The Nature of Social and Personality Psychology as Reflected in *JPSP*, 1965–2000

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A bibliometric analysis of the first 36 years (1965–2000) of the *Journal of Personality and Social Psychology* (*JPSP*) is presented. The authors analyzed the structure of *JPSP* on the basis of contents and other aspects related to productivity, such as growth in the number of articles and authors, and "invisible colleges." In 2001, *JPSP* articles were cited over 23,000 times. An increasing number of older, classic articles are cited, suggesting that there are an accumulating number of citations whose influence endures over time. *JPSP* articles have grown in length, number of studies included, number of references, and number of authors and have become more international with an increasing proportion of authors from outside the United States.The pattern of findings suggests an increasingly complex and mature science.

Modern science is dedicated to the production, diffusion, and sale of symbolic products in the market of intellectual and professional goods. In this market, communication plays a fundamental role (Tortosa & Civera, 2002; Tortosa, Civera, & Sánchez-Lozano, 1999). An essential character of science is that it is public knowledge, open to all because diffusion and publication are the major goals of scientific investigation. In this process, scientific journals play a critical role (Tortosa & Civera, 2002). They are the primary mediators between leading researchers, beginners, specialists, and those who put into practice technical knowledge. However, journals also seek to influence the more general scientific and professional community, institutions, and public authorities (Tortosa, Carpintero, & Peiró, 1981; Vandenbos, 1994).

This current type of scientific journal was first created in the 19th century, when an increasingly diverse community of experts was needed to create new publications, as researchers sought to define themselves and their fields and to establish their respectability and acceptability. Journals soon became the fundamental pillars of new disciplines, among them psychology (e.g., Daniel & Louttit, 1953; Louttit, 1932; Osier & Wozniak, 1984). Since the second half of the 19th century, scientific journals have grown in number, and now more than 100,000 scholarly journals are published. Psychology journals, of course, form part of this publishing phenomenon (Garvey, 1979).

From an institutional perspective, a technical periodical is the medium through which scientific work can be published, through which it acquires social acceptability, and through which knowledge is preserved (Merton, 1977). Thus, journals not only express the state of a science at a given moment but also reveal the problems that concern authors, the most prolific and dynamic research groups, and the most influential studies. In short, journals provide essential data for understanding the current state of a discipline (Civera & Civera, 2002; Civera & Tejero, 1993). One of the most powerful processes for the scientific study of journals is *bibliometrics*, defined by Garfield (1977) as the quantification of bibliographic information. Bibliometrics, then, is one aspect of research into the development of a science. As a result, the statistical and sociometric analysis of scientific literature may be considered as a method of understanding the nature and progress of a scientific field (López & Tortosa, 2002; López Piñero, 1972).

Sources and Methods

Our bibliometric analysis is of the *Journal of Personality and Social Psychology* (*JPSP*), from its inception in 1965 through articles published in 2000. Our database contains authors and their institutions, titles, abstracts, and complete references (Carpintero & Tortosa, 1990; Quiñones, Ferrández, & Peñaranda, 2000; Sánchez, Quiñones, Pedraja, & Martínez Sánchez, 1996; Tortosa & Civera, 2002) for the articles published in *JPSP* during those years. The scientometric approach (Van Raan, 1997) uses bibliometric techniques (Dahmane, 1991) to analyze quantifiable indicators in order to obtain useful information from any published document (López & Tortosa, 2002; Martin, 1996). Thus, authors who have published in *JPSP* were studied on the basis of their productivity and collaborations as well as their home institutions. The published articles themselves are also analyzed, taking into account the subareas and bibliographies (Civera & Martínez, 1995).

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Journal of Personality and Social Psychology, 2004, Vol. 86, No. 3, 435–452
 0022-3514/04/$12.00 DOI: 10.1037/0022-3514.86.3.435

Bibliometric Analysis of *JPSP*

JPSP is among the most important publications in the field of social and personality psychology, owing to the quality and impact of its publications. For example, the journal is cited more than seven times more frequently than the second most cited journal in personality and social psychology, and it is cited as much as the next 10 most cited social or personality psychology journals combined (ISI Journal Citation Reports, 2001). Furthermore, *JPSP* has the highest impact factor (citations per article) of all the social and personality psychology journals. Thus, the journal represents trends at the most elite level of the field. It was first published in 1965 as a successor to the *Journal of Abnormal and Social Psychology*, an official organ of the American Psychological Association (APA), and split into *JPSP* and the *Journal of Abnormal Psychology*. It was edited by Daniel Katz, from the University of Michigan, with Robert Zajonc as associate editor. Carlson (1984) discussed and critiqued the research contents of the journal during its formative years.

Table 1 presents the number of *JPSP* articles published in 1965–1999 from the most productive universities, counting articles as originating at the institution or university system of the authors. The most productive institutions in terms of *JPSP* publications are elite private universities or large state research universities in the United States. As can be seen from Table 1, the most productive

Table 1
Most Productive Institutions: Total Number of Articles and 5-Year Subtotals

University	Years							Total articles	Total authors
	65–69	70–74	75–79	80–84	85–89	90–94	95–99		
University of Illinois at Urbana–Champaign	14	16	52	31	52	21	29	215	396
University of California, Los Angeles	21	35	12	41	30	34	25	198	327
University of Michigan (Ann Arbor)	31	18	18	25	33	34	37	196	308
University of California, Berkeley	34	12	13	34	35	30	27	185	302
Harvard University	26	20	31	20	24	10	11	142	228
Stanford University	35	23	22	22	7	5	20	134	282
University of Texas at Austin	11	10	15	27	30	17	16	126	264
University of Kansas	8	16	16	27	24	9	21	121	279
Yale University	26	28	18	12	17	10	10	121	267
University of Minnesota	24	11	20	28	14	11	12	120	236
Ohio State University	13	11	20	13	15	21	25	118	240
Indiana University	12	15	15	23	20	16	12	113	207
University of Wisconsin—Madison	7	23	16	13	15	23	15	112	244
Northwestern University	11	11	19	19	19	8	17	104	199
University of Washington	10	10	2	14	35	13	10	94	222
Princeton University	9	23	11	12	17	7	12	91	163
New York University	13	3	8	4	22	17	18	85	166
University of Iowa	10	14	13	17	15	4	9	82	153
University of Rochester	6	9	8	21	10	9	16	79	192
Arizona State University	1	5	16	11	15	17	13	78	180
University of North Carolina at Chapel Hill	3	19	7	13	14	9	13	78	152
University of Waterloo (Canada)	8	6	13	14	8	11	16	76	161
University of California, Santa Barbara	6	4	5	11	18	18	13	75	135
University of Connecticut	5	7	12	17	15	11	8	75	134
Cornell University	2	11	15	11	7	13	16	75	117
State University of New York at Buffalo	18	15	2	13	7	12	8	75	152
Purdue University	10	18	16	8	8	7	7	74	141
Michigan State University	5	18	10	8	15	13	4	73	124
Columbia University	11	5	10	6	12	6	18	68	127
University of Colorado	11	8	8	7	11	8	7	60	107
University of Miami	5	7	10	14	14	8	2	60	120
University of Delaware	1	3	4	8	15	12	5	48	101
University of Georgia	1	6	5	9	13	5	7	46	98
University of Southern California	3	6	10	4	6	11	4	44	103
University of Virginia	2	2	8	11	4	3	14	44	116
University of Utah	3	6	4	5	14	8	3	43	110
Texas A&M University			2	1	8	9	20	40	96
Total	437	462	492	572	643	482	514	3,602	7,014

institution was the University of Illinois at Urbana–Champaign, followed by the University of California, Los Angeles, and the University of Michigan (Ann Arbor). However, the order changes if we take into consideration only the last 5 years. For example, Harvard University and Yale University decline, and Texas A&M University, Ohio State University, Columbia University, and University of Virginia increase (Civera & Martínez, 2003; Moya, Carpintero, Peiró, & Tortosa, 1985).

As regards the nations of the authors who have published in the journal, the highest percentage (85%) are from the United States, both when all authors are considered and when we consider only the first author. However, the proportion of first authors from outside the United States has risen steadily during the history of *JPSP*. Figure 1 shows the proportion of first authors in *JPSP* who are from the United States versus all other nations over the first 35 years of the journal. As can be seen, the number of authors from other nations has steadily increased, by 2000 constituting almost one third of *JPSP* articles. If we extrapolate the trend from recent years, we might see half of *JPSP* authors being from outside of the United States in about one decade.

Journal Contents

We present the temporal evolution of articles in Figure 2. In all, 7,277 articles have appeared in 79 volumes. The production rate has varied, from 194 articles appearing in 1979 (Volume 37) to 42 articles in 1969 (Volume 12). Two volumes are published per year, with an average of 205 articles per year. The average length of the articles has varied, from 6.4 pages in 1965 (Volume 2)—to be expected in a new journal—to 15 pages in 1998 and 2000 (Volumes 75 and 78).

In general terms, the number of pages per article has been constant since 1978, the year in which the three content areas were separated. However, the number of words per page was increased with the new journal format adopted in 1986, and therefore over time, the word count of articles has increased.

The 7,277 articles published were written by 16,478 authors, an average of 2.26 authors per article. This figure is lower than the 3.5 indicated by Lotka (1926) for "hard science" publications but higher than in other psychology publications. In Spain, for example, the articles in *Archivos de Neurología y Análisis* and *Modificación de Conducta* are written by an average of 1.65 and 1.92 authors, respectively (Arquiola, Tortosa, & Carpintero, 1989; Civera, 1994). Values between 1 (the minimum possible) and 1.5 authors per article are common. In the case of papers published before 1945 in *Psychological Review*, *Psychological Bulletin,* and *American Journal of Psychology,* 1.37 was the norm. An analysis of other journals, covering more recent periods, provides higher values: For example, *Psychophysiology* showed 2.56 (Gupta, Kumar, & Karisiddappa, 1997; Sánchez, Quiñones, Pedraja, & Martínez Sánchez, 1996). Average number of authors ranges among journals. Those with a markedly historical character tend to have a high number of authors per article (*Journal of the History of the Behavioral Sciences* averages 1.9 authors), whereas general psychology publications have intermediate levels of collaboration (*Revista Latinoamericana de Psicología,* for example, shows an average of 1.6 authors) (Haiqi, 1997; López & Civera, 1994; Quiñones, Vera, Sánchez, & Pedraja, 1992). When we examine 10-year figures for *JPSP*, we find that the ratio of authors per article was 1.91 in the period 1965–1974, 2.16 in 1975–1984, and 2.49 in the latest period. Thus, the number of authors per article in *JPSP* has risen over time.

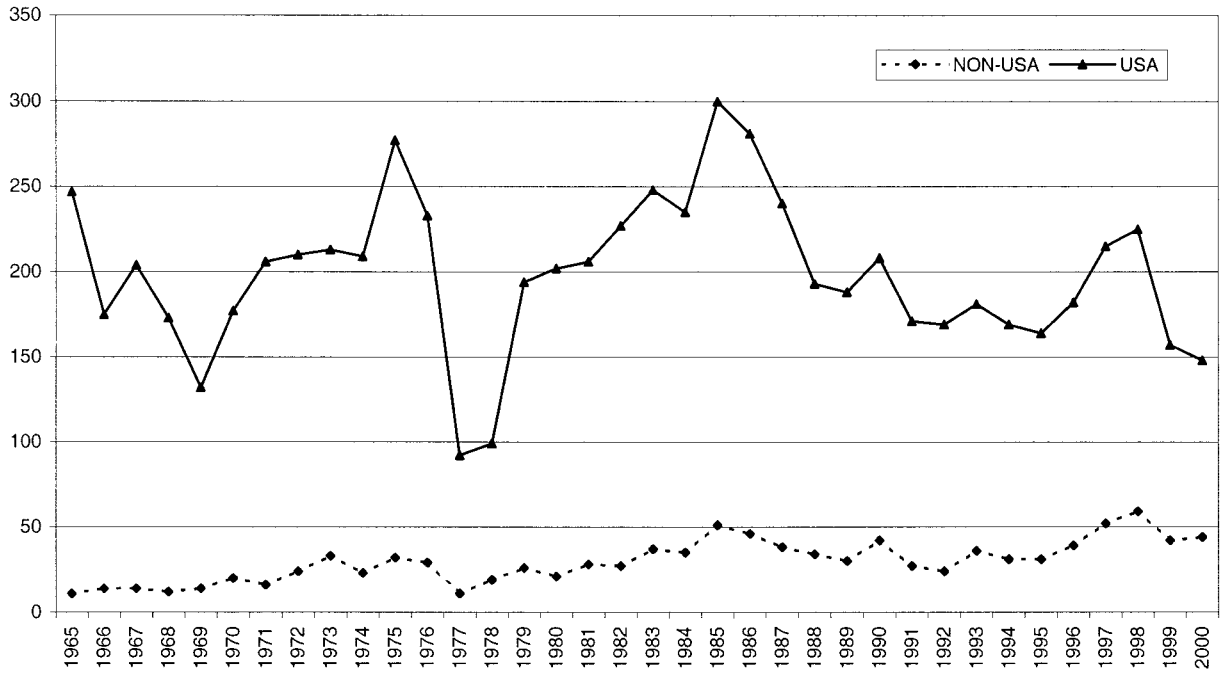


Figure 1. Articles from the United States (USA) and elsewhere (by first author).

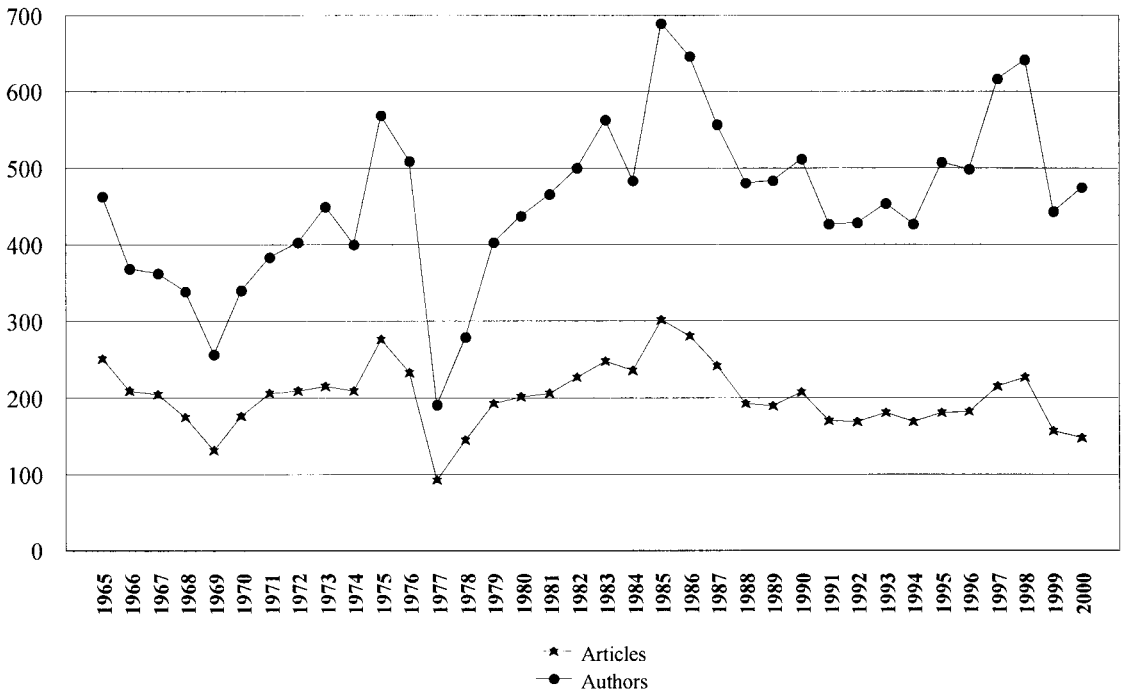


Figure 2. Evolution in the number of articles and authors per year and volume.

The above data support the hypothesis that there are differences in the level of collaboration among disciplines, with the highest level in the physical and natural sciences and the lowest in the humanities. The level of collaboration seen in the various areas of psychology differs in proportion to their similarity with the sciences or humanities (Civera et al., 2002; Price, 1978).

Table 2 shows the country of the institution to which the first author belonged. Of the 45 countries represented, after the United States, Canada, Germany, and Israel are the most widely represented, followed by the United Kingdom and Australia. Canadian authors represented 6.18% of the total, whereas Germany provided 1.56% and Israel 1.28% of the authors. Some countries, such as the former Czechoslovakia, Jordan, Puerto Rico, and Zaire, provided only one author. The fact that Canada is the highest non-U.S. contributor is presumably due to the close interuniversity links between the two countries, research resources available in Canada, and general scientific exchange with the United States (Dutheuil, 1992).

Productivity

One of the traditional indicators used in bibliometric literature (Price, 1973) to measure scientific eminence is the number of articles an author publishes in well-known scientific periodicals. It is therefore interesting to ascertain details about the distribution of the published work of scientists. Scientists interested in the so-called "science of science" showed long ago that in every period of history and in every discipline it is common to find a characteristic distribution of written production (Civera & Tortosa, 2002)—a small number of very active and important authors, with great academic or institutional influence, and a large number of minor contributors, whose activity shows little regularity and who do not usually publish more than one article. These results are consistent for different sources, publications, and countries (Quiñones, Peñaranda, & López, 2000). There are always a small number of very productive authors and a great number of "small authors," whose names appear in the periodicals only once, or only in association with other, more productive researchers.

As long ago as 1954, Dennis found a distribution of productivity among psychologists. Using data referring to 260 investigators who were alive in 1932, Dennis found that 84 had published fewer than nine articles in their first 50 years of life, whereas 4 had published more than one hundred. Whereas the more productive half of the list of authors contributed 93% of the published works, the other half contributed only 7%. Similar values were found for researchers who were alive in 1937 in a study of 587 APA members, and for another group of researchers whose works were published in *Psychological Abstracts* between 1930 and 1950. In both cases, the more productive half of the total number of authors contributed 90% and 92%, respectively, and the less productive half, 10% and 8%, respectively (Dennis, 1954).

Lotka expressed this idea in 1926 with a mathematical equation that shows how the levels of work of authors vary and how substantial differences exist between those who publish many articles and those who contribute very infrequently. Lotka found that 25% of the publications in a given field were written by a small group of very productive researchers (2% of the total), whereas 75% of the authors carried out only 25% of the total research. It seems surprising that such a simple rule is fulfilled so rigorously and that the same distribution of productivity should be found in the first volumes published by the Royal Society and in

Table 2
Country of the Institution to Which the First Author of Article Belongs

Country	Total authors
United States	13,804
Canada	1,019
Germany	258
Israel	212
United Kingdom	194
Australia	182
Holland	178
Japan	72
Italy	45
Belgium	39
New Zealand	31
Spain	20
Poland	19
France	17
Finland	11
Norway	10
Greece	9
India	8
Taiwan	6
Brazil	5
South Korea	5
Colombia	4
Portugal	4
Turkey	4
Chile	3
Nigeria	3
Saudi Arabia	2
China	2
Botswana	2
Malaysia	2
Mexico	2
Russia	2
Czechoslovakia	1
Estonia	1
Philippines	1
Iran	1
Ireland	1
Jordan	1
Korea	1
Peru	1
Puerto Rico	1
Thailand	1
Uganda	1
Zaire	1

data extracted from, for example, *Chemical Abstracts* published at the outset of the 21st century. The number of authors with *n* articles was in reverse proportion to the square of the number of published articles. According to this formula, if we know how many authors have published only one article, the productivity of the rest of the authors who have written *n* articles in a given universe can be deduced. Lotka's work is applicable to the distribution of works per author as long as two criteria are fulfilled:

1. The bibliography must be as complete as possible.

2. The period of time must be sufficiently long to allow more productive authors to publish more than one article.

Lotka's (1926) inverse quadratic law on the productivity of authors established that if we know the number of authors with only one work published in a given field it will be possible to predict the number of authors with *n* works published, the mathematical relation between both variables being determined by the formula $A_n = A_1 n^b$; where A_1 (authors who have published one article) and b (–2) are the intersection and the gradient of the line of regression, of which the values are constant. This result does not match Lotka's estimation, although the difference found in the gradient of the regression line might be due to the difference in the average number of articles per author (see Table 3). Price (1963) explained how to assign the raw data on productivity among the different authors.

As noted elsewhere (e.g., Dennis, 1954; García-Merita, 1978; Price, 1963), high productivity is positively correlated with eminence, prestige, and recognition within the scientific community. In the case of *JPSP*, the number of very productive authors and their productivity indices are somewhat below those predicted by Lotka's (1926) distribution. This result might be an artifact of restricting this analysis to a single journal. In a bibliometric analysis across all journals, the most productive authors would, undoubtedly, have a higher productivity index. Thus, the deviation from Lotka's prediction might be due to the large number of alternative publication outlets for the most productive *JPSP* authors. Furthermore, several of the highly productive authors continue to publish at a high rate (e.g., Ed Diener), and therefore their lifetime productivity will be higher than at present and will more

Table 3
Lotka's Prediction Compared With Actual Author Productivity

No. published articles	Authors	%	Lotka's prediction	Regression
1	5,612	69.20	5,612.00	7,665.03
2	1,142	14.08	1,403.00	1,432.26
3	445	5.49	623.55	536.88
4	240	2.96	350.75	267.63
5	160	1.97	224.48	155.96
6	120	1.48	155.89	100.32
7	64	0.79	114.53	69.08
8	52	0.64	87.69	50.01
9	40	0.49	69.28	37.61
10	40	0.49	56.12	29.14
11	34	0.42	46.38	23.14
12	25	0.31	38.97	18.75
13	18	0.22	33.21	15.44
14	16	0.20	28.63	12.91
15	24	0.30	24.94	10.92
16	9	0.11	21.92	9.34
17	11	0.14	19.42	8.07
18	11	0.14	17.32	7.03
19	11	0.14	15.55	6.16
20	6	0.07	14.03	5.45
21	2	0.02	12.73	4.84
22	6	0.07	11.60	4.32
23	3	0.04	10.61	3.88
24	3	0.04	9.74	3.50
25	6	0.07	8.98	3.17
26	1	0.01	8.30	2.89
28	3	0.04	7.16	2.41
30	1	0.01	6.24	2.04
31	1	0.01	5.84	1.89
32	1	0.01	5.48	1.75
33	1	0.01	5.15	1.62
41	1	0.01	3.34	0.96
51	1	0.01	2.16	0.57

closely match Lotka's prediction. Another possibility is that there are a larger number of authors in *JPSP* who have authored only a single article than is common in other journals and that therefore the number of authors with multiple authorships is overestimated by Lotka's formula. For some reason there might be more individuals in the field of social and personality psychology who publish only a single article in the top journal, whereas in other fields more authors are likely to go on to publish several articles.

Table 4 presents a list of the 30 most prolific *JPSP* authors. In this journal, 5,612 authors (69.2% of the total) have had only one article published, and 6% have had 3 articles published. Middle-ranking authors (those who have had between 4 and 10 articles published) represent 8.7% of the total. The remaining 16% are among the most productive authors, having had between 21 and 51 articles published.

From the information provided by PsycINFO, we identified the topics of the articles (based on APA classification) of the most productive authors (Table 5). Because an article may be assigned to more than one topic, only the first topic mentioned was used. As can be seen, themes connected with social psychology are more frequent than those referring to personality psychology. It is also noteworthy that the specific topics studied most by the most productive authors vary widely; they include social cognition (Robert S. Wyer), subjective well-being (Ed Diener), social learning (Walter Mischel and Albert Bandura), group processes (Chester A. Insko), close social relationships (David S. Holmes), forgiving (Samuel S. Komorita), motivation (E. Tory Higgins), hypnosis (Nicholas P. Spanos), and memory (Michael Ross). Thus, the field appears to study a very diverse set of phenomena that fall under a broad umbrella called personality and social psychology.

Table 4
Most Productive Authors in the Journal of Personality and Social Psychology

Author	No. articles	Productivity index
Wyer, Robert S.	51	1.71
Diener, Ed	41	1.61
Petty, Richard E.	33	1.52
Mischel, Walter	32	1.51
Cialdini, Robert B.	31	1.49
Batson, C. Daniel	30	1.48
Greenberg, Jeffrey	28	1.45
Insko, Chester A.	28	1.45
Zuckerman, Miron	28	1.45
Bandura, Albert	26	1.41
Cacioppo, John T.	25	1.40
Carver, Charles S.	25	1.40
Holmes, David S.	25	1.40
Komorita, Samuel S.	25	1.40
Lepper, Mark	25	1.40
Mikulincer, Mario	25	1.40
Cooper, Joel	24	1.38
Snyder, Mark	24	1.38
Wegner, Daniel M.	24	1.38
Feather, N. T.	23	1.36
Pyszczynski, Thomas A.	23	1.36
Sarason, Irwin G.	23	1.36
Baumeister, Roy F.	22	1.34
Higgins, E. Tory	22	1.34
Ross, Michael	22	1.34
Swann, William B.	22	1.34
Tesser, Abraham	22	1.34
Zanna, Mark	22	1.34
McCrae, Robert R.	21	1.32
Spanos, Nicholas P.	21	1.32

Note. The productivity index is calculated as the natural base logarithm over the number of articles.

In examining the list of the most productive authors, one might notice that there are no women on it. In the first decade, we find Elaine Walster appears with 12 articles and Ellen Berscheid with 10, whereas in the second decade we find Ellen Langer with 12 and Judith Rodin with 11 articles. In the third decade we find only Barbara Sarason with 10 articles.

Table 6 shows the most productive female authors over the history of *JPSP* from 1965 through 2000. In considering the contributions of women to social and personality psychology, it should be remembered that women have played an important role in editing and reviewing for the journal. Why are there fewer women than men among the most productive authors? In the first place, only in recent decades have women entered research psychology in large numbers, and it takes many years to arrive in the most productive group. Perhaps, too, there were institutional barriers to women's progress that impeded their research. Finally, some suggest that the low profile of women in the field of science may be related to their distance from the informal circles of influence, where the personal relationships that bear such fruit in the scientific community are established (Camps, 1990). It might be, too, that women are less willing to make the sacrifices (e.g., of family life) that are required to enter the most productive group (Camps, 1990). Determining why women have not more frequently been members of the most productive group of *JPSP* authors awaits future research.

To understand why so many authors have contributed to only one article, it should be noted that most authors mentioned in this journal form part of research groups that publish collaboratively (Sánchez, Quiñones, & Cameo, 1995). Each group includes one or a small number of eminent members and a large number of other participants, many of whose names appear only on a single article. Personality and social psychology is such that it is imperative for new researchers to collaborate; for them, access to research projects depends on their incorporation into well-established groups. Collaboration with a large research group is also necessitated by a trend in *JPSP* that has grown in recent years: multistudy articles. In 2000, for example, over two thirds of the articles in *JPSP* presented more than one study, with a mean of 2.2 studies per article. Indeed, 34 articles presented four or more studies. Thus, it is difficult for researchers without substantial resources to mount the kind of effort needed for successful publication in *JPSP*. The number of articles written by large groups means that there are many one-article authors with minimal productivity, and this possibly causes the deviation from Lotka's (1926) predictions (see Table 3).

To compare the productivity indexes found in *JPSP* with those of other psychology journals, we undertook a bibliometric literature review. The only data at our disposal came from psychology journals that differed in content or in the time period analyzed; however, rough comparisons were possible. Ordered according to

Table 5
Topics of Articles by Most Productive Authors

Topic	Batson, C. Daniel	Cialdini, Robert B.	Diener, Ed	Mischel, Walter	Petty, Richard E.	Wyer, Robert S.	Total
Developmental psychology	1	3	1	15		2	22
Human experimental psychology	1		3	6	1	7	18
Personality psychology	2	1	27	5	6	5	46
Social processes and social issues	1	3	1			3	8
Social psychology	24	23	5	6	18	31	107
Others	1	1	4		8	3	17
Total	30	31	41	32	33	51	218

highest productivity index, *JPSP* occupies the third position among journals with a long tradition in psychology and an international readership. The first three are *American Journal of Psychology,* with 107 articles written by E. B. Titchener; *L'Année Psychologique,* with 106 articles by A. Binet; and *JPSP,* with 51 articles by Robert S. Wyer. Then comes the *British Journal of Psychology,* whose highest productivity index is 35 articles.

Collaboration

It is frequently supposed that modern science is the result of the concerted work of the members of research groups in given fields of knowledge. Indeed, the very breadth of the problems treated in experimental science demands the joint effort of a group of researchers. To a certain extent, science is crystallizing and broad disciplines and large groups are increasingly absorbing a great part of the economic and human resources available. Multiple authorship has increased during recent decades, although, as we say above, the exact degree of collaboration varies from one discipline to another and even between the different branches of the same discipline.

Table 6
Most Productive Female Authors in the Journal of Personality and Social Psychology *(1965–2000)*

Author	No. articles	Productivity index
Chaiken, Shelley	20	1.30
Taylor, Shelley E.	19	1.28
Berscheid, Ellen	18	1.26
Eagly, Alice H.	18	1.26
Langer, Ellen	18	1.26
DePaulo, Bella M.	16	1.20
Park, Bernadette	16	1.20
Major, Brenda	15	1.18
Matthews, Karen A.	15	1.18
Rodin, Judith	15	1.18
Wortman, Camille B.	15	1.18
Andersen, Susan M.	14	1.15
Fiske, Susan T.	14	1.15
McFarland, Cathy	14	1.15
Rusbult, Caryl E.	14	1.15
Cantor, Nancy	13	1.11
Dweck, Carol S.	13	1.11
Harackiewicz, Judith M.	13	1.11
Spence, Janet M.	13	1.11
Walster, Elaine	13	1.11
Grusec, Joan E.	12	1.08
Mackie, Diane	12	1.08
Nolen-Hoeksema, Susan	12	1.08

The issue of collaboration is also relevant to productivity. One of the most important features of cooperation is its direct relation with productivity. The most productive researchers are those who most collaborate (Civera, 1994). This, in turn, provides them with greater social recognition, which facilitates their access to resources and expertise (Tortosa & Civera, 2002). These experts plan and direct research, which permits them to delegate tasks and increase the possibility of cooperating in other research projects at the same time. Hence coauthorship and productivity go hand in hand (Tortosa & Civera, 2002). The parameter that bibliographic surveys have used most to determine the level of cooperation is the number of authors per article, that is, the number of authors who have taken part in a particular publication.

However, although the productivity of scientists is measured in terms of the number of their publications, there is an added issue in the distribution of publications of the authors. We refer here to the problem of how to treat the multiple authorship of scientific works. Some (e.g., Lindsey, 1982) suggest three ways of treating the problem: a straight count, in which only the first named author is counted; the normal or complete count, in which the whole work is assigned to all of the authors; and the adjusted or fractioned count, whereby each author is attributed the corresponding fraction of the whole. Of the 7,277 articles published in *JPSP* between 1965 and 2000, 1,842 were written by a single author, which represents 25.3%, whereas 40% of articles had two authors and 21.8% three. In this respect, *JPSP* resembles other scientific journals, in which at least 75% of articles are written by at least two authors (see Table 7).

As regards the author–article ratio, it can be seen that collaboration has been on the increase since 1980, with articles written by two authors losing ground to those written by three authors. For instance, from 1965 to 1980 there were only 32 articles written by five authors, whereas from 1981 to 2000, 131 articles had the collaboration of five researchers. This could be a consequence of the new demands of science and of the journals themselves, which continually raise the standards and complexity of the articles they publish.

The method we followed for this analysis was to group authors who write jointly, including works produced in collaboration among the whole group and those authored by only part of the group or by one member individually. In this way, authors who publish in the journal can be classified as a function of the number

Table 7
Number of Articles According to Number of Authors per Article, by Year

	No. authors														
Year	1	2	3	4	5	6	7	8	9	10	11	12	13	32	Total
1965	99	105	37	6	4										251
1966	91	85	27	7											210
1967	77	99	27	2											205
1968	65	59	47	4											175
1969	42	59	27	4											132
	No. authors														
	1	2	3	4	5	6	7	8	9	10	11	12	13	32	
1970	65	77	26	6	1	1			1						177
1971	80	86	32	9											207
1972	74	88	40	7		1									210
1973	63	90	43	17	2										215
1974	76	86	40	8											210
1975	83	127	48	11	5	2	1								277
1976	60	106	47	11	3	5		1							233
1977	25	44	18	5	1										93
1978	56	55	24	8	2										145
1979	54	87	41	8	4										194
	No. authors														
	1	2	3	4	5	6	7	8	9	10	11	12	13	32	
1980	59	78	43	18	3		1								202
1981	57	81	46	13	7	1	1			1					207
1982	61	90	51	20	3	2									227
1983	55	112	56	18	5	2		1							249
1984	71	105	40	16	4										236
1985	62	135	70	28	5	2									302
1986	60	124	65	24	6		1				1				281
1987	60	99	51	23	7	1							1		242
1988	32	82	52	16	6	2	1	2							193
1989	34	71	49	27	4	2	3								190
	No. authors														
	1	2	3	4	5	6	7	8	9	10	11	12	13	32	
1990	36	79	62	25	4	2									208
1991	33	69	37	23	4	3	1	1							171
1992	36	57	40	28	4	2	1	1							169
1993	26	76	47	33											182
1994	26	64	49	29	1	1									170
1995	17	60	58	37	6	2	1								181
1996	21	70	51	26	11	3		1							183
1997	28	80	48	39	9	5	5	1							216
1998	32	77	62	32	14	2	5	2	1						227
1999	13	64	41	26	11	1	1	1							158
2000	13	48	46	21	16	2	1					1		1	149
Total	1,842	2,974	1,588	635	152	44	23	11	2	1	2	1	1	1	7,277

of authors with whom they collaborate and form a group directly or indirectly, ranging from those who always write individually to those linked with several coauthors.

For example, in 2000 P. Glick worked with 31 other researchers to write "Beyond Prejudice as Simple Antipathy: Hostile and Benevolent Sexism Across Cultures," and in 1987 P. Ekman had 12 collaborators for his article "Universals and Cultural Differences in the Judgments of Facial Expressions of Emotions." Price and Beaver (1966) suggested that a standard criterion for establishing collaborative groups could be that the individuals jointly author the articles. They considered that authors who write articles together have a direct link with each other and an indirect connection with their partners' collaborators: They belong to the same scientific group or "invisible college." Groups are identified according to the supposed links between individuals who author a paper jointly. This is the procedure we have used here to represent

the various links between authors (Tortosa, 1985). We now examine the "invisible college" to which the most productive author, Robert S. Wyer, belongs. Figure 3 identifies this network of connections. We consider as part of a group those individuals who author a joint work at least once. As can be seen, the most prolific author is situated in the center of the diagram, and his direct collaborators, that is, those who have published with him since the founding of *JPSP*, are in boxes and joined by a line that goes from the author of the college to each author via an arrow.

The thickness of the arrow depends on the importance of each author (Tortosa & Civera, 2002). For example, if an author has published more than three articles with Wyer, the arrow becomes thicker (see, e.g., Galen V. Bodenhausen). In turn, these collaborators may have published in this journal with other scientists, so that new arrows leave their box and the college becomes wider. Note that these last authors have not published directly with the main author but are connected with him through a common coauthor. To facilitate the task of studying indirect authors, we present these names not in chronological order of publishing in the journal but in alphabetical order. In this way, the influence of the college widens: Wyer has published directly with Thomas K. Srull, who has published with (in alphabetic order) Ed Diener, Thomas Holtgraves, Stuart A. Karabenick, and Daniel Socall. Some immediate coauthors of Wyer also have published jointly. This is shown not by an arrow but by a line that joins them. If an author has published with another author of this invisible college, it is also shown by means of a line connecting them both.

"Small Worlds" of *JPSP*

Another way of studying collaboration is by means of the "small worlds" technique, which throws light on the relationships between the most productive authors (Watts & Strogatz, 1998). In Figure 4 we offer a detailed analysis of the connections among these authors, focusing on the connections of Robert S. Wyer to the other authors and noting the shortest path from him to the other most published authors.

The "invisible" influences that arise through certain author links that relate two or more groups of researchers are evident. By using the small worlds technique, we do not attempt to reflect all of the authors who publish with the most important authors but rather the shortest way (both in time and in number of researchers) to relate the most productive authors. Only in a few cases have the most productive authors published with each other. This pattern is consistent with the idea that the field is composed of clusters of researchers who focus on diverse questions.

Analysis of the References of *JPSP*

Figure 5 presents the total number of references included in *JPSP* articles across the years, as well as the mean number of references per article. As can be seen, the number of references per article has increased about sixfold from 1965 to 2000. Clearly, authors today believe there to be a larger amount of previous research relevant to their articles than when the journal began. Besides authorship, bibliographic references also form common ground between two articles. This is why references have traditionally been considered the clearest sign of the "scientific network" (Price, 1973). References offer clear information as to which authors are most relevant and in which field, because they represent acknowledgment by other members of the scientific community. Therefore, by studying references we can identify the most important sources of information and the most influential authors, works of reference, and journals for a particular subject (Tortosa, Martí, Pérez, & Carpintero, 1989). *Eminence* is thus defined in terms of the degree of recognition and acknowledgment authors and their work receive by the scientific community in question (Zuckerman, 1977).

References can provide a snapshot picture of the field. The number of citations found in *JPSP* is typical for the "hard sciences" literature, which reflects the latest advances. More articles than books are mentioned, but the most cited works of reference are often certain books and chapters. Most works were originally written in English (Brozek & Tortosa, 1989). Most researchers are cited only once, but a few are cited many times, giving a pyramidal shape to the diagrammatic representation of citations. References, in other words, furnish us with maps of a given scientific field, which is of heuristic value in science historiography (Garfield, Malin, & Small, 1978; Zalbidea, Sanchís, & Tortosa, 1989).

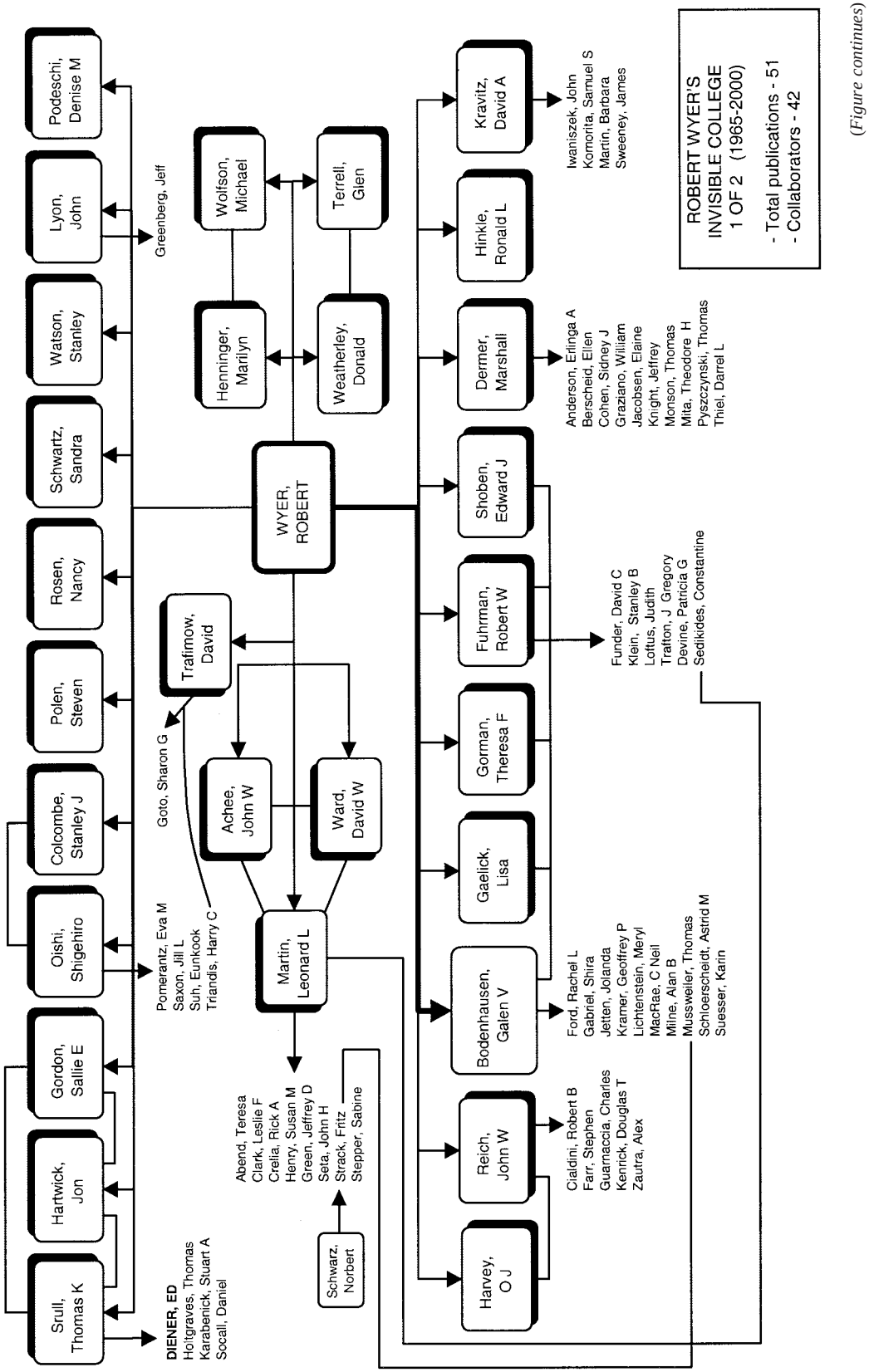
The most cited articles in *JPSP* constitute the theoretical and methodological classics of the journal's authors. During the last decade, the most often cited article is that of R. M. Baron and D. A. Kenny (1986), which was published in the journal itself (source: PsycINFO; see Table 8).

Analysis of the Average Life of Citations

By *obsolescence* we mean the falling from usage of information over time (Line & Sandison, 1974). By analyzing obsolescence we can quantify the dynamics of a science or of a particular area, inspect the course taken by a journal, or follow the works published by an organism or institution. In diachronic studies of obsolescence, a given moment is taken as a starting point, and the impact on science is followed from the references that the area receives in the years following publication. In other words, the half-life of scientific publications indicates the speed at which a particular "scientific front" is moving forward and the capacity of its investigators to extend the boundaries. The half-life is used to determine the strength and the tendency of a given field to change. The mature sciences are the most dynamic, and the half-life of its publications are shorter than in the humanities.

Scientific literature may decline in use because the information it contains is valid but has been assimilated by subsequent publications, because it has been superseded by subsequent research, because the area of investigation has been losing importance, or because it is no longer valid (Zuckerman, 1977). The information that ages most rapidly is that dealing with ephemeral data, preliminary communications, or a field of knowledge that is advancing rapidly. Slower to age is information that is descriptive, refers to concepts, is critical, or is a synthesis (Spinak, 1996).

Burton and Kebler (1960) proposed the concept of half-life as a measure of obsolescence. The half-life represents the period in which half of the currently cited literature was published (Burton & Kebler, 1960). The recency of literature cited in scientific



(*Figure continues*)

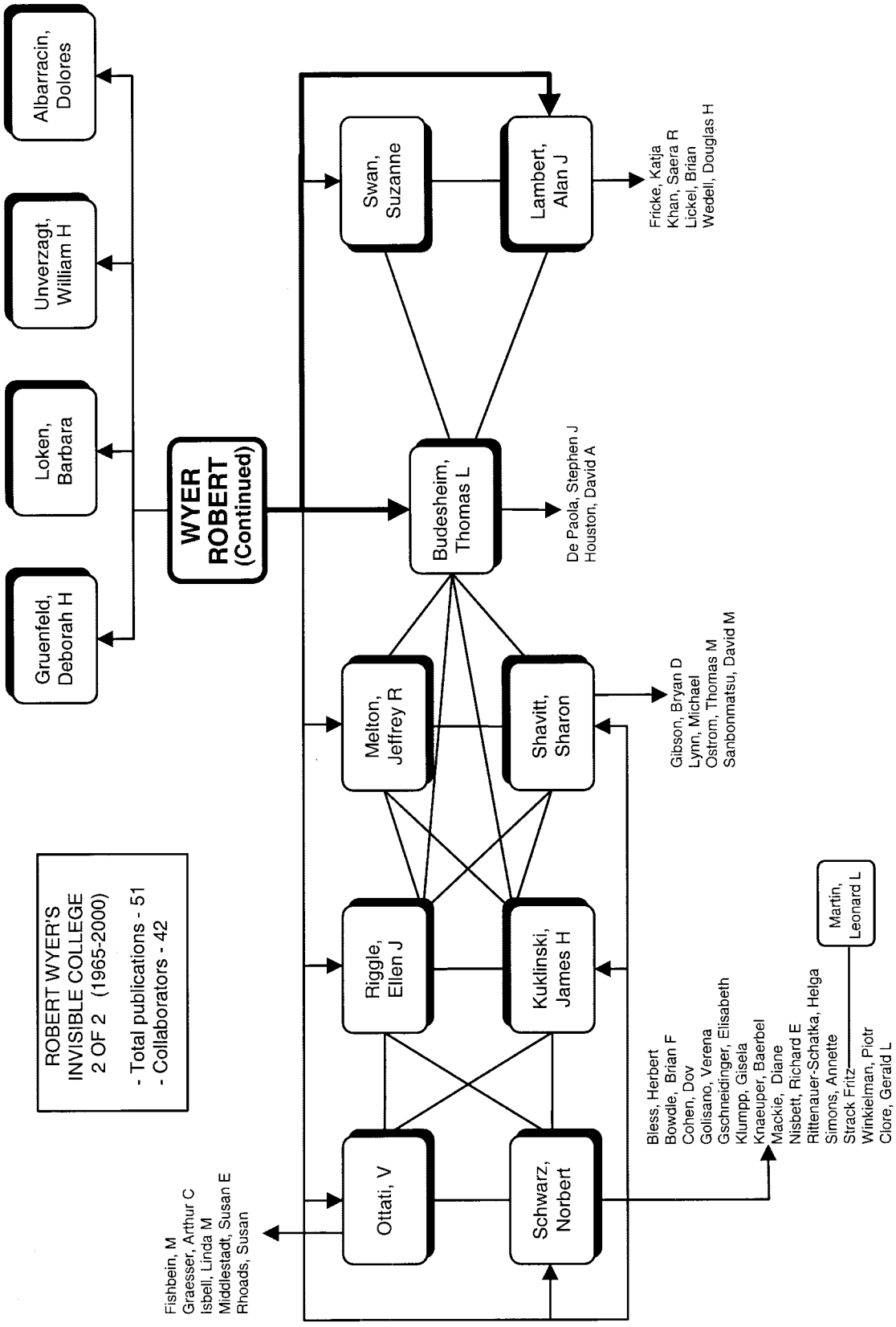


Figure 3. Robert S. Wyer's "invisible college."

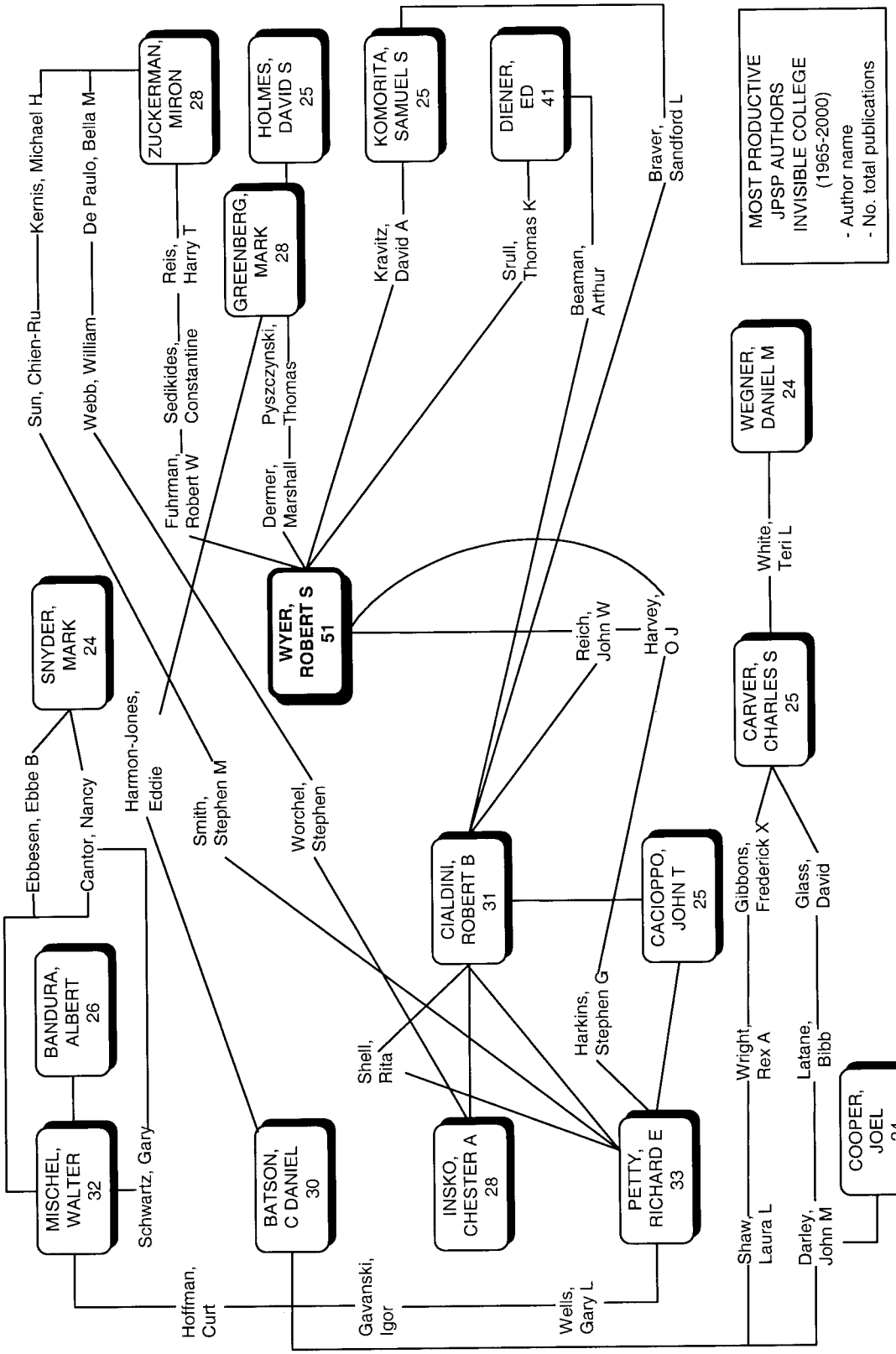


Figure 4. The "small world" technique, focusing on Robert S. Wyer.

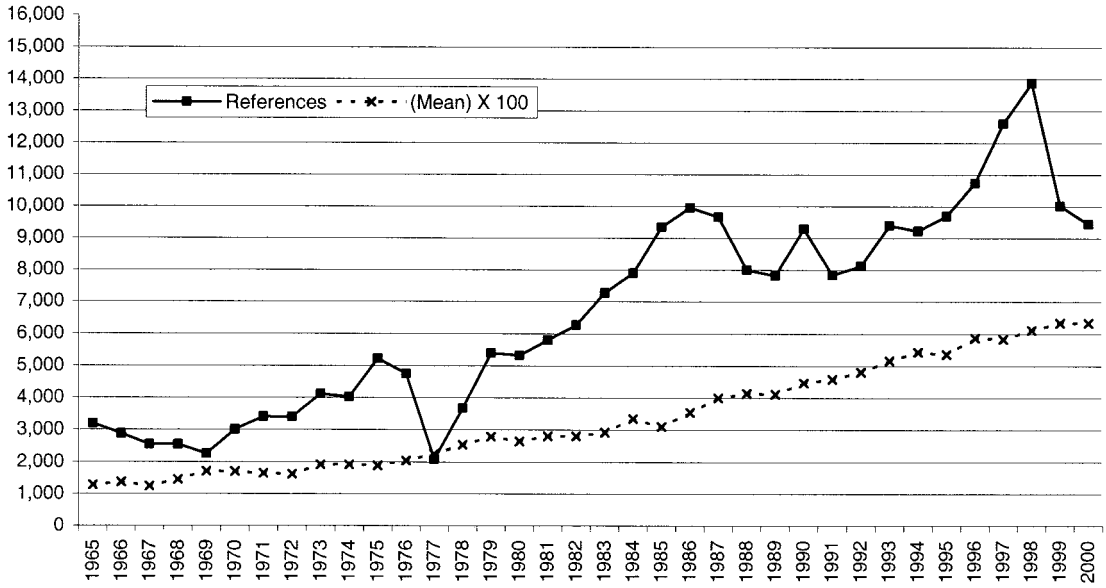


Figure 5. Number of references per year in *Journal of Personality and Social Psychology* articles and mean number of references per article.

articles indicates obsolescence in bibliometric studies. The accelerated growth rate in science (Price, 1963) and the consequent increase in the volume of work related to each scientific topic imply that any scientific work loses validity after some years—that is, it becomes obsolete. The more quickly a discipline grows, the more rapidly obsolescence takes place.

The half-life of the literature cited in *JPSP* was calculated according to the methodology proposed by Burton and Kebler (1960). For each year of the journal, the references cited in the articles were ordered chronologically, and the median of the publication year distribution was computed. The difference between that median and the year under study gives the half-life for that year of the journal. The arithmetic mean of the values found for each of the 35 years under study defines the total half-life of the journal (Egghe, 1993). The average life of the works of reference used in scientific disciplines varies between 4 and 12 years; it is between 8 and 12 years for psychology works (Carpintero & Tortosa, 1991). The average life of the citations used in *JPSP*, shown in Figure 6, is between 6 and 9 years and has been increasing over time. Calculating the half-life of diverse scientific disciplines, Burton and Kebler found considerable variation.

Obsolescence is more rapid for technical and experimental disciplines, in which the previous results have decreasing validity over time, but it is slower for humanistic or philosophical works. In natural sciences and technology, the half-life indices range from a minimum value of 3.9 years in metallurgical engineering to a maximum of 11.8 years in geology. Other disciplines are intermediate, for example, physics (4.6 years), physiology (7.2 years), and chemistry (8.1 years) (López Piñero, 1972). In psychology, approximately half of the literature cited refers to the previous 10 years. For example, manuals appearing in 1961 use materials from 1950 to 1960, whereas those of 1971 use material from 1960 to 1970 (Carpintero & Tortosa, 1990).

The half-life for *JPSP* can be compared with that of other psychology journals. The scientific literature referred to in *JPSP* is noticeably up to date, its recentness surpassed only by journals with a clear technological orientation, such the *Journal of Applied Behavior Analysis* and *Behavior Research Methods and Instruments*, both with a half-life of 5 years, and *Applied Psychology*, whose half-life is 6 years. In psychology journals of general content and more historically oriented journals, half-lives between 8 and 12 years are usual.

Statistical Analysis of the Citations

The total number of citations to *JPSP* articles in 2000 was the highest of any psychology journal. For comparison purposes, the 20,885 citations of *JPSP* articles exceeded those for the next most cited journals: *Psychological Bulletin* (13,367), *Journal of Consulting and Clinical Psychology* (12,251), *Psychological Review* (11,062), and *Child Development* (10,252). *JPSP* ranked 17th among 420 psychology publications in impact (the number of citations per article) and second in the subdiscipline of social psychology (ISI Journal Citation Reports, 2001). It is arguable, however, that *JPSP* ranks first in impact among social psychology journals, because the publication that ranks first is a yearly volume (*Advances in Experimental Social Psychology*), not a journal, and publishes only about five articles per year. Thus, the impact of *JPSP* on psychology as a whole, as well as on social and personality psychology, is impressive.

Some articles tend to introduce very old references (e.g., from ancient philosophers) so that the distribution has a negative skew. In such circumstances it is not ideal to use the mean or the typical deviation, because they would be very affected by these atypical references (Carlson, 1984). Instead, position measurements (percentiles 10, 50, and 90) are used, and these are shown in Table 9.

Table 8
Most-Cited Articles in the Journal of Personality and Social Psychology

Article	No. citations
Baron, R. M., & Kenny, D. A. (1986). The moderator–mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality and Social Psychology, 51,* 1173–1182.	226
Taylor, S. E., & Brown, J. D. (1988). Illusion and well-being: A social psychological perspective on mental health. *Psychological Bulletin, 103,* 193–210.	179
Watson, D., Clark, L. A., & Tellegen, A. (1988). Development and validation of brief measures of positive and negative affect: The PANAS scales. *Journal of Personality and Social Psychology, 54,* 1063–1070.	144
Festinger, L. (1954). A theory of social comparison processes. *Human Relations, 7,* 114–140.	122
Devine, P. G. (1989). Stereotypes and prejudice: Their automatic and controlled components. *Journal of Personality and Social Psychology, 56,* 5–18.	102
Markus, H. R., & Kitayama, S. (1991). Culture and the self: Implications for cognition, emotion, and motivation. *Psychological Review, 98,* 224–253.	100
Watson, D., & Clark, L. A. (1984). Negative affectivity: The disposition to experience aversive motivational states. *Psychological Bulletin, 96,* 465–490.	79
Markus, H. (1977). Self-schemata and processing information about the self. *Journal of Personality and Social Psychology, 35,* 63–78.	78
Abramson, L. Y., Seligman, M. E., & Teasdale, J. D. (1978). Learned helplessness in humans: Critique and reformulation. *Journal of Abnormal Psychology, 87,* 49–74.	75
Hazan, C., & Shaver, P. (1987). Romantic love conceptualized as an attachment process. *Journal of Personality and Social Psychology, 52,* 511–524.	75
Nisbett, R. E., & Wilson, T. D. (1977). Telling more than we can know: Verbal reports on mental processes. *Psychological Review, 84,* 231–259.	74
Watson, D., & Tellegen, A. (1985). Toward a consensual model of mood. *Psychological Bulletin, 98,* 219–235.	74
Beck, A. T., Ward, C. H., Mendelson, M., Mock, J., & Erbaugh, J. (1961). An inventory for measuring depression. *Archives of General Psychiatry, 4,* 561–571.	73
Wills, T. A. (1981). Downward comparison principles in social psychology. *Psychological Bulletin, 90,* 245–271.	70
McCrae, R. R., & Costa, P. T. (1987). Validation of the five-factor model of personality across instruments and observers. *Journal of Personality and Social Psychology, 52,* 81–90.	70
Bower, G. H. (1990). Mood and memory. *American Psychologist, 36,* 129–148.	68
Kunda, Z. (1990). The case for motivated reasoning. *Psychological Bulletin, 108,* 480–498.	66
Bentler, P. M., & Bonnett, D. G. (1980). Significance test and goodness of fit in the analysis of covariance structures. *Psychological Bulletin, 88,* 588–606.	65
Higgins, E. T. (1987). Self-discrepancy: A theory relating self and affect. *Psychological Review, 94,* 319–340.	61
Gilbert, D. T., Pelham, B. W., & Krull, D. S. (1988). On cognitive busyness: When person perceivers meet person perceived. *Journal of Personality and Social Psychology, 54,* 733–740.	61
Gilbert, D. T., & Hixon, J. G. (1991). The trouble of thinking: Activation and application of stereotypic beliefs. *Journal of Personality and Social Psychology, 60,* 509–517.	60
Fenigstein, A., Scheier, M. F., & Buss, A. H. (1975). Public and private self-consciousness: Assessment and theory. *Journal of Consulting and Clinical Psychology, 43,* 522–527.	58

C_{50} denotes the median year of cited articles, C_{10} represents the 10th percentile (oldest articles cited), and C_{90} represents the newest articles cited. It can be seen that the median article cited increases from 6 to 9 years. However, it can also be noticed that C_{10}, the oldest citations, increases from 15 to 27 years, indicating a number of citations that endure over increasing amounts of time. The increasing half-life of references in *JPSP*, along with the emergence of classics that are cited over a period of many years, suggests that the field of social and personality psychology has a growing body of literature that continues to be relevant over time. It does not appear that the field is similar to those sciences in which new articles quickly eclipse older articles and make them obsolete (Stephen, Newsom, & Fenaughty, 1992).

Conclusion

From its outset in 1965, *JPSP* has published many of the most important empirical articles in social and personality psychology. In this way, it has covered certain problems of psychology, which until 1965 had been included primarily in the fields of sociology and abnormal psychology. One criterion for judging the impact of *JPSP* is the wide geographical distribution of its authors, which

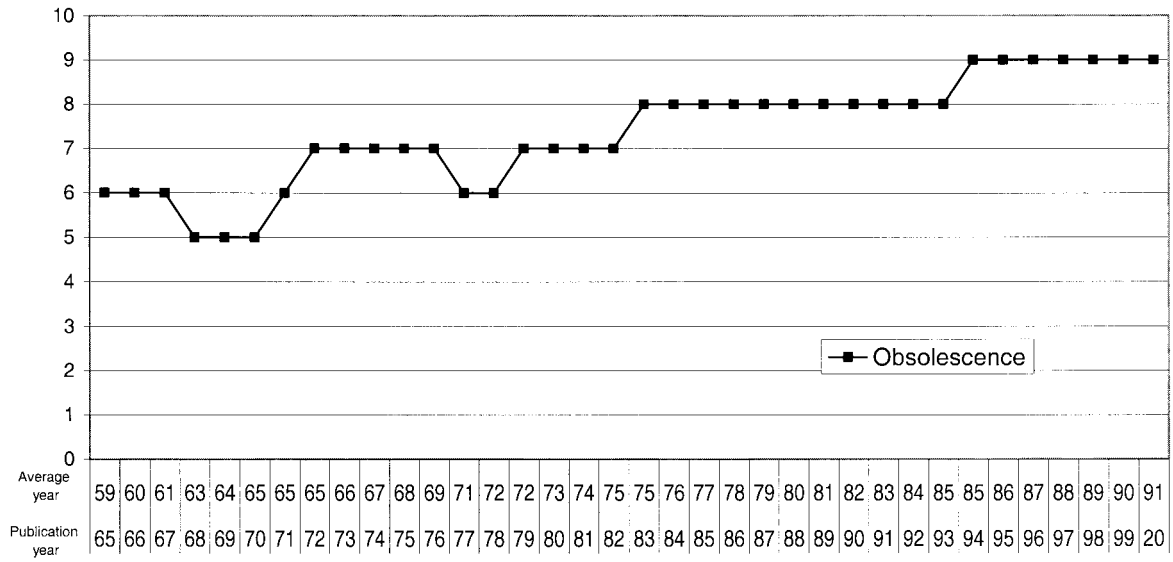


Figure 6. Obsolescence in the *Journal of Personality and Social Psychology.*

includes practically all of the U.S. states (constituting 85.16% of articles published) and all of the continents. Although the proportion of non-American authors (15%) may be considered low, it has been steadily increasing, and we consider it sufficient to point to the internationalization of the journal. In 2000, 30% of the senior authors of *JPSP* articles were located at institutions outside of the United States.

On the basis of the bibliometric analysis, *JPSP* fulfills the parameters established for scientific publications. The collaboration index (2.26) is closer to that of publications dealing with experimental sciences than to those dealing with more theoretical scholarship. The half-life of its references is 6–9 years, pointing to the continuous reference to new research by the authors who publish in the journal.

The science of social and personality psychology appears to be becoming a larger enterprise that involves more researchers per article. For example, there are a growing number of articles with four or more authors (see Table 7). This conclusion is also borne out by the fact that the most productive authors collaborate with many individuals with whom they only occasionally author works. Indeed, this latter strategy seems to be the usual pattern of collaboration for very productive psychologists (note that of the 42 collaborators listed for Robert S. Wyer, only 10 repeat).

One conclusion is clear from our analysis. A few highly productive researchers and institutions account for a substantial proportion of the empirical work in *JPSP*. In addition, several findings point to a science that is a confederation of researchers working on diverse questions that are not built on a highly unified set of theoretical ideas but are linked by journals, textbooks, and conferences. First, in terms of authorship networks, authors appear to cluster with others who study similar topics, whereas the topics studied by the most productive authors are diverse. The classic references cited within the pages of *JPSP* are actually cited in relatively few articles and represent a very small proportion of the total number of citations, suggesting that authors working on separate problems do not use a high proportion of common references. At the same time, there are classic articles that continue to be cited after many years, pointing to the possibility that the field of social and personality psychology is divided into research areas that each have their own classic articles.

To some degree, the structure of research institutions and laboratories influences the nature of the field. A large amount of the research presented in *JPSP* is conducted at elite research universities at which professors conduct research with a large number of students. Gone are the days of 18th- and 19th-century science, when individuals working alone conducted much of the scientific research. If there were large research institutes that concentrated on a single focal problem, there would likely be more senior researchers collaborating with each other. Possibly research structures other than the current one would lead to more integration among the diverse topic areas of social and personality psychology. However, the current structure, with its weaknesses and strengths, has created a very strong empirical tradition for the field. Hopefully the present article will serve a heuristic function in stimulating researchers to study the structure of the field and the consequences of this structure.

Another conclusion that seems indisputable is that *JPSP* has had an enormous impact on the scientific field of social and personality psychology, and the journal seems to be in a better state of health than that described in earlier studies. These earlier analyses have pointed to both strengths and weaknesses in the topics covered and in the methods and statistics used (Carlson, 1984; Reis & Stiller, 1992; West, Newsom, & Fenaughty, 1992). It should be noted, however, that *JPSP* articles are cited as much as those of the next 10 social and/or personality journals combined, and it has the highest citation rate per article of any social or personality psychology journal. As the journal approaches its 40th birthday in 2005, the editors, authors, reviewers, and readers can be assured that they have participated in a successful scientific journal. Hopefully, further bibliometric analysis of the journal can lead to a richer understanding of how scientific work is carried out in social and personality psychology.

Table 9
Statistical Analysis of the References

Year	C_{50}	C_{10}	C_{90}	$R_{90\text{-}10}$	*M*	*SD*
1965	1959	1950	1963	13	1956.71	10.36
1966	1960	1949	1964	15	1957.55	7.95
1967	1961	1952	1966	14	1959.39	8.08
1968	1963	1952	1967	15	1960.25	8.42
1969	1964	1953	1968	15	1961.44	7.89
1970	1965	1953	1969	16	1961.90	8.57
1971	1965	1955	1969	14	1963.29	7.69
1972	1965	1955	1970	15	1963.52	7.78
1973	1966	1956	1971	15	1964.25	8.10
1974	1967	1957	1972	15	1965.16	9.64
1975	1968	1958	1973	15	1966.31	7.76
1976	1969	1957	1974	17	1966.92	9.17
1977	1971	1958	1976	18	1968.32	9.98
1978	1972	1960	1976	16	1969.55	8.80
1979	1972	1959	1977	18	1969.62	9.43
1980	1973	1960	1978	18	1970.60	9.69
1981	1974	1959	1979	20	1971.03	9.71
1982	1975	1961	1980	19	1972.04	10.27
1983	1975	1961	1981	20	1972.60	9.94
1984	1976	1962	1982	20	1973.61	9.90
1985	1977	1963	1983	20	1974.36	11.00
1986	1978	1964	1984	20	1975.40	10.51
1987	1979	1964	1985	21	1976.28	10.54
1988	1980	1963	1986	23	1976.55	11.05
1989	1981	1965	1987	22	1977.99	10.55
1990	1982	1967	1988	21	1979.00	10.75
1991	1983	1967	1989	22	1979.85	10.53
1992	1984	1966	1990	24	1980.24	11.71
1993	1985	1969	1991	22	1981.52	11.24
1994	1986	1968	1992	24	1982.29	11.02
1995	1986	1970	1993	23	1983.31	11.34
1996	1987	1969	1994	25	1983.47	11.70
1997	1988	1970	1995	25	1984.53	11.91
1998	1989	1972	1996	24	1985.78	11.41
1999	1990	1971	1997	26	1986.08	12.93
2000	1991	1973	1998	25	1987.24	12.87

Note. C_{50} represents the median year of cited articles, C_{10} represents the 10th percentile (oldest articles cited), C_{90} represents the 90th percentile (newest articles cited), and $R_{90\text{-}10}$ represents the range between the 10th and 90th percentiles—the variability (in years) of 80% of the references.

References

Arquiola, A., Tortosa, F., & Carpintero, H. (1989). La terapia de conducta en España a través de la revista *Análisis y Modificación de Conducta* [Behavior therapy in Spain according to the journal *Análisis y Modificación de Conducta*]. *Giornale Italiano di Scienza e Terapia del Comportamiento, 22–23,* 59–62.

Brozek, J., & Tortosa, F. (1989). Contributions to the history of psychology: LXI. Language of publications referred to in four Americans journals, 1887–1945: A synthesis. *Perceptual Motor Skills, 69,* 409–410.

Burton, R. E., & Kebler, R. W. (1960). The "half-life" of some scientific and technical literatures. *American Documentation, 11*(1), 24–39.

Camps, V. (1990). *Virtudes públicas* [Public virtues]. Barcelona, Spain: Editorial Espasa-Calpe.

Carlson, R. (1984). What's social about social psychology? Where's the person in personality research? *Journal of Personality and Social Psychology, 47,* 1304–1309.

Carpintero, H., & Tortosa, F. (1990). Aplicaciones de la metodología bibliométrica a la historia de la psicología: Una visión de conjunto [Applications of bibliometric methodology to the history of psychology: An overview]. In F. Tortosa, L. Mayor, & H. Carpintero (Eds.), *La psicología contemporánea desde la historiografía* (pp. 275–314). Barcelona, Spain: PPU.

Carpintero, H., & Tortosa, F. (1991). Die evolution psychologischer forschungsfelder: Eine betrachtung anhand der "Psychological Abstracts" [Fields of psychological evolution: Research based on "Psychological Abstracts"]. In H. E. Lück & R. Millar (Eds.), *Theorien und methoden psychologiegeschichtlicher forschung* [Theories and methods of historical psychological research] (pp. 91–109). Göttingen, Germany: Verlag für Psychologie, C. J. Hogrefe.

Civera, C. (1994). *La influencia de la psicología Alemana en el desarrollo de la psicología española actual. El caso de J. C. Brengelmann y la terapia de conducta.* [The influence of German psychology in the development of modern Spanish psychology. The case of J. C. Brengelmann and behaviour therapy]. Doctoral thesis, University of Valencia, Valencia, Spain.

Civera, C., & Civera, M. A. (2002). Las fuentes documentales en psicología [Documentary sources in psychology]. In F. Tortosa & C. Civera (Eds.), *Nuevas tecnologías de la información y documentación en psicología* [New information and documentation techniques in psychology] (pp. 45–78). Barcelona, Spain: Editorial Ariel.

Civera, C., & Martínez, T. (1995). Aplicación de un método de análisis para la colaboración científica, a la obra científica de J. C. Brengelmann [Application of an analysis method for scientific cooperation with J. C. Brengelmann's scientific literature]. *Revista de Historia de la Psicología, 16,* 263–281.

Civera, C., & Martínez, R. (2003). *Las nuevas tecnologías de la información y documentación en la Juventud. Manual para el diploma de especialización profesional universitario en coordinación y gestión de programas y servicios para la juventud* [Information and documentation technology in youth. Manual for the university professional diploma specializing in the coordination and management of programs and services for young people]. Valencia, Spain: Ed. Universitat Valencia-Consejo de la Juventud de la Comunitat Valenciana.

Civera, C., Osca, J., Tortosa, F., Martínez, R., Mateo, E., & Cano, L. (2002). La investigación española sobre SIDA y su difusión en las revistas nacionales e internacionales [Spanish research into AIDS and its dissemination in national and international journals]. *Revista Española de Drogodependencias, 27,* 249–266.

Civera, C., & Tejero, P. (1993). Una perspectiva de la psicología profesional en los 80. El Colegio Oficial de Psicólogos y sus publicaciones [A look at professional psychology in the 80s. The Official College of Psychologists and their publications]. *Revista de Psicología Universitas Tarraconenses, 15,* 107–127.

Civera, C., & Tortosa, F. (2002). Información y documentación en la ciencia psicológica [Information and documentation in psychological science]. In F. Tortosa & C. Civera (Eds.), *Nuevas tecnologías de la información y documentación en psicología* [New information and documentation techniques in psychology] (pp. 17–41). Barcelona, Spain: Editorial Ariel.

Dahmane, M. (1991). Origine et problématique actuelle de la bibliométrie [Origin and current problems in bibliometry]. *Revue Française de Bibliométrie, 10,* 66–79.

Daniel, R., & Louttit, C. (1953). *Professional problems in psychology.* New York: Prentice-Hall.

Dennis, W. (1954). Productivity among American psychologists. *American Psychologist, 9,* 191–194.

Dutheuil, C. (1992). Bibliomètrie et scientométrie en France: Etat de l'art [Bibliometry and scientometrics in France: State of the art]. *Documentaliste, 29,* 251–261.

Egghe, L. (1993). On the influence of growth on obsolescence. *Scientometrics, 27,* 195–214.

García-Merita, M. L. (1978). *Estudio estadístico y sociométrico sobre James Olds y el impacto de su obra en la comunidad científica: Memo-*

ria de licenciatura [Statistical and sociometric study of James Olds and the impact of his work on the scientific community]. Valencia, Spain: Editorial Mímeo.

Garfield, E. (1977). *Essays of an information scientist* (2 vols.). Philadelphia: ISI Press.

Garfield, E., Malin, M. V., & Small, H. (1978). Citation data as science indicators. In Y. Elkana, J. Lederberg, R. K. Merton, A. Thackray, & H. Zuckerman (Eds.), *Toward a metric of science: The advent of science indicators* (pp. 179–207). New York: Wiley.

Garvey, W. (1979). *Communication: The essence of the science.* New York: Pergamon Press.

Gupta, B., Kumar, S., & Karisiddappa, C. (1997). Collaboration profile of theoretical population genetics specialty. *Scientometrics, 39,* 293–314.

Haiqi, Z. (1997). More authors, more institutions and more funding sources: Hot papers in biology from 1991 to 1993. *Journal of the American Society for Information Science, 48,* 662–666.

ISI Journal Citation Reports. (2001). *ISI web of knowledge (social sciences edition).* Retrieved January 15, 2003, from http://www.ISIKnowledge.com

Lindsey, J. K. (1982). *Applying generalized linear models.* New York: Springer Publishing Company.

Line, M. B., & Sandison, A. (1974). Obsolescence and changes in the use of literature with time. *Journal of Documentation, 30,* 283–350.

López, P., & Civera, C. (1994). La terapia de conducta en España: Una visión a través del análisis bibliométrico de la *Revista Española de Terapia del Comportamiento* (1983–1990) [Behaviour therapy in Spain: A bibliometric view from the journal *Revista Española de Terapia del Comportamiento* (1983-1990)]. *Revista de Historia de la Psicología, 15,* 393–408.

López, P., & Tortosa, F. (2002). Las técnicas bibliométricas [Bibliometric techniques]. In F. Tortosa & C. Civera (Eds.), *Nuevas tecnologías de la información y documentación en psicología* [New information and documentation techniques in psychology] (pp. 199–225). Barcelona, Spain: Editorial Ariel.

López Piñero, J. M. (1972). *El análisis estadístico y sociométrico de la literatura científica* [Statistical and sociometric analysis of scientific literature]. Valencia, Spain: Centro Documentación, Informática Médica.

Lotka, A. J. (1926). The frequency distribution of scientific productivity. *Journal of the Washington Academy of Sciences, 16,* 317–326.

Louttit, C. (1932). *Handbook of psychological literature.* Bloomington, IN: Principia Press.

Martin, B. R. (1996). The use of multiple indicators in the assessment of basic research. *Scientometrics, 36,* 343–362.

Merton, R. K. (1977). *Sociología de la ciencia* [The sociology of science]. Madrid, Spain: Alianza Universidad.

Moya, M., Carpintero, H., Peiró, J. M., & Tortosa, F. (1985). La psicología Británica en la revista *Mind* [British psychology in the journal *Mind*]. *Revista de Historia de la Psicología, 6,* 241–266.

Osier, D., & Wozniak, R. (1984). *A century of serial publications in psychology, 1850–1950.* New York: Kraus International.

Price, D. J. S. (1963). *Little science, big science.* New York: Columbia University Press.

Price, D. J. S. (1973). Citation measures of hard science, technology and nonscience. In C. E. Nelson & D. K. Pollock (Eds.), *Communication among scientists and engineers* (pp. 3–22). Lexington, MA: Heat Lexington Books.

Price, D. J. S. (1978). Toward a model for science indicators. In Y. Elkana, L. Lederberg, R. K. Merton, A. Thackray, & H. Zuckerman. (Eds.), *Toward a metric of science: The advent of science indicators* (pp. 69–96). New York: Wiley.

Price, D. J. S., & Beaver, D. (1966). Collaboration in an invisible college. *American Psychologist, 21,* 1011–1018.

Quiñones, E., Ferrández, E., & Peñaranda, M. (2000, September). La salud mental en España a través de la revista de la *AEN* [Mental health in Spain according to the journal *AEN*]. Paper presented at the First Annual Meeting of the Congreso Internacional Hispano–Portugués, Santiago de Compostela, Spain.

Quiñones, E., Peñaranda, M., & López, J. J. (2000, June). Analysis of the *Journal of Personality and Social Psychology*: The thirty first years. Paper presented at the meeting of the International Conference on Psychology, Haifa, Israel.

Quiñones, E., Vera, J. A., Sánchez, A., & Pedraja, M. J. (1992). La segunda década de la *Revista Latinoamericana de Psicología* [The second decade of the journal *Revista Latinoamericana de Psicología*]. *Revista Latinoamericana de Psicología, 23,* 155–181.

Reis, H. T., & Stiller, J. (1992). Publication trends in *JPSP*: A three-decade review. *Personality and Social Psychology Bulletin, 18,* 465–472.

Sánchez, A., Quiñones, E., & Cameo, M. (1995). Análisis historiográfico de *Anales de Psicología* (1984–94): Estudio bibliométrico de una revista con raíces académicas. [Historiographic analysis of the *Anales de Psicología*: A bibliometric study of a journal with academic roots]. *Anales de Psicología, 11,* 1–17.

Sánchez, A., Quiñones, E., Pedraja, M. J., & Martínez Sánchez, F. (1996). A historic–quantitative approach to psychophysiological research: The first three decades of the journal *Psychophysiology* (1964–1993). *Psychophysiology, 33,* 629–636.

Spinak, E. (1996). *Diccionario enciclopédico en bibliometría, cientometría e informetría* [Encyclopedic dictionary of bibliometry, scientometry and infometry]. Caracas, Venezuela: Unesco.

Stephen, G., Newsom, J. T., & Fenaughty, A. M. (1992). Publication trends in *JPSP*: Stability and change in topics, methods, and theories across two decades. *Personality and Social Psychology Bulletin, 18,* 473–484.

Tortosa, F. (1985). Las redes de revistas psicológicas como instrumento historiográfico [Networks of psychological journals as historiographical instrument]. In S. Rodríguez (Ed.), *Estudios de historia de la psicología: Teoría y métodos de investigación* [Studies in the history of psychology: Theory and methods of investigation] (pp. 81–103). Salamanca, Spain: I. C. E. Universidad de Salamanca.

Tortosa, F., Carpintero, H., & Peiró, J. M. (1981). La introducción de la psicología Europea en USA a través del *American Journal of Psychology* (1887–1945) [Arrival of European psychology in USA through the *American Journal of Psychology* (1887–1945)]. *Revista de Historia de la Psicología, 2,* 289–335.

Tortosa, F., & Civera, C. (2002). *Nuevas tecnologías de la información y documentación en psicología* [New information and documentation techniques in psychology]. Barcelona, Spain: Editorial Ariel.

Tortosa, F., Civera, C., & Sánchez-Lozano, E. (1999). Revistas y definición de ámbitos: El caso de la revista *Ansiedad y Estrés* [Journal and definition of ambits: The case of the journal *Ansiedad y Estrés*]. *Ansiedad y Estrés, 5,* 5–23.

Tortosa, F., Martí, C., Pérez, E., & Carpintero, H. (1989). El análisis de citas como criterio de eminencia en ciencias sociales [Citation analysis as a criterion of eminence in social sciences]. In A. Rosa, J. Quintana, & E. Lafuente (Eds.), *Psicología e historia: Contribuciones a la investigación en historia de la psicología* [Psychology and history: Contributions to the historical research of psychology] (pp. 17–28). Madrid, Spain: Ediciones de la Universidad Autónoma de Madrid.

Vandenbos, G. R. (1994). The APA knowledge dissemination program: An overview of 100 years. In R. Evans, V. Sexton, & T. H. Cadwallader (Eds.), *100 years. The American Psychological Association: A historical perspective* (pp. 347–381). Washington, DC: American Psychological Association.

Van Raan, A. (1997). Scientometrics: State-of-the-art. *Scientometrics, 38,* 205–218.

Watts, D. J., & Strogatz, S. H. (1998). Collective dynamics of small-world networks. *Nature, 393,* 440–442.

West, S. G., Newsom, J. T., & Fenaughty, A. M. (1992). Publication trends in *JPSP*: Stability and change in topics, methods, and theories across two decades. *Personality and Social Psychology Bulletin, 18,* 473–484.

Zalbidea, M. A., Sanchís, P., & Tortosa, F. (1989). Impacto y especifidad: El papel de las revistas especializadas [Impact and specificity: The role of specialist journals]. *Revista de Historia de la Psicología, 10,* 101–110.

Zuckerman, H. (1977). *Scientific elite: Nobel laureates in the United States.* London: Free Press.

Received December 30, 2002
Revision received June 30, 2003
Accepted June 30, 2003 ■