 Evolution of the Strength-of-Voice Factor: updated bibliometric to evaluate publication quality

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Abstract
Objective: To revise and further evaluate the Strength-of-Voice Factor (SVF) bibliometric (presented at ISMPP 2010) measuring the significance of individual publications and publication programs.

Research design and methods: The revised SVF has 4 components: A. journal impact (ScImago Journal Rank), B. revised author score (number of author citations during the period of number of articles authored during the same period), C. number of article citations; and D. article level of evidence (based on Oxford Centre for Evidence-Based Medicine Levels of Evidence Table). For an article, SVF = A x B x C x D/100; for a publication program (or other body of literature), mean and median SVF for the program are assessed.

Conclusions: SVF is an objective bibliometric determining the strength of an individual article or a body of literature (e.g., industry-sponsored publication program). It is different from a journal’s publications, or a journal’s issues or supplements.

Background
One typical metric used to determine the effectiveness of a publication program is a simple tally of the number of publications generated in a given year. Although easy to measure, this metric highlights quantity over quality, does not differentiate between article types (e.g., editorial) and does not reflect the potential clinical impact of the publication.

In an effort to challenge the “quantity mindset,” we first proposed in 2010 a new metric for measuring the quality of the publications effort, which we termed Strength-of-Voice Factor (SVF).

The SVF includes components for the quality of the publishing journal, the article type, citations, and the author’s publication history.

This metric can be applied to a single publication, a collection of publications, or an entire publication program.

At its initial presentation and in subsequent discussions, we decided to make refinements to this metric and test some assumptions of the metric.

Methods
Components of the revised SVF

A. The journal impact
- ScImago Journal Rank (SJR) of the journal during the year in which the article was published (eg, for an article published in 2007, the 2007 SJR was used rather than this year’s)
- Replaced the current year’s impact factor (IF) as component A
- The SJR is freely available and covers a wider array of journals.
- Without the influence of journal self-citations.

B. The article’s publication impact (author SVF)
- Single author SVF = # of citations of author during year of article publication # of articles authored during the publication year.
- More prolific and highly cited authors can drive readers to other articles, thus increasing the strength of the article.

C. The article impact
- Component B score
- # of citations divided by the number of articles in a journal calculation of the SJR attributes different weight to citations depending on the “quality” of the citing journal applying a Papankiv algorithm.
- Without the influence of journal self-citations.

D. The quality of evidence in the article (Table 1) based on the levels of evidence from the Center for Evidence Based Medicine.

Calculation of SVF
- SVF for an article = A x B x C x D/100
- SVF for a program = average of median SVFs for all articles in the program.

Results

- Mean and median SVFs for industry-sponsored publications (Figures 1A and C) and for non-sponsored publications (Figures 1B and F) for the indications varied, with the highest scores for the sponsored publications at launch.

Discussion

- A single drug with multiple indications was selected for this evaluation of the SVF. We looked at:
  - SVF-1 at the year of launch (varies by indication) and in 2 consecutive years post-launch to assess product lifecycle trends
  - SVF scores for all publications that were part of the industry-sponsored publication plan versus those that were externally published.
  - The proportion of “low impact” (article SVF = 0) and “well-received” (article SVF > mean SVF for the publication program) articles.
  - All article and author searches were conducted on the Science Citation Index (SCI) Expanded database (Scopus) limited to English language and type of publication = article, letter, editorial material, or review.

Conclusions

- The data from these analyses show:
  - For industry-sponsored publications, mean and median scores were generally greatest in launch year and decreased within 1 or 2 years post-launch.
  - For non-sponsored publications, the SVF was very low at launch and increased slightly over time, but the median score was still lower than the industry-sponsored publication program’s score.

- This variation may reflect time since launch as there were fewer O’s prior-launch than later.

- The SVFs varied across therapeutic areas; thus, we may wish to investigate ways to normalize scores across the biomedical literature.

References