

ALTMETRICS:
**An Analysis of
Social Media Promotion, Gaming,
and Ethics in Academic Publishing**



ABOUT ALTMETRIC

Altmetric was founded in 2011 and has made it a mission to track and analyze the online activity around scholarly literature. Altmetric collates what people are saying about published research in the media, public policy documents, social networks, blogs, and other online spaces to provide a more robust picture of the influence and reach of scholarly work. Altmetric is part of the Digital Science portfolio. Find out more at altmetric.com

ABOUT AESTHETIC SURGERY JOURNAL

Aesthetic Surgery Journal is a peer-reviewed international journal focusing on scientific developments and clinical techniques in aesthetic surgery. The official publication of the American Society for Aesthetic Plastic Surgery (ASAPS), *ASJ* is also the official English-language journal of many major international societies of plastic, aesthetic and reconstructive surgery representing South America, Central America, Europe, Asia, and the Middle East. It is also the official journal of the British Association of Aesthetic Plastic Surgeons, the Canadian Society for Aesthetic Plastic Surgery and The Rhinoplasty Society.

About the Authors

PHAEDRA E. CRESS

 @phaedracsress

American Society for Aesthetic Plastic Surgery

Has worked in publishing for nineteen years managing high-impact journals in science and medicine. She presently serves as the Executive Editor for the *Aesthetic Surgery Journal* and *Aesthetic Surgery Journal Open Forum* and is immediate past Co-Director of WAME, a member of COPE, Co-chair of the ISMTE Marketing & Social Media Committee, and a Gold Level Altmetric Ambassador. Her research interests include predatory publishing, open access, publication ethics, and altmetrics.

OLIVIER A BRANFORD

 @olivierbranford

MA(Cantab), MBBS(Lon), PhD(Lon), MRCS(Eng), FRCS(Plast)

Is an aesthetic plastic surgeon specialising in non-surgical and surgical cosmetic and reconstructive plastic surgery in London. He has a special interest in breast microsurgical reconstruction surgery which consists of rebuilding the breasts using the patient's own skin, fat and/or muscle. He has performed over 300 successful microsurgical procedures and prides himself on the safety and quality of his clinical work. He is also rated by Tatler magazine as one of top 5 breast aesthetic plastic surgeons in UK.


FOAD NAHAI

 @nahaidr

MD, FACS, Emory University, Maurice J. Jurkiewicz

M. J. Jurkiewicz Endowed Chair in Plastic Surgery and Professor of Surgery at the Emory University School of Medicine. He has taught for over 40 years and is certified by the American Board of Plastic Surgery where he served as a director of the board for six years. He is Editor in Chief of the *Aesthetic Surgery Journal* and *Aesthetic Surgery Journal Open Forum*, past president of the American Society for Aesthetic Plastic Surgery, the International Society of Aesthetic Plastic Surgery, and the American Association for Accreditation of Ambulatory Surgery Facilities.

STACY KONKIEL

 stacykonkiel.org

Director of Research Relations at Altmetric

Her research interests include incentives systems in academia and informetrics, and Stacy has written and presented widely about altmetrics, Open Science, and library services. Previously, Stacy worked with teams at Impactstory, Indiana University & PLOS.

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Altmetric
6 Briset Street
London, EC1M 5NR
United Kingdom
info@altmetric.com

Aesthetic Surgery Journal
11262 Monarch Street
Garden Grove, CA 92841
USA

Executive Summary

Both enthusiasm and caution surrounding the use of social media and altmetrics —“alternative metrics” that measure online attention garnered by published journal articles or other scholarly works—in scientific publishing have increased as editors, authors and readers use these technologies regularly.

In some sectors of the publishing world, the introduction of these technologies raises questions around publication ethics and the role of journal editors in promoting—and potentially artificially inflating or “gaming” altmetrics for—research published in their journals.

In this report, we discuss the effects of social media promotion through the lens of altmetrics. We begin with a look at an experiment, which tracked altmetrics for 120 articles published in the *Aesthetic Surgery Journal (ASJ)* between 1996 to 2016. *ASJ* editors introduced a number of interventions, including extra social media promotion and press coverage, to better understand variations in altmetrics as a result of such promotion by *ASJ* editors and authors, compared to articles that pre-date the onset of social media. They further studied eight articles that received deliberate extra social media, press, and other promotional interventions to assess whether those articles’ altmetrics improved as a result.

Our results show a demonstrated increase in altmetrics for *ASJ* research published after 2012, due to the heavy use of social media for marketing purposes. We found that the newest articles published in *ASJ*, in particular those that were afforded extra social media and other marketing promotion after 2014, typically garnered the highest Altmetric Attention Scores, with greater digital impact in the form of tweets, Facebook posts, blogs, and national media attention.



Our results show a demonstrated increase in altmetrics for *ASJ* research published after 2012, due to the heavy use of social media for marketing purposes.

The report goes on to discuss these findings in the context of publication ethics. We believe that a gray area exists between the extremes of “all research promotion is good, because it results in attention for our journals” and “any kind of strategic social media promotion of research is unethical.” Strategic promotion for research on the part of journal editors and authors can be helpful in bringing research to the attention of communities of interest. However, gaming practices such as purchasing social media posts and the use of bots are inexcusable, and such practices can cast undue suspicion upon responsible journal marketing practices. These practices may in turn cause readers to question the ethics of the research itself, which can be detrimental for journals.

This report shows that the use of social media and targeted engagement strategies in academic publishing can have significant effects on an article’s digital impact, and added benefits for journals such as improved author and brand loyalty. We invite journal editors and authors who read this report to consider this topic and share their feedback with *ASJ* and Altmetric.

Altmetrics—“alternative metrics” that measure online attention garnered by published journal articles or other scholarly works—have been proposed as a complement to more traditional citation impact metrics, such as the Journal Impact Factor, and usage statistics like full-text and PDF downloads.

Altmetrics can include diverse data sourced from the social web, including social media and newspaper coverage, as well as citations to research in patents and public policy.

Altmetric is an altmetrics company that tracks and collates online shares and mentions of published research in the sources they monitor. Uniquely, Altmetric offers a composite indicator called the Altmetric Attention Score, which approximates the overall reach of research.

ABOUT THE ALTMETRIC ATTENTION SCORE AND ALTMETRIC “DONUT”



The Altmetric Attention Score is a weighted measure of the attention that a scholarly output has received. It is based on the volume of attention, the sources that the attention comes

from, and the authors of the individual pieces of attention (or “mentions”). The colors of the donut differ from article to article to reflect the sources of the attention that an item has received.

Most attention that contributes to the Score comes from mentions from 2011 onward. Some outputs have attention from as far back as 1928.

From time to time you might notice that the Altmetric Attention Score for a piece of research fluctuates. This can happen when a mention has been deleted, when we remove posts that have been flagged as spam, or when we add new sources and need to re-weight our scoring algorithm.

THE COLORS OF THE DONUT

- Policy documents
- News
- Blogs
- Twitter
- Post-publication peer-reviews
- Facebook
- Sina Weibo
- Syllabi
- Wikipedia
- Google+
- LinkedIn
- Reddit
- Faculty1000
- Q&A (Stack Overflow)
- Youtube
- Pinterest
- Patents

As altmetrics become more commonplace in academic publishing, we sought to engage the editorial board of the *Aesthetic Surgery Journal (ASJ)* by bringing to their attention the importance of social media marketing and the potential positive effects it might have for the Journal. Questions arose that prompted the ASJ team to evaluate articles published in ASJ in the context of the social media attention that they received, and their resulting altmetrics success.

At ASJ's 2014 annual meeting in San Francisco, co-author Phaedra Cress presented the merits of social media and in particular the significance of altmetrics in academia. The board was given instructions and encouraged to engage ASJ readers through Twitter and Facebook. In this report, we use May 2014 as a starting point for examining the effects of social media promotion upon research, with a presumed increased potential for higher altmetric attention.

ASJ had known for some time that altmetrics were of value to journals. ASJ editors realized that altmetrics were increasing in popularity when major publishers began adopting them across their entire journal portfolios. Therefore, we wanted to research the value of altmetrics in the plastic surgery community, in order to increase readership and interest in the Journal.

With the growth of ASJ's Twitter and Facebook reach, we began to consider that these strategic social media promotion tactics introduced an ethical conundrum, with regard to "gaming." Gaming is a broad term that implies the manipulation of metrics, whether intentional or unintentional.

If a journal engages in strategic self-promotion on social media, and appreciates the higher Altmetric Attention Scores that its articles receive due to that promotion, is this "gaming," and is it necessarily a bad thing? Or are certain kinds of gaming merely an extension of traditional journal marketing practices, which aim to increase the reach, readership, and respect of a journal within relevant communities? In that case, what kinds of gaming would be unacceptable, and why?

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Euan Adie, founder of Altmetric, once outlined the risk and likelihood of gaming based on the amount of value added to the discussion of an article versus the perceived intent to manipulate the discussion. He proposed four kinds of gaming:

1. Legitimate promotion (intent exists, value added);
2. Gaming (intent exists, no value);
3. Spam (no intent, no value);
4. Incidental (no intent, value but not directly to the article)

It is with this nuanced understanding of gaming that the ASJ authors sought to explore the effects of social media promotion on a longitudinal series of academic publications in the *Aesthetic Surgery Journal (ASJ)*. The analysis also aimed to more widely understand the potential gaming of ASJ articles' altmetrics as a result of strategic promotion at the journal level, compared to articles that pre-date the onset of social media and the focus on altmetrics. We further studied a specific cohort of articles that received deliberate extra social media, press, and other attention to assess whether the articles' altmetrics improved as a result.

This report focuses on the effects of using social media in journal-led article promotion, with an emphasis on altmetrics. By choosing specific articles to promote through social media, a benign form of gaming occurs, though not for the sake of intentional unethical behavior. The authors sought to identify both the effects of promotion on journal altmetrics and other tangential effects such as an increase in author loyalty, retention, and readership, as a result of the efforts expended by the editorial team of ASJ.

1. Adie E. Altmetric blog. <http://www.altmetric.com/blog/gaming-altmetrics/>. September 18, 2013.

A study in journal-led social media promotion

ASJ staff identified articles published between May 2014 and November 2014 that were subject to social media marketing and editorial board member engagement. The journal's publisher at that time, SAGE, promoted a number of ASJ articles via Twitter, Facebook, and blogs in addition to the social media promotion offered by the ASJ editorial team. The journal's society, the American Society for Aesthetic Plastic Surgery (ASAPS), also issued press releases several times per year based on select ASJ articles.

The analysis focused almost exclusively on full-length research articles in various sections of *ASJ* (breast, oculoplastic surgery, and rhinoplasty), as opposed to Editorials and shorter articles, because they are typically more well read and cited. Reviews, Continuing Medical Education and Supplement articles were also selected, because the editorial board anecdotally noted that these types of articles had garnered more online attention. We also included Editor's Choice articles which are made free and open to read without a subscription.

To understand the effects of social media promotion on the overall reach of the promoted *ASJ* articles, *ASJ* staff chose altmetrics as a measure of effectiveness. *ASJ* used Altmetric as an altmetrics data source due to its ease of use.

Altmetric tracks research outputs (e.g. books, journal articles, data sets, conference proceedings, clinical trials, gray literature) across a number of diverse data sources (including policy documents, mainstream media, blogs, online reference managers like Mendeley and CiteULike, post-publication peer-review forums, and social media including Twitter, Facebook, Google+, Pinterest, and Reddit). More information is available at the Altmetric website.²

ASJ staff analyzed 120 *ASJ* articles published between 1996 and 2016 by analyzing at their Altmetric Attention Scores in longitudinal cohorts of articles grouped by year of publication: 1996 (10); 2004 (10); 2009 (10); 2012 (10); 2013 (10); 2014 (20), 2015 (20), 2016 (30). Articles published after 2014 received social media marketing attention. *ASJ* staff selected articles over a range of 10 years and increased the number of articles per year to compensate for what they believed

would be higher altmetrics based on two factors: the onset of social media, and altmetrics being made available across all content by *ASJ*'s publisher, Oxford University Press. Prior to 2014, *ASJ* editors had used the Altmetric bookmarklet to identify Attention Scores—a manual process that was not scalable. Moreover, *ASJ* staff did not formally launch its social media program until 2014 and therefore content published prior to that only received occasional social media promotion from the publisher.

ASJ staff further analyzed a cohort of eight articles that received deliberate additional social media promotion through Twitter and Facebook, media attention in the form of press releases created by the ASAPS media department, and promotion at conferences and on the *ASJ* website (eg, inclusion in lists for “most downloaded articles” or “highest Altmetric Attention Score articles,” when applicable) to understand whether the articles' Altmetric Attention Scores improved as a result. The final cohort of eight promoted articles were non-exclusive from the other cohorts, and were selected at random with attention paid to including at least one article per issue per volume and also social media supplement articles.

2. <https://help.altmetric.com/support/solutions/articles/6000060968-what-data-sources-does-altmetric-track>

Strategic social media promotion results in more attention for research

Through our analysis, we found that the newer articles published in *ASJ*, and in particular those that were afforded extra social media and marketing attention, typically garnered higher Altmetric Attention Scores and more social media focus in the form of tweets, Facebook posts, blogs, and national media attention.

In analyzing our publications, a pattern began to emerge in the longitudinal 2012 and 2013 article cohorts, showing an increase in posted tweets and the volume of articles with an Altmetric Attention Score compared to earlier years.

Articles published after 2014 had received *ASJ* social media marketing attention. Within these articles, there was a demonstrated increase in Altmetric Attention Scores, traction, and attention from earlier years, likely due to the increased prevalence of altmetrics and the heavy use of social media for marketing purposes.

In 2016, the Journal created a Social Media Ambassador program and encouraged aesthetic doctors and trainees to share conversations, tweets, and Facebook posts. The number of tweets increased by nearly 70% for the articles published in 2016 over those published in 2015.

The eight articles in the promoted cohort garnered more tweets (1472 vs 1430) and more news media mentions (338 vs 258) than the 30 studied articles in the 2016 cohort combined.

One might interpret these results to be common sense: “Obviously, if a journal tweets articles, it will increase the Altmetric Attention Score - since the Score counts tweets!” However, less than 10% of attention received by *ASJ* articles were from official Journal social media accounts.

Overall, these results point to the power of deliberate, strategic promotion of a journal's published content. But there are questions as to whether this kind of marketing and promotion unfairly influence or “game” altmetrics for promoted articles, and it also raises a number of ethical nuances to consider.

ASJ'S STRATEGIC SOCIAL MEDIA PROMOTION

The editorial team at *ASJ* has already brought to the attention of its reviewers and authors the importance of becoming involved in the social media promotion of their articles. The Journal provides tutorials and documentation to help reviewers and authors get started, and encourages promotion by authors at the point of article publication. *ASJ* tags authors when we post their work on Twitter, Facebook, or Instagram, to provide them every opportunity for further promotion among their own social networks. As technology and opportunities for further advances become available, we will continue to share and educate our authors, readers, and editors. We similarly encourage all journal authors and editors to engage with their respective communities via social media, if they have not dived in already.

Distinguishing gaming from legitimate promotion

In the context of this analysis, we considered the different forms of gaming that may exist among users and consumers of social media and how they may affect Altmetric Attention Scores.

ASJ editors considered how we as journal editors define gaming, and what is the line between marketing and spam? In turn, Altmetric asked ourselves: whose job is it specifically to police published articles in the torrent of academic literature for misuse and potential ethics violations relative to Altmetric Attention Scores?

As a group, we came to the conclusion that while gaming or excessive promotion of articles may imply manipulation, strategic social media promotion is not an ethical violation.

Since 2013, Altmetric has understood that most kinds of online promotion of research are typically done without ill intent. The gaming that Altmetric works hardest to identify and address are those that aim to inflate an Altmetric Attention Score for its own sake; for example, an author buying tweets and retweets simply to increase their altmetric counts.

Authors, journal editors, and altmetrics skeptics sometimes express concern over the ease with which this kind of malicious gaming can occur. Twitter bots, bought for pennies on the dollar, can be deployed using specified keywords that trigger the sending of spam in the form of a related link to an article sharing that keyword. Spammers can similarly be hired to share any link along any requested keyword.

Malicious gaming strategies can also be used in reverse. For example, a researcher or editor might suggest that a competing author's legitimate self-promotion of research is spam, in an effort to get those posts removed from services like Altmetric—unlikely though that scenario might be.

Altmetric deals regularly with malicious gamers, particularly those who attempt to use social media to artificially inflate their Altmetric Attention Scores. We have established a number of policies and automated checks that identify instances of malicious gaming, and we take care to ensure that those practices do not benefit gamers.

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Some examples of methodologies employed by Altmetric to prevent malicious gaming are:

- We avoid metrics that are easily gamed (e.g. Facebook likes, YouTube views)
- We ignore repeated mentions of the same article by the same social media account
- We cap the Altmetric Attention Score for articles suspected of gaming

However, there are clear benefits for journals that strategically promote their articles on social media, resulting in increased Altmetric Attention Scores, and these can benefit authors and readers directly.^{3,4,5}

With the increase in the number of published papers each year, altmetrics are one way that readers can identify relevant, useful research. Altmetrics may also be useful for authors, who are increasingly in need of mechanisms by which to demonstrate the “broader impacts” of their research in funding applications and promotion and tenure.

Moreover, having the ability to share new research and information offers surgeons, educators, and academics the opportunity to not only self-promote, but also to teach, mentor, and learn the latest techniques and data for potential implementation in their own practices. Social media sites are increasingly used to educate, transforming from social networks into information networks. Through strategic social media promotion of their research, authors may discover social benefits such as international standing within the academic community.

Sharing evidence-based medicine from bonafide journals such as *ASJ* also helps to expand the view and resources for current and prospective patients, beyond the “Facebook News” to which many patients often turn for information. For the public, often the main concern is not what treatment to have, but how to find out who they can trust to provide the best care. Many do not know how to go about this process. This is confounded by relentless marketing from unscrupulous organizations representing untrained, poorly qualified individuals touting non-evidence-based hyped products.

Social media also allow for sharing of new trends such as predatory publishing and conferences, serving as a universal warning.⁶ It also allows everyone involved in publishing an article to stay abreast of the latest ethical concerns to help keep them in compliance.⁷

Whether or not all of the above practices are ethical is arguably a relative question, one that is distinct from the benefits of these practices. Authors employing malicious gaming practices might argue that by buying tweets for their journal articles, they are exposing potential readers to research they might benefit from. Alternatively, critics of strategic journal social media promotion might view those practices as “inorganic,” and therefore not useful when being considered alongside other numeric indicators that showcase user-driven engagement with research.

These ethical questions are not simple ones to answer, and unfortunately the publishing community has not yet established ethics guidelines that can guide decision-making, as they have done with citation manipulation.⁸ We welcome discussions from individuals and organizations like Committee on Publication Ethics (COPE), the International Society of Technical and Managing Editors (ISMTE), and the World Association of Medical Editors (WAME), with an aim to develop heuristics that can aid editors and authors in following ethical self-promotion practices for their research.

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For the public, often the main concern is not what treatment to have, but how to find out who they can trust to provide the best care.

3. Branford OA, Mallucci P. Publicize or Perish! A guide to social media promotion of scientific articles: featuring the Plastic and Reconstructive Surgery “Author Tool Kit.” *Plast Reconstr Surg*. 2015;136(4):579e-581e.
4. Branford OA, Mallucci P. Twitter for plastic surgeons who are too busy to tweet. *PRSonally Speaking*. *PRSjournal*. Available at: <https://prsonallyspeaking.wordpress.com/2015/11/09/twitter-for-plastic-surgeons-who-are-too-busy-to-tweet/>. November 9, 2015. Accessed March 13, 2017.
5. Cress PE. Using Altmetrics and Social Media to Supplement Impact Factor: Maximizing Your Article’s Academic and Societal Impact, *Aesthetic Surgery Journal*, Volume 34, Issue 7, September 2014, Pages 1123-1126, <https://doi.org/10.1177/1090820X14542973>
6. Cress PE. Are predatory conferences the dark side of the open access movement? *Aesthet Surg J*. 2017;37(6):734-738.
7. Reid C, Cress PE. Update on scholarly publication ethics: navigating the confusing landscape. *Aesthet Surg J*. 2016;36(10):1195-1197.
8. <https://publicationethics.org/resources/discussion-documents/citation-manipulation>

In Summary

Social media use by the public is growing inexorably and there is a huge appetite for science news. As community-facing leaders in innovation, plastic surgeons should embrace social media as a tool to promote evidence-based plastic surgery in the interests of supporting and educating our patients and raising awareness about the benefits of the specialty.

Social media is the new language of aesthetic plastic surgery and it is quickly overtaking word-of-mouth as the most popular way by which to obtain reliable and truthful information, and this trend is likely to continue. As board-certified aesthetic surgeons, we need to reclaim aesthetic plastic surgery from the tabloid press, celebrity gossip, and the likes of TMZ, in the interests of public safety and quality outcomes. What better way to do this than by engaging digitally with peer-reviewed journals such as *ASJ* and it's newly launched open access sister journal *ASJ* Open Forum on behalf of our patients?

Our analysis has found that strategic social media promotion of *ASJ* research leads to increased Altmetric Attention Scores, which can help readers, authors, and journal editors alike. *ASJ* tweets and posts to Facebook, and encourages our authors, editors, and readers to do the same—responsibly. Both Altmetric and *ASJ* will continue to work to avoid malicious gaming and ethical abuses as they relate to academic publishing. We invite researchers to use this research as a launching point for more investigations and discussions on this topic. As the prominence of altmetrics in publishing continues to grow, so too can the analysis, integrity, and the value of it.

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