The good news about bad news: Communicating data services to cognitive misers

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Tragic news: Shawn is no longer with us...

We'll miss you, Shawn!
A 2007 study of negative political ads

“...provides evidence that negative ads do activate the aversive motivational system. As these participants watched negative political ads, physiological responses indicated that their body was reflexively preparing to move away. Negative ads also elicited more physiological and self-reported arousal than moderate ads. Recognition data show that detailed information from negative ads is better recognized...”

Environmentalism: which message has a stronger impact?
Climate change: the strong influence of negative messages

A single exposure to a message that attacks the science behind climate change is very effective in increasing disbelief and reducing concern about climate change.

In contrast, messages about the positive results from addressing climate change (emphasizing improved public health, economic opportunity, stewardship of the environment, or national security) were not effective in increasing belief in climate change or concern about climate change.

McCright, A. et al. (2016) Examining the Effectiveness of Climate Change Frames in the Face of a Climate Change Denial Counter-Frame. Topics in Cognitive Science 8(1), 76-97. DOI: 10.1111/tops.12171
Bad news can inspire pure terror!
Evolution theory supports the stronger impact of bad events over good events

“...it is evolutionarily adaptive for bad to be stronger than good...[O]rganisms that were better attuned to bad things would have been more likely to survive threats...”

“A person who ignores the possibility of a positive outcome may later experience significant regret at having missed an opportunity...”

“In contrast, a person who ignores danger (the possibility of a bad outcome) even once may end up maimed or dead.

“Survival requires urgent attention to possible bad outcomes, but it is less urgent with regard to good ones. Hence, it would be adaptive to be psychologically designed to respond to bad more strongly than good.” [p. 325]
Evidence

There is a convergence of evidence supporting the central hypothesis that bad is stronger than good from results of psychological studies across multiple different spheres (such as relationships, self-concept, reaction to events, emotion, memory, learning, child development, and information processing).

Baumeister, R.F. et al. (2001) Bad is stronger than good.

“Insofar as people are cognitive misers, they cannot afford to process all information to an equally full extent, so they must prioritize their cognitive resources and focus on what is important. If bad is generally stronger than good, then information pertaining to bad events should receive more thorough processing than information about good events...

“The more extensive processing will also tend to lead to enhanced memory for bad material…”

Baumeister, R.F. et al. (2001) Bad is stronger than good. p. 340
Why do bad things have greater impact?

“...generally, people’s experiences with positive events...may have less impact on their survival than their experiences with negative events... As a result, it is adaptive for people to place greater weight on bad events than on good events.”

Positive-Negative Asymmetry

“On one hand, there is a tendency for bad events...to have more impact on a person than good events...

“On the other hand, most of the experiences people have in everyday life are pleasant. As a result, there is a tendency for people to expect positive outcomes and good experiences from other people. In part, this very expectation may lead people to be surprised by and strongly affected by the bad things that occur in life.”

“Perhaps the broadest manifestation of the greater power of bad events than good to elicit lasting reactions is contained in the psychology of trauma.”

... “Many kinds of traumas produce severe and lasting effects on behavior, but there is no corresponding concept of a positive event that can have similarly strong and lasting effects.”

So, the trauma of that bad-news story may have a strong and lasting effect on our behavior.

Baumeister, R.F. et al. (2001) Bad is stronger than good. p. 327
The Biglan classification scheme for disciplines in higher education

Domain Differences

“...differences among disciplines and specializations are so essential, compelling, and inescapable that all performance indicators and bureaucratic measures based on common criteria are 'totally inappropriate'...”

[p. 166]

We selected an academic discipline in each domain.

Then, we identified the top two journals in each discipline, by impact-factor rankings from *Journal Citation Reports* (JCR, 2015).
## Journal guidelines on data sharing

<table>
<thead>
<tr>
<th>Discipline</th>
<th>Journal 1</th>
<th>Journal 2</th>
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<tbody>
<tr>
<td>Biology</td>
<td>Biological Reviews <strong>Neutral</strong> No specific data-sharing mandate; suggests providing supporting materials (including data sets)</td>
<td><strong>PLOS Biology</strong> <strong>Neutral/Positive</strong> Matter-of-fact presentation of data sharing expectation; FAQs note that “PLOS believes that making data available fosters scientific progress.”</td>
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<tr>
<td>Mechanical Engineering</td>
<td><strong>Neutral</strong> Data scarcely mentioned, but a note that supplementary files “offer the author ... possibilities to publish supporting applications, high-resolution images, background datasets, ... and more.”</td>
<td><strong>International Journal of Plasticity</strong> <strong>Neutral</strong> Silent on sharing requirements; matter-of-fact guidance on the inclusion of data, such as video data and “supplementary data,” stipulating file formats and such.</td>
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<tr>
<td>Sociology</td>
<td>American Sociological Review <strong>Neutral</strong> Sharing is expected, in accordance with ASA’s stated policy: “Sociologists make their data available after completion of the project or its major publications…”</td>
<td><strong>Annual Review of Sociology</strong> <strong>Neutral</strong> Matter-of-fact presentation of author guidelines. “Candidates for inclusion in supplemental material are videos ... additional figures, large data sets and tables, and related references.”</td>
</tr>
<tr>
<td>Education</td>
<td>Review of Educational Research <strong>Neutral</strong> Does not publish new empirical work, but “comprehensive reviews of literature…” Dig deep for AERA research policy, which defines scientifically based research as requiring “access to data for reanalysis, replication, and the opportunity to build on findings.”</td>
<td><strong>Educational Psychologist</strong> <strong>Neutral</strong> Silent on data or sharing in its instructions to authors.</td>
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What’s ethics got to do with it?

Ethics statements from professional societies could supplement (or supplant) author guidelines from key journals in each discipline.

**American Institute of Biological Sciences**
“Promote the free and open exchange of information, not withholding information to substantiate a personal or scientific point of view.” [https://www.aibs.org/about-aibs/ethics_statement.html]

**American Society of Mechanical Engineers**
[As a practice-oriented organization, there appears to be little communication around issues of data sharing; not surprisingly, however, their ethics statement points up the importance of respecting IP rights.] [https://www.asme.org/about-asme/professional-membership]

**American Sociological Association**
“Sociologists share data and pertinent documentation as a regular practice.” [http://www.asanet.org/about/ethics.cfm]

**American Educational Research Association**
“Education researchers share data and pertinent documentation as a regular practice. Education researchers make their data available after completion of the project or its major publications for verification or other analyses by other researchers…

“Education researchers anticipate data sharing as an integral part of a research plan whenever data sharing is feasible.” [http://www.aera.net/AboutAERA/tabid/10062/]
Sentiment analysis

Document sentiment classification (or document-level sentiment analysis) ... aims to classify an opinion document (e.g., a product review) as expressing a positive or a negative opinion (or sentiment), which are called sentiment orientations or polarities.

Sentiment words are natural features as they are words in a language for expressing positive or negative sentiments. For example, good, wonderful, and amazing are positive sentiment words, and bad, poor, and terrible are negative sentiment words. Most sentiment words are adjectives and adverbs, but nouns (e.g., rubbish, junk, and crap) and verbs (e.g., hate and love) can also be used to express sentiments. Besides individual words, there are also sentiment phrases and idioms, for example, cost someone an arm and a leg.

What do libraries talk about when they talk about research data?

Small sample of \( N = 10 \) of randomly selected ARL and RLUK libraries
RDM or data sharing web page(s) coded for tone [positive, neutral, negative]
Most were neutral or neutral/positive
Good data management is an important part of the research process and is increasingly emphasized by institutions and funding agencies.

It is good research practice to ensure that your data are managed properly throughout the life of the project.

Well managed research data allows reliable verification of results and enables data sharing among the wider research community, thus enhancing the long-term value and impact of the work.

As research becomes more data intensive and collaborative, data management is now an important part of responsible scholarly communication. Good data management benefits your own project as well as the various discipline-specific communities you are a part of.
Despite evidence that neural pathways are strongly affected by negative messaging, we find that:

- Journal author guidelines are mostly neutral;
- Ethics statements tend to be neutral; and
- Libraries rarely invoke a negative tone to send a persuasive message.

So, should we start spreading the bad news?

Targeting the message to “communities of data” (cross-disciplinary and domain-agnostic), requires a carefully nuanced approach.

Libraries have a long tradition of adopting a neutral stance. Is it possible to change?

One reason that bad news sticks is that the default expectation remains that events and outcomes will be positive.
Now we want you to talk...

1. What data services does your library/institution offer and how do you communicate it?
2. Are users looking to the library or other research support group for guidance and assistance with research data management plans?