

Amusing titles in scientific journals and article citation

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Abstract

The present study examines whether the use of humor in scientific article titles is associated with the number of citations an article receives. Four judges rated the degree of amusement and pleasantness of titles of articles published over 10 years (from 1985 to 1994) in two of the most prestigious journals in Psychology, *Psychological Bulletin* and *Psychological Review*. We then examined the association between the levels of amusement and pleasantness and the article's monthly citation average. The results show that while the pleasantness rating was weakly associated with the number of citations, articles with highly amusing titles (2 standard deviations above average) received fewer citations. The negative association between amusing titles and subsequent citations cannot be attributed to differences in the title length and pleasantness, number of authors, year of publication, and article type (regular article vs. comment). These findings are discussed in the context of the importance of titles for signalling an article's content.

Keywords: citation analysis; research evaluation; writing style; humor

1. Introduction

The decision whether to read a scientific article is based on various cues concerning the content of the article. One of the most important of these cues is the article title [1,2]. However, studies of academic papers in various disciplines have so far not found any association between title contents and subsequent article citation [3,4,5]. For instance, an investigation of “attention grabbers”, in Marketing titles, words such as “new” and “marketing”, did not reveal any effect of title contents on the lifetime citations of the article [3]. We studied an extreme case of attention grabbing, the use of humorous titles. The use of humor in scientific titles makes sense if we take the point of view of the title as a persuasion tool for attracting readers [6] and consider the fact that humor has been widely used in advertising over the years, and still is [7]. The question addressed in the present study is whether the use of amusing titles is indeed associated with the subsequent success of the article, as measured by the citation index.

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The effect of humor in the context of academic texts was recently investigated in several experimental studies [8,9,10]. Bryant and his colleagues [8] examined the effect of humorous illustrations in a textbook. The participants, undergraduate students, were asked to evaluate their enjoyableness, the credibility of the author and the persuasiveness of the text. The study used a specially prepared section of an academic book dealing with interpersonal communication. Amusing cartoons were added to illustrate different educational points. The number of illustrations in the 6 pages text was set to be either 0, 2 or 6. The results show that while humorous illustrations did make the text more enjoyable, they *impaired* the authors' rated credibility and the text persuasiveness. Another study [9] focused on existing published material (90 texts selected randomly from a complete list of introductory communication textbooks). The authors found that the number of humorous occurrences in each text was positively associated with the degree of enjoyment, but negatively associated with the perceived credibility of the author.

These previous findings suggest that the use of humor in titles may harm the attractiveness of scientific articles. Specifically, the use of humor may decrease the tendency to read an article and treat its contents seriously². The goal of the present study is to extend the previous investigations by examining the impact of amusing titles in academic papers in the area of Psychology on subsequent article citations.

We examined articles published over a span of 10 years (from 1985 to 1994) in two of the most steadily high ranking journals in behavioral science, *Psychological Bulletin* and *Psychological Review*. While the abstract definition of what makes a text humorous is vague at best [11,12], we followed the Oxford dictionary definition of humor, which states that humor is "the quality of being amusing or comic" [13]. We therefore measured humor by asking judges to subjectively rate their degree of amusement.

To control for the emotionality of the text [14], we also asked judges to report the pleasantness aroused by the title, as defined by "giving a sense of happy satisfaction or enjoyment; friendly and likeable" [13]. We also assessed additional features available in the title scanning process: The length of the title (number of words), the number of authors, the year of publication, and in addition, the type of the article (regular article vs. comment, response and reply article).

2. Method

2.1. Judges:

Eight psychology graduate students (four females and four males) studying at the Technion or at Haifa University were recruited for evaluating the titles. We chose judges with academic education in Psychology so they would be able to understand the professional terminology. The judges' age ranged from 25 to 27. Because Israeli graduates were used, we selected judges who were self-rated as having a mother tongue level in English and who have passed a short oral exam. Each journal was evaluated by an independent group of four judges (2 males and 2 females), selected randomly. The judges were given payment for their participation (200 New Israeli Shekel for the whole experiment; NIS 1 = \$4.5).

2.2. Materials:

The titles of all of the articles published from 1985 to 1994 in *Psychological Bulletin* and *Psychological Review* were analyzed. In *Psychological Bulletin* one title was removed because no citation data was found, leaving a total of 658 titles. In *Psychological Review* one title was removed because no citation data was found and eight titles were removed due to the fact they were re-publications, leaving a total number of 351 titles. The final total number of titles was 1,009.

² Alternatively, articles with humorous titles may be inherently less important (see discussion section).

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2.3. Procedure:

Judges were provided with an MS-Excel file that included the titles from one of the two examined journals (row headings) and the assessment dimensions (column headings). The order of the titles was separately randomized for each judge to cancel out practice or fatigue effects. The complete instructions appear in the Appendix section. Briefly, judges were given the definitions of amusement and pleasantness and were asked to rate the titles on a 1 to 7 Likert scale, where 1 means “not amusing (pleasant) at all” and 7 means “very amusing (pleasant)”. The judges were instructed to assess the titles in sessions of no more than an hour, and to take breaks of at least 10 minutes between sessions.

Comments, response and reply articles were identified by the presence of a target article in the title or abstract (limited to up to three years after the target article was published). In this way, 56 articles (8.51 %) were identified as comments, responses, or replies in *Psychological Bulletin*, and 59 (16.81 %) in *Psychological Review*. Finally, we gathered the citation information for each article in the different journals using the ISI Web of Knowledge database [15].

2.4. Analysis:

The dependent variable was the average monthly number of citations that the article had received between its publication month and the end of year 2005. The independent variables were the levels of amusement and pleasantness of the titles, averaged across the four judges in each journal. For the initial examination we used Spearman's rho correlations. In addition, using T-tests for independent samples, we compared titles rated as high (2 standard deviations above average) in amusement and pleasantness with the remaining titles. In this way, the Top Amusing titles group included titles with at least 3.0 rating points, leaving 69 titles out of the 1009 title sample (6.84%). The Top Pleasant titles group included titles with at least 5.5 rating points, leaving 37 titles out of the 1009 title sample (3.68%). Examples of Top Amusing titles that were also in the Top Pleasant titles group include: “Beware of a half-tailed test”, “The unicorn, the normal curve, and other improbable creatures”. An example of a Top Amusing title that was *not* in the Top Pleasant title group is: “Modeling the days of our lives: Using survival analysis when designing and analyzing longitudinal studies of duration and the timing of events”.

3. Results

3.1. Reliability of the judgments:

The internal consistency of the amusement scale was adequate for both *Psychological Bulletin* ($\alpha = 0.83$) and *Psychological Review* ($\alpha = 0.78$) titles. The internal consistency of the pleasantness scale was lower in both journals ($\alpha = 0.65, 0.67$, respectively).

3.2. Title contents and subsequent citations:

Table 1 shows the overall statistics of the two journals. As indicated in the table, *Psychological Review* titles were rated as significantly more amusing and pleasant while *Psychological Bulletin* titles were significantly longer. We chose to analyze the two journals together in order to increase statistical power but examined the effect of the target journal using an analysis of covariance. This is partly justified by the finding of no significant difference between the two journals in the dependent variable, the average number of citations ($t(631.2) = 1.76$, NS).

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Table 1: A comparison of titles published between 1985 and 1994 in the two journals (means and proportions; standard deviations appear in parenthesis).

	Psychological Bulletin (N=658)	Psychological Review (N=351)
Number of citations (monthly)	0.72 (1.16)	0.87 (1.34)
Amusement *	1.28 (0.68)	1.86 (0.85)
Pleasantness *	3.67 (0.93)	4.11 (0.86)
Number of words *	9.90 (3.78)	9.09 (3.5)
Number of authors	1.78 (0.8)	1.81 (0.86)
% comments, responses and replies *	8.5%	16.8%

* = $p < .05$

Table 2: A comparison of Top Amusing titles and the remaining Low Amusing titles (means and proportions; standard deviations appear in parenthesis).

	Top Amusing (N = 69)	Low Amusing (N = 950)
Number of citations (monthly) *	0.53 (0.55)	0.79 (1.26)
Pleasantness *	4.93 (0.87)	3.74 (0.88)
Number of words	10.57 (4.55)	9.54 (3.63)
Number of authors	1.67 (0.89)	1.80 (0.81)
Year of publication	1990.0 (2.9)	1989.6 (2.5)
% comments, responses and replies *	20.0%	11.0%
% Psychological Review *	49.3%	33.7%

* = $p < .05$

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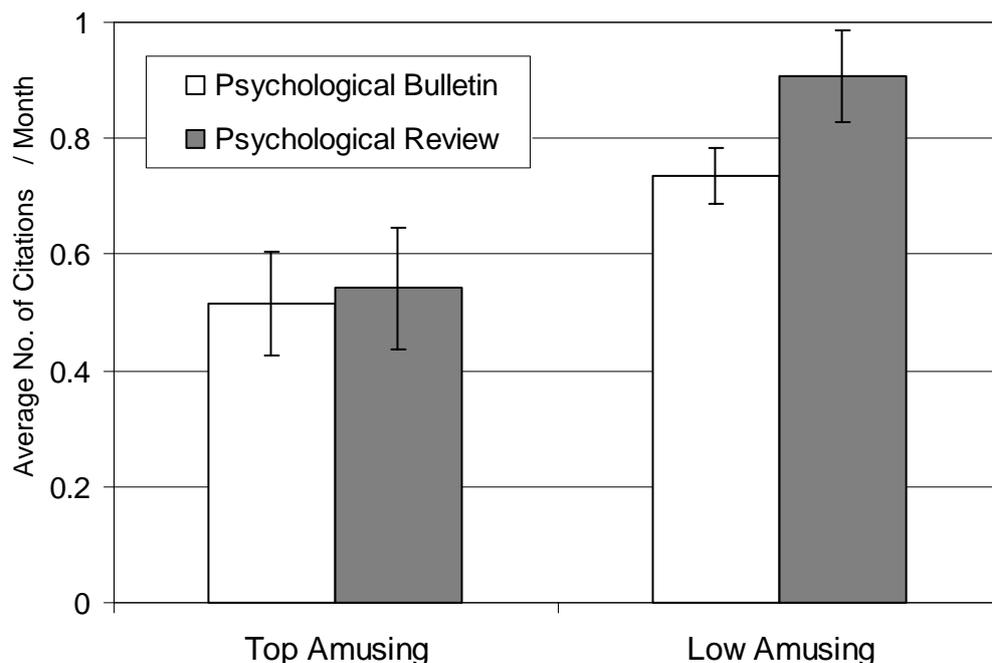
Correlational analysis: An examination of all of the studied titles reveals that the level of amusement was *not* significantly correlated with the number of citations ($r = 0.03$, NS). However, the title pleasantness was positively correlated with the number of citations ($r = 0.16$, $p < .01$). Additionally, the title amusement and its pleasantness were positively correlated ($r = 0.39$, $p < .01$).

An examination of highly amusing and pleasant titles: We proceeded with an analysis of the Top Amusing titles. Table 2 and Figure 1 summarize the differences between the Top Amusing and the remaining (Low Amusing) titles. As indicated in the table and figure, the Top Amusing titles had fewer citations in both journals, with the difference (0.26 citations per month) amounting to a 33.4% reduction in the number of citations. A T-test for independent samples indicated that this difference was significant ($t(104.1) = -3.37$, $p < .01$; Cohen's $d = .027$, a small effect size). In addition to this first order effect, the variance of the number of citations was significantly lower in the Top Amusing titles (Levene's test: $F(1, 1007) = 5.71$, $p < .01$). Therefore, while overall the title amusement was not associated with the number of citations, an exceptionally high level of amusement was negatively associated with the number of citations.

As indicated in Table 2, the percentage of comment papers (including also responses and replies) was significantly higher in the Top Amusing titles group ($Z(1007) = 2.34$, $p < .01$). When retaining only non-comments, the difference between groups remains significant ($t(77.7) = -2.64$, $p < .01$). Top Amusing titles were also rated as significantly more pleasant ($t(1007) = 10.8$, $p < .01$), and included more Psychological Review titles ($Z(1007) = 2.76$, $p < .01$). To control for the potential moderating effects of article type, pleasantness, and journal, we conducted an analysis of variance co-varying for these factors. The results showed that the difference between the Top Amusing titles and the other titles remained significant ($F(1,1003) = 5.62$, $p < .05$).

We also examined whether the effect of amusing title contents is due to the structure of the title, specifically the use of colons and question marks. Forty nine percents of the Top amusing titles (excluding comments) included a colon and 20% included a question mark (compared to 53% and 5% in the remaining titles, respectively). However, the differences in the number of citations between Amusing titles that did or did not include colons and did or did not include question marks were both not significant.

Figure 1 – Psychological Bulletin and Psychological Review papers: Monthly citations in Top Amusing titles and the remaining Low Amusing titles (means and standard errors).



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Next, we examined the Top Pleasant titles (See table 3). There was no significant difference in the number of citations between the Top Pleasant titles group and the remaining (Low Pleasant) titles ($t(1007) = -0.78$, NS). Thus, extreme high pleasantness was not associated with a smaller number of citations.

Table 3: A comparison of Top Pleasant titles and the remaining Low Pleasant titles (means and proportions; standard deviations appear in parenthesis).

	Top Pleasant (N = 37)	Low Pleasant (N = 972)
Number of citations (monthly)	0.62 (0.64)	0.78 (1.24)
Amusement *	3.32 (1.57)	1.41 (0.65)
Number of words	9.05 (4.32)	9.63 (3.68)
Number of authors	1.51 (0.84)	1.80 (0.82)
Year of publication	1989.2 (2.8)	1989.6 (2.9)
% comments, responses and replies	10.8%	11.0%
% Psychological Review *	70.3%	33.6%

* = $p < .05$

An analysis of extremes: Given the small proportion of Top Amusing titles (69 titles; 6.84%) in order to ensure that the results do not stem from random error we conducted a simulation of 10,000 comparisons between random 69 titles and the remaining titles, using t-tests for independent samples to compare the two groups. The results reveal that 6.0% of the comparisons were significant in the current direction (2.4 times more than expected by chance). However, even when penalizing the significance criteria accordingly ($\alpha = 0.021$), our result ($p = 0.00098$) is well below the criteria, indicating that the differences in the number of citations do not stem from random error. An identical analysis of the second order effect shows that it is also significant ($\alpha = 0.019$, $p = 0.017$).

3.3. An analysis of same author papers:

To explore the robustness of the current findings to articles written by the same author, we focused on a small sample of authors who published both Top Amusing titles and Low Amusing titles in the same journal. Given the small number of articles in our sample that were written by the exact same author, we extended our investigation to cases where the first author of the Top Amusing title was also a co-author of a Low Amusing title. This resulted in 19 pairs of titles written by the same author, where 10 pairs had the exact same author, 6 had the same first author with different co-authors, and 3 had different first authors. We then compared the citations for the Top Amusing and Low Amusing titles of the same author.

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Consistent with our previous results, the Top Amusing titles received fewer citations, with a monthly average of 0.58, compared to 1.55 in Low Amusing titles, a 62% difference in the number of citations. This difference approached statistical significance ($t(21.7) = 1.69, p = 0.10$). Moreover, the difference between the variances of the citations was significant ($F(1,38) = 3.99, p = .05$). Specifically, as before, in the Top Amusing titles the variance was considerably smaller than in the remaining titles (SD of 0.76 compared to 2.36, respectively). This result further supports the findings that amusing titles are associated with a more homogenous distribution of citations, and fewer highly cited papers.

4. Discussion

Previous studies have established that there is an association between title characteristics and other aspects of the scientific paper, such as an association between title and manuscript length [16] and between title length and the number of authors [17,18]. However, very few studies have examined the predictive power of titles for evaluating future citations. The few studies that examined the impact of specific title words suggested that the title is not an informative tool for predicting the number of citations [3,4].

The results of the current study indicate that in two prestigious scientific journals in Psychology the use of exceptionally amusing titles (2 standard deviations above the average rated amusement) was associated with a substantiate “penalty” of around 33% of the total number of citations. The present results were found in both of the examined journals and cannot be attributed to potential moderating effects of the title length and pleasantness, the number of authors, the year of publication, and the article type (regular article vs. comment).

There are several possible interpretations for these findings. One possibility is that humorous titles communicate a non-serious subject matter, and as found previously in experimental settings [8,9] harm the credibility of the paper. This might be due to the specific expectations of readers of scientific papers to which humorous contents may signal low quality [19]. Another possible contributing factor is that papers with highly amusing titles could be more difficult to find using article databases because amusing titles include fewer professional keywords [2]. Yet it is also possible that papers with highly amusing titles may simply be less important. Humor might even be a way of hiding the true value of an article. Studies have shown that in some exchange situations vagueness of information can mask low quality products and improve their success [20,21]. This explanation is consistent with the second order effect found in the present study. Articles with highly amusing titles did have a modest level of citations but they “did not reach the stars”.

The second main finding of the current study is that the title pleasantness was weakly associated with the number of citations; and unlike the amusing titles, top pleasant titles were not significantly associated with a reduced number of citations. These results are consistent with findings in marketing research showing that feelings of pleasantness are associated with increased confidence [22] and with positive attitude [23]. It is interesting to note that although feelings of pleasantness were associated with the degree of amusement, only the amusement factor was negatively associated with article citation.

Limitations of the present study include the focus on two journals in Psychology and the use of only four graduate students as judges. Another limitation of the current study is that it is a “natural experiment” of existing data. Like other field experiments, the results may be interpreted in different ways. Some of these interpretations, listed above, indicate that humor has a direct and even causal role in determining the citations of an article. Others imply that humor has a secondary role. Nevertheless, we think that the current findings are important. Other studies have already established a causal negative effect between the use of humor in academic texts and the subsequent evaluations of their credibility and persuasiveness [8,9]. Our study examined the robustness of these laboratory findings in the major outlets of scientific research in psychological science.

Humor does have a substantial place in our life and it has many beneficial aspects in human interaction and communication. It can reduce social stress, promote positive emotions and emotional connection, and enhance attention, understanding, and acceptance of messages [24]. However, there are some aspects of life where humor may have a negative impact. Traditionally, scientific publication is considered a serious matter, and humor seems

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antithetical to it [2,25]. The results of the current study give an empirical validation to this notion. Although the reasons for the negative association between the use of amusing titles and subsequent citations are not entirely clear, the findings do suggest that authors should be cautious about including humorous contents in article titles.

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Appendix: Instructions

Please assess the article titles presented in the Excel file, according to the following dimensions:

Comprehension: Please write the number of the words in the title that you DO NOT understand.

Amusement: How amusing do you find the title?

According to the Oxford dictionary, **Amuse** means – “cause (someone) to laugh or smile”. By this definition, please assess the following titles on a 1 to 7 scale, where **1** means not amusing at all and **7** means very amusing. Please use the full range of the scale (1 to 7), **not** only the values **1** and **7**.

Pleasantness: How pleasant do you find the title?

According to the Oxford dictionary, **Pleasant** means – “giving a sense of happy satisfaction or enjoyment; friendly and likeable”. By this definition, please assess the following titles on a 1 to 7 scale, where **1** means not pleasant at all and **7** means very pleasant. Please use the full range of the scale (1 to 7), **not** only the values **1** and **7**.

***Please note that amusement and pleasantness do not pertain to the subject of the article itself or to your personal interest but to the way the title is written.**

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