

# Current Comments®

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## Janet T. Spence Receives the 1993 NAS Award for Excellence in Scientific Reviewing

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In 1993, the unofficial "Year of the Woman," the National Academy of Sciences (NAS) chose Janet Taylor Spence, Alma Cowden Madden Professor of Liberal Arts and Ashbel Smith Professor of Psychology and Educational Psychology, University of Texas, Austin, as the second female recipient of the NAS Award for Scientific Reviewing in the award's 14-year history. (Virginia Trimble, University of California, Irvine, was the first woman to be honored. She was selected in 1986 for her contributions to the review literature of astronomy and astrophysics.<sup>1</sup>) In addition, of the 20 individuals distinguished by the 17 NAS awards this year, Spence was the only woman selected. In a May 1993 *Scientist*® interview that focused on these awards, she commented on the growing role of women in science, suggesting that "we'll see more women getting awards in the future, simply because there'll be more to choose from."<sup>2</sup>

The NAS Award for Scientific Reviewing was established in 1979 by ISI® and Annual Reviews, Inc., Palo Alto, California, to honor James Murray Luck, the founder of Annual Reviews and its editor-in-chief until 1969. It carries with it a \$5,000 honorarium cosponsored by these two organizations. An independent committee appointed by NAS selects each year's recipient.

The award is given to researchers in the biological, physical, and social and behavioral sciences who produce high-quality scientific reviews. The selection committee focuses on one of these disciplines each



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year, on a three-year rotating schedule. Last year's recipient was atmospheric chemist Robert T. Watson, program office director in the Earth Science and Applications Division of NASA.<sup>3</sup> Alexander N. Glazer, professor of biochemistry and molecular biology, University of California, Berkeley, received the prize in 1991.<sup>4</sup>

Scientific reviews play a critical role in the dissemination of established research findings as well as new data in a particular field. In honoring Janet Spence with its award for excellence in scientific reviewing, the NAS cited her "pervasive and generative influence upon virtually all of the contemporary, scientific literature of psychology as editor, author, and policy-maker."<sup>5</sup>

Spence, who says she "was pleased and honored"<sup>6</sup> to receive the NAS award, finds that "reviews are extremely valuable, particularly with the information explosion, which is showing no signs of slowing down. It is almost impossible to pull together information in a coherent way today, unless you are very familiar with a narrow topic. Reviews are the lifeblood of a field at this point."<sup>6</sup> In addition, citation analysis is an important tool for identifying reviews and other publications deemed useful by researchers. Shortly after winning her award, Spence commented on the role of citation analysis in her work. "Valid performance measures are generally hard to come by," she noted. "But in the case of academic scientists, it's hard to argue with either number of publications or...citations!"<sup>7</sup>

Spence, whose published works span 40 years, has "played a central role in extending the experimental and quantitative methods characteristic of Yale and Iowa psychology into the complex and typically more qualitative domains outside of the animal and human laboratory," according to psychologist Gardner Lindzey of the Center for Advanced Study in the Behavioral Sciences, Stanford, California, and the 1987 recipient of the NAS Award for Scientific Reviewing.<sup>8</sup> In his introductory comments at the Washington, DC, NAS awards ceremony held April 26 during the academy's 130th annual meeting, Lindzey commented that "the enduring theme in Janet Spence's research has been the identification and measurement of motivational factors that influence cognitive performance. In recent years, she has also attempted to tackle the enigma of masculinity and femininity. Her concern with gender differences in achievement and the motivational explanations that had traditionally been invoked to explain them led her and her colleagues to identify varieties of achievement motives and to determine their implications for performance in academic and vocational settings. Her investigations have ranged widely, from the laboratory to the field, from performance on contrived tasks to aggregated

measures over extended periods of time that occur in the real world, from studies of the psychologically normal to the mentally ill, from young children to adults."<sup>8</sup>

### Biographic Information

Janet Taylor Spence was born in Toledo, Ohio, in 1923. She received an AB from Oberlin College, Ohio, in 1945 and went on to study for an additional year at Yale University in New Haven. In 1949 she graduated from the State University of Iowa, Iowa City, with an MA and a PhD in psychology.

Spence knew she wanted to be a psychologist when she was still in high school, even though she had only the vaguest idea of what that meant. "That's what I wanted to be. You could say it was a calling. I spent my career learning what a psychologist is and if it was what I wanted to be, and happily it is."<sup>6</sup>

After completing her doctorate, she taught at Northwestern University, Evanston, Illinois, from 1949 to 1960 and then served a four-year stint as a research psychologist at the Veterans Administration Hospital in Iowa City. She left this position to join the faculty at the University of Texas, Austin, where she continues to teach today.

Spence has twice been a visiting research scholar at Harvard University, Cambridge, Massachusetts—from 1974 to 1975 and again in 1991. She was also a fellow at the Center for Advanced Studies in the Behavioral Sciences, Palo Alto, California (1978-1979). Since 1985 she has received three honorary doctor of science degrees: from Oberlin, her undergraduate alma mater; Ohio State University; and the University of Toledo.

Not content only to teach, Spence has generously lent her research expertise to various professional societies. From 1978 to 1983 she was a member of the governing board of the Psychonomic Society. Then, in 1984, she served as president of the American Psychological Association

**Table 1:** Most-cited works of Janet Taylor Spence, 1945-1992 *SCI*<sup>®</sup>/*SSCI*<sup>®</sup>.

Cites	Publication
2,575	<b>Taylor J A.</b> A personality scale of manifest anxiety. <i>J. Abnormal Soc. Psychol.</i> 48:285-90, 1953.
770	<b>Spence J T &amp; Helmreich R L.</b> <i>Masculinity &amp; femininity: their psychological dimensions, correlates, &amp; antecedents.</i> Austin, TX: University of Texas Press, 1978. 297 p. (See also: <b>Spence J T.</b> The second sex. Citation Classic <sup>®</sup> . <i>Current Contents</i> <sup>®</sup> / <i>Social &amp; Behavioral Sciences</i> 25(18):3, 3 May 1993, and <i>CC</i> <sup>®</sup> / <i>Arts &amp; Humanities</i> 15(10):20, 10 May 1993.)
759	<b>Spence J T, Helmreich R &amp; Stapp J.</b> Ratings of self and peers on sex role attributes and their relation to self-esteem and conceptions of masculinity and femininity. <i>J. Personal. Soc. Psychol.</i> 3:29-39, 1975.
335	<b>Taylor J A.</b> The relationship of anxiety to the conditioned eyelid response. <i>J. Exp. Psychol.</i> 41:81-92, 1951.
295	<b>Spence J T &amp; Helmreich R L.</b> The Attitudes Toward Women Scale: an objective instrument to measure attitudes toward the rights and roles of women in contemporary society. <i>JSAS Cat. Select. Doc. Psychol.</i> 2:66-7, 1972.

while simultaneously chairing the Psychology Section of the American Association for the Advancement of Science. In 1989 Spence became president of the newly formed American Psychological Society.

This year's NAS award winner has also contributed her excellent communication skills to a variety of prestigious journals. Over a span of 10 years, she served as associate editor (1969-1973) and editor (1973-1979) of *Contemporary Psychology*, the most important publisher of reviews of psychology publications.<sup>8</sup> Currently, she provides editorial consulting services to the *Journal of Personality and Social Psychology*; *Personality and Social Psychology Bulletin*; *Journal of Clinical Psychology*; *Psychology of Women Quarterly*; and *International Journal of Personality*.

### Citation Record

Janet Taylor Spence's distinguished career is clearly evident in her published work. One of her earliest published papers is also her most-cited publication. (See Table 1.) Published in the 1953 *Journal of Abnormal and Social Psychology*, "A Personality Scale of Manifest Anxiety"<sup>9</sup> has been cited by other authors over 2,500 times according to the 1956-1992 *Social Sciences Citation Index*<sup>®</sup> (*SSCI*<sup>®</sup>) and 1945-1992 *Science Citation Index*<sup>®</sup> (*SCI*<sup>®</sup>). This paper "presented a psychometrically sound, objectively scored, and valid measure of anxiety as a stable personality characteristic."<sup>6</sup>

The scale it described was developed as a device for selecting subjects for experiments in human motivation. It consisted of 50 statements that were indicative of manifest anxiety when answered a certain way. For example, statements such as "I am troubled by attacks of nausea," "I cannot keep my mind on one thing," "I am easily embarrassed," and "I worry over money and business" indicated anxiety when answered as TRUE by respondents, as did the following items when marked as FALSE: "My hands and feet are usually warm enough," "I have very few headaches," "I practically never blush," "I am usually calm and not easily upset."<sup>9</sup> When asked recently about the paper's citation longevity, Spence noted that the work "was the first of its kind. [It] and our drive theory of anxiety were going on at the same time and attracted a great deal of attention. The popularity of the scale and our experimental work touched latent interest in the topic of anxiety and people in several fields. The scale has stood the test of time and is still useful."<sup>6</sup>

In the late 1960s, Spence departed radically from her earlier research, in part due to the emergence of the women's movement. An article published in 1966 by E. Aronson, R. Willerman, and J. Floyd<sup>10</sup> explored reactions of a group of test subjects to tapes of people acting in competent and incompetent ways. The paper concluded that competent people are more likable, particularly under certain conditions.

Spence noted, however, that all participants in the study were men. Who, then, she asked herself, likes competent women? This seemingly simple question led her and colleague Robert Helmreich, University of Texas, Austin, to conduct a comprehensive study that resulted in the publication of her second most-cited work: *Masculinity & Femininity: Their Psychological Dimensions, Correlates, & Antecedents*.<sup>11</sup> (See Table 1.) Spence recently summarized the content of this book in a *Citation Classic*<sup>®</sup> commentary for *Current Contents*<sup>®</sup>, stating that it investigated "classic theories about purported temperamental differences between men and women and women's supposed lack of achievement motivation."<sup>12</sup>

While this study was in progress, Spence published several papers on related topics, including the 1972 Attitudes Toward Women Scale<sup>13</sup> and the 1974 Personal Attributes Questionnaire.<sup>14</sup> According to Spence, developing the attitude scale was a major research effort, but it was needed to measure test subjects' reactions to women performing competently.<sup>12</sup> The initial results of this study were also published in 1972, in a paper entitled "Who Likes Competent Women?"<sup>15</sup> Her third most-cited work, "Ratings of Self and Peers on Sex Role Attributes and Their Relation to Self-Esteem and Conceptions of Masculinity and Femininity,"<sup>16</sup> which has been referenced in over 750 publications, appeared during this period as well. It analyzed the responses of 248 male and 282 female subjects to the Personal Attributes Questionnaire and the Attitudes Toward Women Scale.

In the 1980s Spence continued to build on the data gathered for and summarized in her *Citation Classic* book. In 1985 she published a theory she developed for gender identity and its implications for masculinity and femininity.<sup>17</sup> This work influenced her to study specific phenomena such as sexually aggressive tactics in dating relationships.<sup>18</sup> Her initial inquiries into sexual differentiation and achievement motivation also led to a broader set of inqui-

ries into topics such as individualism<sup>19</sup> and workaholism.<sup>20</sup>

In summarizing her research and career as a psychologist, Spence says, "My early research work on anxiety cut across several areas of psychology. And my first teaching assignments covered a diversity of courses that continue to amaze me. They turned me into something of a generalist which shaped my future research and was reinforced by my experience as an editor. Participating in and keeping up with diverse fields is impossible today except in a superficial way. But appreciation of the broad sweep of the discipline of psychology as a whole is still a goal that I cherish."<sup>6</sup>

### Other NAS Awards

In conclusion, it should be noted that the NAS honored 19 other individuals in 1993 for their outstanding contributions to science. (See Table 2.) Jerome B. Wiesner, president emeritus, and Institute Professor emeritus, Massachusetts Institute of Technology (MIT), Cambridge, received the academy's highest award, the NAS Public Welfare Medal. He was cited "for his devoted and successful efforts in science policy, education, and nuclear disarmament and world peace."<sup>5</sup> The \$50,000 Richard Lounsbery Award for extraordinary scientific achievement in biology and medicine was shared by Stanley B. Prusiner, University of California, San Francisco, and Bert Vogelstein, Johns Hopkins University Medical School, Baltimore, Maryland.

Steven Pinker, MIT, was the sole winner of the Troland Research Award, which conferred upon its winner a prize of \$35,000. He was cited "for his significant contributions to the fields of visual perception and the acquisition and evolutionary basis of language."<sup>5</sup> The NAS Award for the Industrial Application of Science, with an honorarium of \$25,000, is given for original scientific work of intrinsic scientific importance and with significant, beneficial applications in industry; this year it went

**Table 2:** 1993 NAS awards and recipients.

**NAS Public Welfare Medal (Bronze Medal)**  
Jerome B. Wiesner  
Massachusetts Institute of Technology  
Cambridge, MA

**Arctowski Medal (Bronze Medal and \$20,000)**  
John A. Simpson  
University of Chicago, IL

**Comstock Prize (\$20,000)**  
Erwin L. Hahn and Charles Fence Slichter  
University of California, Berkeley, and  
University of Illinois, Urbana

**Arthur L. Day Prize and Lectureship (\$20,000)**  
Hiroo Kanamori  
California Institute of Technology, Pasadena

**Henry Draper Medal (Gold-Plated Bronze Medal  
and \$10,000)**  
Ralph A. Alpher and Robert Herman  
Union College, Schenectady, NY, and  
University of Texas, Austin

**Gibbs Brothers Medal (Vermeil Medal and \$5,000)**  
Olin J. Stephens II  
Sparkman and Stephens, Inc., Hanover, NH

**Richard Lounsbery Award (Vermeil Medal, \$50,000,  
and \$20,000 travel stipend)**  
Stanley B. Prusiner and Bert Vogelstein  
University of California, San Francisco, and  
Johns Hopkins University Medical School  
Baltimore, MD

**NAS Award for Behavioral Research Relevant to the  
Prevention of Nuclear War (\$5,000)**  
Thomas C. Schelling  
Harvard University, Cambridge, MA, and  
University of Maryland, College Park

**NAS Award in Chemical Sciences (Bronze Medal and  
\$10,000)**  
Richard H. Holm  
Harvard University, Cambridge, MA

**NAS Award for Chemistry in Service to Society  
(\$20,000)**  
Harold S. Johnston  
University of California, Berkeley

**NAS Award for the Industrial Application of Science  
(\$25,000)**  
Nick Holonyak, Jr.  
University of Illinois, Urbana

**NAS Award for Initiatives in Research (\$15,000)**  
R. Eric Betzig  
AT&T Bell Labs., Murray Hill, NJ

**NAS Award in Molecular Biology (Gold Medal and  
\$20,000)**

Peter S. Kim  
Whitehead Institute for Biomedical Research,  
Cambridge;  
Massachusetts Institute of Technology and  
Howard Hughes Medical Institute, Cambridge, MA

**NAS Award for Scientific Reviewing (\$5,000)**  
Janet Taylor Spence  
University of Texas, Austin

**Robertson Memorial Lecture of the National Academy  
of Sciences (\$7,500)**  
F. Sherwood Rowland  
University of California, Irvine

**Troland Research Award (\$35,000)**  
Steven Pinker  
Massachusetts Institute of Technology, Cambridge

**Selman A. Waksman Award in Microbiology (\$5,000)**  
Boris Magasanik  
Massachusetts Institute of Technology, Cambridge

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to Nick Holonyak, Jr., University of Illinois, Urbana.

Several NAS awards carry an honorarium of \$20,000. These include the Arctowski Medal, won by John A. Simpson, Arthur H. Compton Distinguished Service Professor of Physics, Enrico Fermi Institute, University of Chicago, "for his pioneering studies of the properties of the charged particle environment of the sun, the earth and the other planets";<sup>5</sup> the Comstock Prize, awarded for an important discovery or investigation in electricity, magnetism, or radiation energy and shared by Erwin L. Hahn, University of California, Berkeley, and Charles Fence Slichter, Center for Advanced Study, University of Illinois, Urbana; the Arthur L. Day Prize and Lectureship given to Hiroo Kanamori, John E. and Hazel S. Smits Professor of Geophysics, California Institute of Technology, Pasadena, "for his outstanding contributions to the fundamental physics of the earthquake source process and to its application to earthquake prediction and mitigation of seismic risks";<sup>5</sup> the NAS Award for Chemistry in Service to Society, awarded to Harold S. Johnston, University of California, Berkeley, "for his pioneering efforts to point out that manmade emissions could

affect the chemistry of the stratosphere, in particular, the danger of the depletion by nitrogen oxide of the earth's critical and fragile ozone layer";<sup>5</sup> and the NAS Award in Molecular Biology, which recognizes a recent notable discovery by a young scientist—in this case, Peter S. Kim, Whitehead Institute for Biomedical Research, Cambridge, Massachusetts; MIT; and Howard Hughes Medical Institute.

Additional NAS award winners include Ralph A. Alpher, Union College, Schenectady, New York; Robert Herman, University of Texas, Austin; Olin J. Stephens II,

Sparkman and Stephens, Inc., Hanover, New Hampshire; Thomas C. Schelling, Harvard University and University of Maryland, College Park; Richard H. Holm, Harvard University; R. Eric Betzig, AT&T Bell Laboratories, Murray Hill, New Jersey; F. Sherwood Rowland, University of California, Irvine; and Boris Magasanik, MIT.

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