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Heiner Evanschitzky*

Carsten Baumgarth†

Raymond Hubbard‡

J. Scott Armstrong**

*Marketing Center Muenster, Universitat Munster

†Universitat Siegen

‡Drake University

**University of Pennsylvania, armstrong@wharton.upenn.edu

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Heiner Evanschitzky*
Marketing Center Muenster (MCM)
Westfälische Wilhelms-Universität Münster
Am Stadtgraben 13-15, 48143 Muenster, Germany
Tel.: +49-251-83-22036
Fax: +49-251-83-22032
E-Mail: evanschitzky@ifhm.de

Carsten Baumgarth
Lehrstuhl für Marketing
Universität Siegen,
Hölderlinstr. 3, 57068 Siegen, Germany
baumgarth@lfm.fb5.uni-siegen.de

Raymond Hubbard
Thomas F. Sheehan Distinguished Professor of Marketing
College of Business and Public Administration
Drake University
Des Moines, IA 50311
Raymond.Hubbard@Drake.edu

J. Scott Armstrong
The Wharton School
University of Pennsylvania
Philadelphia, PA 19104
Armstrong@wharton.upenn.edu

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* Corresponding author

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Over the past decade, researchers have expressed concerns over what seemed to be a paucity of replications. In line with this, editorial policies of some leading marketing journals have been modified to encourage more replications. We conducted an extension of a 1994 study see whether these efforts have had an effect. In fact, the replication rate has fallen to 1.2 percent, a decrease in the rate by 50%. As things now stand, practitioners should be skeptical about using the results published in marketing journals as hardly any of them have been successfully replicated, teachers are advised to ignore the findings until they have been replicated, and researchers should put little stock in the outcomes of one-shot studies.

Since the appearance of Hubbard and Armstrong's (1994) article concerning the need to publish more replications in the managerial sciences, a number of developments have occurred which bode well for their increased presence in the literature. These include the publication of other papers in various marketing and management areas emphasizing the vital role of replication research (e.g., Hubbard and Vetter, 1996; Hunter, 2001; Madden, Easley, and Dunn, 1995; Singh, Ang, and Leong, 2003; Tsang and Kwan, 1999; Wells, 2001). Moreover, under Arch Woodside's instigation (Easley and Madden, 2000, p. 1), a special issue of the *Journal of Business Research* (2000) devoted to the topic of replication made it the first major business journal to focus attention on the importance of such work.

Perhaps more importantly, changes have been made in the editorial policies of leading marketing and management science journals aimed at facilitating the publication of replications. These include Winer's (1998) revival of the "Research Notes and Communications" section of the *Journal of Marketing Research*, and Mick's (2001) introduction of a "Re-Inquiries" section in the *Journal of Consumer Research*. Further, in an extended editorial on the issue in the *Academy of Management Journal*, Eden (2002, p. 841) wrote that sound management practices would be greatly aided by "...a large number of high-quality replication studies."

In light of the above developments we conducted an extension of Hubbard and Armstrong (1994), referred to hereafter as H&A. Our goal was to answer the following question: What has happened to the publication rate for replications and extensions in marketing in the years following their study?

Definitions and Methodology

We used the same definitions of the central terms employed by H&A (1994, p. 236). Therefore, a *replication* is defined as "a duplication of a previously published empirical study that is

concerned with assessing whether similar findings can be obtained upon repeating the study.” Likewise, a *replication with extension* is “a duplication of a previously published empirical research project that serves to investigate the generalizability of earlier research findings.” Note that this latter goal of determining the range of conditions under which the findings do and do not hold up can also be addressed by studies in which the author(s) conducts a series of experiments within the *same* article. Unfortunately, such works lack independent assessment. Therefore, following H&A, our account incorporates only replications that were published as independent papers.

We estimated the frequency of replications appearing in the *Journal of Marketing (JM)*, *Journal of Marketing Research (JMR)*, and the *Journal of Consumer Research (JCR)* based on a census of all empirical articles published in them for the period 1990–2004. This involved a total of 1,389 such contributions. Next, two teams, each headed by one of the authors, independently classified all of these works to determine the publication incidence of replications and extensions. Classification results between the two teams were then compared. If a disagreement occurred, the two teams discussed the situation with an eye to resolving any differences. This process saw an 88% agreement rate between the two teams.

In a further attempt to verify that we properly quoted their work, we contacted all first authors of the replication studies in our analysis as well as of the other papers we cited. Of the 52 authors we were able to reach by email, 21 responded. They all indicated that we properly cited their work.

Frequency of Replications

Table 1 shows the present findings on the publication incidence of replication research in marketing, and compares them with those of H&A. Whereas H&A estimated that an average of 2.4% of empirical research papers published in *JM*, *JMR*, and *JCR* for 1974–1989 were replications with extensions—a figure they regarded as too low—the average for these same three journals for 1990–2004 has fallen to 1.2% (i.e., only 16 extensions out of 1,389 empirical articles). This downward trend applies to each of the journals: *JM* (3.4% to 1.2%), *JMR* (1.9% to 0.6%), and *JCR* (2.3% to 1.7%).

Insert Table 1 about here

Some research indicates that there are often differences in the results of original and replication studies (e.g., Hubbard and Vetter 1996; Reid, Soley and Wimmer 1981). In marketing, H&A found that only 15% of extensions confirmed initial outcomes, 25% provided partial support, and 60% conflicted with their predecessors. In comparison with the study by H&A, our follow-up showed that that of the 16 replications, 44% confirmed earlier results, 31% provided partial support, and 25% found no support at all for the results of the original study. While these findings are not as severe as with H&A, they nevertheless reinforce the importance of performing replications. There are no obvious explanations for these differences in outcomes between the two studies.

A comparatively brighter picture emerged when analyzing the incidence of replications featured in the *Journal of Business Research*, whose editorial policy is sympathetic toward such

work. Of the 861 empirical articles published in *JBR* between 1990 and 2004, 2.8% were replications with extensions, a figure marginally higher than H&A's 2.4% (Table 1).

To determine whether the lack of published replications applies only to U.S. based journals, we examined also the leading German marketing journal, *Marketing ZFP (MZFP)*, over the period 1990–2004. We found that the paucity of replication research witnessed in American journals is mirrored in Germany, where a mere 0.6% of *MZFP*'s empirical articles dealt with this work (Table 1).

Finally, across all five journals for the period 1990–2004, only 41 of 2,409 empirical articles, or 1.7%, qualified as replications with extensions (Table 1). While it is difficult to say what is optimum, this rate appears to be rather low. Consider an analogy to medicine. What if less than 2% of the studies attempted to verify claims about medical treatments through replication?

Practical Solutions to the Lack of Replications

To encourage the growth of replications in marketing's empirical literature, the data and methods used in the original studies should be made available on the Internet concurrent with a paper's publication. Traditionally, supporting information of this nature has been difficult to obtain (see Hubbard and Little, 1997). This procedure may require some effort by the authors, but it is time well spent. Gleditsch, Metelits and Strand (2003), in their analysis of 416 papers published in the *Journal of Peace Research*, found that papers *offering data in any form* were cited twice as often as comparable papers without such an offer. (Their study controlled for many variables, such as type of article, co-authorship, age of paper, length of paper, and characteristics of author.)

It requires active participation by a journal's editor to ensure that the data and methods are archived. The *Journal of Money, Credit and Banking (JMCB)* has long had a policy that authors

must deposit the data and code used for papers they publish. However, McCullough, McGeary and Harrison (forthcoming) found that of 150 empirical articles, sufficient information for replication was provided for only 10% of them. A key barrier was that in many cases the necessary data and methods were not archived. For example, the rate of archiving was only 3% for *JMCB* papers published from 2001 through 2004.

A similar editorial policy is applied by the *Journal of Conflict Resolution*. That journal created a dedicated website on which all necessary materials have to be made available for replication purposes. Since the first issues of 2002, the authors must sign that they have met this policy as condition of publication (Russett, 2003).

Fortunately for editors, compliance with archiving is now simpler than it has been previously. Authors can be required to supply footnotes showing how to find the data and methods on the Internet. This highlights the availability of the information and also enables the editor to download the materials on the journal's website. This procedure is currently mandated by journals such as the *American Journal of Political Science*.

Editors might, upon publication, identify important articles that should be replicated/extended, and invite designated researchers to do so. These replications would be accorded special publication status.

Unsolicited *proposals* could be reviewed as a basis for replication studies. In addition, competent replications that are submitted through traditional channels might be guaranteed some manner of publication. This might be a short printed version along with the author's reply, with details on the Internet, to be followed by open peer review. Important replications would receive more print space.

Replications are needed especially for important papers. For example, Ioannidis (2005) found that replications were conducted on about 75% of highly cited papers in medicine (in a sample from 1990 through 2003). Additional emphasis on this kind of scholarship can also be provided by appointing a replications editor. This has been done, for instance, at the *Journal of Applied Econometrics*.

We acknowledge, of course, that the above suggestions for increasing the amount of replication research in journals is unlikely to be effective if editors, reviewers, and researchers devalue this kind of work. Many seem to believe that this is a mundane form of research, one that is synonymous with “merely checking” others’ results, and therefore denigrate its worth. However, the discovery of empirical regularities is made possible *only* by replication with extension research.

Conclusions

Given the favorable reaction over the past decade to calls for more replications, our expectation was that a greater frequency of them would be published in *JM*, *JMR*, and *JCR* for the period 1990–2004 than were found for 1974–1989. However, the percentage of replications was published over the latter period dropped by 50%

We endorse a number of strategies to promote replication research. These include:

- using footnotes to direct readers to data and methods (in enough detail to permit direct replication) on the Internet,
- inviting replications of important papers,
- evaluating research proposals for replications with an eye to their subsequent publication,
- appointing replications editors, and
- publishing all competent replications.

Scientific findings rest upon replication. As things stand now, few results in marketing have been successfully replicated. Given this, we suggest that practitioners should be skeptical about making decisions based on the findings of the predominantly single-shot studies reported in the leading marketing journals. Teachers, also, should be wary of putting much faith in such results in classroom lectures. Finally, many researchers fail to appreciate that, in the absence of replication research, our discipline rests on weak foundations.

APPENDIX

Replications studies in *JM*, *JMR*, *JCR*, *JBR*, *MZFP* from 1990-2004

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Table 1.

Replications with Extensions in Marketing: 1974–1989 versus 1990–2004

Journals	1974–1989^a			1990–2004^b		
	Number of Empirical Studies	Replications with Extensions	%	Number of Empirical Studies	Replications with Extensions	%
<i>JM</i>	207	7	3.4	331	4	1.2
<i>JMR</i>	366	7	1.9	524	3	0.6
<i>JCR</i>	262	6	2.3	534	9	1.7
Subtotal	835	20	2.4	1,389	16	1.2
<i>JBR</i>				861	24	2.8
<i>MZFP</i>				159	1	0.6
Total				2,409	41	1.7

^a Based on Hubbard and Armstrong (1994).^b See the Appendix for a list of these studies.

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