

SECTION 4

Ethics Matter

CHAPTER 14

Dante's *Inferno*: Seven Deadly Sins in Scientific Publishing and How to Avoid Them

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“Relinquish all hope, ye who enter here.”

Dante Alighieri, *The Divine Comedy, Inferno*, Canto III, 9

Some 700 years ago, Dante Alighieri (1265–1321) wrote an epic poem about a man's journey through the afterworlds of hell, purgatory, and heaven. In his *Divine Comedy*, he catalogued the vices and virtues of people who had passed into those spiritual domains, in part to provide a valuable insight to us, the living. Dante described hell as a very unhappy and inhospitable place that had nine different levels ranging from the blazing inferno of the eternally damned to a rather benign area, called the First Circle, which was reserved for worthy individuals who were born before the world was redeemed and therefore could not enter the gates of heaven (Alighieri, 1947).

Within this general metaphor, this chapter will take the reader on an educational journey through the various levels of scientific misconduct, from unintentional but questionable research practices, such as citation bias, to serious scientific fraud, such as the fabrication of data. Our purpose is not to scare the fear of God into the gentle hearts of our readers. Rather, like Dante on his journey through the netherworld, we too should see the mortal consequences of scientific misconduct so that we can learn how to avoid them. Table 14.1 shows the seven types of misconduct this chapter explores. In addition to describing

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these various “sins” and the people who commit them, we also discuss their relative seriousness, the punishments that can result, and how to prevent these kinds of problems before they arise. In Chapter 15, we discuss the same issues within a framework of ethical decision making, using case studies to illustrate each topic.

The first issue is carelessness, exemplified by unconscious or conscious citation bias, misrepresenting the accomplishments or findings of others, and neglecting to reference findings that an informed reader would need to know to interpret the author’s conclusions. In its most benign form, this problem consists of a failure to read and understand the articles one cites. A more serious offence is the distortion of others’ work so that their ideas or findings support a preconceived point of view that the author is trying to advance. Carelessness can also be manifested in poor management or inaccurate presentation of data.

The second ethical issue is dual and redundant publication, which occurs when two or more articles share any of the same data without full cross-referencing.

The third issue we consider is unfair or irresponsible authorship. According to standard Ethical Practice Guidelines published by the International Society of Addiction Journal Editors (ISAJE) and similar guidelines of other organizations (e.g., Committee on Publication Ethics (COPE)), all persons named as

	Sin	Examples	Punishments
1	Carelessness	Citation bias, understatement, negligence	Request for correction, letter to editor
2	Redundant and duplicate publication	Same tables or literature reported without noting prior source, same article published in different journals	Rejection of manuscript, copyright infringement, retraction
3	Unfair authorship credit	Failure to include eligible authors, inclusion of honorary authors, use of ghost writer	Angry colleagues, complaints to editor or employer
4	Undeclared conflict of interest	Failure to cite funding source	Letter to editor, public apology
5	Human/animal subject violations	No ethical approval	Rejection of manuscript, notification of employer
6	Plagiarism	Reproducing others’ work or ideas as one’s own	Retraction of manuscript, notification of employer
7	Scientific fraud	Fabrication or falsification of data, misappropriation of others’ ideas or plans given in confidence	Retraction of manuscript, notification of employer, publication ban

Table 14.1: The seven deadly sins and punishments of those who engage in publishing misconduct.

authors should have made a major contribution to the work, not just a token contribution.

Failure to declare a conflict of interest (COI) is the fourth ethical issue considered in this chapter. A COI is a situation or relationship in which professional, personal, or financial considerations could be seen by a fair-minded person as potentially in conflict with the researcher's or author's independence of judgment.

The fifth ethical violation is the failure to conform to minimum standards of protection for animal subjects or human research participants. The latter includes confidentiality of patient records and other data, informed consent, and proper explanation of the risks of research participation. Abiding by standards set by national and institutional boards for the protection of animal or human subjects is an important aspect of research under this rubric.

Plagiarism is the sixth issue. Plagiarism literally means the act of "literary theft" by using or closely imitating the language and thoughts of another author as if they were one's own.

The final level is scientific fraud. This form of misconduct consists of the deliberate fabrication of data or the alteration of findings to make a study more credible and acceptable for publication.

A meta-analysis of survey studies conducted by research scientists and their student trainees representing a range of disciplines indicates that up to 33.7% admit to engaging in questionable research practices, and 0.3%–4.9% have fabricated or falsified data. Misconduct is reported more frequently by medical and pharmacological researchers than those from other disciplines (Fanelli, 2009). How prevalent are these various ethical problems among addiction scientists? ISAJE conducted an informal survey of its members to learn about the kinds of ethical misbehavior of most concern to journal editors (Stenius & Babor, 2003). Duplicate publication in various forms and inappropriate citations were the most common problems encountered by journal editors in their routine processing of manuscripts. A substantial number of journals had experienced at least some of the more serious forms of scientific misconduct, such as plagiarism and failure to declare COI. Authorship problems were also noted quite often. Although most problems were considered infrequent occurrences by the editors, it is likely that these issues are often hidden from the eyes of busy editors and reviewers. For example, editors and reviewers are unlikely to detect scientific fraud in the normal editorial process because data fabrication can be easily hidden in lab records and computer files that are inaccessible during the review process. Skilled reviewers are more likely to detect plagiarism and citation bias, but there is a general suspicion that the cases of identified and provable misconduct are the tip of an iceberg.

In the following sections of this chapter, each of these ethical improprieties is discussed in terms of its relative importance, possible consequences, and strategies for avoidance. Table 14.2 provides definitions of the various types of ethical problems discussed in the chapter.

Citation bias	A form of carelessness that ranges from a rather benign failure to read the articles one is citing to distorting the meaning of others' work.
Copyright	The legal right granted to an author, publisher, or distributor to exclusive publication, production, sale, or distribution of a scientific work.
Divided publication	Information from a single research study is divided for publication in two or more articles. Also called "salami science."
Duplicate publication	Re-publication of the same article in two places without clear reference to the other publication.
Fabrication	Presenting data in a research report that have not been obtained in the manner or by the methods described in the report.
Fractionally divided publication	Reporting in a single article only a fraction of the data that have been or will be reported in their entirety in another article.
Ghost authorship	A published article fails to acknowledge the original writers' contributions.
Guest authorship	A researcher is invited to add his or her name to a study or publication without fulfilling authorship criteria.
Misappropriation	Illicitly presenting or using in one's own name an original research idea, plan, or finding disclosed in confidence.
Misrepresentation (falsification) of findings	Altering or presenting original findings in a way that distorts the result in a scientifically unjustified way or by omitting results or data pertinent to conclusions.
Partial repetitive publication	Repeatedly publishing parts of the same information in modified form.
Plagiarism	Presenting someone else's manuscript, article, text, or idea as one's own.
Redundant/repetitive publication	Publishing the same information two or more times (e.g., in journal articles and book chapters).
Self-plagiarism	Copying and presenting one's own text or article without properly attributing its original source.
Unethical authorship	Authorship which violates the principle that all persons named as authors should have made a major contribution to the work reported and be prepared to take public responsibility for it. Similar to guest authorship.

Table 14.2: Definitions of terms referring to various forms of scientific misconduct.

Negligent Carelessness and Citation Bias

The first Deadly Sin described in Table 14.1 refers to minor forms of negligent carelessness and citation bias that are likely to mislead readers and distort the value of scientific research. Perhaps the most benign and most prevalent form of ethical impropriety, negligent carelessness, is characterized by such deficiencies as a failure to adequately review the literature on a topic, lack of candor or completeness in describing one's research methods, or presentation of data that are based on faulty statistical analyses. A related problem occurs when an author cites articles taken from other reports or from published abstracts without having read the primary sources.

A more serious form of carelessness in scientific writing is citation bias. One form of this bias is the selective citation of only those articles that support a particular point of view, ignoring or understating the importance of articles that contradict that viewpoint. For example, a study of all therapeutic intervention studies included in meta-analyses published between January 2008 and March 2010 in the Cochrane database found that studies with statistically significant findings were cited twice as often as nonsignificant studies (Jannot et al., 2013). A citation bias favoring significant results is also evidenced in the psychiatric literature (Nieminen et al., 2007). Within the addiction field, Etter and Stapleton (2009) found that randomized controlled trials for nicotine replacement therapy that included positive and statistically significant results were more often cited than articles that did not ($N = 41$ vs. 17 , $p < .001$). In addition, a meta-analysis of 42 studies reporting smoking among people with schizophrenia found that the actual average prevalence of smoking among this population is 62%, as opposed to the 80%–90% rate frequently reported. The analysis also found that, for every 10% increase in prevalence reported in a study, there was a 28% increase in the likelihood of that study being cited. These higher rates were also inaccurately reported in publically available information and by the media (Chapman et al., 2009). The intention to deceive others may not be operative in all or even most cases, but this does not make this practice any less unacceptable.

Another form of citation bias is selective citation to enhance one's reputation, epitomized by self-citation. We discuss these issues in Chapter 10 in terms of various deviations from ideal citation practice. A case analysis of these practices in Chapter 15 further illustrates the ethical dimensions of such transgressions.

Consequences

If the effect of these practices is to mislead or misinform the reader, then they are considered a form of scientific misconduct, even if they only occur at the drafting stage when they are often detected by observant colleagues or reviewers who are likely to request a more balanced literature review or the correction of obvious mistakes. In some cases, an editor may reject an otherwise

acceptable manuscript if reviewers raise questions about the author's objectivity or intellectual sloppiness. The consequences could be more serious if carelessness or citation bias is detected only after the article is published. If readers of a published article detect a statistical mistake, a clear bias in the formulation of a research question, or the selective reporting of the literature, they may write letters to the editor pointing out the problem. Editors in turn may ask for corrections to the text or the data analyses, which are subsequently published as a special note to readers. Beyond these embarrassing consequences, failure to cite relevant studies and bias in the interpretation of previous research is likely to create a negative impression of the author among his or her colleagues. The institution with which the author is affiliated may experience criticism and damage of reputation. Furthermore, if articles showing favorable results with large effect sizes are cited more often, readers can be misled into thinking treatments or interventions are more effective than they really are. This may affect the health of individuals and the way services are organized for the public, or it could have other policy implications. Figure 14.1 provides an illustration of how citation bias could have adverse policy and clinical implications.

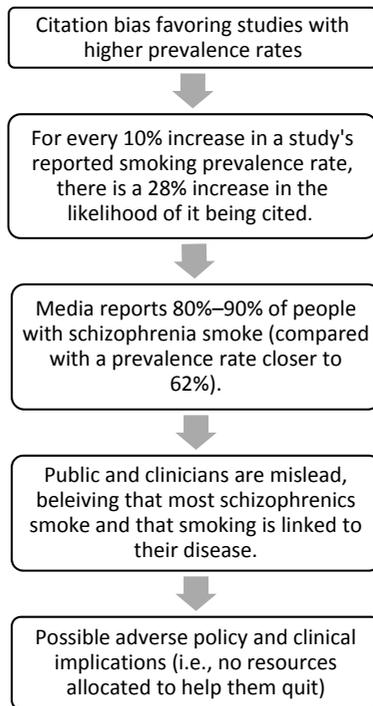


Figure 14.1: Citation bias and its potential consequences.
Source: Chapman et al. (2009).

Prevention

As discussed in Chapters 7, 8, and 10, the best way to avoid these problems is to follow appropriate citation practices, conduct a thorough review of the literature (by searching for positive as well as negative outcomes), read all of the articles you cite, present research findings accurately, and interpret them objectively. Locating unpublished studies and/or outcomes may also help to reduce bias. Authors who collaborate on multi-authored articles have a special responsibility to read all drafts of a manuscript with extreme care to make sure these problems are detected during the early stages of the publication process. Even when several authors divide responsibility for writing different sections of a research report, authors should always check each other's work.

Duplicate and Redundant Publication

Authors wishing to reach the widest possible audience, or a variety of specific audiences, may seek to report a single definable body of research in more than one article, in repeated reports of the same work, in fractional reports, or in reports in more than one language (Huth, 1986). But there are also less noble motives for duplicate and redundant publication, including the desire for multiple publications to enhance one's reputation.

Redundant publication occurs when two or more articles share the same data without full cross-reference (COPE, 1999). Duplicate (or dual) publishing, according to the International Committee of Medical Journal Editors (ICMJE, 2013, p. 8), refers to the "publication of a paper that overlaps substantially with one already published without, clear, visible reference to the previous publication." In general, journal editors expect authors to ensure that no significant part of the submitted material has been published previously and that the article is not concurrently being considered by another journal. Meta-analyses (Choi et al., 2014; Gotzsche, 1989) indicate that repetitive publishing practices have become a serious problem, and the evidence suggests that this is true across nations, accounting for 18.1% of all retractions of articles published on PubMed between 2008 and 2012 (Amos, 2014). In Finland and China, the rate of retractions for duplicate publication is much higher (37.5% and 29.4%, respectively) (Amos, 2014). Therefore, many journals now require authors to state in writing whether the data have been previously reported in part or in whole (ICMJE, 2013).

As indicated in Table 14.2, a number of different terms have been used to describe this phenomenon. Although there are some important differences among prior, duplicate, repetitive, fragmented, and redundant publication, they are all part of a common problem. Duplicate and redundant publication and their variants consume valuable resources that otherwise might be devoted to other authors who are publishing original data or ideas. Because of limited

journal space, the publication of one person's article means that another's article will be rejected. If there are questions about the extent of the overlap between two articles, editors and reviewers need to take extra time to review several publications to determine the extent of redundancy and whether it violates any copyright agreements.

Regardless of whether the repetition occurs with data or ideas (e.g., repetitive review articles), the information from duplicated sources is sometimes inadvertently cited in a way that implies that the findings or conclusions are independent of each other, when in fact they are based on the same source. Without full disclosure in the original sources, authors of subsequent meta-analyses and review articles based on these source articles may come to biased conclusions because the effect of a given finding is multiplied or distorted.

Instances of Acceptable Secondary Publication

As Huth (1986) has noted, some types of repetitive publication are legitimate and should not be considered scientific misconduct. This is particularly the case in the publications associated with large data sets that involve multiple investigators across many sites. Often, the collaborating investigators have included measures related to a particular hypothesis or methodology, which could and should be reported in separate articles even though the article presents the same subjects, methods, procedures, and even some of the same data as other articles. Such publications may be intended to highlight the relevance of particular clinical findings for a particular audience, especially if they have been first published in a technical journal that did not permit the reporting of particular findings or the discussion of clinical implications. Articles presented at scientific conferences or meetings but not published in full may also be submitted to journals for publishing. In such cases provide an explanatory letter along with copies of related materials (ICMJE, 2013).

It is also acceptable to re-publish ideas, data, or review findings when journal editors or book editors request that a popular author write a topical review or commentary for their publication, as long as the author tells the editor about previously published material and cites all relevant reports in the commissioned article.

Another possibly acceptable variant is publication of the same article, often in its entirety, in two languages when the editors of both journals agree to it and when the translated version cites the original version as the primary publication (which cannot be submitted simultaneously). Submitting the same article to two journals may also be justifiable if the two journals are in very different disciplines and the publication is intended for different groups of readers, the authors have received permission from the editors of both journals, the title indicates it is a secondary publication of a primary publication, *and* the reviewers' comments bring about considerable changes to the manuscript (ICMJE, 2013).

Self-Plagiarism

A special case of redundant publication is “self-plagiarism,” a topic on which relatively little has been written. According to Griffin (1991), this occurs when an author re-uses text from his or her own previously published article in a way that fails to give proper acknowledgement to its source and its owner. By *owner*, we mean the person who or organization that owns the copyright (see Table 14.2 for definition), which is often the publisher of the previous version of the borrowed text, not the original author. This problem typically occurs when authors re-use text from a literature review or the methods section of an article either without changing the wording or by quoting the original text. Unlike the re-use or re-publication of original data, self-plagiarism is something that is more the result of laziness than dishonesty. It can also be a form of self-aggrandizement.

Consequences

If a duplicate publication constitutes a copyright infringement, it may result in a reprimand for the author, a retraction of the article, or an apology to the journal editors and the publishers involved. Editors, likely embarrassed by the need to publish a retraction, have adopted policies and regulations to prevent this questionable research practice. *Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals* (previously known as *Requirements for Manuscripts Submitted to Biomedical Journals*), which is endorsed by over 500 medical journals, cautions the following: “Authors who attempt duplicate publication without such notification should expect at least prompt rejection of the submitted manuscript. If the editor was not aware of the violations and the article has already been published, then the article might warrant retraction with or without the author’s explanation or approval” (ICMJE, 2013, p. 9).

Furthermore, redundant articles may mislead researchers because of the duplicate counting of subjects in a meta-analysis, as illustrated in the case described in Box 14.1 (Tramèr et al., 1997). And when instances of scientific misconduct like this are reported to the public, they diminish the reputation of scientists and their work. In general, an author is not allowed to re-use previously published material when the rights have been assigned to the publisher, which occurs in most instances of scientific journal publications. Reprinting more than one or two sentences verbatim without proper attribution may constitute a violation of copyright and could result in legal sanctions, although this rarely occurs in cases of minor copyright violations.

The negative consequences of self-plagiarism may be less obvious and editors are unlikely to consider small amounts (the *BMJ* uses a baseline of 10%) of “borrowing” to be a major problem, but if an observant reviewer detects

Investigators conducting a meta-analysis of randomized controlled trials for the medication ondansetron found that 17% were duplicate publications that had not been cross-referenced, resulting in a 28% duplication of patient data. Furthermore, the duplicated randomized controlled trials reported greater efficacy than nonduplicated studies. If duplicated data were included in the meta-analysis, the efficacy of ondansetron would be overestimated by 23% (Tramèr et al., 1997).

Box 14.1: Case study: Impact of duplicate publication on meta-analysis.

widespread self-plagiarism, the editor may reject the article. Nevertheless, the more that authors re-use text without proper quotation or attribution, the more they risk adverse consequences from editors and publishers, ranging from a reprimand to legal action for copyright violation.

Prevention

Authors of overlapping articles would be seriously remiss in failing to cite their previously published work (see Jerrells, 2001, for a discussion of this problem) or submitting the same article to two different journals while intending the piece to be recognized as two original articles. The fault in this sin does not insomuch lie with the duplicate publication itself but with the author's intent to deceive. When there is any possibility of repetitive publication, authors must notify editors to explain the connection between the current article and its predecessors. Ideally, the author should submit all related publications to the editor along with an explanation of the potential overlap and the reasons for the new report. Second, all versions of related articles must contain appropriate citations and complete references to the related articles so that readers and editors can evaluate the implications of the repetition and overlap. This includes citing illustrations or tables reprinted or adapted from other journals. When publishing an article in two different journals, each publication should clearly state, "This paper is also published as 'Title of paper' in the *Title of Journal*, Vol x(x), pp. x." (Bretag & Mahmud, 2009, p. 194), or secondary publication should refer to the primary one in the title (ICMJE, 2013).

A survey on redundant publishing (Yank & Barnes, 2003) found that both editors and authors believe that journals do not do enough to expose, condemn, and penalize this publishing sin. Authors also felt that that redundant publications occur because the practice is not condemned by academic leaders and because authors do not understand how redundant reporting distorts the aggregation of data (i.e., meta-analyses). Therefore, editors, authors, and academic

leaders should clarify and enforce mutually acceptable standards on redundant publication (e.g., *Recommendations for the Conduct, Reporting, Editing, and Publication of Scholarly Work in Medical Journals*, Section III.D.2 and IV.B).

Regarding self-plagiarism, set off short quotations from a previously published article in quotation marks, and cite the original version. Permission must be requested from the publisher or other copyright holder when large sections are reproduced. When there is a need to repeat the information contained in a previously published literature review or a methods section, the best solution is to change some of the wording in each sentence and to refer the reader to relevant sources for previously published material (e.g., "As discussed in our previous report [give author names and year of publication]," etc.). It has also been suggested (Bretag & Mahmud, 2009) that authors could use text-matching software to ensure that they have appropriately described all previously published work; however, it should be noted that there has been some concern over potential ethical and legal issues surrounding the software (McKeever, 2006).

Unfair Authorship

Authorship of a scientific report refers not only to the writing of a manuscript but also to the origin of a writing project, any experimentation or other research connected with it, and the substantive kinds of work that led up to it. According to the ISAJE Ethical Practice Guidelines (www.isaje.net) and other codes (COPE, 1999; ICMJE, 2013), all persons named as authors should have made a major contribution to the work reported and be prepared to take public responsibility for its contents (in proportion to the credit they claim on the author list). An editorial (Huth, 1982, p. 613) in the *Annals of Internal Medicine* defines relevant terms as follows:

Responsibility means the ability and willingness to defend the content of the paper if it is challenged by readers. *Public* means that authors are willing to carry out this responsibility in a published defense, such as a signed letter to the editor; private defense in private correspondence would not reach the scientific public.

Content means not simply packages of data but also the conceptual framework on which they are hung; the justification for a study or clinical observations; the basis for the study design; methods for collection of valid data; the analysis and interpretation of the data; and the logic that led to the conclusions.

The ICMJE's (2013) four criteria for authorship are also relevant in this context: (a) substantial contributions, (b) drafting the work or revising it critically, (c) final approval of the version to be published, and (d) agreement to be accountable.

There are a number of ways in which authorship decisions can result in ethical improprieties. First, some persons who have made significant contributions to an article may not receive sufficient credit or may receive no credit at all. This occurs when an article is drafted without the knowledge or consent of someone who made a substantive contribution earlier in the process. It also occurs when a decision to list the order of contributions is not made fairly with the full agreement of the co-authors, as when a major contributor is listed after a minor contributor to enhance the ego or career of the minor contributor. Another instance of inappropriate credit occurs when a co-author, such as a science writer, is not listed because the research group might be embarrassed to admit that someone else wrote the article, such as a science writer hired by a drug company to expedite the publication of favorable findings. This is called *ghost authorship* because the real author's identity is unknown to those who read the article. Ghost writers are used by drug companies (Moffatt & Elliott, 2007) and were used by the tobacco industry (see Box 14.2) (Davis, 2008). By contrast, *guest authorship* occurs when articles are prepared by hired writers but published under the names of academics or scientists who allow themselves to be listed (sometimes for a payment or other incentives) without satisfying authorship criteria (Stern & Lemmens, 2011). The concern with this unethical practice lies with COIs and the potential for bias, as evidenced by ghostwritten articles on hormone replacement therapy, Vioxx (an anti-inflammatory drug that was withdrawn amid safety fears) and Fen (a popular diet drug withdrawn for safety reasons). A less serious form of ghost writing can occur when researchers, who are either too busy or poor writers, employ professional science writers to draft manuscripts of original research. For the purposes of this discussion, we concentrate on the former definition.

An analysis of tobacco industry documents and transcripts of tobacco litigation testimony showed that British American Tobacco ghost-wrote the International Advertising Association (IAA) report titled "Tobacco Advertising Bans and Consumption in 16 Countries," originally published in 1983 and again as a revision in 1986. J.J. Boddewyn, a marketing professor, served as "guest" editor of the reports. The reports concluded that tobacco advertising bans did not result in a reduction of tobacco use. These reports were then publicized in print materials, media campaigns, and legislative hearings during the 1980s and later. The Tobacco Institute, the major trade association representing the major U.S. cigarette manufacturers at the time, helped arrange for Boddewyn to present the findings to the U.S. Congress and the media.

Box 14.2: Case study: Ghost writing by the tobacco industry.

A second type of authorship problem arises when some persons are listed as co-authors even though they made no substantive contribution to the article or the research. A common example is the practice of listing the head of a department or a research center director, often at the end of the author list, a custom known as gratuitous, honorary, or gift authorship. Again, in the light of this practice, one must question the ethical climate in research settings that allows such behavior to exist. Ethical guidelines, appropriately crafted and implemented, might deter such transgressions.

Between these two extremes, there are a number of related infractions, such as the failure to give proper recognition to a person's contribution by listing him or her inappropriately low in the author list, or the tendency to award co-authorship for minor contributions based on personal or political considerations. A more complete discussion of authorship issues is provided in Chapters 5 and 11, which also describe procedures to minimize ethical and interpersonal problems related to authorship credits. Our purpose here is to discuss the seriousness and consequences of this type of misconduct and to summarize the steps that can be taken to prevent its occurrence.

Consequences

Authorship credits may be one of the most contentious issues in scientific publishing. At the level of collaborating research groups, the consequences range from hurt feelings to formal complaints made to a scientist's unit director or institutional authority. In between these extremes, there are likely to be recriminations, perceptions of unfairness, and poisoned working relationships, which could damage the reputations of some of the parties involved. In the case of ghost writing, the funder (for example a drug manufacturer) obtains the credibility and prestige attached to the guest author, which may translate into distorted perceptions of the evidence base and affect public health. When instances of unfair authorship credit are detected, the editor's response could range from the rejection of a pending manuscript to the call for a correction to a published article. Some journals (e.g., *PLoS Medicine*), call for a formal retraction if unacknowledged ghostwriting is discovered after publication and reporting of authors' misconduct to institutions, in addition to banning the guest author from future submission (*PLoS Medicine* Editors, 2009). But these questionable research practices rarely come to the attention of editors unless there is a case of scientific fraud, where co-authors might claim that they were not sufficiently involved in the writing of the article to detect the fabrication in the first place. Some have called for academic sanctioning (Moffatt & Elliott, 2007), and because ghostwritten articles have been used in litigation to support drug companies' claims, others (Stern & Lemmens, 2011) argue that a guest author's claim for credit of an article written by someone else constitutes legal fraud.

Prevention

How can authors best deal with ethical issues related to authorship? As noted in Chapter 11, we advise early agreement on the precise roles of the contributors and collaborators and on matters of authorship and publication. The ICMJE (2013) has attempted to control unfair authorship practices by requiring that journals ask detailed questions about each author's contributions. The lead author should periodically review the status of authorship credits within a designated working group by having open discussions of substantive contributions with all prospective collaborators. To avoid disputes, lead authors should distribute and discuss authorship guidelines with all potential collaborators on a manuscript. Those who may have been listed as an "honorary author" should instead be mentioned in the acknowledgments and have their contributions specified. An open discussion of authorship should be on the academic agenda of research centers. Involving an institutional ethics committee in drawing up institutional guidelines might also be helpful. Open and ongoing conversation about these issues, combined with institutional policies, is the best way to avoid problems.

Undeclared Conflict of Interest

When a gift or gesture of any size is bestowed, it imposes on the recipient a sense of indebtedness. The obligation to directly reciprocate, whether or not the recipient is conscious of it, tends to influence behavior (Katz et al., 2003).

A COI is a situation or relationship in which professional, personal, or financial considerations compromise, or could be seen by a fair-minded person as potentially compromising independence of judgment (ISAJE, 1997). This problem has become exacerbated by closer relationships between government and industry (e.g., Bonner & Gilmore, 2012), industry-civil society partnerships, and cuts to government funding which encourage the procurement of industry sponsors.

Real, Apparent and Potential COIs

Real (or actual) COIs should first be distinguished from "apparent" and "potential" conflict situations (See Table 14.3), as a COI only indicates the potential for bias, not the likelihood. A *real COI* means that the author, or the administrative unit with which the author has an employment relationship, has a financial or other interest that could unduly influence the author's position with respect to the subject matter being considered. An *apparent COI* exists when an interest would not necessarily influence the author but could prompt others to question the author's objectivity. Sometimes a conflict may exist, but the link is not so clear, as was the case with a young investigator who failed to declare funding

Real or actual COI	A direct conflict exists between professional judgment/objectivity and private interests
Apparent COI	It appears or could be perceived that competing interests are improperly influencing the professional's judgment, whether or not that is actually the case
Unapparent COI	A conflict may exist, but the link is unclear
Potential COI	Private interests are not but could come into direct conflict with professional judgment

Table 14.3: Conflict of interest (COI) situations.

from the Institute for Research on Pathological Gambling. When contacted by the journal about her failed declaration, the researcher reported that she had no idea that the Institute's funding came from the gambling industry. *Unapparent COIs* such as these occur when sponsorship is provided through an industry-funded social aspects organization or another third party, or when the recipient of the funding is unaware of the funding source. A *potential COI* involves a situation that may develop into a real COI.

One's perception of COI is just as important as COI itself, as even paid travel, honoraria, or other relationships can subconsciously "create strong dispositions or obligations to reciprocate" (Mauss, 1967). As explained by Katz et al. (2003) "When a gift or gesture of any size is bestowed, it imposes on the recipient a sense of indebtedness. The obligation to directly reciprocate, whether or not the recipient is conscious of it, tends to influence behavior." This means that one does not necessarily need to have a financial interest in the outcome of one's research to constitute having a COI.

COIs can be financial, personal, political, or academic. *Financial interests* can include employment, research funding, stock or share ownership, payment for lectures or travel, consultancies, or company support for staff (COPE, 1999). These kinds of conflict are most often discussed in ethics codes and reports on research integrity because they are easier to document and quantify. *Personal conflicts* might include a vendetta against another researcher whom the author dislikes. *Political conflicts* exist when researchers distort their findings or interpretation to conform to a specific political idea or ideology. *Academic conflicts* include the attempt to validate "pet" theories that support one's own ideas. These kinds of conflict are difficult to detect, but authors should nevertheless consider them when evaluating their own work. Authors in the past received little guidance in evaluating and responding appropriately to issues of regarding COIs. The existence of compliance offices in research settings is helpful, but these institutions themselves will not solve the problem. Researchers and research groups need appropriate training about the ethical dimensions involved as well as about opportunities for ongoing dialogue and conversation (Institute of Medicine, 2002).

One way to determine whether a COI exists is to ask the following question: If the situation or relationship were revealed to the editor or the reader only after the article was published, would it make a reasonable person feel misled or deceived? COI is not in itself wrongdoing. However, scientific misconduct does occur when there is a failure to declare real or potential conflicts to an editor, one's co-authors, and the readers of an article, to the extent that potential conflicts are very important in the evaluation of any piece of scientific work. As discussed in more detail in Chapter 16, the potential for COI in the addiction field is enhanced by any relationship or funding connected to the tobacco industry, the alcohol beverage industry, for-profit health care systems, private hospitals, the pharmaceutical industry, or "social aspect organizations" that receive their primary support from industry sources. For example, in the search for medications that may be used to treat tobacco, alcohol, or illicit drug dependence, scientists involved in research on a particular product may have financial ties with companies that have a business interest in that product.

The alcohol and tobacco industries have also funded researchers to conduct policy studies or policy-related program evaluations.

Sometimes the industry funds studies directly; other times, it funds studies indirectly through social aspect organizations, think tanks, or other third parties that receive support from industry sources (see Box 14.3 for a list of these organizations). In addition to research funding, industry ties can include paid consultancies, conference presentations, stockholding, advisory board membership, or patent holding.

Two major questions regarding the need for COI policies and precautions are whether industry funding affects the quality and eventual publication of research and whether the effect is deleterious. Bias toward "positive" results may exist even among articles that disclose financial ties to industry (Cho, 1998). For example, pharmaceutical industry-supported medication studies are significantly more likely to report "positive" findings (i.e., that the manufacturer-associated medication is better than the placebo) than non-industry-funded

- Foundation for Alcohol Research (formerly ABMRF)
- Institut de Recherches Scientifiques sur les Boissons (IREB)
- National Center for Responsible Gaming (NCRG)
- Center for Consumer Freedom (CCF)
- European Foundation for Alcohol Research (ERAB)
- International Alliance for Responsible Drinking (IARD, formally ICAP)
- Alcohol Information Partnership

Box 14.3: Organizations receiving industry support.*

**This list is not exhaustive.*

studies (Stelfox et al., 1998). Several examples of such biases have been observed in the addiction field. One analysis found that industry-supported studies were more likely than non-industry-funded studies to conclude that secondhand smoke has no health effects (Lambe et al., 2002). In reviewing all randomized controlled trials on nicotine replacement therapy included in the Cochrane database, Etter et al. (2007) found that industry-supported trials were more likely to produce statistically significant results when compared with independent trials. Researchers (Cataldo et al., 2010) conducting a meta-analysis on the link between smoking and Alzheimer's disease found that, in tobacco-industry-affiliated studies, smoking was associated with a significantly decreased risk for Alzheimer's disease, whereas those with no industry affiliation demonstrated a significant increased risk. Such instances of COI could be made worse by publication bias, in which industry-favorable studies are more likely to get published than are unfavorable ones.

There are several possible mechanisms to explain how conflicts, especially those connected with industry ties, may lead to publication bias (see Cho, 1998). One is suppression of publication, whereby negative findings are not published because either the author fears loss of funding from industry sponsors or the industry itself imposes restrictions on publication. Another mechanism is self-selection or industry selection of researchers who are more likely to get positive results. Even when grants are awarded by industry-funded organizations that convene expert review panels, the panel members themselves may be influenced by receipt of honoraria, travel funds and invitations to speak at industry-supported conferences. A third possibility is industry control of the research agenda, so that funding is only provided for topics that are not likely to threaten an industry's financial interests. A final possibility is that even when the funding source has no influence on the findings, researchers compromise their own credibility by being associated with industries that have a vested interest in the outcomes of the research.

From the literature reviewed in this section, we conclude that industry funding can affect the nature, quality, and credibility of research, and the effect is likely to be deleterious.

Consequences

The existence of a COI does not mean that the conflict will result in adverse consequences. However, people with a conflict often fail to realize the extent to which the conflict has affected their judgment, because this can occur subconsciously. Another consequence of having competing financial interests is the possible limitation of publication options. Although most journals do not ban publication of articles because of their authors' financial interests, some journals have now begun to prohibit authors of editorials and review articles from publishing if the author has a substantial financial interest in the product

discussed in the editorial or review (Relman, 1990). This policy does not apply to authors of scientific reports that present original data.

Undeclared COIs, when detected, may have serious consequences, such as the rejection of a pending article, the retraction of a published article, or the author's need to publish an apology. A more subtle effect of real or apparent COI is the perception by one's scientific colleagues that one's scientific work is biased because of a personal or financial interest. Industry relationships can also threaten the integrity of the author's host institution itself.

Prevention

Researchers must first be made aware of the ethical issues that arise when exploiting COIs. Many schools are requiring ethics classes that include education on COIs, and many academic institutions and medical centers have adopted rules governing financial support for faculty activities. These rules describe when faculty must disclose particular interests and when they must divest themselves of particular financial interests. In 2013, an expert Task Force convened by the Pew Charitable Trusts published COI best practice recommendations for academic medical centers, which can be read in Table 14.4.

COI committees, when they operate as part of ethical review committees, are a part of institutional compliance oversight and hold promise in this respect.

COI area	Best practice recommendation
Disclosing COIs	Required to disclose all industry relationships that relate to academic activities in teaching, research, patient care, and institutional service.
Acceptance of gifts and meals	Prohibited
Industry-funded speaking	Prohibited
Industry-sponsored fellowships	Clinical training: prohibited Research training: permitted
COI curriculum	Required
Consulting and advising relationships	Marketing: prohibited Scientific activities: permitted
Industry support of accredited continuing medical education	Should not be supported
Ghostwriting and honorary authorships	Prohibited

Table 14.4: Recommended best practices in medical conflict of interest (COI) policies.

Note: Adapted from Pew Charitable Trusts (2013).

Authors should pay close attention to the guidelines issued by these committees. As noted in Chapter 16, the scientific community has issued warnings about the advisability of accepting any funding from the tobacco and alcohol industries and has suggested rigorous adherence to voluntary ethical codes when such funding is accepted.

According to Loue (2000), the best way to avoid problems associated with potential COI is self-elimination from participation in potentially conflicting activities. Short-term consulting arrangements with the tobacco, alcohol, and pharmaceutical industries are often not worth the questions the researcher must face about his or her objectivity. Arrangements with industry can be particularly problematic when the researcher is asked to sign a restrictive contract regarding the ownership of data, the sponsor's control of the data, and the investigator's right to publish them.

Even when these guidelines have been followed appropriately, however, authors should declare to the editor any real, potential, or apparent COI with respect to their involvement in a particular publication. Authors should declare conflicts between (a) commercial entities and authors personally and (b) commercial entities and the administrative unit with which the authors have an employment relationship.

Authors should also declare sources of funding for a study, review, or other publication in a way that can be clearly understood by the reader, even if the journal does not require authors to do so. A footnote or an acknowledgment is the most appropriate mechanism. Describe funding sources in sufficient detail so that an average reader can recognize potential COIs. If a funding source is a social aspect organization with an ambiguous name such as The Alcohol and Health Fund, the reader should be informed that, for example, the organization is supported by a group of beer companies.

Disclosure alone will not necessarily eliminate publication bias. Researchers who are serious about avoiding even the appearance of COI are advised to dilute the conflicting relationship by getting funding from both industry and nonindustry sources and by refusing to sign industry agreements that do not guarantee the researcher's right to publish the results regardless of the study's outcome. Other management strategies include avoiding additional financial ties that are not absolutely necessary to the pursuit of the research, such as the acceptance of advisory board memberships, stock options, or consulting fees from companies sponsoring research (Cho et al., 2002).

Human/Animal Subjects Violations

Addiction research involving human and animal subjects has been conducted for over a century. During this period, regulations governing human and animal experimentation have developed into a very complex set of procedures that are typically governed by appointed committees located at institutions involved

in biomedical research. These procedures include ethical review of research protocols, safety monitoring of animals and human research participants, and informed consent requirements for human participants. These procedures were developed out of concern for the rights of research participants following a series of well-publicized medical experiments in which human subjects were exposed to harmful agents or had effective treatments withheld without their knowledge or consent (Loue, 2000). It has now become customary, if not mandatory, to submit proposed research for independent review by an ethical research committee to determine its ethical acceptability from the perspective of the local community and the researcher's institution (Federman et al., 2003).

Such boards focus primarily on the protection of research participants by assuring that the study's procedures minimize risks of unwarranted harm to participants. Although regulations regarding types of study requiring ethical approval vary across the world, formal international standards developed to guide experimentation involving human participants have been put forth in the 1964 Declaration of Helsinki, which states that in medical research involving human participants, the well-being of the individual research subject takes precedence over all other interests. In particular, the 1975 and 1983 revisions emphasized the importance of voluntary informed consent to participate in research (Loue, 2000).

Additional ethical issues may also have to be considered for certain types of research involving individuals who are substance dependent. Does drug or alcohol dependence in combination with other factors limit capacity to give informed consent? What other factors—intoxication, withdrawal, chronic recidivism? Do the criteria for dependence imply impaired decision making? If someone is using drugs despite reoccurring problems and does not seek treatment, should he or she be categorized as not exhibiting concern for his or her welfare and therefore incapable of providing informed consent?

Genetic research raises similar if not even more challenging ethical issues. Genetic research in relation to addiction exposes subjects, their families, and the broader social community to additional risks (Chapman et al., 2012). Risks to subjects include the loss of privacy and the loss of control over sensitive personal information. Financial remuneration for research participation may increase the use of drugs or alcohol if adequate precautions are not taken. Incentive payments to parents to encourage them to enroll their children in genetic studies are unacceptable because of the risk of coercing children to participate. Editors and authors have a duty to make sure that published research is subject to rigorous ethical review.

Nevertheless, in some cases, particularly the social sciences, there is the perception that ethical review has gone too far in its attempts to minimize risks that may not be present. As explained by Mäkelä (2006): (a) social research is generally much less invasive than medical research; (b) its impact on research participants involves different casual chains; (c) social research design tends to be more open ended; and (d) in social research, the context of the relationship

between researcher and participant is closer to that of a journalist and a minister rather than that of a doctor and patient.

Consequences

Failure to follow recommended or required journal procedures regarding protection of human and animal research subjects could have several important consequences. Although most journals do not ban publication of articles because they have not been submitted for ethical review, some journals now require authors to state whether their research conforms to the minimum standards outlined in the Declaration of Helsinki, a set of ethical principles regarding human experimentation developed by the World Medical Association. In particular, social and behavioral research such as survey studies and research involving archival records may not require stringent informed consent procedures. However, it would be an error to rely on this perception. Surveys, on occasion, have resulted in significant harm to individuals and to institutions. It is safer to submit all research for institutional review and to let the committee decide whether the researcher is exempt or not. Failure to obtain ethical approvals or informed consent from research participants may lead an editor to question the purpose and value of the research and could result in a decision not to send the manuscript out for review or, when the failure is detected during peer review, to decline the manuscript. Another consequence could be the notification of an official from the author's institution.

Prevention

It is always wise to mention both in the cover letter to the editor and in the text of a submitted manuscript that the researchers have followed appropriate ethical review procedures. If there are any questions regarding the applicability of human subjects requirements, these should be raised with the editor in the cover letter or in a telephone call or email message before submission of a manuscript. Often these questions can be resolved by consulting the journal's website or instructions to authors. The ICMJE (1991, p. 339) has provided the following guidance regarding ethical issues:

When reporting experiments on human subjects, indicate whether the procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional or regional) and with the Helsinki Declaration of 1975, as revised in 1983. Do not use patients' names, initials, or hospital numbers, especially in illustrative material. When reporting experiments on animals, indicate whether the institution's or the National Research Council's

guide for, or any national law on, the care and use of laboratory animals, was followed.

Scientific journals also have an important role to play in the protection of human and animal research subjects. Journals are responsible for the dissemination of research findings. They “are obligated to publish research that meets high ethical standards . . . for which the authors have attested to their compliance with regulatory and ethical standards” (Federman et al., 2003, p. 205). A number of journals have implemented policies requiring authors to certify compliance with informed consent procedures, and ISAJE (1997) subscribes to these policies.

Plagiarism

Plagiarism refers to both the theft of intellectual property, such as ideas and images, and the copying of unattributed textual material. Plagiarism ranges from the unreferenced use of others’ published and unpublished ideas, including research grant applications, to submission under “new” authorship of a complete article, sometimes in a different language. It can also include copying of another’s work verbatim or nearly verbatim in a way that misleads the ordinary reader about the author’s own contribution. Table 14.5 provides examples of instances that can be constituted as “clear plagiarism,” such as copying an entire article, as well as less serious forms like the “minor copying” of a string of words (COPE, 2011).

It may occur at any stage of planning, research, writing, or publication. It applies to both print and electronic versions of a publication. The Office of Research Integrity, an office within the U.S. Department of Health and Human Services that monitors investigation of research misconduct, considers plagiarism to include both the theft or misappropriation of intellectual property and the substantial unattributed textual copying of another’s work, such as sentences, paragraphs or even entire manuscripts, in a way that misleads the ordinary reader regarding the contribution of the author.

	<i>Least serious</i>		<i>Most serious</i>
	←		→
Extent	Few words	Whole paragraph	Whole article
Originality	Commonly used	Used by small number of authors	Original idea
Referencing	Full and accurate referencing		Not referenced
Intent	Unintentional deception		Intentional deception

Table 14.5: Features of plagiarism identified by the Committee on Publication Ethics.

Note: Adapted from COPE (2011).

Consequences

Developments in text-matching software (e.g., CrossCheck, eTBLAST) have made detecting instances of plagiarism much easier. The consequences of plagiarism can be serious, ranging from an editor's reprimand to a formal hearing and loss of employment after an allegation is reported to the author's institutional officials. The US Office of Research Integrity generally does not pursue the limited use of identical or nearly identical phrases that, for example, describe a commonly used methodology or previous research, because these are not considered to be substantially misleading to the reader or of great significance. Journal editors can be unrelenting and at times unforgiving if they detect instances of plagiarism. The typical approach is first to request a written explanation from the author soon after the plagiarism has been discovered. Most often, these instances are discovered by knowledgeable and vigilant reviewers or by readers who sometimes report that their own words, sentences, paragraphs, or articles have been misappropriated. If the author's explanation is credible and the amount of copying is small, the consequences may be nothing more than a letter of reprimand and possibly the rejection of the manuscript. More extensive types of plagiarism may result not only in the rejection of the manuscript, but also in the publication of a correction or retraction if the

1. Cite idea sources and identify the contributions of others without exception, even when paraphrasing or summarizing.
2. Use quotation marks for any verbatim text taken from another author.
3. Clarify for readers which ideas are the author's own and which are derived from another source.
4. Be familiar with copyright law.
5. Paraphrasing and summarizing requires authors to produce the same meaning using their own words.
6. Paraphrasing and summarizing requires authors to possess a comprehensive understanding of the material.
7. Refer to the primary literature, as opposed to a secondary source.
8. Always double check citations and reference section.
9. If uncertain as to whether an idea or fact is common knowledge, cite the original source.
10. Do not partake in ghostwriting.

Box 14.4: Guidelines for avoiding plagiarism.
Source: Roig (2013).

material has already been published, and authors may be banned from submitting to the journal in the future (COPE, 2011).

Studies indicate that retractions for this deadly sin are increasing in recent years, accounting for 9.8%–17.0% of retractions (Fang et al., 2012). More importantly, such matters may then be referred to the author's institutional employer, who typically will have responsibility for dealing with allegations of scientific misconduct. This is discussed in more detail in the next section. Although failure to attribute the original source of a sentence or paragraph may constitute a copyright infringement and could result in civil proceedings, such cases are rarely prosecuted.

Prevention

The US Office for Research Integrity offers 26 *Guidelines on Avoiding Plagiarism* (Roig, 2013), which focus on disclosing all sources through appropriate citation or quotation conventions (see Box 14.4 for relevant guidelines). If the author plans to use a large amount of other people's written or illustrative material, he or she must seek permission to reprint the material (COPE, 1999). Legal definitions may vary from country to country regarding plagiarism, copyright, and intellectual property rights. The author should review these with the editor when there is any question (Roig, 2013).

A more common problem that may result in an embarrassing revelation is the unintentional copying of small amounts of textual material or the borrowing of others' ideas or concepts without appropriate attribution. These cases are usually the result of negligence, sloppiness, or laziness, as when an author fails to use quotation marks or paraphrases someone else's ideas without stating the source. In these instances, the best prevention method is the careful documentation of all source documents in the course of note taking and the development of writing habits that allow ample time to prepare a manuscript. Authors can ensure they have appropriately cited their work using text-matching software recommended by the Office of Research Integrity.

Other Types of Scientific Fraud

According to various ethical authorities (e.g., Committee on Publication Ethics, 2011), scientific fraud is manifested in the following forms:

- fabrication or falsification of data, that is, presenting data in a research report that have not been obtained in the manner or by the methods described in the report or altering or presenting original findings in a way that distorts the result in a scientifically unjustified way, or by omitting results or data pertinent to conclusions;

- plagiarism, that is, presenting someone else's manuscript, article, or text as one's own;
- misappropriation, that is, illicitly presenting or using in one's own name an original research idea, plan, or finding disclosed in confidence; and
- noncompliance with legislative and/or regulatory requirements.

Although the terms fraud and misconduct are often used interchangeably, it is important to note that fraud implies intentional deception. Fraud can occur in the course of proposing, conducting, or reporting research. It is most often detected at the time of publication, primarily because reviewers, editors, and readers of scientific articles are very critical and skeptical by nature and profession. In the course of this chapter, and in other parts of this book (see Chapters 5, 10, and 11), we have described several of the less serious instances of scientific

In December 2003, the Court of Justice of the Canton of Geneva gave its sentence in an (in)famous case of scientific fraud. A Swedish professor at The University of Geneva and formerly of Gothenburg University had charged two tobacco activists with libel after they accused him of 'unprecedented scientific fraud' concerning the risks of passive smoking. The court dismissed the case, stating that "Geneva has indeed been the platform of a scientific fraud without precedent in the sense that. Professor Ragnar Rylander has acted in his capacity of associate professor at the University, taking advantage of its influence and reputation and not hesitating to put science at the service of money, in disregard of the mission entrusted to this public institution." According to the court, for thirty years the professor had had a close but secret relationship with Philip Morris, which included substantial financial rewards. Thus he lied when he stated to *The European Journal of Public Health* that he had never had contact with Philip Morris. In his research on passive smoking and in several conferences on the topic he questioned the risks connected with passive smoking. According to the Court, the professor "did not hesitate to deceive the general public in order to show himself favorable to the tobacco company." In particular, the Court reported as apparently fraudulent a study on respiratory diseases in children in which he altered the database so that no link could be made between passive smoking and the frequency of respiratory infections.

Box 14.5: An example of scientific fraud from the tobacco field.

Sources: Domstol i Geneve slår fast svenskt vetenskapsfusk (Court in Geneva gives sentence on Swedish scientific fraud). *Svenska Dagbladet*, 16.12.2003 www.prevention.ch/rypr151203.htm, accessed 11 June 2004.

misconduct, such as the selective interpretation of others' findings, inappropriate citation practices, unfair authorship practices, selective reporting of data, or use of inappropriate statistics. The problem with these questionable research practices and the more serious forms of fraud (e.g., data fabrication) is the damage it does to the scientific enterprise, to the extent that it misleads other scientists and establishes a false record that may be misinterpreted by the public, policymakers, or clinicians. Box 14.5 provides an example of scientific fraud from the field of addiction research.

Consequences

Journal editors, funding agencies, and academic institutions take allegations of scientific misconduct seriously, especially those institutions that depend on public support for their research. Typically, an editor who receives information about possible fraud or who suspects it during the course of a manuscript review has a limited number of options, starting with the notification of the author. Many scientific and academic institutions have procedures to deal with allegations of fraud and misconduct; therefore, an editor can begin by passing the allegation and the author's response to an appropriate institutional official or review committee for further action if the allegation seems credible. In general, the process begins with a preliminary investigation, followed by a more formal inquiry if the allegation has sufficient substance or importance. In such cases, the withdrawal or rejection of the manuscript, or the publication of a correction in the case of an already published article, is the least of the author's worries. Fraud can lead to disciplinary action, banishment from advisory committee or review boards, and the re-review and possible retraction of previously published articles. As is the case with the previous publishing sins, fraud also distorts research findings and can erode the public's trust in research (Gupta, 2013).

Prevention

There can be no substitute for careful mentoring and training of scientists in the prevention of scientific misconduct. Most scientists have such high respect for the values of science that they would never deliberately fabricate data or mislead their colleagues about the data they have collected or its interpretation. Milder forms of scientific misconduct may result from ignorance, so that deliberate exposure to ethical training may help individual scientists avoid these kinds of problems. Researchers are encouraged to review the resources listed in Table 14.6. Because scientists typically work in groups along with research support staff, the best way to prevent fraud is to check the data as well as colleagues' work carefully at every stage in the process of conducting a research project and preparing a scientific report. *BMJ* goes so far as to require investigators to submit full data sets to accompany trials that are published in that journal.

1. Code of conduct for social science research
UNESCO [undated] http://www.unesco.org/new/fileadmin/MULTIMEDIA/HQ/SHS/pdf/Soc_Sci_Code.pdf .
2. Guidelines for research ethics in the social sciences, law and the humanities
The National Committee for Research Ethics in the Social Sciences and the Humanities (NESH), 2006 https://graduateschool.nd.edu/assets/21765/guidelinesresearchethicsinthesocialscienceslawhumanities.pdf
3. The concordat to support research integrity
Universities U.K., 2012 http://www.universitiesuk.ac.uk/highereducation/Documents/2012/TheConcordatToSupportResearchIntegrity.pdf
4. European code of conduct for research integrity
European Science Foundation (ESF) and ALLEA (All European Academies), 2011 http://www.esf.org/fileadmin/Public_documents/Publications/Code_Conduct_ResearchIntegrity.pdf
5. Singapore statement on research integrity
2 nd World Conference on Research Integrity, 2010 http://www.singaporestatement.org/statement.html
6. Teaching the responsible conduct of research in humans (RCRH)
Koreman, S. G., Office of Research Integrity, 2006 http://ori.hhs.gov/education/products/ucla/default.htm
7. Declaration of Helsinki—Ethical principles for medical research involving human subjects
World Medical Association, 1964 http://www.wma.net/en/30publications/10policies/b3/index.html

Table 14.6: Resources.

Finally, we encourage readers to come forward with good-faith allegations of scientific misconduct and remind readers about protections for whistleblowers, for example, those endorsed by the US Office of Research Integrity, Department of Health and Human Services (2014) in the *Whistleblower's Bill of Rights*.

Conclusion

At various times in its short history, addiction research has had its credibility damaged because of ethical breaches in its research and publication practices. Today the field is experiencing an even greater crisis in values, caused by increasing pressure to publish, COIs, and ethical committee restrictions on research

(Babor, 2009). Furthermore, questionable research practices may be implicitly encouraged by publication practices that focus on significant findings.

This situation has been exacerbated by researchers and organizational entities such as journals and professional societies not having a consistent framework of ethical standards and ethical decision making that can protect authors, the scientific community, and the public from the ethical problems that arise in research and scientific writing. A practical, case-based approach with appropriate ethical analysis, designed to address the realities of research and publishing, follows in Chapters 15 and 16.

In most countries, the general public rates biomedical and social scientists highly in terms of their occupational prestige and credibility. When scientific misconduct is detected and publicized, scientists violate this trust and science loses public support. By following the preventive measures described in this chapter, researchers can avoid most of the major and minor ethical dilemmas associated with scientific misconduct. But the obligation of ethical conduct in reporting research in journal publications does not rest with the authors alone. The Institute of Medicine (2002) report affirms what this chapter espouses in terms of the integrity of individual authors (researchers) by advocating “above all a commitment to intellectual honesty and personal responsibility for one’s actions and to a range of practices that characterize the responsible conduct of research” (p. 5). This report also notes that individuals can only flourish in institutions that “establish and continuously monitor structures, processes, policies and procedures [that support] integrity in the conduct of research and use this quality improvement” (Institute of Medicine, 2002, p. 5). There is no one strategy that can be relied on to fully overcome questionable research practices or instances of serious research misconduct. Therefore, a multipronged approach is required by researchers, academics, journal editors, peer reviewers, funders, ethics committees, and regulatory authorities. Such an approach would not only go a long way in preventing the Seven Deadly Sins, it would also remove the need for punishments meted out in the Circles of Hell.

Please visit the website of the International Society of Addiction Journal Editors (ISAJE) at www.isaje.net to access supplementary materials related to this chapter. Materials include additional reading, exercises, examples, PowerPoint presentations, videos, and e-learning lessons.

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