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Comment

EurekAlert! survey confirms challenges for science communicators in the post-print era

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An informal, online survey of 1,059 reporters and public information officers, conducted this year by EurekAlert! (www.eurekalert.org), the science-news Web service of the American Association for the Advancement of Science (AAAS), seems to confirm key challenges associated with communicating science in a post-print, increasingly multi-media-focused era. As many newspapers in the United States, the United Kingdom, and other regions continue to down-size, reporters still covering science and technology say they increasingly need good-quality images, as well as rapid access to researchers capable of making science more understandable to lay audiences. The EurekAlert! findings, released 16 August during the Euroscience Open Forum 2006 meeting in Munich, Germany, suggest that beyond the predictable reporter concerns of learning about breaking research news before the competition or the public, top concerns for today's reporters are "finding researchers who can explain science," and "obtaining photographs or other multimedia to support the story." Judging the trustworthiness or integrity of scientific findings while avoiding "hype" also emerged as key concerns for 614 reporters who participated in the EurekAlert! survey, along with 445 public information officers.

Introduction

The ranks of U.S. print-based science journalists -- across the country, and even in some cases at elite, top-tier national newspapers -- are shrinking. As science communications keeps evolving around the world, print science pages at a number of U.S. newspapers have been eliminated or replaced by more consumer-oriented pages focusing on health and medical news.

Anecdotal reports suggest that a similar shift, from print-based to online and broadcast science news reporting, may be underway in the United Kingdom and other regions of Europe, although newspaper readership continues to increase in India. Latin American reporter groups, meanwhile, have expressed an apparently increasing interest in science news, while Spanish-language science-news reporting in the United States also is on the rise.

Clearly, science news in the United States and many other regions is being conveyed to the public by an increasingly diverse, multi-lingual, non-specialist community of reporters. To better understand these changes, and the needs of today's science reporters and public information officers, EurekAlert!, the science-news Web site for reporters, established by the American Association for the Advancement of Science (AAAS), conducted an informal, online survey of 614 reporters and 445 public information officers.

The survey was conducted by an independent research firm, Cell Associates, and supervised by EurekAlert!. Results were reported during a Euroscience Open Forum 2006 symposium in Munich, Germany, co-sponsored by EurekAlert! and the Max Planck Society, titled "Myths of Science: Glowing Monkeys, Wonder Dogs, and More." In addition to a presentation on the survey, the Euroscience symposium also included presentations by two scientist-communicators and three reporters for the *Financial Times, Sueddeutsche Zeitung,* and *Washington Post.*

Sea changes in U.S. science news reporting

When asked, most Americans will say that they think science - and news about scientific developments - are important: In a 1993 survey of 1,250 Americans, conducted by Louis Harris of LH Research for the

Scientists' Institute for Public Information in New York, most respondents said that science news is "as important as crime, financial, political, sports, or any other kind of news, and they crave even more news."[1] A majority (71 percent) of those surveyed said they would oppose any reduction in the amount of science news coverage available to them.

Since that survey was conducted, however, as many newspapers have continued to downsize, they also have reduced the number of traditional, print journalists specializing in science coverage. In its respected annual report on American Journalism, *The State of the News Media 2006*, the Project for Excellence in Science Journalism has described "a seismic transformation in what and how people learn about the world around them."[2] The statistics from calendar year 2005 are now well-known: Two powerhouse newspapers, the *New York Times* and *Los Angeles Times*, cut a total of 145 newsroom jobs, while the *Philadelphia Inquirer* and *San Jose Mercury News* cut 15 percent and 16 percent of newsroom positions, respectively. Newspapers such as the *Dallas Morning News* have eliminated their science pages altogether.

More recently, the latest Audit Bureau of Circulations data revealed that overall circulation at 770 U.S. daily newspapers fell 2.5 percent for the six-month period ending March 2006, with Sunday circulation dropping by 3.1 percent for 610 of the papers, according to analysis by the Newspaper Association of America. Some major national newspapers showed small gains during this same period, with the *New York Times* up by 0.5 percent and *USA Today* up by 0.09 percent, the ABC assessment showed.[3] Yet, newsroom layoffs have persisted in 2006: The *Washington Post*, for instance, announced early buyouts for nearly 70 newsroom staff members, including at least one veteran science journalist.[4]

A recent article in *The Economist* predicts that it is "only a matter of time" until newspapers begin to shut down in large numbers, and that "over the next few decades half the rich world's general papers may fold."[5] Although the *State of the News Media* report contends that such dire warnings of print journalism's forthcoming extinction are "overheated," it confirms that "even in bigger newsrooms, journalists report that specialization is eroding as more reporters are recast into generalists."[6] All those generalists need articulate sources who can help them understand complex research terminology, and they need photographs and other multimedia materials.

The changing media landscape also is providing new opportunities for communicating science. At a professional-development seminar on October 15, 2005, organized by EurekAlert! at the National Press Club in Washington, D.C., David Braun, an editor for NationalGeographic.com, reported to some 200 public information officers that news consumption at his site had recently increased by 70 percent. Braun publishes approximately 1,000 online news stories per year, he said.[7]

Beyond the United States, and in other languages

Despite the apparent decline of U.S. newspapers, readers in some other regions of the world remain hungry for print-based news. In an interview with the U.K. newspaper, *The Independent*, Microsoft mogul Bill Gates held out some hope for the future of the newspaper, at least for the near-term, and particularly in certain regions beyond the United States. "I'm sure it will be more than 50 years when somebody is still printing a newspaper and taking it to someone, somewhere," Gates was quoted as saying. "Newspaper readership is still growing in India."[8]

Within the United States, meanwhile, Spanish-language newspapers are on the rise, even as their English-language counterparts scramble to boost readership. Circulation for U.S.-based Spanish-language papers jumped from about 140,000 in 1970 to 17.4 million in 2003. Although circulation for these media outlets dipped slightly in 2004, the number of Hispanic daily newspapers in the United States increased further, from a handful in 1970 to 42 in 2004.[9]

At the same time, in certain Latin American regions, activities of reporter groups have seemed to suggest an increased interest in science news. For example, a recent science journalism workshop, held at the University of California San Diego's Institute of the Americas, attracted 35 Latin American journalists who were interested in developing their science writing and broadcasting skills. More than 400 applicants vied for the opportunity to participate in this event, which trained reporters through hands-on instruction with leading scientists and experienced science journalists. Similarly, a Latin American outreach effort by the *Science* Press Package team at AAAS resulted in 35 new reporter-registrants over a six-month period in 2006, according to multi-lingual consultant Michaela Jarvis of

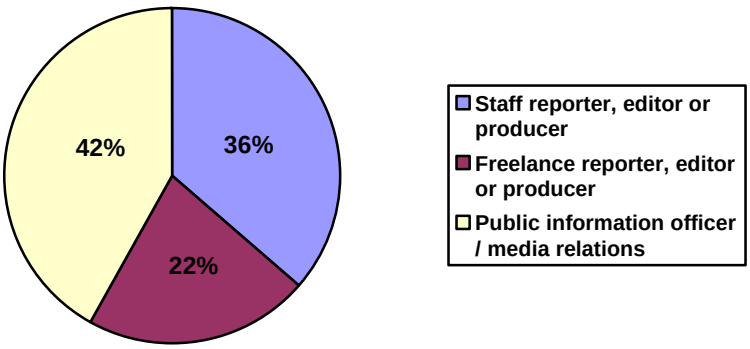

Figure 1. Breakdown of Survey Respondents.

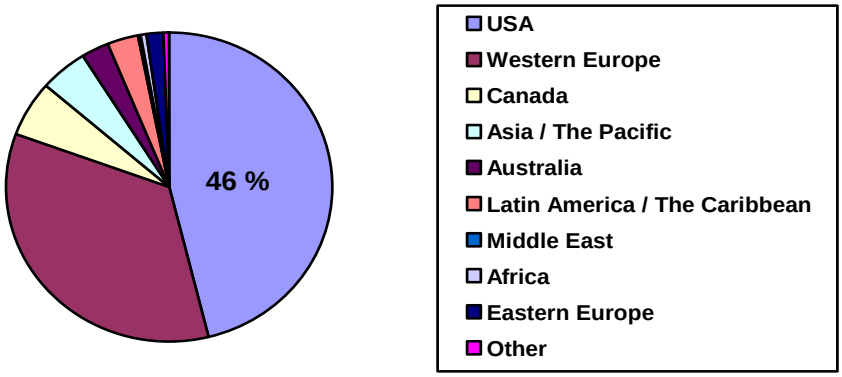

Figure 2. Breakdown of Reporter Respondents.

Pleasant Hill, California. The promotional effort quickly boosted the total number of Latin American reporters using the EurekAlert! Web site (including the *Science* Press Package) to more than 100. A number of Latin American media outlets also seem to be gaining in prestige and influence, too; in Mexico, for instance, the financial dailies, *El Financiero* and *El Economista* may now be comparable to the *Financial Times* and *Wall Street Journal*, in terms of how they are perceived by their own readers.

The EurekAlert! survey findings: Demographics

The EurekAlert! Web site, established in 1996 by former AAAS News & Information Director Nan Broadbent, now serves some 5,000 registered reporters working in 60 different countries. Reporters log onto EurekAlert! to access some 75,000 keyword-searchable science news releases, submitted by public information officers tasked with communicating technical information for approximately 500 leading research and educational institutions. Thus, the Web site has a ready-made audience for conducting science communications surveys.

While the 2006 survey should not be construed as rigorously scientific, responses may provide a useful snapshot of modern science communications. Of the 1,059 respondents, as mentioned, 614 were reporters. Thirty-six percent of all reporter-respondents were on-staff reporters or editors, while 22 percent said they were reporting as freelancers. (see figure 1.)

Of the 1,059 respondents overall, a slight majority of 592 (56 percent) lived in the United States, and 464 (44 percent) lived internationally. Yet, less than half of the reporters who took the survey (46 percent) were U.S.-based (see figure 2). Most PIO responses (70 percent) came from within the United States, however. (see figure 3.)

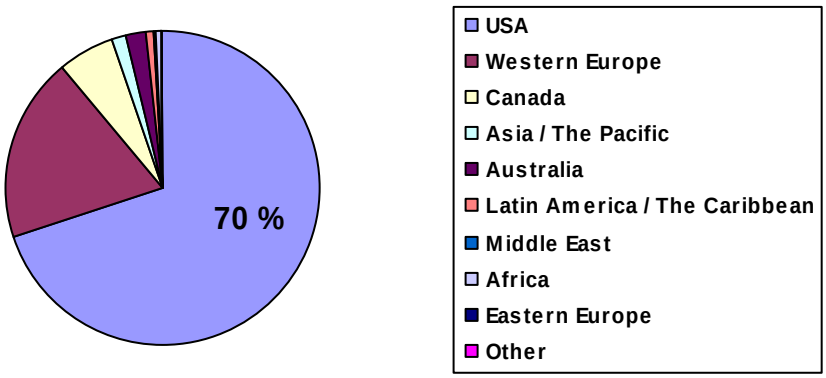

Figure 3. Breakdown of Public Information Officer (PIO) Respondents.

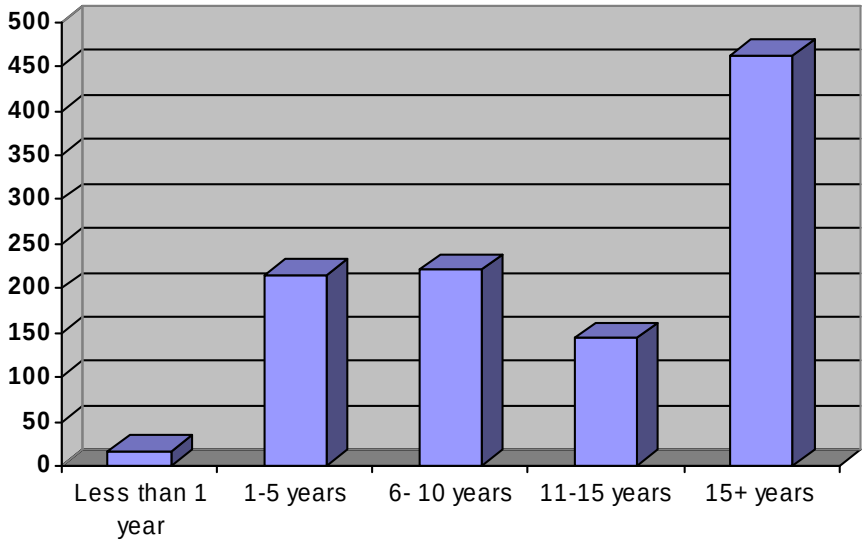

Figure 4. Years of Experience: Reporters and PIOs.

Most reporters and PIOs who completed the survey had significant media experience, with more than half (57 percent) having worked in the field for more than 10 years. Overall, the reporters who responded to the survey had more years of experience than the PIOs; 62 percent of reporters versus 51 percent of PIOs reported having more than 10 years of media experience. (see figure 4.)

Reporter-respondents worked for a wide variety of media outlets. Some 28 percent worked at newspapers, another 28 percent at magazines, 12 percent at online outlets, 8 percent at trade publications, and the remainder in television, or for wire services, radio, or other media. International reporters were more likely to work at newspapers and magazines; U.S. reporters were more likely to work at trade and online publications. (see figure 5.)

Most reporters who completed the survey (88 percent) said they were regular users of the EurekAlert! Web site, visiting at least once per month. This finding was perhaps predictable for a site with a 92-percent subscriber-renewal rate. It also was consistent with earlier customer-satisfaction surveys, and with testimonials of reporter-registrants. Robert Lee Hotz, for example, a science writer for the *Los Angeles Times*, has called EurekAlert! "the Swiss Army Knife of science Web sites," which offers instant access to new research from peer-reviewed journals.[10]

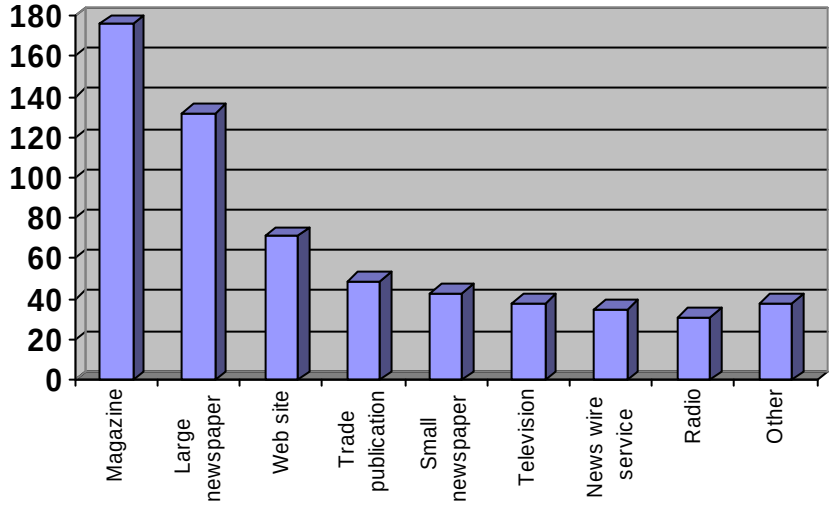

Figure 5. Primary Media Outlet.

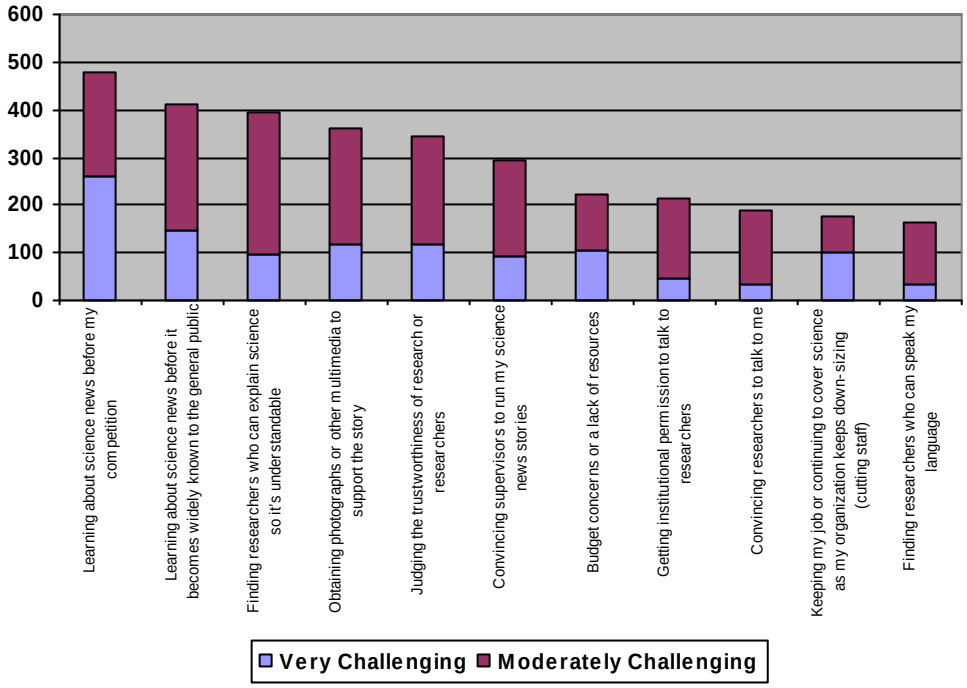

Figure 6. Challenges Rated by Reporters as Very or Moderately Challenging.

Top reporter and PIO challenges

The 2006 EurekAlert! survey sought to identify key challenges facing reporters and public information officers. Toward that end, reporters were asked to rate a series of challenges. Not surprisingly, reporters indicated that their top concerns are to learn about breaking science-news stories before the information reaches either competitors or the public. Beyond these usual news-reporting concerns, however, finding researchers capable of explaining science in an understandable fashion was the task most frequently

	U.S. Reporters	**International Reporters**
1.	Learning about science news before my competition	Learning about science news before my competition
2.	Learning about science news before it becomes widely known to the public	Judging the trustworthiness of research or researchers
3.	Judging the trustworthiness of research or researchers	Finding researchers who can explain science so it's understandable
4.	Finding researchers who can explain science so it's understandable	Learning about science news before it becomes widely known to the public
5.	Obtaining photographs or other multimedia to support the story	Obtaining photographs or other multimedia to support the story
6.	Reporting science news despite budget constraints	Convincing supervisors to run my science news stories
7.	Convincing supervisors to run my science news stories	Reporting science news despite budget constraints
8.	Keeping my job or continuing to cover science as my organization down-sizes	Keeping my job or continuing to cover science as my organization down-sizes
9.	Getting institutional permission to talk to researchers	Getting institutional permission to talk to researchers
10.	Convincing researchers to talk to me	Convincing researchers to talk to me

Table 1. Top Ten Challenges Rated Very or Moderately Challenging.

cited by reporters as either "very challenging" or "moderately challenging." Obtaining photographs or other multimedia materials to help convey complex scientific content was the next task most often listed by reporters as either very challenging or moderately challenging. Another of the most vexing concerns for reporters, overall, seemed to be in judging the trustworthiness of research or researchers, followed by the need to convince supervisors to run science-news stories as well as tight reporting budgets. (see figure 6.)

U.S. vs. International Reporters

There were several differences in how U.S. versus non-U.S. reporters rated the challenges they face (see table 1). In addition, non-U.S. reporters were twice as likely as U.S. reporters to rate "finding researchers who can speak my language" as a challenge.

Public information officers also were asked to rate the various challenges that they face as they communicate science to reporters and the public.

Predictably perhaps, press officers said that their top challenges were in convincing reporters to cover stories, and in finding out about forthcoming research news stories involving their researchers.

Beyond these standard communications challenges, though, press officers -- like reporters -- said that their biggest concerns include finding researchers who can explain science so that it's understandable; identifying reporters who might be interested in a particular story; and obtaining photographs, video and other multimedia to support a story. (see figure 7.)

In general, U.S. and non-U.S. public information officers assigned very similar ratings to each challenge. Not surprisingly, however, non-U.S. press officers found it more challenging than their U.S. counterparts to find researchers to handle interviews in particular languages (58% of non-U.S. press officers, versus 42% of U.S. press officers found the language barrier to be a challenge).

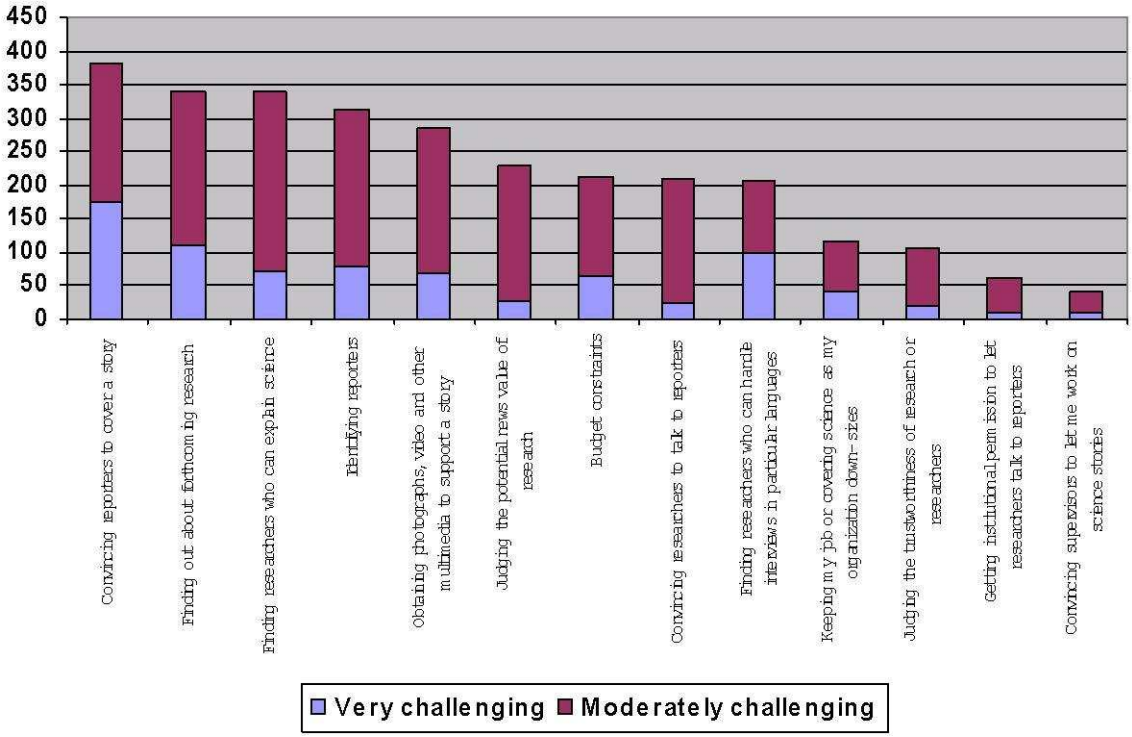

Figure 7. Challenges Rated by Press Officers as Very or Moderately Challenging.

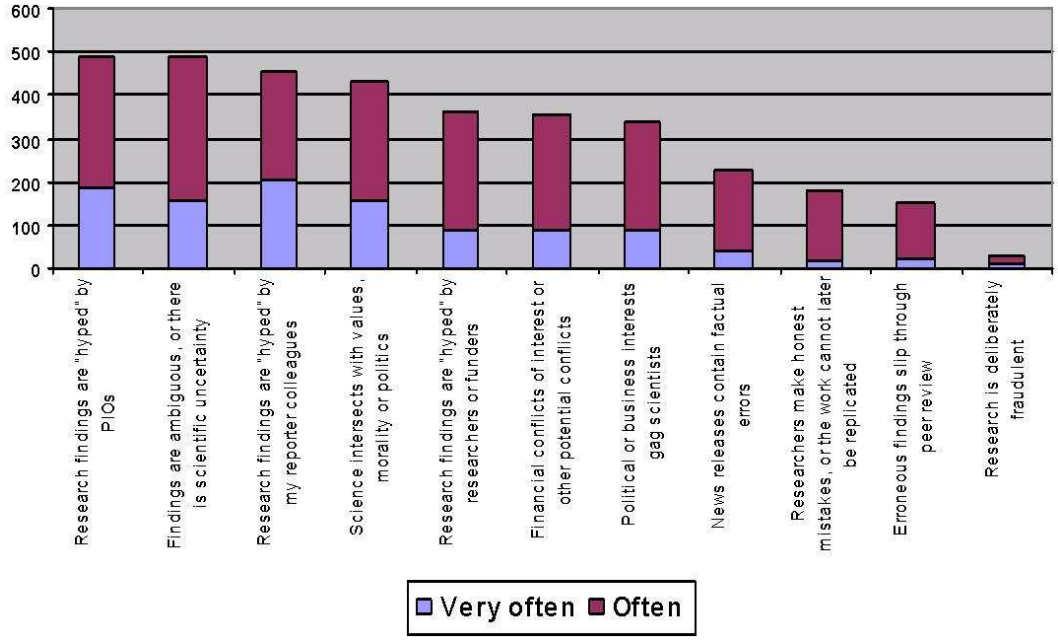

Figure 8. Problems Rated by Reporters as Occurring Very Often or Often.

Problems affecting public trust in science

Also as part of the survey, reporters were asked to rate a number of issues affecting public trust in science.

The top five problems reporters said they see often were: 1.) research findings being "hyped" or overstated by press officers; 2.) ambiguous findings, or scientific uncertainty; 3.) research findings being

"hyped" or overstated by reporter colleagues; 4.) the intersection of science with values, morality or politics; and 5.) findings being "hyped" by researchers or funders. (see figure 8.)

When asked to rate the same problems affecting public trust in science, public information officers responded in much the same way as reporters. But, press officers said the biggest problems occur when reporters hype research findings or make mistakes in coverage. Yet, reporters said press officers or other reporters are more often to blame for excessive hyping of scientific findings. The intersection of science with values, morality, or politics also was a top concern for press officers, along with scientific ambiguity. Like reporters, press officers identified deliberate research fraud as a rare problem.

"Pet peeves" of reporters and PIOs

Reporters' top pet peeve seems to be press officers or researchers who respond too slowly to media queries. (see figure 9.) For their part, not surprisingly, public information officers identified their top challenges as convincing reporters to cover stories and learning about forthcoming research. (see figure 10.) Further, while reporters said they need more photographs, video, and other multimedia materials to cover science, press officers said they are far more likely to e-mail text to reporters, post text-based news releases to EurekAlert!, or post releases to other services. Interestingly, some 400 press officers out of 445 said they "strongly agreed" or "somewhat agreed" that researchers should "talk up their research." But, nearly the same number (about 360) also said researchers must avoid hyping results.

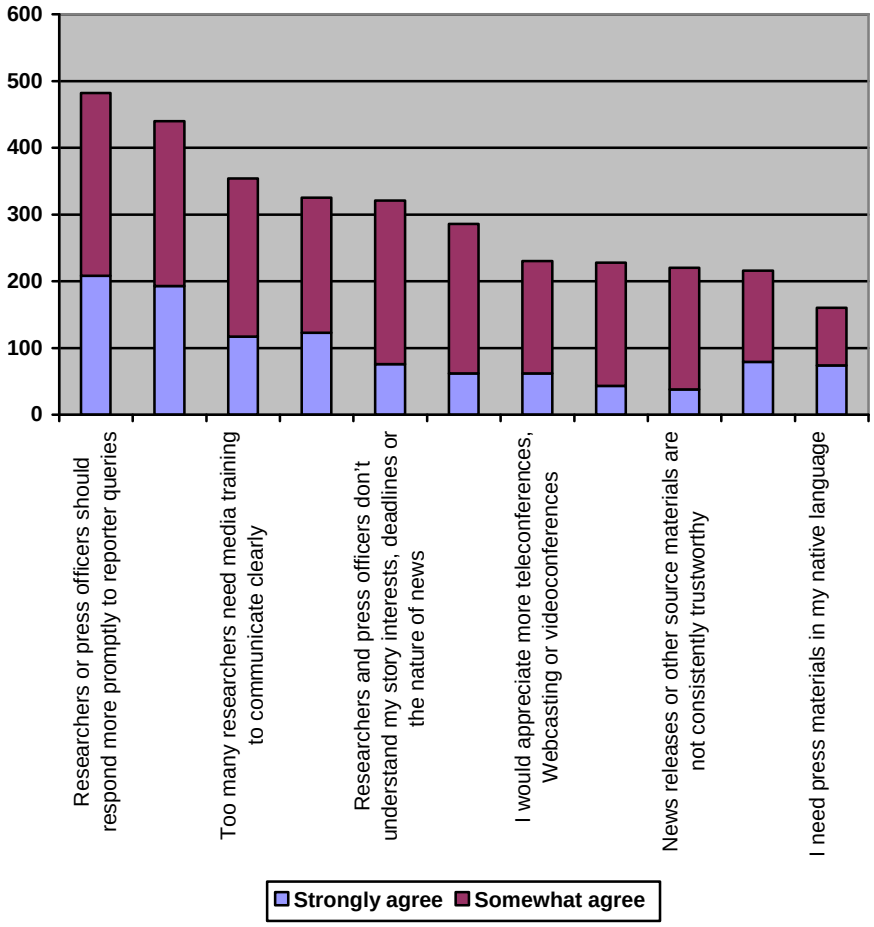

Figure 9. Reporters' Pet Peeves.

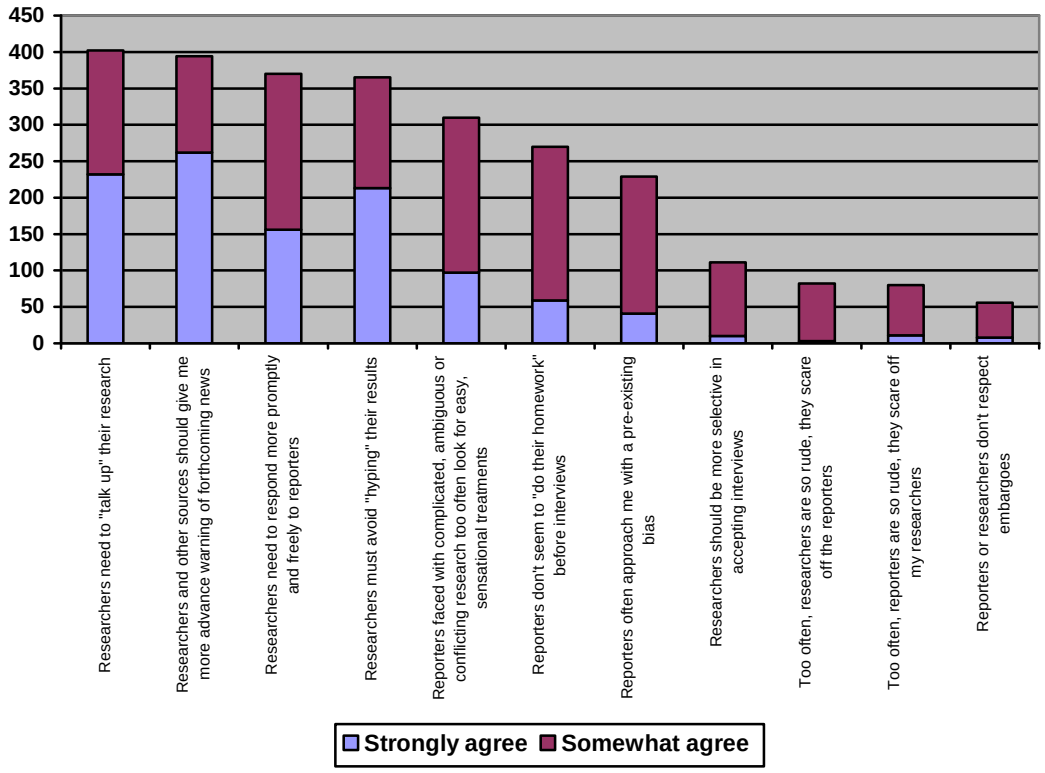

Figure 10. PIOs' Pet Peeves.

Hot topics for science-news reporting

What science-news stories are most interesting to reporters, their supervisors, or news consumers? Reporters in both the United States and other regions of the world listed the top story interest of their readers or viewers as medicine and health. But, U.S. reporters listed stem cells and cloning, followed by psychology and neuroscience, technology and the environment as their readers' top picks. By comparison, non-U.S. reporters said their audiences were more interested in the environment, climate-change research, natural disasters and animals.

Overall, the 614 reporters worldwide who responded to the survey rated medicine and health, the environment, stem cells and cloning, natural disasters, and technology as the topics of greatest interested to readers or viewers in their area. (see figure 11.)

But, when asked to list the topics of greatest interest to their editors, producers, or other supervisors, reporters said the boss wants to know more about stem cells and cloning. Readers, on the other hand,

	U.S. Reporters	**Non-U.S. Reporters**
1.	Medicine and health	Medicine and health
2.	Stem cells and cloning	Environment
3.	Psychology and neuroscience	Climate change
4.	Technology	Natural disasters
5.	Environment	Animals

Table 2. Top 5 Topics Rated as Very or Moderately Interesting, U.S. vs. Non-U.S. Reporters.

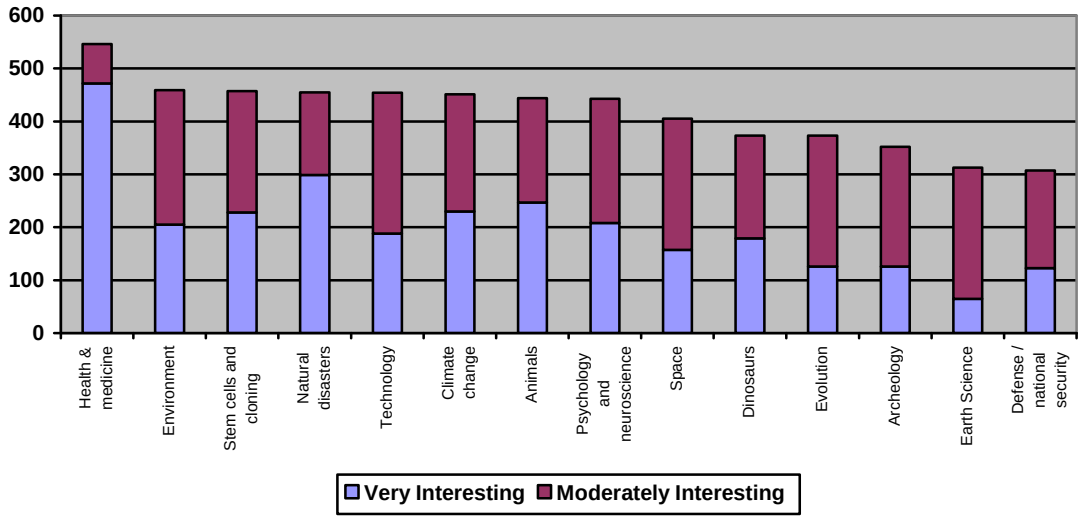

Figure 11. Topics rated as very or moderately interesting.

may be more interested in news about health and medicine, and they enjoy accessible science stories about dinosaurs, whereas editors may be more inclined to take an interest in defense and national security issues. According to reporters who took part in the EurekAlert! survey, non-U.S. editors and producers were more likely than their U.S. counterparts to push for stories on evolution and archeology.

Reporters' responses regarding the popularity of health and medicine stories is consistent with earlier studies of science-news coverage: As a graduate student at Purdue University's Department of Communications, Marianne G. Pellechia analyzed science coverage in three major newspapers -- the *New York Times*, *Chicago Tribune*, and *Washington Post* -- during three time periods, 1966-70; 1976-80; and 1986-90. In the journal, *Public Understanding of Science*, Pellechia reported that "coverage was very similar in each of the time frames studied, with an emphasis on medical and health related issues." In fact, she noted: "More than 70 percent of the articles in each period were classified as dealing with medicine and health (72.22 percent in 1966-70, 75.76 percent in 1976-80 and 71.43 percent in 1986-90). Articles on natural and physical science were the next most frequent article type, accounting for 16.67 percent of the articles in 1966-70, 24.24 percent of those in 1976-80, and 25 percent of the articles from 1986-90. Articles dealing with technological issues and developments were the least frequent in all three time periods (making up 11.11 percent of the articles in 1966-70, versus 0 percent of those in 1976-80 and 3.57 percent of those in 1986-90)."[11]

The 2006 EurekAlert! survey results concerning reporters' science-news story preferences also is consistent with news coverage resulting from the AAAS Annual Meeting, America's largest general scientific conference. The AAAS Meeting has been drawing between 600 and 1,200 press registrants per year for the past six years, depending on the venue for each year's meeting, and 60 percent of all press registrants typically are news reporters. Further, AAAS staff have scheduled between 24 and 32 news briefings to take place over the course of each year's meeting, stimulating significant news pickup. The event therefore provides a useful barometer of science-news interests among reporters.

For example, at the top of the list of top 10 U.S. stories from the 2006 AAAS Annual Meeting was a report on illnesses originating from animals. International reporters' favorite story also focused on a health and medicine story regarding anti-aging research and potential new therapies for the symptoms of old age. But, over the past several years, U.S. reporters covering the AAAS Meeting have tended to show less interest in environmental stories, and more interest in new technologies and emerging fields of science, as compared with their international counterparts. (see table 3.)

	Top U.S. Stories		**Top International Stories**
1.	Illnesses from animals	1.	A cure for old age?
2.	The “next New Orleans”	2.	Antarctic / Greenland ice
3.	Exploring a dusty cosmos	3.	Evolution on the front line
4.	A cure for old age?	4.	Early humans on menu
5.	Antarctic / Greenland ice	5.	Seafood and health
6.	Evolution on the front line	6.	Illnesses from animals
7.	The roots of food quality	7.	Habitable worlds in our galactic neighborhood
8.	Gesture and learning	8.	Kids’ online safety
9.	Lean monkeys live longer?	9.	Drug therapy in children
10.	The cultured ape	10.	The cultured ape

Table 3. 2006 AAAS Annual Meeting News Coverage.

Meeting the new challenges in science communications

The transformation of science reporting, and news reporting in general, is clear. While U.S. newspapers have been downsizing, news consumers worldwide have been shifting alliances. In an exhaustive survey of 10,230 adults in 10 nations, a 2006 BBC-Reuters Media Center poll on trust in the news media found that 3 in 10 respondents had abandoned a media source over the past year after losing faith in the integrity of the news content being provided.[12] Further, a majority of respondents (82 percent) identified national television as their most trusted source of news -- signaling, perhaps, that Fox Television News, for example, may be more widely trusted by some news consumers than the *New York Times*. National and regional newspapers were identified as the second most trusted source of news for 75 percent of respondents, with local newspapers getting the nod from 69 percent of survey participants, followed closely by public radio (67 percent). Satellite television and blogs were the least trusted sources of news.

Changing preferences of news consumption, plus economic pressures on print news media, mean that science is today being covered by a growing number of broadcast, online, and general-assignment reporters, in addition to conventional print science journalists. Thus, it is clear that public information officers -- particularly those in academic and non-profit research institutions -- are being challenged as never before to identify post-print science communications mechanisms.

Innovative new technologies are emerging in a number of public information shops. The National Science Foundation, for example, has established an online multimedia gallery accessible to broadcast journalists, which features an impressive 900 images, 70 videos and 250 audio files, and which receives over 32,000 monthly hits.

Ohio State University (OSU) has also initiated several programs targeting broadcast and online journalists. For one such program, OSU has partnered with the Ohio Supercomputer Center and the Advanced Computing Center for the Arts and Design to produce state-of-the-art video vignettes designed to portray complex scientific concepts for which images are not yet available. Earle Holland, Director of Research Communications at OSU, has reported that the video “enhances what we have to offer to national and international news media, increasing the appeal of particular stories.”

For its part, EurekAlert! has launched a keyword-searchable multimedia gallery. Now in its first phase of development, the EurekAlert! gallery featured 1,300+ science-related images, as of this writing. In a second phase, the gallery also will invite submissions of short audio files, while a third phase is intended to provide a first-of-its kind database of short but broadcast-quality video segments to help convey complex scientific findings and issues. EurekAlert! maintains an experts database, too, complete with video samples for broadcast reporters, and several multi-language portals for non-English speaking reporters.

As more public information offices engage in initiatives such as these, the new breed of science communicator will have better access to science and medical news, to the ultimate benefit of news consumers worldwide.

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