
The Fallout: What Happens to Whistleblowers and Those Accused But Exonerated of Scientific Misconduct?*

James S. Lubalin and Jennifer L. Matheson,
Research Triangle Institute, Washington DC, USA

Keywords: scientific misconduct, scientific integrity, whistleblowing, exoneration

ABSTRACT: *Current DHHS regulations require that policies and procedures developed by institutions to handle allegations of scientific misconduct include provisions for “undertaking diligent efforts to protect the positions and reputations of those persons who, in good faith, make allegations.” Analogously, institutions receiving PHS funds are required to protect the confidentiality of those accused of such misconduct or, failing that, to restore their reputations if the allegations are not confirmed. Based on two surveys, one of whistleblowers and one of individuals accused but exonerated of scientific misconduct, this paper examines how well the system works to protect both sets of participants in cases of alleged misconduct.*

Contrary to popular impressions created by notorious cases, substantial minorities of both whistleblowers and exonerated scientists experience no adverse outcomes at the time the allegations are made and pursued. During this period, however, whistleblowers report more negative outcomes and more severe negative outcomes than their accused but exonerated counterparts. In the longer run, majorities of both groups report little impact on different aspects of their careers or professional activities, though those who report any impacts generally report negative ones. The accused but exonerated, however, appear to fare worse than whistleblowers in impacts on several aspects of their personal lives; their mental health, physical health, self-esteem, and self-identity.

The evidence from these studies suggests that: (1) federal officials should focus on the role of institutional and departmental officials in mediating the most severe consequences experienced by those involved in these incidents; (2) potential whistleblowers and accused scientists should be counseled regarding the likely harm they will suffer if their case gains notoriety or if they hire an attorney; and (3) institutions can best protect whistleblowers and those accused but exonerated of scientific misconduct by acting promptly and limiting access to information.

* An earlier version of this paper was presented at the symposium entitled “Misconduct in Science: A Decade of Progress or Merely Years of Controversy” held during the Annual Meeting of the American Association for the Advancement of Science, Philadelphia, Pennsylvania, 13 February, 1998.

Address for correspondence: James S. Lubalin, Ph.D. and Jennifer L. Matheson, M.A., Research Triangle Institute, 1615 M Street, N.W., Suite 740, Washington, DC 20036-3209, USA.

Paper received, 21 April 1998; revised, 3 November 1998; accepted, 22 February 1999.

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INTRODUCTION

Uncovering misconduct in science often depends on the willingness of someone who is aware of or suspects misconduct to report it. Exposing such misconduct is generally recognized to be of significant value to society and to the integrity of scientific research.¹⁻³ [a] Whistleblowing is often seen as one of the most egregious forms of organizational dissent, however, and often prompts hostility and retaliation.⁴⁻⁵ The willingness of individuals to allege misconduct, therefore, is likely to depend on how the system deals with and protects them when they come forth with their allegations.⁶ Potential whistleblowers must consider whether the allegation will be taken seriously and the report treated confidentially. They must also consider whether reporting will provoke retaliation not only from those accused but also from the larger academic and scientific community. Current federal regulations³ require that policies and procedures developed by institutions to handle allegations of misconduct must include provisions for “undertaking diligent efforts to protect the positions and reputations of those persons who, in good faith, make allegations.” These regulations also make the institutions responsible for notifying the U.S. Department of Health and Human Services (DHHS) in the event that there is an immediate need to protect the interests of person(s) making allegations.^{3, 7}

Analogous protections apply for those who are accused of scientific misconduct. In our system, they should be presumed innocent until conclusion of an inquiry or investigation, their confidentiality should be protected, and, if they are exonerated of misconduct, they should suffer no adverse consequences personally or professionally. This latter point is very significant since, for example, approximately 65 percent of cases of alleged scientific misconduct that come to the attention of the Office of Research Integrity (ORI) in the DHHS result in exoneration and higher rates of exoneration have been cited in a report by the National Academy of Sciences, (NAS) National Academy of Engineering (NAE), and Institute of Medicine (IOM).¹ Institutions receiving Public Health Service (PHS) funds are required to comply with a PHS regulation requiring them to protect the confidentiality of the accused or, when appropriate, to restore their reputations if the accusations are not confirmed.³

This paper examines information about how well the system works to protect both whistleblowers and those accused but exonerated of scientific misconduct. It examines the extent to which they suffer short-term and long-term adverse consequences of their involvement in cases of alleged misconduct and seeks to determine who suffers most and under what circumstances.

BACKGROUND

As noted, federal law and regulations require institutions that receive PHS funding for scientific research to take responsibility for handling cases of alleged research misconduct. They are required to conduct an inquiry into every accusation of scientific

[a] The U.S. Public Health Service (PHS) defines Misconduct in Science as, “fabrication, falsification, plagiarism, or other practices that seriously deviate from those that are commonly accepted within the scientific community for proposing, conducting, or reporting research.”³

misconduct, followed by a formal investigation should the inquiry indicate the need.³ Not all cases are kept confidential. Some cases gain significant notoriety. Not infrequently, whistleblowers report suffering terribly for blowing the whistle. Those accused of scientific misconduct also report suffering significant loss to their professional reputations, even in cases where they are exonerated. Most information on this comes from press reports and other anecdotal evidence.

Much of the research on whistleblowers is based on case studies illustrating the personal experiences of a few individuals.^{4,8-9} There have been almost no empirical studies done to illustrate the extent to which scientific misconduct cases result in immediate and long-term adverse consequences for whistleblowers or those accused but exonerated of scientific misconduct.¹ No one knows whether adverse outcomes are widespread or limited to small numbers or particular subsets of individuals. Nor does anyone know what it is about some cases that result in negative outcomes for their participants in contrast to other cases which do not.

Although hundreds of highly publicized reports of individual misconduct have been published, analysts at the NAS, NAE, and IOM concluded that there have been few well developed, systematic efforts to analyze data on cases of scientific misconduct.¹ These analysts also contended that researchers have been slow to embark upon this area of inquiry due to an absence of empirical data, inconsistent definitions of scientific misconduct, the sheer complexity of most cases, as well as the confidentiality of cases of misconduct.¹

There is a small body of research literature on the extent to which people report being exposed to perceived misconduct, on their propensity to report or not report such misconduct when they perceive it, on reasons given for not reporting by those who perceive but do not report misconduct, and on short-term consequences, including retaliation, experienced by those who report perceived misconduct.^{4,10-20} Some findings are suggestive regarding what might be found in this study. For example, one study found that threats and retaliation were experienced by more than one-third of those who reported misconduct, and the negative consequences experienced most often included shunning, harassment, intimidation, and poor performance reviews.¹⁹ Another study determined that a large portion of university-based whistleblowers reported having suffered severe retaliation, with an astounding 60% reporting having lost their jobs.⁴ Other negative outcomes reported in this study included harassment, departmental transfer, reduced responsibility or salary, closer work monitoring, and change in responsibility. Less than five percent reported no retaliation. The majority reported disruption to their families. Interestingly, an overwhelming majority (87%) said they would blow the whistle again if needed.

Other findings of these studies are relevant to but not directly comparable to the focus of the current investigation because they focus on misconduct that is not reported. For example, these studies indicated that reported misconduct is a small proportion of all misconduct, with no more than one-third to one-half of instances of known or suspected misconduct actually reported,^{14,19} and that people do not report misconduct primarily for fear of retaliation.^{14,19} Subordinates, especially students and junior scientists, may find it difficult to make allegations of scientific misconduct if they have little supporting evidence or if they fear retribution.¹ These studies have

shown that there is significant discrimination and economic loss experienced by whistleblowers due to their reports of misconduct; therefore it is widely believed that people are deterred from exposing such wrongdoing.¹ The authors found no studies of those who were accused but exonerated of misconduct.

At the federal level, ORI has responsibility for developing and assuring compliance with protections for whistleblowers and those accused of scientific misconduct in PHS-funded research. To assess the size of the problem and identify where problems appeared to be most acute, ORI contracted with the Research Triangle Institute (RTI) to conduct two surveys: one of whistleblowers and one of scientists accused but exonerated of scientific misconduct. The surveys determined, in a systematic way, what types of actions were taken following allegations, what the direct outcomes of these actions were, and what efforts were made by the cognizant institutions to protect confidentiality and/or restore the reputations of whistleblowers and those accused of misconduct. Full reports of these two studies are available from the ORI.^{21, 22, [b]}

METHODS

In both studies, data collection was carried out in two phases. First, RTI used information from ORI's closed case files to locate as many whistleblowers or accused-but-exonerated individuals as possible. RTI used mail as much as possible for tracing individuals involved in these cases (e.g., return address requests, asking for an address from anyone who opened the letter at the last known work setting). However, for those RTI could not locate by mail, RTI also used telephone tracing through work and/or home telephone numbers from ORI's files. For those RTI located in these two groups, RTI then mailed the survey, a reminder postcard, and a second survey, then conducted additional follow-up procedures by telephone to maximize the response.

OVERALL RESPONSE RATES

Whistleblowers. After tracing and other follow-up, RTI was able to obtain what appeared to be a current address and/or other current contact information for 104 of 127 (82%) of the cases listed as whistleblowers in ORI's files. Table 1 indicates that, using this address information (plus information from one self-selected case), RTI was ultimately able to obtain completed survey forms from 68 of 105 whistleblowers (65%).^[c] Reasons for 37 non-completions include 11 individuals who reported no involvement as a whistleblower and who were deemed ineligible (10%), 10 persons who refused to participate (10%), and 16 individuals who could not be contacted in the

[b] Available in "Reports & Special Studies Section of Publications" on the Office of Research Integrity website at: <http://ori.dhhs.gov>. Also available from the ORI by calling (301) 443-5300 or writing to Office of Research Integrity, 5515 Security Lane, Suite 700, Rockville, MD 20852, USA.

[c] With regard to cases in Table 1 and discussed in the text, (i.e., 68 completions, 105 mailed surveys, and 128 initial whistleblowers, respectively,) each includes one whistleblower who heard about the study, decided that he or she belonged in the study, was sent a survey instrument (after consultation with ORI), and completed the survey.

final round after obtaining what appeared to be a current address in the initial address verification stage of the study (15%). Excluding whistleblowers deemed to be ineligible, RTI obtained completed surveys from 68 of 94 whistleblowers, a 72 percent response rate.

Table 1. Comparison of Whistleblowers and Exonerated Respondents with Initial Lists

Measure	Whistleblowers				Exonerated			
	ORI List		Completed Surveys		Initial Sample		Completed Surveys	
	No.	%	No.	%	No.	%	No.	%
Total Cases	128	100.0	68	*	105	100.0	51	**
Age of Case								
Recent Case (1992 or Later)	14	10.9	9	13.2	18	17.1	11	21.6
Earlier Case (1991 or Earlier)	113	88.3	58	85.3	87	82.9	40	78.4
Unknown	1	0.8	1	1.5	0	0.0	0	0.0
Who Conducted Inquiry								
Institution	82	64.1	43	63.2	85	81.0	42	82.4
Government	33	25.8	19	27.9	19	18.1	9	17.6
Unknown	13	10.2	6	8.8	1	1.0	0	0.0
How Allegation was Pursued								
Inquiry	64	50.0	38	55.9	64	61.0	35	68.6
Investigation	50	39.1	29	42.6	40	38.1	16	31.4
Unknown/Not Pursued	14	10.9	1	1.5	1	1.0	0	0.0

* Response Rate for Whistleblower is 72%

** Response Rate for Accused but Exonerated is 64%

Accused-but-Exonerated. RTI used systematic random sampling to choose a sample of 105 accused-but-exonerated individuals from 147 such individuals in ORI's file (72%).^[d] After tracing, RTI was able to obtain current addresses for a total of 87 (83%) of the original group of 105, one of whom was deceased, leaving 86 potential subjects (82%). Table 1 indicates that, using this address information, RTI was ultimately able to obtain completed survey forms from 51 of 86 exonerated individuals (59%). Reasons for the 35 non-completions include six individuals (7%) who reported no involvement with an allegation of scientific misconduct and who were deemed ineligible; seven persons (8%) who refused to participate (one during the initial address confirmation round); and 22 individuals (26%) who could not be contacted in the final round after obtaining what appeared to be a current address in the initial address verification stage of the study. Excluding the people who reported themselves ineligible, RTI obtained responses from 51 of 80 accused-but-exonerated individuals, a 64 percent response rate. In addition, RTI augmented the database with the cases

[d] The reasons for sampling relate to an initial design intended to include accused individuals who were found to have engaged in scientific misconduct. This plan was eventually discarded but too late to include the full census of accused-but-exonerated individuals in the survey population.

closed in one additional month, September, 1994, which added five more cases. Because of the relatively small number of cases, RTI also mailed surveys to 18 individuals for whom RTI could not confirm addresses in the initial contact phase.^[e] These 23 cases netted only three additional respondents who are included in later tables.

Comparability of Initial Sample and Those Completing the Surveys. Table 1 also contains information on the comparability of those in the original ORI files and those in the final samples on three measures available in the ORI files for both whistleblowers and accused-but-exonerated individuals (i.e., age of case, who conducted the inquiry, and how allegations were pursued). In general, these data show that those in the final samples are comparable to the full set of whistleblowers and exonerated individuals in ORI's files:

- **Whistleblowers.** Eleven percent of all whistleblowers in closed cases in ORI's files were from cases closed in 1992 or thereafter, while 13 percent of those in the final sample were from such cases. Similarly, 64 percent of all whistleblowers had their cases handled by their institution versus 63 percent of the whistleblower sample, and 26 percent of all whistleblowers and 28 percent of the final sample had their cases handled by federal authorities. A slightly higher proportion of whistleblowers whose cases reached only the inquiry stage completed surveys compared to those whose cases went on to investigation. Consequently, 50 percent of all whistleblowers were in cases that reached only an inquiry stage, while 56 percent of those who completed surveys were involved in such cases.
- **Accused-but-Exonerated.** Seventeen percent of all exonerated individuals were from cases closed in 1992 or thereafter, while 22 percent of those in the final sample were from such cases. Similarly, 81 percent of all exonerated individuals had their cases handled by their institution versus 82 percent of the exonerated sample, and 18 percent of all exonerated individuals and 18 percent of the final sample had their cases handled by federal authorities. Sixty-one percent of all exonerated individuals were in cases that reached only an inquiry stage, while 69 percent of those who completed surveys were involved in such cases.

Not surprisingly, this table shows that the cases in which whistleblowers were involved were pursued further than the cases in which exonerated respondents were involved (i.e., higher proportions handled by the government, higher proportions reached the investigation stage). This is because the most serious cases, in which the accused was found to have engaged in scientific misconduct, are included for the whistleblower sample but not for the exonerated respondents.

Before turning to the analyses of the survey findings, it is worth noting that the closed cases in ORI's files are not representative of all misconduct cases. They simply represent the set of closed cases about which ORI is knowledgeable. Because RTI attempted to survey everyone in the ORI whistleblower file and nearly three-fourths of

[e] This procedure was acceptable for this small group because the contact information on these cases was of recent vintage, since the surveys were mailed less than one year after their cases were closed.

those in ORI's exonerated individuals file, and because there is no basis for extrapolating the survey results to some larger universe of cases, the typical statistical tests of significance and estimates of standard errors of estimate that normally apply to sample survey data were not applied in this study. Rather, the data provide descriptive information about a conveniently available set of whistleblowers and accused-but-exonerated individuals. The differences that appear in the data are the real differences that exist in this population—no significance tests are needed to assure that the differences were not due to random error. Only the practical question remains -- how big a difference should be considered meaningful? Although the data were collected using rigorous scientific methods, the answer to how big a difference is meaningful is more political than scientific and is really a question of how big a difference would make ORI, or the scientific community generally, want to change its policies and procedures. As a rule, this paper discusses differences only when they exceeded 10 percent and draws major conclusions only when the differences are substantially larger than this.

RESULTS

This paper examines results of three types. It looks first at the direct consequences reported by whistleblowers and exonerated respondents as a result of their involvement in cases of alleged misconduct. Then, it reviews the reported long-term impact of participation in such cases on the careers, professional activities and personal lives of whistleblowers and exonerated scientists. Finally, it presents some findings that pertain uniquely to either whistleblowers or those accused but exonerated of misconduct.

Direct Consequences. Table 2 shows the extent to which whistleblowers and those accused but exonerated of scientific misconduct reported experiencing negative consequences that they attributed directly to their involvement in the case of alleged misconduct. Those who answered the surveys selected consequences that occurred at the time of the whistleblowing incident as well as those that occurred after the incident. Because previous analyses suggested that most of the consequences experienced begin during the incident, only consequences at the time of the incident are included in analyses in this paper.^{21, 22} In this survey, individuals could report more than one consequence. To assist the reader and to simplify later analyses, the consequences are grouped under four headings— (1) hassles, pressures, and delays; (2) loss of research resources or opportunity; (3) denial of advancement; and (4) loss of position. These categories are ordered from least to most severe consequences based on the authors' view of the seriousness of each consequence and each category as a whole.

Not too surprisingly, the least severe consequences were reported with greatest frequency. Nearly a third of whistleblowers (31%) and two-fifths of those exonerated of misconduct (40%) reported experiencing no negative consequences at all as a result of their involvement. The converse of this is that, overall, whistleblowers said they experienced negative consequences somewhat more often (69%) than those accused but exonerated of scientific misconduct (60%).

Table 2. Negative Actions Experienced by Whistleblowers and Exonerated Respondents

Type of Negative Action	<u>Whistleblowers</u>		<u>Exonerated</u>	
	No.	%	No.	%
Total	68	100.0	52	100.0
Experience of at Least One Negative Action				
No Negative Actions Experienced	21	30.9	21	40.4
Experienced Negative Actions	47	69.1	31	59.6
Hassles/Pressure/Delay				
Pressure to Drop/Admit Allegation	29	42.6	5	9.6
Additional/Counter Allegations Made	27	39.7	18	34.6
Ostracism	17	25.0	11	21.2
Lawsuit Threatened	10	14.7	19	36.5
Delays in Reviewing/Clearing Manuscripts	6	8.8	6	11.5
Delays in Processing Grant Applications	4	5.9	9	17.3
Loss of Research Resources/Opportunity				
Reduction in Research Support	14	20.6	9	17.3
Reduction in Travel Funds	7	10.3	0	0.0
Loss of Desirable Work Assignments	7	10.3	4	7.7
Reduction in Staff Support	7	10.3	3	5.8
Denial of Advancement				
Denial of Salary Increase	8	11.8	4	7.7
Denial of Promotion	5	7.4	5	9.6
Denial of Tenure	6	8.8	0	0.0
Loss of Position				
Fired	8	11.8	3	5.8
Not Renewed	8	11.8	1	1.9

Sizeable minorities of whistleblowers (15%-43%) and exonerated individuals (10%-37%) reported being pressured to drop or admit the allegations, being subjected to counter-allegations or additional allegations, being ostracized by their colleagues, or being threatened with a lawsuit. In addition, those accused of misconduct reported delays in having their manuscripts cleared (12%) or grants processed (17%).

In addition to the hassles, pressures, and delays, about a fifth of those included in each survey reported a reduction in research support (21% of whistleblowers, 17% of exonerated). Smaller, but non-trivial proportions of whistleblowers reported loss of other support or work opportunities (10%), as did some of those accused but exonerated of misconduct (6%-8%).

Moving further along the scale to even more serious consequences, RTI found that 12 percent of whistleblowers reported being denied a salary increase, being fired, or not having their position renewed, while smaller numbers reported denials of promotion (7%) or tenure (9%). Exonerated individuals reported similar experiences but with lower frequency (10% denied promotion, 8% denied salary increases, 6% fired). These are severe consequences, and the fact that they occurred even this frequently suggests inadequacies in either the content or the implementation of federal regulations.

The survey asked respondents to indicate who they believed was responsible for the negative consequences that they experienced. Again, respondents could cite more than one person as responsible for the consequences they experienced. Considering all those who experienced any negative consequences (Table 3), whistleblowers were most likely to attribute their difficulties to institutional officials^[f] (57%) or the accused (53%) and somewhat likely to attribute their problems to colleagues (32%) and students or others (28%). Accused-but-exonerated respondents were most likely to blame the whistleblowers for their problems (74%) but also quite likely to blame institutional officials (48%) and somewhat likely to blame students and others (39%), as well as colleagues (26%).

Table 3. Who Whistleblowers and Exonerated Respondents Judge Responsible for the Negative Consequences They Experienced

Type of Person	Whistleblowers		Exonerated	
	No.	%	No.	%
Total Experiencing Any Negative Actions	47	100.0	31	100.0
Institutional Official	27	57.4	15	48.4
University Administrator	10	21.3	9	29.0
Dean of College/School	14	29.8	5	16.1
Department Chair/Head	13	27.7	11	35.5
Laboratory Chief/Head	3	6.4	2	6.5
Center Director	7	14.9	1	3.2
Colleague	15	31.9	8	25.8
Accused or Complainant	25	53.2	23	74.2
Scientific/Professional Society	8	17.0	0	0.0
Student/Other	13	27.7	12	38.7
Funding Agency	-	0.0	5	16.1

In Tables 4-6, those who said they experienced any negative consequence are divided into two subgroups. One group consists of those who reported at least one of the severe consequences listed in Table 2 under loss of position or denial of advancement (labeled “severe negative action”). The other is composed of those who reported only one of the less severe consequences listed in Table 2 under loss of research resources/opportunity or hassles, pressures, or delays (labeled “less severe negative action”).

Examination of only those who reported the most severe consequences in both groups in Table 4 (p. 238) shows that they overwhelmingly attributed their problems to institutional officials (88%-89%). This is not surprising, because it is not possible to be fired or to be denied advancement without the explicit cooperation of institutional

[f] This paper uses the term institutional official to refer to persons holding one of the following institutional positions: university administrator; dean of college/school; department chair/head; laboratory chief/head; or center director. The attribution that a person held an institutional position is made in two ways in the survey. Sometimes, those who completed surveys reported that they themselves held such a position at the time of the whistleblowing incident and sometimes they attributed those positions to someone else— e.g., those to whom they reported an allegation of misconduct or those they held responsible for the consequences they experienced as a result of being involved in a whistleblowing incident.

officials. In addition, exonerated respondents who said they experienced severe negative outcomes seemed to blame almost everyone around them (67% blamed the whistleblower, 56% blamed colleagues). For those who said they experienced only the less severe consequences, the patterns noted in Table 3 prevail.

Table 4. Who Whistleblowers and Exonerated Respondents Judge Responsible for the Negative Consequences They Experienced by Severity of Outcome Experienced

	<u>Whistleblowers</u>				<u>Exonerated</u>			
	Severe Outcome		Less Severe Outcome		Severe Outcome		Less Severe Outcome	
Person Judged Responsible	No.	%	No.	%	No.	%	No.	%
Total	17		30		9		22	
Type of Person								
Accused/Complainant	4	23.5	14	46.7	6	66.7	17	77.3
Colleagues	3	17.6	4	13.3	5	55.6	3	13.6
Institutional Officials	15	88.2	12	40.0	8	88.9	7	31.8
Prof. Society/Funding Agency	1	5.9	4	13.3	1	11.1	4	18.2

In addition to looking at the consequences that were reported and who the respondents identified as responsible for their difficulties, RTI also determined who, among the whistleblowers and accused respondents, reported they had suffered direct negative consequences most often. Some interesting patterns emerged (Table 5).

- **Degree.** For whistleblowers, those with a research doctorate as opposed to a clinical degree were more likely to report adverse outcomes. No such pattern was found for the exonerated, for whom type of doctoral degree made no difference.
- **Work Setting.** Both whistleblowers and exonerated respondents reported more negative consequences when they worked in academic rather than in government settings. Whistleblowers were particularly likely to report adverse consequences if they were in basic science as opposed to clinical departments. The accused were equally likely to report adverse consequences in both types of departments.
- **Tenure, Full/Part-Time Status, and Academic Rank.** Tenure status did not affect whether whistleblowers or accused-but-exonerated respondents reported suffering negative consequences. Since virtually all whistleblowers and exonerated respondents were employed full-time when the incident occurred, no meaningful comparisons of employment status were possible. Also, academic rank had no impact on the likelihood of reporting negative outcomes for exonerated respondents, but being an assistant professor did increase the likelihood of reporting negative consequences for whistleblowers.

Some characteristics of the cases and their relationship to the consequences reported were also examined. These results are presented in Table 6 (p. 240), and indicate the following:

Table 5. Number and Percent of Whistleblowers and Exonerated Respondents Who Reported Experiencing Any Negative Consequences by Personal Characteristics

Characteristic of Whistleblower/Accused	Whistleblowers			Exonerated		
	Negative Outcome			Negative Outcome		
	Total	No.	%	Total	No.	%
Total	68	47	69.1	52	31	59.6
Degree						
PhD or DSc	45	33	73.3	32	19	59.4
MD & PhD, MD, MB, OD, DDS	17	10	58.8	19	12	63.2
Other	6	4	66.7	1	0	0.0
Work Setting						
Academia	53	39	73.6	43	26	60.5
Government	10	5	50.0	3	1	33.3
Other	5	3	60.0	6	4	66.7
Type of Academic Department						
Basic Science	31	26	83.9	19	12	63.2
Clinical	12	6	50.0	18	12	66.7
Other	10	7	70.0	6	2	33.3
Non-Academic	15	8	53.3	9	5	55.6
Continuity/Security of Position						
Tenure	38	27	71.0	27	16	59.3
Non-Tenure	30	20	66.7	25	15	60.0
Full Time/Part Time Status						
Full Time	63	43	66.7	52	31	59.6
Part Time	3	3	100.0	0	0	n/a
Student	2	2	100.0	0	0	n/a
Academic Rank						
Professor	24	17	70.8	23	15	65.2
Associate Professor	10	7	70.0	10	6	60.0
Assistant Professor/Lecturer	9	8	88.9	9	6	66.7
Student/None	25	15	60.0	10	4	40.0

- **Relationship to Accused/Whistleblower.** The reported relationship of the whistleblower to the accused, whether a superior, peer, or subordinate, had no impact on the extent to which whistleblowers reported negative impacts. However, for exonerated respondents, the lower their reported status relative to the whistleblower, the more likely they were to report negative consequences.
- **Institutional Position.** One curious finding was that having an institutional position (see note^[1], p. 237) decreased the likelihood that a whistleblower would report experiencing a negative outcome but increased the likelihood that an exonerated respondent would report experiencing one.
- **Case Publicity.** Finally, both parties to an allegation were highly likely to report suffering negative outcomes when the cases were publicized and less likely to report such outcomes when there was no publicity.

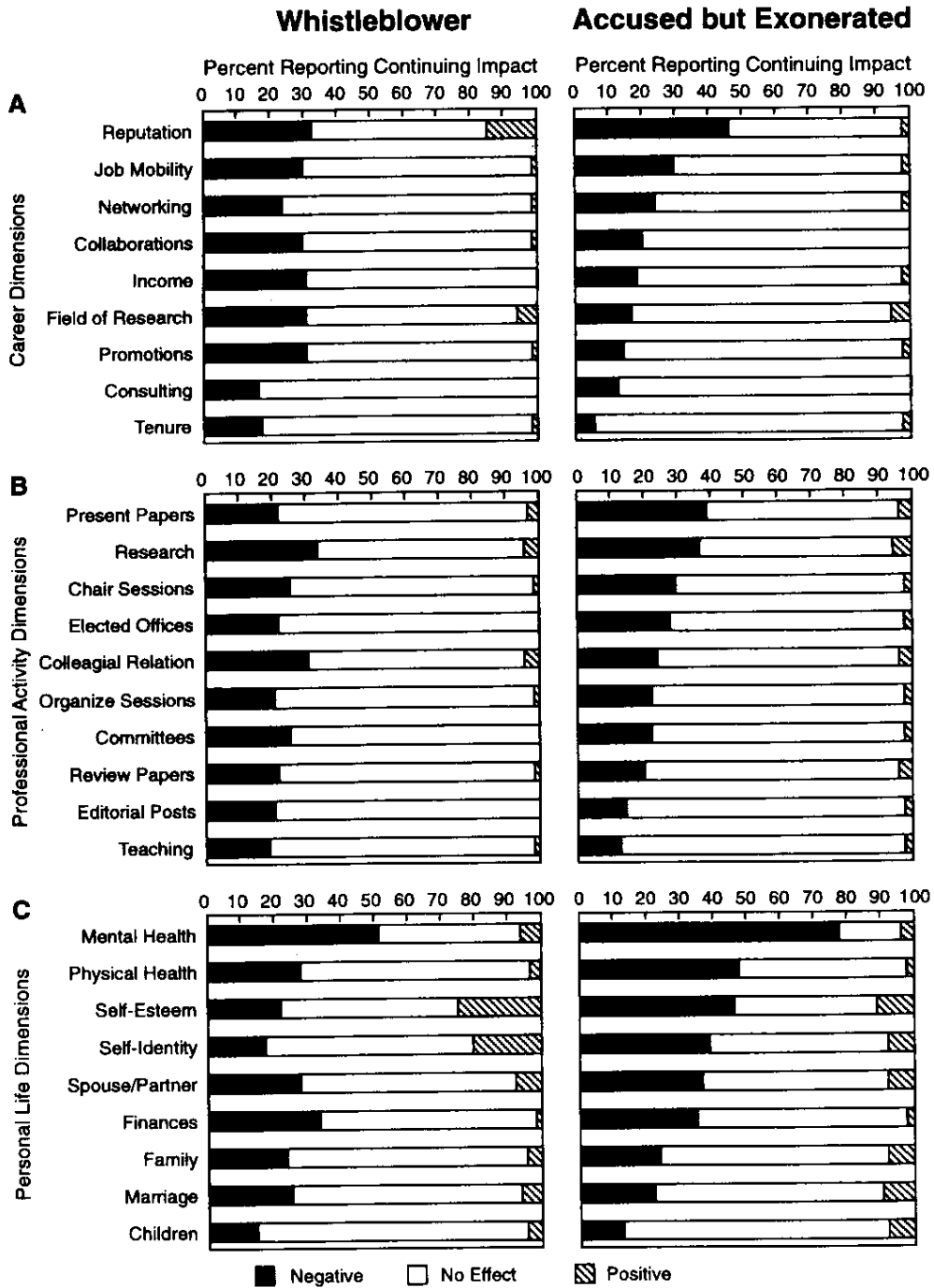
Table 6. Number and Percent of Whistleblowers and Exonerated Respondents Who Reported Experiencing Any Negative Consequences by Case Characteristics

Characteristic of Case	Whistleblowers			Exonerated		
	Negative Outcome			Negative Outcome		
	Total	No.	%	Total	No.	%
Total	68	47	69.1	52	31	59.6
Relationship to Accused/Complainant						
Superior/Supervisor	25	19	76.0	22	12	54.5
Collaborator/Colleague	12	10	83.3	15	10	66.7
Student/Subordinate	12	11	83.3	2	2	100.0
Outside Research/Reviewer	17	8	47.1	8	4	50.0
Other	2	0	0.0	5	3	60.0
Institutional Position						
Held on Institutional Position	12	5	41.7	20	14	70.0
Held no Institutional Position	56	42	75.0	10	17	53.1
Case Publicity						
Publicized	15	13	86.7	14	13	92.9
Not Publicized/No Answer/Don't Know	53	34	64.2	38	18	47.4

Long-Term Consequences of Involvement in Cases of Alleged Scientific Misconduct. In addition to looking at negative consequences at the time the allegations were made and during any inquiries or investigations, the survey asked about the longer-term impact on participants of their involvement in these cases. At the time of the survey, the vast majority of cases (85% for whistleblowers and at least 78% for exonerated respondents) had been closed for three years or more. The questions asked what impact the whistleblowing incident “has had” on various aspects of their careers, professional activities, and personal lives. Thus the reference frame here is much longer-term than the question used in the prior analyses that focused on consequences at the time of the incident.

Figure 1 looks at the continuing impact of involvement in the incident of alleged scientific misconduct on various dimensions of the careers, professional activities, and personal lives of whistleblowers and exonerated respondents. In each of these domains, because there are bigger differences among items for exonerated respondents than for whistleblowers, the items are sorted from most to least reported negative impact by those accused but exonerated of misconduct. Regarding career, the survey asked about continuing impacts on their reputations, income, promotions, tenure, job mobility, consulting, collaborations, networking, and field of research. In the area of professional activities, the survey asked about continuing impacts on presenting papers, chairing or organizing sessions, reviewing papers, serving in editorial posts, teaching, research, collegial relations, committee memberships, and elected offices. Finally, with regard to personal life, the survey asked about continuing impacts on their physical and mental health, finances, self-identity and self-esteem, marriage, family, spouse or partner, and children.

Figure 1. Impact of Involvement in Incident of Alleged Scientific Misconduct on Career, Professional Activity and Personal Life Dimensions for Whistleblowers and Exonerated Respondents



With a few exceptions, which are discussed below, the patterns in Figure 1 are all similar. For most dimensions, regardless of domain, the “typical pattern” is as follows: a majority, and often a sizeable one, of those in both groups reported that their involvement in these cases resulted in no long-term effect on the various aspects of their careers, professional activities, or personal lives. Of those who said it did have an impact on any given dimension, almost all reported that the impact was a negative one.

Looking first at the impact on various aspects of their post-involvement careers (Panel A in Figure 1), on every dimension, both groups chose the “uncertain or no effect” option most often and reported negative outcomes more often than positive outcomes. The percent of exonerated respondents reporting negative outcomes across dimensions varied more (6%-46%) than the percent of whistleblowers reporting negative outcomes across the same dimensions (16%-32%). One dimension, reputation, is notable. Accused-but-exonerated respondents were almost as likely to report negative (46%) as neutral (52%) impacts on their reputations, while whistleblowers were much less likely to do so (32% negative versus 53% neutral), and nearly one-in-six whistleblowers (15%) reported a positive impact on their reputations as a result of having blown the whistle.

Looking next at the reported impact on various aspects of their post-involvement professional activities (Panel B in Figure 1), it is again the case that, on every dimension, both groups chose the “uncertain or no effect” option most often and reported negative outcomes more often than positive outcomes. The percent of exonerated respondents reporting negative outcomes across dimensions varied only slightly more (13%-39%) than the range of percentages of reported negative outcomes by their whistleblowing counterparts (19%-34%). On no dimension did even 10 percent of either group report that the long-term impact was positive.

There are a few deviations from the general pattern in the area of reported impacts on the personal lives of those involved in these incidents (Panel C on Figure 1). For example, the data indicate that involvement in these incidents reportedly takes a heavy toll on the mental health of a majority of both groups, but particularly on those accused but exonerated of scientific misconduct. Seventy-eight percent of exonerated respondents reported negative impacts on their mental health, as did 52 percent of whistleblowers. It is noteworthy that this is the only dimension on which a majority both of whistleblowers and of those exonerated of charges of misconduct reported negative outcomes. However, for the exonerated respondents, there is another dimension, self-esteem, in which the percent reporting negative outcomes (46%) slightly exceeds the percent reporting neutral outcomes (43%). Also, for the exonerated sample, involvement in these cases was reported as almost as likely to have a negative (48%) as a neutral (50%) impact on their physical health.

Finally, Figure 1 identifies two dimensions of their personal lives for which sizeable minorities of whistleblowers reported positive impacts—self-identity (21% positive) and self-esteem (25% positive). Moreover, regarding these two dimensions, the proportion that reported positive impacts is slightly larger than the proportion that reported negative impacts (18% and 22%, respectively). A more typical pattern holds in the remaining dimensions in this domain for both groups. However, exonerated

respondents reported experiencing negative outcomes in the dimensions in this domain more often than in dimensions in the work-related domains.

Another way to summarize these data is to note that one-third or more of whistleblowers reported negative impacts on only three dimensions, their mental health (52%), research (34%), and finances (33%), while exonerated respondents frequently reported negative outcomes in many more dimensions, including their mental health (78%), physical health (48%), reputations (46%), self-esteem (46%), paper presentations (39%), self-identity (39%), research activities (37%), spouse or partner (37%), and finances (35%). Conversely, at least one-in-ten exonerated respondents reported a positive impact on only one dimension, their self-esteem (11%), while whistleblowers reported positive impact at least this often on three dimensions—reputation (15%), self-identity (21%), and self-esteem (25%).

Findings Relevant Only to Whistleblowers or those Accused but Exonerated of Misconduct. So far, this paper has looked only at those items that were measured in common in the two surveys. Because the nature of their roles in these incidents and the responsibility of the institutions under federal regulations differ for these two populations, some aspects of this study were specific to whistleblowers and others were specific to exonerated respondents. The most significant population-specific findings are briefly summarized here. Full details of these analyses are available in two technical reports from the ORI.^{21, 22}

One key issue for whistleblowers is whether or not, knowing what they now know about the consequences of their actions, they would blow the whistle again. The results in Table 7 may be summarized as follows:

Table 7. Whistleblowers' Willingness to Blow the Whistle Again by Severity Level of Negative Actions Experienced

Severity Level of Negative Actions	Total	Willingness to Blow Whistle Again							
		No		Probably		Yes		Uncertain	
		No.	%	No.	%	No.	%	No.	%
Total	68	7	10.3	8	11.8	46	67.6	7	10.3
Negative Actions Experienced									
No	21	0	0.0	1	4.8	18	85.7	2	9.5
Yes	47	7	14.9	7	14.9	28	59.6	5	10.6
Severity of Negative Action									
Severe Negative Action	17	3	17.6	1	5.9	9	52.9	4	23.5
Less Severe Negative Action	30	4	13.3	6	20.0	19	63.4	1	3.3

- **Whistleblowers Overall.** Overall, two-thirds of all whistleblowers (68%) say they would blow the whistle again and an additional 12 percent say they would probably do it again. The remainder is split equally between those who said they would not do it again (10%) and those who said they were uncertain (10%).

- **Whistleblowers With/Without Negative Consequences.** Of those who experienced no negative actions, 86 percent said they would definitely blow the whistle again, and an additional five percent said they would probably do it again. The remainder (10%) said they were uncertain if they would do it again or not, but there was not a single person in this group who reported they would not blow the whistle again. Not surprisingly, this contrasts substantially with the views of whistleblowers who suffered one or more negative actions. Still, considerably more than half such complainants (60%) said they would definitely blow the whistle again and another 15 percent said that they would probably do it again. However, in this case, the same number of whistleblowers (15%) said they would not blow the whistle again, while the remaining 11 percent were uncertain.
- **Whistleblowers With Severe Versus Moderate Negative Consequences.** Whistleblowers who experienced severe negative consequences were more likely than their peers who suffered only moderate negative consequences to report that they would not blow the whistle again (18% versus 13%) and that they were uncertain about whether or not they would do it again (24% versus 3%). Conversely, those who suffered less serious consequences were more likely to say they would definitely or probably blow the whistle again (63% and 20% versus 53% and 6%).

The key issues this study examined for those accused but exonerated of misconduct were how well their institution handled the case when allegations were made against them, whether or not their institution adequately protected their confidentiality and, if not, whether or not the institution did all it could to restore their reputations following exoneration. Overall, less than half of the accused but exonerated respondents said they were satisfied with the handling of their cases, the maintenance of confidentiality, and the restoration of their reputations.

As many exonerated respondents reported that they were satisfied (44%) as dissatisfied with the handling of their cases (Table 8). Moreover, the level of dissatisfaction correlated directly with the severity of the consequences experienced. Dissatisfaction was reported by just 14 percent of those who experienced no negative outcomes, by 55 percent of those who reported that they experienced only one or more of the less severe outcomes, and by 78 percent of those who reported a significant negative consequence of their involvement in the incident of alleged misconduct.

Satisfaction or dissatisfaction with aspects of how the cases were handled is reported in Table 9. Length of the inquiry, confidentiality of the proceedings, opportunity to defend oneself, and notification of the allegations were reported as important aspects of the handling of the case by at least half of exonerated respondents. In each of these areas, as well, a higher proportion of respondents reported dissatisfaction rather than satisfaction with the handling of his or her case: length of inquiry (58% dissatisfied versus 30% satisfied), confidentiality of proceedings (47% dissatisfied versus 41% satisfied), opportunity to defend oneself

[g] The columns in Tables 8, 9, 10, and 11 are based on a question that asked exonerated respondents about "overall satisfaction with handling and outcome" of the case. Since the rows of these tables deal only with aspects of how the cases were handled, we have chosen to omit the phrase "and outcome" from the text and tables to make our presentation clearer.

Table 8. Overall Satisfaction of Exonerated Respondents Regarding Handling of Case by Severity Level of Negative Actions Experienced

Severity Level of Negative Actions	Total	Overall Satisfaction With Handling of Case					
		Dissatisfied		Neither Satisfied Nor Dissatisfied**		Satisfied	
		No.	%	No.	%	No.	%
Total	54	24	44.4	6	11.1	24	44.4
Negative Actions Experienced*							
No	21	3	14.3	3	14.3	15	71.4
Yes	31	19	61.3	3	9.7	9	29.0
Severity of Negative Action							
Severe Negative Action	9	7	77.8	1	11.1	1	11.1
Less Severe Negative Action	22	12	54.5	2	9.1	8	36.4

* 2 of 54 respondents had no opportunity to respond to the items used to create this variable. Therefore, the number of respondents in this section of the table is only 52.

** Includes two respondents who did not answer this set of items at all.

Table 9. Overall Level of Satisfaction of Exonerated Respondents with Handling of Case by Aspects of Handling

Aspects of Handling	Total*	Overall Satisfaction With Handling of Case					
		Dissatisfied		Neither Satisfied Nor Dissatisfied		Satisfied	
		No.	%	No.	%	No.	%
Total	54						
Handling							
Notification of allegations	28	13	46.4	4	14.3	11	39.3
Prompt institutional response	23	6	26.1	5	21.7	12	52.2
Confidentiality of proceedings	32	15	46.9	4	12.5	13	40.6
Length of inquiry	33	19	57.6	4	12.1	10	30.0
Expertise on panels	18	9	50.0	1	5.6	8	44.4
Protection against conflicts of interest	9	6	66.7	1	11.1	2	22.2
Opportunity to defend yourself	30	14	46.7	3	10.0	13	43.3
Legal representation	9	6	66.7	0	0.0	3	33.3
Length of investigation	23	14	60.9	2	8.7	7	30.4
Opportunity to review reports	22	15	68.2	1	4.5	6	27.3

* This column reports the number of respondents who said these aspects of case handling contributed significantly to their overall opinion of the handling of the case.

(47% dissatisfied versus 33% satisfied), and notification of allegations (46% dissatisfied versus 39% satisfied). In only one area of case handling, namely promptness of institutional response, were exonerated respondents more often satisfied (52%) than dissatisfied (26%) with how the institution dealt with the case. However, fewer than half of exonerated respondents (43%) deemed this an important aspect of case handling.

Table 10. Overall Level of Satisfaction of Exonerated Respondents with Handling of Case by Type and Amount of Costs Incurred

Costs	Total	Overall Satisfaction With Handling of Case					
		Dissatisfied		Neither Satisfied Nor Dissatisfied		Satisfied	
		No.	%	No.	%	No.	%
Total	54						
Any Costs Incurred							
Yes	24	16	66.7	1	4.2	7	29.2
No	30	8	26.7	5	16.7	17	56.7
Legal Fees							
Yes	18	13	72.2	0	0.0	5	27.8
No	36	11	30.6	6	16.7	19	52.8
Other Costs							
Yes	11	8	72.7	1	9.1	2	18.2
No	43	16	37.2	5	11.6	22	51.2
Dollar Amount of Costs							
Less than \$5,000	6	2	33.3	0	0.0	4	66.7
\$5,000-\$49,999	10	7	70.0	1	10.0	2	20.0
\$50,000 or more	7	7	100.0	0	0.0	0	0.0

Two-thirds of exonerated respondents who said they incurred costs of any type (including legal costs) reported themselves to be dissatisfied with the handling of their cases (Table 10, above). Conversely, more than half of those who said they incurred no costs of any type reported themselves satisfied with the handling of the case. For those who said they incurred costs, the more costs they incurred, the less satisfied they reported they were with the handling of their cases.

Table 11 indicates that two-thirds of exonerated respondents who said they hired attorneys reported that they were dissatisfied with the handling of their cases, and only a little over one-fourth said they were satisfied. For those who reported that they did not hire an attorney, the pattern is reversed: three-in-five said they were satisfied and one-in-four said they were dissatisfied with the handling of their cases. Causality is unclear in these findings. It may be that only those who were already very dissatisfied with the process of inquiry or investigation took this step. However, it is also possible that increasing the adversarial nature of this process may result in hardening of positions that result, ultimately, in less favorable views of how the case progressed.

Less than half of the exonerated respondents (46%) reported that his or her institution did all it could to maintain the confidentiality of the accused (Table 12). About one-third of the respondents (35%) reported that the institution did not do everything possible to maintain confidentiality. Fewer than half but at least one-in-four exonerated respondents reported that his or her institution undertook each of the following steps to safeguard confidentiality: limited the number of people involved (46%), made no significant work assignment changes during the inquiry/investigation (46%), and conducted the inquiry/investigation and reached conclusion quickly (26%).

Table 11. Overall Level of Satisfaction of Exonerated Respondents with Handling of Case by Extent of Attorney Representation

Costs	Overall Satisfaction With Handling of Case						
	Total	Dissatisfied		Neither Satisfied Nor Dissatisfied		Satisfied	
		No.	%	No.	%	No.	%
Total*	52						
Any Attorney Representation**							
No	29	7	24.1	5	17.2	17	58.6
Yes	21	14	66.7	1	4.8	6	28.6
When Represented by an Attorney							
During Only	6	5	83.3	0	0.0	1	16.7
During and After	13	8	61.5	1	7.7	4	30.8
After Only	2	1	50.0	0	0.0	1	50.0

* 2 of 54 respondents did not respond to the item pertaining to overall satisfaction with handling of case. Therefore, the total number of potential respondents for this table is 52.

** 2 of the 52 potential respondents had no opportunity to respond to the items used to create the variable "any attorney representation." Therefore, the number of respondents in this section of the table is only 50.

Table 12. Efforts to Safeguard Confidentiality Reported by Exonerated Respondents

Institutional Actions to Safeguard Confidentiality	Total	
	No.	%
Total	54	100.0
Institution Did All It Could to Safeguard Confidentiality		
Yes	25	46.3
No	19	35.2
Don't Know	10	18.5
What Institution Did to Safeguard Confidentiality		
Limited Number of People Involved	25	46.3
Made No Significant Changes in Work Assignments During Inquiry/Investigation	25	46.3
Conducted Inquiry/Investigation and Reached Conclusion Quickly	14	25.9
Did Not Safeguard Confidentiality	10	18.5
Asked Whistleblower Not to Discuss	7	13.0
What Institution Did to Breach Confidentiality		
Did Not Breach Confidentiality	24	44.4
Did Not Conduct Inquiry/Investigation in a Timely Manner	18	33.3
Did Not Control Leaks of Information	17	31.5
Involved Excess People	6	11.1
Notified Outside Parties	5	9.3

Only a small proportion reported that the institution did nothing to safeguard confidentiality (19%). More than twice this number (44%) reported that the institution did not breach confidentiality. However, about one-third of exonerated respondents reported that the institution did not conduct the inquiry/investigation in a timely manner (33%) or that it did not control leaks of information (32%).

Only 25 percent of the respondents said they were satisfied with the efforts made by the institution to restore his or her reputation (Table 13, below). Thirty exonerated respondents (58% of those with valid data on the item) reported that their institutions did nothing to restore their reputations. (Of these 30, four reported that an institution took no action at the request of the exonerated individual.) Only nine accused-but-exonerated respondents (17%) reported that their institution consulted with them about measures that could be taken to restore their reputations.

Table 13. Efforts to Restore Reputation Reported by Exonerated Respondents

Institutional Actions to Restore Reputation	Total	
	No.	%
Total*	52	100.0
Did Institution Consult You About Measures for Restoring Your Reputation		
Yes	9	17.3
No/Non-Response	41	78.8
Satisfaction with Institutional Effort to Restore Reputation		
Satisfied	13	25.0
Neither Satisfied Nor Dissatisfied/Non-Response	19	36.5
Dissatisfied	20	38.5
What Institution Did to Restore Reputation		
Notified Officials of Findings	14	26.9
Nothing	26	50.0
Nothing at My Request	4	7.7
Other	4	7.7

* Number of respondents in this table sum to fewer than 54 due to missing data on items used to measure either row or column variables.

CONCLUSIONS

One important finding of these surveys is that, contrary to anecdotal impressions from press reports, substantial minorities of both whistleblowers and those exonerated of scientific misconduct said they experienced no adverse outcomes at the time the allegations were made and pursued. Majorities (sometimes large ones) reported no long-term impacts on their careers, professional activities, or personal lives (except in a small number of areas). In the short-run, during the period of inquiry and investigation, whistleblowers reported more negative outcomes and more severe negative outcomes than their accused-but-exonerated counterparts. However, in the long-run, the picture is more mixed. With the exception of a few dimensions, majorities of both groups reported little impact on different aspects of their careers or professional activities, although those who reported any impact generally reported a negative one. In their personal lives, however, the exonerated reported that they fared worse than did their whistleblowing counterparts, particularly with regard to impacts on their mental and physical health and on their self-esteem and self-identity.

Most people who reported that they suffered negative consequences during the incident reported suffering less severe effects such as hassles, pressures, and delays and, to a lesser extent, the loss of resources or work opportunities. Although relatively few said they were denied advancement and fewer still said they lost their job, the fact

that nearly one-in-eight reported such severe negative consequences indicates that institutions could do a far better job in handling these cases.

In addition, moderate to sizeable minorities of both groups reported negative long-term impacts of their experience on nearly every dimension examined. Cases require careful handling from the outset because reported impacts originate at the time allegations are made and the case is pursued.^{21, 22}

If PHS is to avoid long-term negative impacts of whistleblowing on both the whistleblower and those accused but exonerated of misconduct, it is clear that it must intervene or cause institutions to intervene to prevent the specific negative consequences from occurring in the first place. The evidence from these studies suggests that, for whistleblowers, the place to focus interventions is in basic science departments and, for both groups, to focus on the role of institutional and departmental officials in order to limit the most severe consequences for those involved in these incidents.

It also suggests that potential whistleblowers and those accused of misconduct should be counseled regarding the likely harm that can result from increased notoriety, that is, if, for example, concerns are taken outside the institution and/or publicized by the media.^[h] However, publicity of the potential consequences of whistleblowing may not deter would-be whistleblowers, as evidenced by the fact that substantial numbers of whistleblowers would do it again, despite the consequences they experienced.

These studies also support the conclusions that effective institutional actions likely to protect the reputations of exonerated individuals (and likely whistleblowers as well, though the whistleblower survey did not address this topic) include: (1) acting promptly to conduct and conclude an inquiry and, if necessary, a thorough investigation of the allegations; (2) limiting the number of people who have information about the allegations or who are involved in the inquiry/investigation process to those who have a need to know; (3) deferring notification of outsiders to the extent feasible and consistent with existing laws and regulations and requirements of a thorough inquiry/investigation; and (4) limiting access to information about the case and monitoring information flow to minimize leaks. These studies also suggest it would be important for institutions to consult with those exonerated of research misconduct to develop a plan for restoring their reputations. In addition, these studies suggest that institutions take action to restore the reputations of those exonerated of misconduct, unless specifically requested not to do so by those individuals, because inaction appears insufficient to assure that those who are accused but exonerated are not hurt by unsupported allegations. Among the most important actions an institution might consider is officially notifying all pertinent officials within the institution when the finding of scientific misconduct is not confirmed.

Acknowledgments: The research on which this paper is based was supported by two contracts with the Office of Research Integrity (ORI). The authors appreciate the thoughtful direction and comment of Dr. Lawrence Rhoades of ORI who served as project officer for both of these efforts. The contents and views expressed in this paper, however, are solely the responsibility of the authors and do not reflect the position of the Office of Research Integrity. The superb skill of Ms. Mary-Anne Ardini in directing the two surveys that underlie this paper is also gratefully acknowledged, as is the word processing support of Ms. Darlene Bostic and Ms. Sharon Porter.

[h] Cases may become public because of the actions of one or the other party to the case—the whistleblower or the accused—or because of the actions of others who have information about the case. This recommendation applies only to the extent that public release of information is, in fact, in the control of those directly involved in the case.

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