

THE TREND TOWARD MORE ATTRACTIVE AND INFORMATIVE TITLES: *AMERICAN PSYCHOLOGIST* 1946–2010¹

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Summary.—Titles of journal articles serve to attract attention and inform potential readers. All titles from 65 volumes of *American Psychologist* (1946–2010, $N=12,313$ titles) were studied in terms of their emotionality, style, and contents. Several trends noted for titles in different kinds of journals from psychology and other disciplines were present in *American Psychologist* (increasing title length, increasing use of punctuation marks, increasing employment of words with pleasant and arousing connotations, variations in the frequency of different content words). Longer titles allow authors to specify more information, and emotionally upbeat titles are more likely to attract reader attention. In an unexpected quadratic trend, titles became more abstract and the number of titles increased until about 1985, after which the trend was reversed and titles became more concrete as their numbers decreased. Predictors of this trend include societal variables and the journal's editorial policies.

Titles contain the first significant information available to readers about a published work: they serve the twin functions of attracting potential readers' attention and describing the contents of the work (Haggan, 2003; Hartley, 2005). Hartley (2008) outlined thirteen ways in which titles could both attract and inform readers. Until roughly 30 years ago, readers typically scanned the titles in research and professional journals, or those in abstracting publications, to decide which articles to read. In the computer age, titles serve a similar function for readers conducting scans of library databases with the help of search engines. Abstracts are also consulted, but generally in a hierarchical manner, and only after a positive decision based on a title has been taken. Researchers in various disciplines (e.g., Hogenraad, Bestgen, & Durieux, 1992; Whissell, 2004; Sigelman, 2006; Cook, Beckman, & Bordage, 2007; Webster, Jonason, & Schember, 2009) have employed changes in the titles of a discipline's journals to describe the development of the discipline. This report examines all titles in the official journal of the American Psychological Association, *American Psychologist*, from the year of its founding (1946; Wolfle, 1946) to the end of the first decade of the 21st century (2010). The journal is widely circulated among psychologists (Fowler, 1992), and even more widely available electronically.

According to its founding principles, restated by a succession of edi-

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tors (Brayfield, 1965; Kiesler, 1976; Goodstein, 1986, 1987, 1988; Fowler, 1991, 1992, 1993, 1996; Anderson, 2006), *American Psychologist* is not primarily a research journal: it publishes archival documents (e.g., annual reports, minutes), information of interest to members of the Association (e.g., articles on ethical or legal issues, names of award-winners, and obituaries of prominent psychologists) and articles on current issues of scientific and professional concern. More than half the journal's pages have been devoted to its official or archival functions (Goodstein, 1986, 1987; Zimbardo, 2002), and editors (Brayfield, 1965; Kiesler, 1976; Fowler, 1992) have emphasized the importance of broad appeal and an accessible writing style in articles submitted for publication in the remaining pages. The journal's web site reports a current ISI impact factor of 6.5, which means that the average article in *American Psychologist* is cited by six or seven other articles within two years of its publication. This impact factor is well above the mean of approximately one citation per article for hundreds of journals in the psychology/multidisciplinary category (Anderson, 2006).

Certain time-related trends, such as the use of longer titles and the employment of more punctuation marks across time, characterize titles in a variety of journals. Those studied have been primarily research publications (e.g., Whissell, 2004; Soler, 2007, 2011; Ball, 2009) or ones specializing in reviews of the literature (e.g., Hogenraad, *et al.*, 1992; Soler, 2007, 2011), so it is by no means certain that the observed trends will also characterize *American Psychologist*, which serves a different function. Measures of *American Psychologist* titles in this research include title length (also studied by Sigelman, 2006, and Webster, *et al.*, 2009), title emotionality (studied by Hogenraad, *et al.*, 1992, and Whissell, 2004), title punctuation (e.g., Haggan, 2003; Sigelman, 2006; Hartley, 2007), and the employment of particular content words or classes of words (e.g., Hogenraad, *et al.*, 1992; Whissell, 2004; Webster, *et al.*, 2009). Changes in these variables are tracked as a function of time, represented by year (1946–2010) or volume (1–65) of *American Psychologist*.

METHOD

Titles ($N = 12,313$) were downloaded between March 19 and March 24, 2011, from PsycINFO, the American Psychological Association's database, with the help of the Scholar's Portal search engine. Entries were stripped of all information other than titles. Punctuation marks adjacent to words were removed from them by one space, all dashes were replaced by hyphens, and all letters carrying diacritical marks were rendered in their simpler form (e.g., ü became u, and é became e). Text in italics was converted to normal font. Although Arabic numerals such as "1995" remained in the data, they were not scored as words.

Titles were analyzed with a program written by the author for the statistical package SPSS, which manipulates words as string variables. The program calculated word length and counted the number of words in general and the occurrences of specific classes of words (e.g., words including the root "psycho," such as psychology and psychologist). It computed the relative frequency of punctuation marks and scored words in terms of their emotional connotations and imagery by comparing them, with the help of a table look-up function, to the Dictionary of Affect in Language database (Whissell, 2009). Word frequency values were similarly obtained by consulting a database representing a broadly sampled corpus of everyday English (Whissell, 1998).

The Dictionary of Affect (Whissell, 2009) contains participants' ratings of their reactions to 8,742 words taken from samples of natural English. Participants indicated whether they considered individual words to be Pleasant (3), Neutral (2), or Unpleasant (1); Active (3), Neutral (2), or Passive (1); and Easy to Envision (3), In Between (2), or Difficult to Envision (1). Mean values for these variables characterize individual words. The word "award," for example, has Dictionary of Affect scores of 2.83 (people view it as Pleasant), 1.75 (it is of low-average Activation), and 3.00 (people find the word was easy to envision, or concrete). The word "pathology," on the other hand, has scores of 1.00 (it is Unpleasant), 1.71 (of low-average Activation), and 1.2 (it is abstract, or difficult to envision). The word "psychologist" is of average Pleasantness, average Activation, and concrete (2.00, 2.00, and 3.00). Although psychology does employ some rather rare words (e.g., trichotillomania, weltanschauung), most of its vocabulary is shared with everyday English. Even words indicative of diagnostic categories (e.g., major depression, anxiety disorder) are in common use. *American Psychologist* also reaches a broad rather than a specialized audience, leading to the expectation that extremely rare words would not predominate in titles. Despite the inclusion of many names in *American Psychologist* titles (both in obituaries and in award notices), and despite the specialized language of the discipline, the Dictionary was able to provide scores for 81% of all title words, an average of more than six words per title. Scores for emotion and imagery in each year were calculated on the basis of these matched words.

Words were compared to a table of word frequencies based on a corpus of 348,000 words sampled from everyday English sources, such as media (e.g., television news reports, newspaper articles), print works (e.g., novels, textbooks), university essays written by students, and transcriptions of the proceedings of meetings (Whissell, 1998). A word not found in the corpus was assigned a frequency of zero. In this corpus, the word "psychology" had a frequency of 6 per 348,000, while "behaviour" and

"behavior" together had a frequency of 46. "Psychotherapy" did not occur at all in the corpus, so its frequency was zero. The most common English word, "the," had a frequency of 17,244 per 348,000 words.

Measures describing titles are listed in Table 1. The seven main measures were Pleasantness, Activation, Imagery, word length, word frequency, title length, and the number of titles per year. The last measure was included because it varied considerably (e.g., there were 282 titles in 1989 but only 162 in 2010), and the author questioned whether this variability was related to the style of titles. Additional variables reflect the yearly employment of commas and colons (in proportion to words), and the proportional use of words belonging to the families psychology (all title words including the root "psycho-"), behaviour (all title words including the root "behav-"), cognition (all including the root "cogni-"), evolution/genetics (all including the roots "evolv-" or "evolu-" as well as "genes," "genetic,"

TABLE 1
MEANS FOR EARLY (1946–1955), INTERMEDIATE (1979–88), AND RECENT (2001–2010)
VOLUMES OF *AMERICAN PSYCHOLOGIST* AND CORRELATIONS FOR THE FULL RANGE
(1946–2010) WITH COMPONENT SCORES C1 AND C2 AND YEAR

Variable (Trend) ³	Means ¹			Correlations ²		
	Early	Intermediate	Recent	C1 ⁴	C2	Year
Pleasantness (↑)	1.79 ^a	1.85 ^b	1.91 ^c	.94	-.08	.92
Activation (↑)	1.72 ^a	1.75 ^b	1.77 ^c	.89	-.03	.76
Imagery (U)	1.65 ^a	1.58 ^b	1.66 ^a	.27	.88	.05
Word Frequency (↓) 3,011 ^a		2,655 ^b	2,230 ^c	-.93	.02	-.87
Word Length (U)	5.83 ^a	5.52 ^b	5.78 ^a	-.17	.84	-.32
Words / Title (↑)	7.62	8.06	8.01	.48	-.21	.49
Titles / Year (n)	106.6 ^a	251.4 ^b	190.6 ^b	.55	-.74	.64
Commas (↑)	.021	.023	.025	.40	.03	.43
Colons (↑)	.022 ^a	.056 ^b	.051 ^b	.71	-.51	.76
Question Marks (n)	.005 ^a	.008 ^b	.005 ^a	-.03	-.38	.02
Psychology ⁵ (↓)	.0722 ^a	.0481 ^b	.0395 ^c	-.79	.36	-.90
Behaviour (n)	.0007 ^a	.0043 ^b	.0011 ^a	.00	-.48	.01
Cognition (n)	.0002 ^a	.0022 ^b	.0012 ^c	.33	-.48	.48
Evolution (↑)	.0000 ^a	.0007 ^a	.0021 ^b	.61	.05	.63
Gender (↑)	.0000 ^a	.0008 ^b	.0008 ^b	.48	-.21	.52
Minorities (n)	.0001 ^a	.0007 ^b	.0002	.03	-.44	.11
Clinical (↓)	.0082 ^a	.0029 ^b	.0009 ^a	-.76	.34	-.82

¹Means characterized by different superscripts are significantly different from one another (*t* test, $p < .05$, two-tailed). ²Correlations $\geq |.25|$ are significant at $p < .05$, two-tailed. ³Primary trends in the relationship of each variable with year are noted as ↑ (linearly increasing), ↓ (linearly decreasing), U (U-shaped), or n (inverse-U shaped). ⁴C1 and C2: First and second composites from the principal components analysis. ⁵All variables at and below this point describe the use of classes of words in proportion to words in general.

"DNA," and "chromosomes"), minorities (including "minority"), gender, and clinical (or "clinician," "clinicians").

RESULTS

Titles in Early, Middle, and Recent Volumes of American Psychologist

Table 1 reports means for sample sets of 10 early volumes (1-10, 1946–1955), 10 recent volumes (56-65, 2001–2010), and 10 intermediate volumes (34-43, 1979–1988) of *American Psychologist*. According to one-way analyses of variance (ANOVA) with *post hoc t* tests, there are significant differences ($p < .05$) among sets of years for all but two variables (the use of commas and words per title). Differences are described in Table 1 by superscripts and can be summarized in terms of two basic trends. Measures either vary linearly with year (e.g., Pleasantness rises across years, while the use of Psychology words falls), or they covary with year in a quadratic U or inverse-U pattern (e.g., word length falls and then rises, while the employment of Behaviour words first rises and then falls).

Principal Components Analysis

The seven key variables appearing first in Table 1 were submitted to a principal-components analysis with a varimax rotation for the full range of 65 years. The number of cases was small, but data points were based on observations of more than 1,000 words apiece. The analysis produced two components with eigenvalues greater than one (3.32 and 1.89), which together explained 74% (47%, 27%) of the common variance. The first component, C1, had high loadings for Pleasantness (.94), Activation (.89), word frequency (–.93), the number of titles per year (–.55), and words per title (.48). C1 ranged along a continuum from years with more but shorter titles including common and emotionally sadder words to years with fewer but longer titles, including rarer and emotionally more upbeat words. The second component, C2, was characterized by high loadings for Imagery (.87), word length (.84), and fewer titles per year (–.74). At the low end C2 described years with more and more abstract titles including shorter words, and at the high end years with fewer but more concrete titles including longer words. Although single titles are unlikely to embody all the trends described here and in Table 1, which refers to entire volumes, some sample titles are offered in Table 2. These illustrate change across time by focusing on early, intermediate, and recent time periods. Evident in Table 2 are the rise and fall of number of articles per year, the increase in title length, the increase in Pleasantness and Activation across periods, and the presence of different content words in different time periods ("clinician" in the early, "behaviour" in the middle, and "gender" in the recent period).

TABLE 2
 SAMPLE TITLES FROM EARLY, INTERMEDIATE, AND RECENT PERIODS OF *AMERICAN PSYCHOLOGIST*

Early Volume: 1946 (69 titles)
The members talk about APA problems
Problem-centered training in the development of the clinician
The growth of student interest in Psychology
German applied Psychology during WW II
Can we meet the formidable demand for psychological services?
Middle Volume: 1985 (258 titles)
Experimental psychologists in industry: perspectives of employers, employees, and educators
Response expectancy as a determinant of experience and behaviour
Toward a more inclusive integration of evolutionary biology and personality psychology
Experimenting on social issues: the case of school desegregation
Metatheoretical dilemmas in the psychology of gender
Recent Volume: 2010 (162 titles)
Women at the top: powerful leaders define success as work, family in a culture of gender
Bridging science and practice to improve patient care
Intergenerational effects of high neuroticism in parents and their public health significance
The dissemination and implementation of evidence-based psychological treatments: a review of current efforts
Do no harm: towards contextually appropriate psychosocial support in international emergencies

Linear and Quadratic Trends across Years

Component scores representing C1 and C2 were correlated with year (Fig. 1). C1 was strongly related to year and rose systematically between 1946 and 2010 ($r = .92, p < .001$). C2 had a U-shaped relationship with year (quadratic $r = .76, p < .001$) with a trough in the area of 1985. C2 fell systematically until 1985 ($r = -.84$) and rose systematically thereafter ($r = .87$). The most abstract titles, and those containing shorter words, are to be found close to 1985, where the number of titles per year is highest. Means for the intermediate set of years in Table 1, which were chosen to represent the time period around 1985, illustrate this fact. The manner in which Imagery and word length load on C2 is not surprising because the relationship between word length and Imagery for natural language is positive ($r = .29$ for Dictionary of Affect words).

Individual measures characterizing *American Psychologist* titles echo the trajectories of component scores across time, as confirmed by the results of one-way ANOVAs and the significant correlation of variables with C1, C2, and year (Table 1). Measures are easily grouped according to the trajectory (linear or quadratic) which they follow most closely: their grouping has been indicated in the table with one of four symbols (\uparrow , \downarrow , U, and \cap) which describe the direction of each relationship as well as its form.

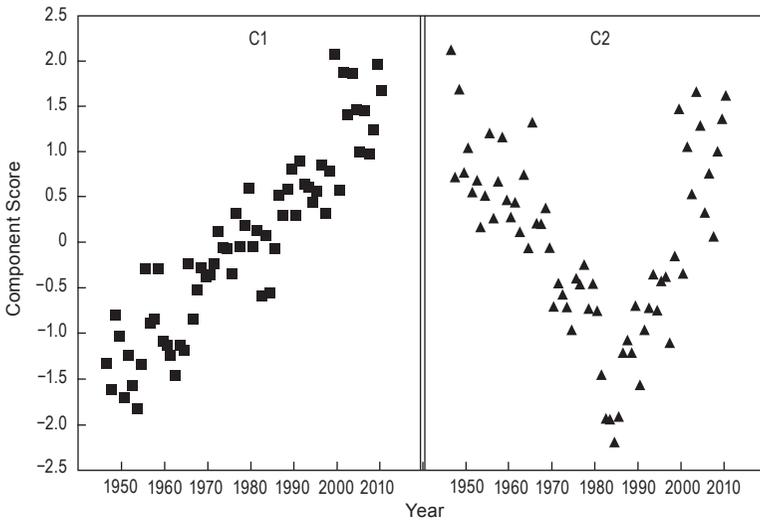


FIG. 1. The relationship of component scores (C1 = Pleasantness, Activation, and the use of more common words; C2 = Imagery, fewer titles per year, and longer words) to year.

Pleasantness, Activation, words per title, the use of commas and colons, and the employment of Gender and Evolution words all rose across time (\uparrow). Word frequency and the use of Psychology and Clinical words fell across time (\downarrow). Imagery and word length first fell and then rose (U), and titles per year, and the use of Behaviour, Cognitive, and Minority words and question marks first rose and then fell (\cap).

Business and Content Titles

American Psychologist includes some titles representing entries that are oriented to the business functions of the association (e.g., minutes of meetings, announcements of awards, obituaries). An attempt was made to separate these titles from others which refer to content rather than business. Any title containing the words "award/s," "obituary," "proceedings," "meeting," "convention," "report," "committee/s," or "secretary/'s" or the numbers 19 or 20 (from dates) was classified by a computer program as a Business title. All other titles were, by default, Content titles. The system of classification was approximate, but useful: a check of 50 titles from 1946 and 50 from 2010 indicated that its assignments were 95% accurate ($\chi^2 = 81.03$, $p < .001$; $\phi = .90$).

Thirty-one percent of all titles were Business titles, and 69% were Content titles. With year as the case, there were significant differences between the two types of titles for all measures except the use of commas (t tests, $p < .05$; Table 3). Business titles employed more Pleasant and Concrete words, and they were longer. They also employed more colons. Con-

tent titles were more Active, employed words of higher frequency, represented more titles per year, and, as might have been expected, included more content words in all categories of Table 3.

Measures of title characteristics were calculated for Business and Content titles separately and were correlated with year and with an inflected variable centered on 1985. This variable was computed as the absolute difference of year from 1985. Year and the inflected variable represented linear and inflected or quadratic trends (C1 and C2, Table 1), respectively. Title characteristics were significantly related to both year and the inflected variable (Table 3). Relationships differed according to type of title. For example, Business titles included rarer words across years ($r = -.93$ for word frequency), but no such tendency was evident for Content articles, where the correlation was effectively zero. For Content titles, the use of commas rose significantly across years ($r = .81$), but this trend was reversed for Business titles ($r = -.49$). As well, the concreteness of language represented by Imagery rose in a linear fashion for Business titles ($r = .65$)

TABLE 3
GROUP MEANS AND CORRELATIONS OF TITLE CHARACTERISTICS WITH YEAR AND AN
INFLECTED VARIABLE CENTERED ON 1985 FOR BUSINESS, CONTENT, AND ALL TITLES

Title Characteristic	Type of Article							
	Business		Content		All		Means	
	Year	1985-V	Year	1985-V	Year	1985-V	B	C*
Pleasantness	.89	.38	.33	-.38	.87	-.32	1.90	1.84
Activation	.84	-.57			.57	-.39	1.73	1.76
Imagery	.65		-.73	.61		.57	1.75	1.50
Word frequency	-.93	.59			-.81	.29	1,887	2,440
Word length	-.71	.41		.41	-.77	.33	4.28	4.98
Words/Title	.71	.52	.80	-.45	.49	-.28	8.33	7.37
Titles/Year	.88	-.31		-.85	.64	-.91	58	131
Question Marks	-.35	.26					.0012	.0106
Commas	-.49	.29	.81	-.35	.59	-.34	.0135	.0127*
Colons		-.64	.77	-.86	.71	-.83	.0529	.0275
Psychology	-.58		-.84	.72	-.90	.64	.043	.054
Behaviour				-.47		-.48	.0007	.0054
Cognition			.40	-.53	.34	-.57	.0001	.0024
Evolution/Genetics		-.27	.59		.57		.0002	.0015
Minorities				-.28		-.31	.0001	.0005
Gender			.51		.48	-.35	.0000	.0008
Clinical	-.49		-.75	.65	-.79	.59	.0020	.0041

Note. — Title characteristics are defined as in Table 1. Cases are years with $N = 65$; only significant correlations are reported. Two-tailed critical values are .25 ($p < .05$); .32 ($p < .01$); .42 ($p < .001$). *All differences between Business (B) and Content (C) titles were significant with the exception of the difference for commas (t tests, $p < .05$).

and fell in a linear fashion for Content titles ($r = -.73$). Linear associations with year tended to be stronger for Business titles, while correlations with the inflected variable were stronger for Content titles. Some construct validity was provided by the fact that content categories (the last seven rows of Table 3) were significantly related to year and the inflected variable for Content titles (nine significant relationships, many of them strong) but not Business titles (two significant relationships, of weak and medium strength).

Psychology in the World

The discipline of psychology and *American Psychologist* do not exist in a vacuum: they are embedded within a society which is itself subject to pressures and changes of various kinds. The years studied here (1946–2010) include important world events such as the Korean War, the Vietnam War, and the Gulf conflicts. They also include times of serious inflation (the 1970s), times when markets were performing poorly (the 2000s), and times of societal excess (the 1980s). In a *post hoc* analysis, title characteristics were correlated with a number of variables representing societal change. These were employment rate, U.S. inflation, the number of executions performed in the U.S. as a result of the death penalty, military spending as a percentage of Gross Domestic Product (GDP), and the Political Threat Index (McCann, 1998). Most of these variables (e.g., threat, executions, economic problems) are indicators of unpleasantness. Members of a society experiencing greater unpleasantness might be expected to write more about unpleasant topics and publish articles with more unpleasant titles. Data sources are described in Table 4. Some relationships of societal variable to year were basically linear (e.g., for employment), others were inflected around 1985 (e.g., for executions), and others had complex irregular patterns (e.g., for inflation, threat). Significant relationships between societal measures and title characteristics are summarized in Table 4. Employment rates for men and women were highly correlated ($r = -.88$), so only the latter are included in the table.

Two societal variables were largely unrelated to the characteristics of titles. There were only four weak relationships associated with inflation. These were the use of commas ($r = .25$) and colons (.27) in Business titles and the use of words from the Evolution/Genetics (–.27) and Minority (.33) categories in Content titles. There were only three weak relationships associated with political threat: word length (.38) and title length (.28) in Business titles were related to threat, as were references to Minorities (.27) in Content titles. The three remaining variables (Female Employment Rate, Number of Executions, and Military Expenditures as a percentage of GDP) were related to title characteristics in various ways (Table 4).

The frequency of words, word length, and title length for Business ti-

titles was inversely related to the rate of women's employment. The use of concrete words and Psychology and Clinical content words was inversely related to year for Content titles. Executions in the U.S. were correlated inversely with the use of colons in both Business and Content titles, and positively with the concreteness of title language and the use of words from the Psychology and Clinical categories: the years of Reagan's presidency (1981–1989) were characterized by more executions and more concrete language in titles. Military spending as a proportion of GDP was inversely correlated with title Pleasantness and Concreteness for both types of titles. If Military Spending can be interpreted as reflecting "tough times," where the U.S. was gearing up for conflict, such times were associated with less Pleasant and less concrete Content titles, a lower mention of some classes of content words (Cognition, Evolution/Genetics, Gender) and the higher mention of others (Psychology, Clinical).

The interpretation of significant correlations in Table 4 is subject to four stringent cautions. Correlation does not imply causation. Furthermore, societal variables were selected *post hoc*. For example any variable

TABLE 4
CORRELATION OF TITLE CHARACTERISTICS WITH SOCIETAL VARIABLES FOR BUSINESS AND CONTENT TITLES

Characteristic	Fem. Employ.		Executions		Military Spending	
	B	C	B	C	B	C
Pleasantness	.85	.35		-.27	-.74	-.36
Activation	.82		-.46		-.72	
Imagery	.60	-.72		.47	-.54	-.59
Word Frequency	-.93		.36		.74	
Word Length	-.74			.36	.52	
Words/Title	-.70	.80	.37		.47	-.65
Titles/Year	.86	.29		-.71	-.60	-.36
Question Marks	-.36				.45	
Commas	-.46	.78	.26			-.62
Colons		.81	-.53	-.64	-.33	-.74
Psychology	-.59	-.84		.56	.37	.68
Behaviour			-.26	-.53		
Cognition	.25	.46		-.33		-.42
Evolution/Genetics		.54				-.37
Minorities				-.28		
Gender		.48				-.35
Clinical	-.50	-.75		.53		.69

Note.—Title characteristics are defined as in Table 1. Fem. Employ. = women's employment rate, from the Bureau of Labor Statistics, U.S. Department of Labor; Executions = number of deaths by execution, [http://en.wikipedia.org/wiki/file:Executions_in_the_United_States_\(new\).png](http://en.wikipedia.org/wiki/file:Executions_in_the_United_States_(new).png); Military Spending = military expenditures as a percent of GDP, from the Council on Foreign Relations, <http://www.cfr.org/cgs/>; Threat = society-wide threat rating, from McCann (1998); B = Business titles; C = Content titles.

with a monotonic relationship to year (e.g., GDP) would be related to measures loading on C1. In addition, unassessed historical changes might be responsible for spurious correlations among assessed variables. Finally, broad correlational investigations in areas without strong theoretical models are subject to the “crud factor” (Meehl, 1990), which predicts the presence of many weak and significant correlations among variables that are difficult to interpret.

DISCUSSION

Comparisons to Previous Research

There is considerable uniformity in the results of studies addressing the construction of titles in different types of journals from different disciplines. One purpose of this research was to identify the presence (or absence) of previously noted trends in *American Psychologist*, which is not primarily a research journal, but rather one which serves to inform a professional community.

Title length. — *The Publication Manual of the American Psychological Association* (6th ed., 2010) suggests that titles should be succinct, informative, stylish, and no more than a dozen words long. Studies discussing titles in French and English journals dealing with psychology, political science, oncology, a selection of sciences, and linguistics have indicated that average title length is in this range, and that title length has increased across time (Rouquette, 1975–76; Whissell, 2004; Lewison & Hartley, 2005; Sigelman, 2006).² The norm for psychology titles from these sources is 10 words. Titles in *American Psychologist* are shorter than this norm (eight words as opposed to 10), but both Business and Content titles have tended to grow longer over time (Tables 1, 3). The relative brevity of *American Psychologist* titles is due in part to the inclusion of many obituaries, which tend to have brief titles, for example, “Harry Sands (1917–2007)” from 2010. It may also be the result of the editorial policy that articles should “appeal to the largest number of psychologists and other behaviour and social scientists” (Goodstein, 1986, p. 1) rather than being specialized in nature: specialization leads to detailed description which increases title word counts. *American Psychologist* does include some very long titles, usually in association with its official functions. For example, the 2010 title “Proceedings of the American Psychological Association for the legislative year of 2008: minutes of the annual meeting of the council of representatives, February 22–24, 2008, Washington, DC, and August 13 and 17, 2008, Boston, MA, and minutes of the February, June, August, and December 2008 meetings of the Board of Directors” contains 44 words. It is, however, fairly atypical.

²Gesuato, S. (2008) Encoding information in titles: academic practices across four genres in linguistics. <http://www.openstarts.units.it/dspace/handle/10077/3200>.

Other articles from the same year have briefer titles such as, "Obedience lite" and "Evolutionary psychology and intelligence research."

Colons in Titles.—Researchers (Haggan, 2003; Whissell, 2004; Lewison & Hartley, 2005; Sigelman, 2006; Hartley, 2007;) noted the increasing presence of colons in the titles of articles, and it has been estimated that roughly 35-45% of articles in psychology journals currently employ colons in their titles. Both of these conclusions held true for *American Psychologist*. The use of colons rose across time for Content titles (Table 1): titles of 43% of articles published in 2001–2010 included colons. It has been suggested that the inclusion of colons in titles predicts scholarly publication, productivity, and distinction, as well as complexity of thought (Dillon, 1981). Colons allow for shorter titles and permit readers to infer connections between title parts. For example, the 2010 *American Psychologist* title "In the public interest: intellectual disability, the Supreme Court, and the death penalty" does not specify the relationship of "public interest" to the post-colonic portions of the title, but it does encourage the inference that this relationship will be pursued in the article. The inclusion of colons in *American Psychologist* titles also has something to do with a particular style adopted by the journal in the titles of various functional articles such as those announcing awards or (in the past) those introducing obituaries or comments on previous articles. This style dictates a two part title with the one part describing the category of the title and the other its particulars, for example, "G. Daniel Lassiter: award for distinguished contributions to research in public policy" from 2010 or "Why the self looks so empty: comment on Cushman" from 1991. Colons were more commonly employed in Business titles than Content titles.

Pleasantness and activation.—Words in titles of two psychology review journals grew increasingly pleasant after WWII (Hogenraad, *et al.*, 1992), and words in titles of *Psychological Reports*, a journal publishing primarily research reports, grew not only more pleasant but also more active across time (Whissell, 2004). Similar trends were observed for titles in *American Psychologist* (Tables 1, 3), which are currently more pleasant and active (i.e., more cheerful and upbeat) than they have ever been. Values for Pleasantness (1.91) and Activation (1.77) in title words of articles from 2001–2010 are significantly above norms for everyday English, represented by the broadly sampled corpus described by Whissell (1998; 1.85, 1.67: $z > 40$, $p < .001$). Such positive emotionality serves the attraction function of titles by drawing more readers to articles, thereby prompting more citations. Titles in *Psychological Bulletin* and *Psychological Review* judged as more pleasant (but *not* those judged as more amusing) tend to be cited more frequently (Sagi & Yechiam, 2008). The increasing pleasantness and activation of title words could be a reflection of a systemic factor—the steadily increas-

ing prosperity of the Western world since the end of the WWII (evidenced by increases of the USA GDP between 1947 and 2010).³ As well, editorial policy for *American Psychologist* has been explicitly in favour of positive emotionality, with Goodstein (1986, p. 2) suggesting that articles (and, by inference, titles) should display “good humor” and be “enjoyable.”

Imagery.—Sigelman (2006) concluded, on the basis of a Regressive Imagery Dictionary, that titles in a political science journal had grown more abstract across time. The trend for increased abstraction in *American Psychologist* titles, as measured by the Dictionary of Affect, is not strictly linear. Business titles become more concrete across time while Content titles become more abstract (Tables 1, 3).

Content words.—Webster, *et al.* (2009) studied frequent content words found in titles from the journal *Evolution and Human Behavior* (1979–2008) to answer the question “What do evolutionary psychologists study?” They identified an increased interest in the topics of sex, sex differences, faces, and attractiveness. In this research, which poses the question “What do psychologists read in the official journal of their professional association?” several groups of title words such as Psychology words, Behaviour words, Evolutionary words, and Clinical words were distributed differently across the first 65 years of *American Psychologist*. Titles in the sciences, social sciences, and arts and humanities have tended to include the word “gender” more frequently across time, but the word “sex” at roughly the same rates (Haig, 2004). For *American Psychologist*, the use of both word types increased across time ($r = .52$ for Gender, $r = .43$ for Sex): neither word type was present in the early period of Table 1, but Sex was used twice as often as Gender in the middle period (.0017/.0008) and Gender more often than Sex in the most recent period (.0008/.0005).

A comparison of all words employed in titles of some of the earliest (1946–1952) and most recent (2004–2010) volumes of *American Psychologist* indicated different usage patterns for many words in addition to those included in Table 1. Some words were relatively more frequent in the earliest volumes (e.g., standard, university, American, ethical, survey, theory, training, planning, and service), while others were more frequent in the most recent ones (e.g., professional, cultural, diversity, international, post-doctoral, distinguished, scientific, and winners; z comparing proportions, $p < .05$, two-tailed). While some patterns of change, such as those seen in the employment of Behaviour and Cognitive words likely indicate fluctuating interests in research areas, others, such as the examples above, point to differences between a newly established professional association and one expanding well beyond its original roots.

³http://www.data360.org/dsg.aspx?Data_Set_Group_Id=230.

1985—Or Thereabouts

Several of the variables studied here were related to year in a U or inverse-U fashion, especially for Content titles (Table 3). For many of these, the inflection point—the point at which the slope of the curve became zero before changing sign and direction—was at approximately 1985. One possible explanation for the location of the inflection point involves editorial policy. Goodstein became editor in 1986, during the key period, and he wrote three brief editorials describing editorial policy (in 1986, 1987, and 1988). Goodstein emphasized the rejection rate of the journal, the importance of short articles, and the limited journal pages available. By the third year of Goodstein's editorship, journal pages had been reduced from approximately 1,500 in 1984 to approximately 1,100 in 1988, and this at a time when the number of articles published per year was still high (> 250, on average). Fowler (1991), who also edited *American Psychologist*, pointed to the fact that editorial policies are fluid ("consistency has not always been AP's [*American Psychologist's*] most salient characteristic," p. 3) and may change in non-obvious ways ("editorial policy is shaped by the underpinnings and current stage of development of the field . . ." p. 3).

Other likely stimulants to change were noted in the reports of the American Psychological Association included in *American Psychologist* on a yearly basis. The Association had experienced financial instability and was only "starting to come out of the woods" in 1984 (Treasurer's Report, Fowler, 1985, p. 613). In 1982, the Executive Officer of the Publications and Communications Board discussed with editorial staff the recommendation that *American Psychologist* move to publishing more material appropriate to a magazine (Abeles, 1982, p. 653). In 1983 a retreat of the Publication and Communication Board led to the recommendation that the editorial policy of the journal "be liberalized" to permit the publication of "manuscripts on relevant topics" (Abeles, 1983, p. 670). In the first half of the 1980s, *Psychology Today*, recently purchased by the American Psychological Association, was becoming a popular but expensive magazine (Fowler, 1985, p. 613; the magazine was resold in six years). Within the same time frame, PsycINFO, the electronic database of the Association, was being developed and expanded (Abeles, 1982, p. 653). Computerized databases have made many more titles, abstracts, and articles available to individual researchers. The increase in the number of titles typically scanned in a search might influence readers' responses to titles. There were also changes in *American Psychologist* titles reflecting changes in American society (Table 4). There were several significant correlations between title characteristics and either year or an inflected variable centered on 1985. These relationships merit further investigation.

Predictions for the Future

Data in Table 3 can be employed to predict characteristics of future *American Psychologist* titles. If current trends continue, Business titles will become more Pleasant, more Active, more concrete, longer, and less heavily punctuated. They will also include more uncommon words. Content titles will become longer, more heavily punctuated, more Pleasant, and more abstract. There will likely be changes in the frequency of topic words for Content titles, with more mentions of topics in the Evolution/Genetics and Gender categories. New categories of topic words will almost certainly come into view as time passes. For the near future, these predictions will likely prove accurate because they are based on current trends. However, it is by no means certain that current trends will continue indefinitely. One problem with the assumption is most of the variables in Table 3 have upper limits. It is difficult to envision standard title lengths of 35 words, or standard Pleasantness scores at the maximum value of 3; ceiling effects are inevitable. A second problem lies in the possibility that an "external force" (in the Newtonian sense, where things keep on going as they are unless affected by an external force) will change the direction of the relationship between title characteristics and year. Such a force was at work in the years around 1985 when the C2 curve inflected. Finally, a close examination of the points in Fig. 1 will emphasize the rather odd distribution of points between 2000 and 2010 for both C1 and C2. The point scatter does not support the conclusion of a continued relationship with year ($p > .10$), and the two series have a break in them (empty space) between 1999 and 2000 which merits further study.

Conclusions

Successful titles of journal articles should attract and inform potential readers, especially in an age when readers scan dozens of titles output by computerized search engines in relatively short periods of time. The original title of this article (Emotion style and content of titles in *American Psychologist* 1946–2010) was intended to be informative: it belonged to Hartley's seventh category of titles that emphasizes methodology (2008, p. 24). However, a reviewer's description of the title as "unimaginative" suggests that it did not achieve the other important function of titles – that of attracting attention. The revised title (The trend towards more attractive and informative titles: *American Psychologist* 1946–2010) belongs to Hartley's fourth category of titles that report findings. It describes/interprets results.

Research has confirmed the importance of attractiveness in the creation of first impressions (Lorenzo, Biesanz, & Human, 2010). Title punctuation-category (descriptive, declarative, questioning; Jamali & Nikzad, 2011) is related to the citation rates of articles: descriptive or declarative

titles are associated with higher citation rates than articles including question marks in their titles. Results for title length have been equivocal: Jacques and Sebire (2010) suggest that articles with longer titles are cited more often while Jamali and Nikzad (2011) report a weak but opposite trend. Titles typifying the most recent volumes of *American Psychologist* avoid question marks, but they are informative and attractive. They employ active words (they stand out), pleasant words (they are positive in outlook), and concrete words (they engender mental images). Such titles encourage the inference that the articles which they describe are purveyors of oomph⁴ rather than bumf.⁵

The years when computerized search engines began to be widely accessible (the 1980s, when PsycINFO was established by the American Psychological Association and the C2 curve inflected), were years of relatively rapid change. More articles became available to potential readers who cast wider and wider nets in their search for materials. The explosion of available materials continues. Google® searches are frequently employed to find articles posted on authors' web sites as well as in journals, and new open-access web journals are continually being announced. Future research could address the hypothesis that title changes are a response to the total mass of titles available, and that title characteristics are predictors of "survival" (i.e., readership and citation) in a crowded niche.

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⁴Spirited vigor, physical or sexual attractiveness: <http://www.thefreedictionary.com/oomph>.

⁵Pamphlets, forms, or memorandums, especially of an official nature and deemed of little interest or importance: <http://www.thefreedictionary.com/bumf>.

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