

Financial Ties between DSM-IV Panel Members and the Pharmaceutical Industry

Lisa Cosgrove^a Sheldon Krimsky^b Manisha Vijayaraghavan^a
Lisa Schneider^a

^aUniversity of Massachusetts, Boston, Mass., and ^bTufts University, Medford, Mass., USA

Key Words

Conflicts of interest · Ethics · Financial interests ·
Psychopharmacologies

Abstract

Background: Increasing attention has been given to the transparency of potential conflicts of interest in clinical medicine and biomedical sciences, particularly in journal publishing and science advisory panels. The authors examined the degree and type of financial ties to the pharmaceutical industry of panel members responsible for revisions of the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*. **Methods:** By using multimodal screening techniques the authors investigated the financial ties to the pharmaceutical industry of 170 panel members who contributed to the diagnostic criteria produced for the DSM-IV and the DSM-IV-TR. **Results:** Of the 170 DSM panel members 95 (56%) had one or more financial associations with companies in the pharmaceutical industry. One hundred percent of the members of the panels on 'Mood Disorders' and 'Schizophrenia and Other Psychotic Disorders' had financial ties to drug companies. The leading categories of financial interest held by panel members were research funding (42%), consultan-

cies (22%) and speakers bureau (16%). **Conclusions:** Our inquiry into the relationships between DSM panel members and the pharmaceutical industry demonstrates that there are strong financial ties between the industry and those who are responsible for developing and modifying the diagnostic criteria for mental illness. The connections are especially strong in those diagnostic areas where drugs are the first line of treatment for mental disorders. Full disclosure by DSM panel members of their financial relationships with for-profit entities that manufacture drugs used in the treatment of mental illness is recommended.

Copyright © 2006 S. Karger AG, Basel

Medical journals began introducing conflict-of-interest (COI) disclosure requirements for authors two decades ago beginning with articles of original research. A growing awareness of the importance of author disclosure in biomedical publications is reflected in the rising number of medical journals that have adopted COI policies over the past decade and the support for such policies among professional societies. If financial COI among medical researchers can bias the outcome of a study (as recent research shows) [1, 2], there is as much reason to

believe it can also bias the recommendations made by members of advisory panels [3–5]. The importance of protecting the integrity and public trust in scientific and medical advisory committees has been widely discussed [6, 7]. Yet, there remain areas that lack the transparency of financial COIs that have become standard procedures in many medical publications [8, 9].

To date there has been no study examining the relationship between the pharmaceutical industry and the scientists comprising the advisory panels that recommended changes in the *Diagnostic and Statistical Manual of Mental Disorders (DSM)*, a leading medical manual used for the diagnosis of psychiatric disorders. Pharmaceutical companies provide substantial funding for conventions, journals, and research related to what is included in the DSM, because what is considered diagnosable directly impacts the sale of their drugs [10]. This ‘uneasy alliance’ [11] was evidenced when a prominent journal reported that it was difficult to find research psychiatrists to write an editorial about the treatment of depression who did not have financial ties to the pharmaceutical companies that manufacture antidepressant medications [12]. Recently some members of the American Psychiatric Association (APA) have expressed concern about the potential for COI that arises with the increase in industry support [13]. For example, at the annual meeting of the APA in 2004 there were 54 industry-supported symposia. Also, pharmaceutical advertising revenue in APA journals, totaling USD 7.5 million in 2003, increased 22% in 1 year [14].

Objectives of the Study

Continuously produced since 1952 by the APA, the DSM, currently in its sixth revision [15], is the official manual for psychiatric diagnosis in the United States.¹ Its classification system is used by government agencies and for all mental health professionals who seek third party reimbursements. The manual provides the standard psychiatric taxonomy found in psychiatry and psychology textbooks [16]. Nearly 400,000 mental health professionals, including psychiatric nurses, social workers, psychologists and psychiatrists practice in the United

¹ Outside of the United States the official coding system for mental illness is the International Statistical Classification of Diseases and Related Health Problems, 10th Revision (ICD-10). According to the DSM IV-TR, the preparation of DSM-IV has been closely coordinated with the preparation of Chapter V ‘Mental and Behavioural Disorders’ of ICD-10.

States, most of whom have taken instruction on the DSM [17].

In this study we investigated the financial relationships that members of the advisory boards to the DSM-IV and the DSM-IV-TR have had with the pharmaceutical industry, which manufactures drugs used by clinicians for the treatment of mental disorders. We assessed the extent and types of financial relationships for each of the diagnostic panels.

Methods

The *Diagnostic and Statistical Manual for Mental Disorders (DSM)* is organized around working groups or panels. Most of the panels address a specific category such as ‘Mood Disorders’. The members of each panel have significant influence in determining whether a new diagnosis should be added or an older diagnosis revised for the next edition of the manual. From the latest edition of the DSM (DSM-IV) and the edition with text revision (DSM-IV-TR), we identified 228 individuals associated with the development of the volume. After deleting clerical staff, we were left with 170 expert members who comprised a total of 18 distinct panels.

Each panel member was put through a series of ‘screens’ to determine whether he or she has had any financial associations with one or more pharmaceutical companies whose business is potentially affected by decisions or recommendations made by the panel. The ‘screens’ involved tracking publications of the panel member for disclosures of potential COIs (in journals that have disclosure policies), and submitting the panel member’s name into the news media database Lexis-Nexis and Internet search engines. We also submitted panel members’ names into databases of the US Patent and Trademark Office to screen for holdings of intellectual property in a drug whose sales could be affected by recommendations of the DSM. For example, the FDA’s approval of Sarafem (fluoxetine hydrochloride) for the treatment of premenstrual dysphoric disorder was contingent upon expert testimony that concluded that premenstrual dysphoric disorder was a distinct clinical entity that should be included as a mental disorder in the DSM [18].

Panel members were screened for any financial affiliations they had with the drug industry between the years 1989 (the DSM-IV was published in 1994) through 2004. By using multiple screening techniques to gather published or Internet data on financial affiliations, we were able to avoid a methodology that relied solely on self-reporting (e.g., surveying panel members).

Financial associations of interest for this study include: honoraria, equity holdings in a drug company; principal in a startup company, member of a scientific advisory board or speakers bureau of a drug company; expert witness for a company in litigation; patent or copyright holder; consultancy; gifts from drug companies including travel, grants, contracts, and research materials. We use the term ‘financial interest’ in describing the relationship between panel members and the pharmaceutical industry rather than the term ‘conflict of interest’ (COI) because the latter term implies an interpretation of the interest. Thus, we choose not to define COI. Rather, we identify categories of financial interest and reserve judgment on whether they represent a real, perceived, or potential COI.

Our approach is congruent with other publications that make a distinction between the finding of 'financial interests' and the judgment of 'conflicts of interest' [19–21]. Specifically, there is less disagreement about what constitutes a 'financial interest' than there is about what makes a 'conflict of interest'.

The specific screening methods we applied included Lexis-Nexis, Internet search engines (such as Google and Yahoo), the US Patent and Trademark Office Internet Site on patents pending or awarded, and Medline. Each finding of a panel member's financial connection to a drug company was coded: H = honorarium; RF = research funding; RM = research materials (equipment, drugs, cell cultures, etc); EQ = equity in a company; CB = member of a corporate board (advisory board or board of directors); SB = speakers bureau; CON = consultant; ET = expert testimony; DINP = drug industry nonprofit (a nonprofit organization funded primarily by the pharmaceutical industry such as the Novartis Foundation); P = holds a patent, patent application or royalties on a product relevant to the treatment of mental disorders, and CIFS = collaborator in industry-funded study. Individuals classified under CIFS are DSM panel members who participated in a study as a coinvestigator or collaborator, where the principal investigator (rather than the panel member) was described as funded by the pharmaceutical company.

A DSM panel member who received a fee from a drug company for speaking at a session of a symposium sponsored by a pharmaceutical company was coded as an H (received an honorarium). However, when a university or medical school receives unrestricted educational grants from a drug company, the company usually does not have a role in selecting the speakers, setting the honoraria, or signing the speaker's honoraria check. For our study, a panel member who spoke at a symposium but did not receive *direct* payment from a drug company (e.g., he/she spoke at a professional meeting or Grand Rounds of a medical school sponsored wholly or in part by a pharmaceutical company) was not coded as H. In other words, lecture honoraria paid by a university were considered as nondisclosable financial interests for the purpose of this study. Although not included in our analysis, we found 23 panel members who gave talks sponsored, in part, by drug companies but who were compensated by universities under unrestricted grants.

While our methodology allowed us to ascertain varied financial relationships that existed between DSM panel members and the pharmaceutical industry during the period of analysis, it did not allow us to make causal inferences about those relationships. We could not determine whether, or to what extent, an individual's association with the pharmaceutical industry influenced his/her behavior on a DSM panel or, conversely, whether participation on a DSM panel influenced his/her subsequent involvement with the pharmaceutical industry. For the most part, the data on panel member associations with the pharmaceutical industry are atemporal. Some of the financial relationships might have occurred before, during, or after publication of the DSM volumes. Ethical considerations are relevant whether the panel member's involvement in the drug industry occurred prior to or after DSM publication.

Three investigators independently conducted screens on the panel members. Any questions about coding were resolved by a fourth investigator. No panel member was coded as having a financial connection unless there was unambiguous information confirming the relationship.

Interrater Reliability

We chose 20% of the panel members (every fifth name) for an interrater reliability test. One investigator, who was not involved in coding, reviewed the data for 19 names representing 44 coding decisions. This investigator missed 2 coding decisions; all other coding decisions matched the results of the coding team. Our test demonstrated that the most likely error of using another coder was missing a financial interest. This error was minimized by having three independent coders who compared findings and reached consensus. Our methodology tends to err in understating rather than overstating the financial interests of panel members.

Results

Of the 170 DSM panel members 95 (56%) had one or more of the eleven financial links to a company in the pharmaceutical industry. Figure 1 shows the percentages of the panel members listed in the DSM-IV and DSM-IV-TR with financial linkages to drug companies. Unless otherwise noted, the percentages given for each DSM category include the members from both the 1994 and 2000 editions. In 6 out of 18 panels more than 80% of panel members were found to have financial ties to the pharmaceutical industry. These include 100% of the panels for the 'Mood Disorders Work Group' (n = 8) and the 'Schizophrenia and Other Psychotic Disorders Work Group' (n = 7), 81% for 'Anxiety Disorders' (n = 16), 83% for 'Eating Disorders' (n = 6), 88% for 'Medication-Induced Movement Disorders' (n = 8) and 83% for 'Premenstrual Dysphoric Disorders' (n = 6) (see fig. 1). The mental illness categories denoted by 'Mood Disorders' and 'Schizophrenia and Other Psychotic Disorders' are the two main categories for which psychopharmacological treatment is standard practice, whereas it is far less likely for individuals diagnosed with 'Substance-Related Disorders' (17%; n = 6) to receive such treatment (unless there is a coexisting mental disorder such as a mood disorder).

The most frequent financial link we found between the DSM expert panels and the drug industry is 'research funding'. Among the 170 panel members, 42% received research funding from pharmaceutical companies; 22% were consultants and 16% served as members of a drug company's speakers bureau (see fig. 2).

Of those panel members who had financial links with the pharmaceutical industry (n = 95) 76% had research funding, 40% had consulting income, 29% served on a speakers bureau, and 25% received honoraria other than from serving on a speakers bureau (see fig. 3). More than half of the panel members with financial ties were found

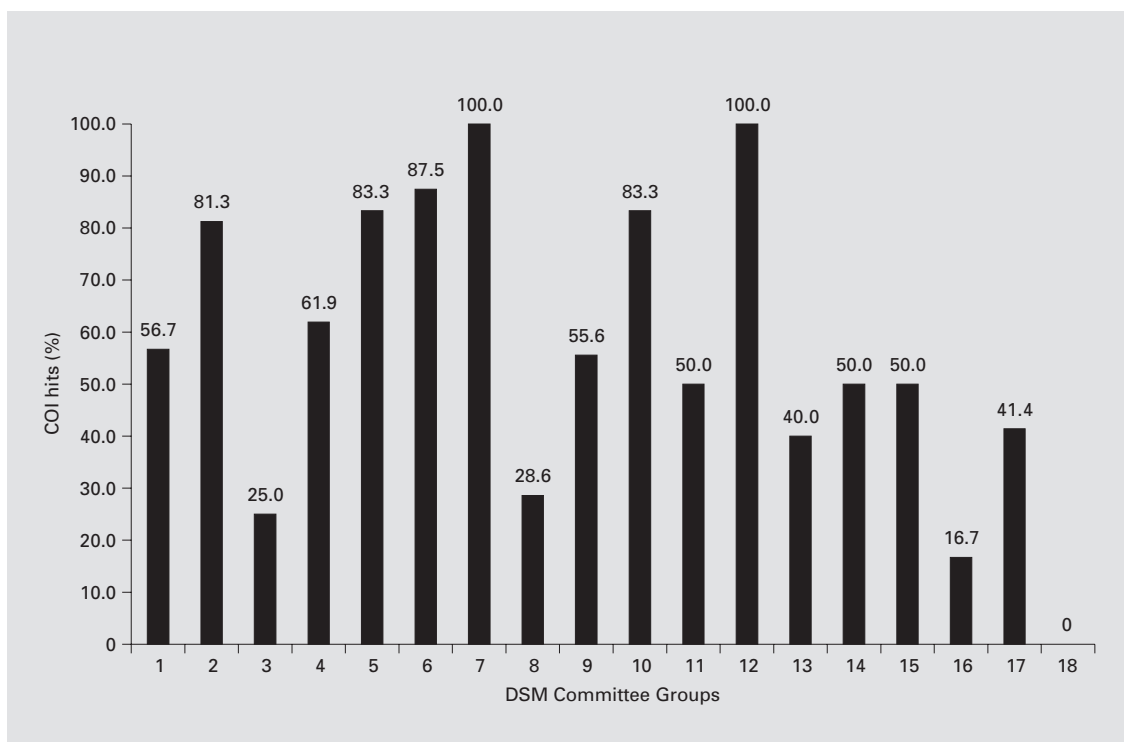


Fig. 1. Percentage of panel members of the DSM with financial ties.

	%		%
1 Task Force-IV	56.7	10 Premenstrual Dysphoric Disorder	83.3
2 Anxiety Disorders	81.3	11 Psychiatric Systems Interface Disorders	50.0
3 Delirium, Dementia, Amnesic and Other Cognitive Disorders	25.0	12 Schizophrenia and Other Psychotic Disorders	100.0
4 Disorders Usually First Diagnosed during Infancy, Childhood and Adolescence	61.9	13 Sexual Disorders (IV)	40.0
5 Eating Disorders	83.3	14 Sexual and Gender Identity Disorders (TR)	50.0
6 Medication-Induced Movement Disorders (TR)	87.5	15 Sleep Disorders	50.0
7 Mood Disorders	100.0	16 Substance-Related Disorders	16.7
8 Multiaxial Issues	28.6	17 Committee on Psychiatric Diagnosis and Assessment	41.4
9 Personality Disorders	55.6	18 Joint Committee of the Board of Trustees and Assembly of District Branches on Issues to DSM-IV	0.0

to have more than one category of financial interests with the pharmaceutical industry. Eleven panel members had five different financial ties (see fig. 4). When there were competing coding categories, only the most precise descriptor was coded. For example, a panel member listed on a speakers bureau, where he/she received honoraria, was coded only as 'SB'. Hence, the percentages in figure 4 represent the most conservative estimate of DSM panel members with multiple financial associations to the pharmaceutical industry.

Limitations

The results of this study need to be interpreted in light of several limitations. First, it is reasonable to expect that some types of financial relationships were not detected by our screening methods. For example, expert witnesses serving in litigation are difficult to detect with standard screening tools. Second, our screening methods fell short of allowing us to quantify or to set a temporal sequence for the association. In most instances information about the amount of money received from pharmaceutical com-

Fig. 2. Categories of financial interest held by DSM Panel Members: total members (n = 170). RF = Research funding; CON = consultant; SB = speakers bureau; CB = member of a corporate board; H = honorarium; CIFS = collaborator in industry-funded study; DINP = drug industry non-profit affiliation; RM = research materials; EQ = equity in a company; P = patent; ET = expert testimony.

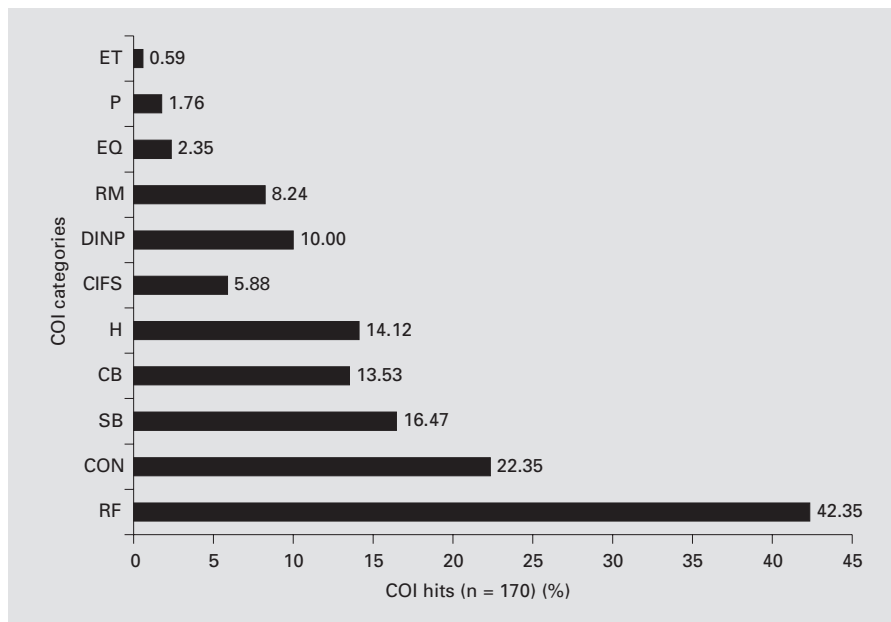


Fig. 3. Categories of financial interest held by DSM Panel Members: members with financial interests (n = 95). RF = Research funding; CON = consultant; SB = speakers bureau; CB = member of a corporate board; H = honorarium; CIFS = collaborator in industry-funded study; DINP = drug industry nonprofit affiliation; RM = research materials; EQ = equity in a company; P = patent; ET = expert testimony.

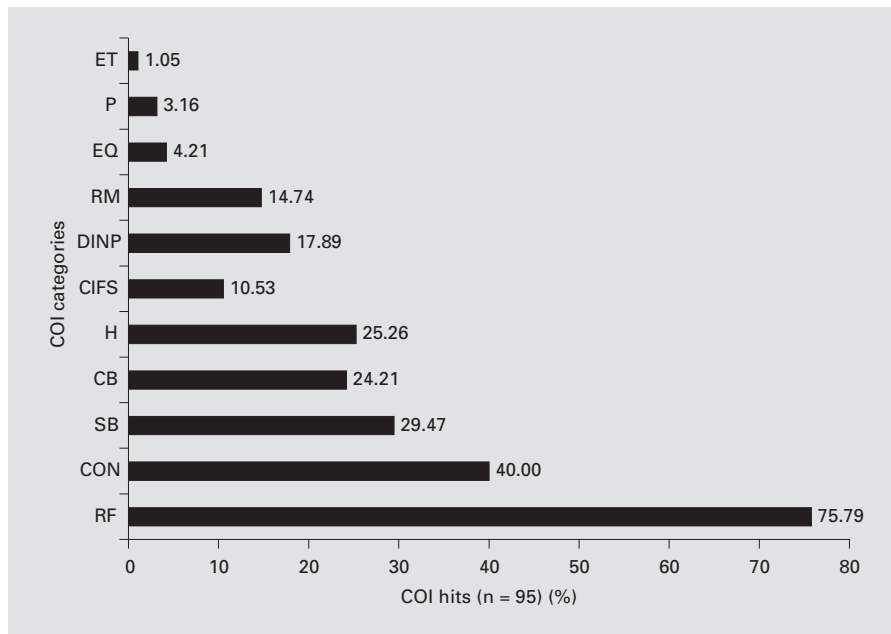
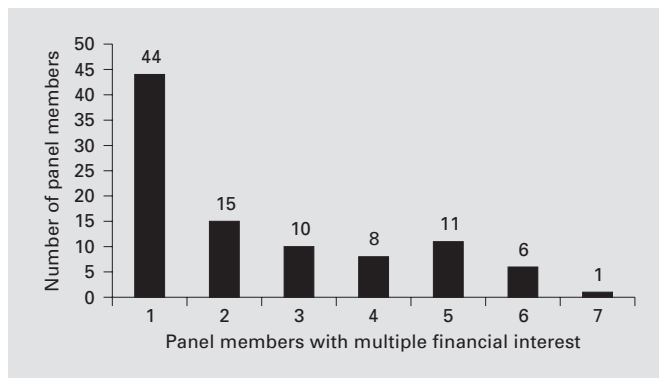


Fig. 4. DSM panel members with multiple financial interests.



panies was not disclosed. Also, disclosures were reported strictly in terms of whether a person was a current or past recipient of industry support. Even among journals that have set high standards on author disclosure, no specific dates are given. For example, the following is a typical disclosure statement: 'Dr. X has received honoraria and research support from Company Y and Company Z and he also serves on their speakers bureau.' Because it was not possible to quantify these relationships or locate the precise time they occurred, only qualitative conclusions can be drawn about the extent of the financial relationships of DSM panel members with the pharmaceutical industry. Also, no conclusions can be drawn about the impact these relationships may have had on a panel member's behavior. However, there are ethical concerns in these relationships regardless of the amount of money given or the timing of the financial association. A financial relationship held during (or just before) participation as an expert panel member might influence or be perceived to influence the outcome of a DSM work group. On the other hand, if their association with the pharmaceutical industry occurred after work on the panel was completed, panel members might be perceived as using their prestige to leverage lucrative consulting arrangements with the pharmaceutical industry. In the latter case public trust in the independence of medical science is eroded when former panel members, who are valued as 'thought leaders' [22], exert their influence on prescription practices through consulting, public speaking, and participation in industry-sponsored educational workshops.

Finally, we relied on self-reported disclosure data that was available in the open literature. Author noncompliance with journal COI policies has been cited as a problem [23]. Therefore, the percentages of DSM panel members identified as having financial ties and the variety of their ties to the pharmaceutical industry should be considered de minimis figures.

Comments

Receiving financial support from a pharmaceutical company should not automatically disqualify an individual from serving on a DSM panel. However, the public and mental health professionals have a right to know about these financial ties, because pharmaceutical companies have a vested interest in what mental disorders are included in the DSM. Transparency is especially important when there are multiple and continuous financial relationships between panel members and the pharma-

ceutical industry, because of the greater likelihood that the drug industry may be exerting an undue influence on the DSM. As previously noted, the DSM working groups that had the highest percentage of financial ties to the pharmaceutical industry were those groups working in diagnostic areas (e.g., mood disorders and psychotic disorders) where pharmacological interventions are standard treatment. In light of the extreme profitability of the psychotropic drug market, the connections found in this study between the DSM and the pharmaceutical industry are cause for concern. For example, antidepressants and antipsychotics were the fourth and fifth leading therapy classes of drugs in 2004, with annual global sales totaling USD 20.3 and USD 14.1 billion dollars, respectively [24]. One antidepressant alone, venlafaxine (Effexor, Wyeth) achieved USD 3.7 billion in sales in 2004 [25]. The antipsychotic drug market has been identified as one of main therapeutic areas for global market growth with sales of USD 8.5 billion in 2002 and projected sales of USD 18.2 billion by 2007 [26]. Therefore, we recommend that the APA institute a disclosure policy for panel members of the DSM who have financial ties to the drug industry. This is consistent with the trend for greater transparency in the membership of federal advisory panels. Raising awareness about the real or perceived COI of panel members is an important public health issue [27–32].

Transparency should also apply to journal publication [33, 34]. We undertook a search of Ulrich's Periodicals Directory using the terms 'psychiatry and drugs', 'psychopharmacology', 'drugs and mental illness' and 'psychiatry and medication'. When restricted to the descriptors 'active', 'academic/scholarly', 'English language' and 'refereed journals', the search identified 45 journals of psychiatry. Of those, 19 had COI disclosure policies (42%). Many of the financial ties that were found in this study were discovered because of these disclosure policies. Thus, we also recommend that all psychiatry journals adopt COI policies following the recommendations of the International Committee of Medical Journal Editors.

Acknowledgments

We are most grateful for the assistance of two UMass graduate students, Michelle Levinson and Greg Noga and one Tufts University undergraduate student Naomi Mower, all of whom conducted preliminary searches. Ms. Mower participated through a summer scholars grant from Tufts University provided through the university's endowment. Dr. Krinsky was her mentor under the program. He received a small stipend for supplies. No other participants of the study were supported by grants.

References

- 1 Bekelman JE, Li Y, Gross CP: Scope and impact of financial conflicts of interest in biomedical research: a systematic review. *JAMA* 2003; 289:454–465.
- 2 Antonuccio DO, Danton WG, DeNelsky GY, Greenberg RP, Gordon JS: Raising questions about antidepressants. *Psychother Psychosom* 1999;68:3–14.
- 3 Little M: Research ethics and conflicts of interest. *J Med Ethics* 1999;25:259–262.
- 4 Gutfield R: Panel urges FDA to act on adviser bias. *Wall Street Journal*, Dec 9, 1992, B6.
- 5 Monbiot G: Guard dogs of perception: corporate takeover of science. *Sci Eng Ethics* 2003; 9:49–57.
- 6 Krimsky S: The redemption of federal advisory committees; in *Science in the Private Interest*. Lanham, Rowman & Littlefield, 2003.
- 7 Schroter S, Morris J, Chaudhry S, et al: Does the type of competing interest statement affect readers' perceptions of the credibility of research? *Randomised trial*. *BMJ* 2004;328: 742–743.
- 8 Stolberg SJ: Study says clinical guides often hide ties of doctors. *New York Times*, Feb 6, 2002, A17.
- 9 Fava GA: Conflict of interest in psychopharmacology: can Dr. Jekyll still control Mr. Hyde? *Psychother Psychosom* 2004;73:1–4.
- 10 Eriksen K, Kress VE: *Beyond the DSM Story: Ethical Quandaries, Challenges, and Best Practices*. Sage, Thousand Oaks, 2005, p x.
- 11 Bodenheimer T: Uneasy alliance: clinical investigators and the pharmaceutical industry. *N Engl J Med* 2000;342:1539–1544.
- 12 Angell M: Is academic medicine for sale? *N Engl J Med* 2000;342:1516–1518.
- 13 Goldstein B: APA-pharmaceutical relations. *Psychiatr News* 2003;38:35.
- 14 Scully JH: Advertising revenue helps APA meet its objectives. *Psychiatr News* 2004; 39:4.
- 15 American Psychiatric Association: *Diagnostic and Statistical Manual of Mental Disorders: DSM-IV, ed 4, text revision*. Washington, American Psychiatric Association, 2000.
- 16 Hare-Mustin RT, Marecek J: Abnormal psychology and clinical psychology: the politics of madness; in Fox D, Prilleltensky I (eds): *Critical Psychology: an Introduction*. Sage, Thousand Oaks, 1997, pp 104–120.
- 17 Mental health practitioners and trainees: *Mental Health, United States, 2002*. Rockville MD: USDHHS Substance Abuse and Mental Health Services Administration, Center for Mental Health Services. Available at <http://www.mentalhealth.samhsa.gov/publications/allpubs/SMA04-3938/Chapter21.asp> (accessed February 16, 2005).
- 18 Cosgrove L, Riddle B: Constructions of femininity and experiences of menstrual distress. *Women Health* 2003;38:37–58.
- 19 Krimsky S, Rothenberg LS, Stott P, Kyle G: Financial interests of authors in scientific journals: a pilot study of 14 publications. *Sci Eng Ethics* 1996;2:395–410.
- 20 Warner TD, Gluck JP: What do we really know about conflicts of interest in biomedical research? *Psychopharmacology* 2003;171:36–46.
- 21 Boyd EA, Bero LA: Assessing faculty financial relationships with industry: a case study. *JAMA* 2000;284:2209–2214.
- 22 Angell M: *The Truth about Drug Companies*. New York, Random House, 2004, p 142.
- 23 Krimsky S, Rothenberg LS: Conflict of interest policies in science and medical journals: editorial practices and author disclosures. *Sci Eng Ethics* 2001;7:205–218.
- 24 *Leading Therapy Classes by Global Pharmaceutical Sales, 2004*. Available at www.imshealth.com/ims/portal/front/articleC/0,2777,6599_71234024_71234109,00.html (accessed March 24, 2005).
- 25 *Leading Products by Global Pharmaceutical Sales, 2004*. Available at www.imshealth.com/ims/portal/front/articleC/0,2777,6599_71234024_71234109,00.html (accessed March 24, 2005).
- 26 *Global Market Forecast*. Available at www.woodmac.com/pdf/pharmaquantpluspressrelease.pdf (accessed March 24, 2005).
- 27 Editorial: Experts and the drug industry. *New York Times*, March 4, 2005.
- 28 Cho MK, Shohara R, Schissel A, Rennie D: Policies on faculty conflict of interest at US universities. *JAMA* 2000;284:2203–2208.
- 29 Rennie D: Fair conduct and fair reporting of clinical trials. *JAMA* 1999;282:1766–1768.
- 30 Korn D: Conflicts of interest in biomedical research. *JAMA* 2000;284:2234–2237.
- 31 Starcevic V: Opportunistic 'rediscovery' of mental disorders by the pharmaceutical industry. *Psychother Psychosom* 2002;71:305–310.
- 32 Fava GA: Conflict of interest and special interest groups. The making of a counter culture. *Psychother Psychosom* 2001;70:1–5.