



Cross-national evidence of a negativity bias in psychophysiological reactions to news

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What accounts for the prevalence of negative news content? One answer may lie in the tendency for humans to react more strongly to negative than positive information. "Negativity biases" in human cognition and behavior are well documented, but existing research is based on small Anglo-American samples and stimuli that are only tangentially related to our political world. This work accordingly reports results from a 17-country, 6-continent experimental study examining psychophysiological reactions to real video news content. Results offer the most comprehensive cross-national demonstration of negativity biases to date, but they also serve to highlight considerable individual-level variation in responsiveness to news content. Insofar as our results make clear the pervasiveness of negativity biases on average, they help account for the tendency for audience-seeking news around the world to be predominantly negative. Insofar as our results highlight individual-level variation, however, they highlight the potential for more positive content, and suggest that there may be reason to reconsider the conventional journalistic wisdom that "if it bleeds, it leads."

news coverage | negativity bias | political communication

This paper is focused on the human propensity to give more weight to negative information than to positive information and the relevance of this tendency for the nature of news coverage. The importance of negativity biases for news is relatively clear. Negativity biases affect news selection, and thus also news production, as well as citizens' attitudes about current affairs. Testing for the prevalence of negativity biases and considering their implications for the nature of news content is central to our understanding of the flow and impact of mass-mediated current-affairs content. In a period during which news around the world is especially wrought with negativity, this subject is of obvious significance.

The paper proceeds as follows. We first review the existing literature on negativity biases, particularly as it relates to news consumption, highlighting the paucity of comparative research on the issue. We note that one major consequence of this gap in research is an inability to distinguish the extent to which these negativity biases vary due not just to individual-level, but also to cultural, political, or media-system factors. The key, we argue, lies in testing for differences in responses to news content across both individuals and cultures. We then present results from what is, to our knowledge, the single largest, directly comparable body of data on negativity biases in psychophysiological responses to video news.

Results, based on over 1,000 respondents across 17 countries and 6 continents, suggest that there is, on average, a negativity bias in psychophysiological reactions to video news content. There are, however, also considerable differences in the way in which individuals react to negative versus positive news content. These individual-level differences are not easily explained by culture or country. Indeed, there is considerable within-country variation in responses to news content. This fact

highlights the possibility that news content could be attention-grabbing for some citizens even if it is not systematically negative.

Background

Our research is motivated by 2 widely recognized features of modern-day communications. First, mass-mediated news is a central and critical component of large-scale representative democracy. Media provide a critical flow of information between elites and citizens and are a vital mechanism for democratic accountability. Second, negative tone is a defining feature of news; good news, in contrast, is nearly synonymous with the absence of news. This asymmetry in coverage has been the focus of a considerable body of work on mass media in the United States (1, 2), and it is evident in studies of media content and journalists' decisions cross-nationally (3–5). Importantly, this work suggests that, even as news coverage has been negative for many years, it has also been increasing in recent decades.

In sum, the nature and quality of mass-mediated news content is central to the nature and quality of representative democracy, and that content is systematically skewed toward negative information. This is partly a function of the demand for negative news, since market forces will produce news in line with

Significance

News coverage of current affairs is predominantly negative. American accounts of this tendency tend to focus on journalistic practices, but this cannot easily account for negative news content around the world. It is more likely that negativity in news is a product of a human tendency to be more attentive to negative news content. Just how widespread is this tendency? Our evidence suggest that, all around the world, the average human is more physiologically activated by negative than by positive news stories. Even so, there is a great deal of variation across individuals. The latter finding is of real significance for newsmakers: Especially in a diversified media environment, news producers should not underestimate the audience for positive news content.

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consumers' interests, including negativity (6). Even so, the tone of news content has been cited as a source of systematic deficiencies in what citizens know about their governments and the world around them (1). Inadequate or incorrect political knowledge, citizen apathy, and disengagement—these are just some of the consequences attributed to the overwhelmingly negative nature of news content.

These facts point to the importance of understanding why media content is the way it is. They also highlight the need to understand if and why media consumers prioritize negative coverage. Concerns about media coverage typically focus on the supply side of the media—i.e., choices of journalists and editors—but the demand side may be equally important. Even as people say they want more positive news, they systematically select more negative news (7), for instance. This should come as no surprise: There are, after all, burgeoning literatures across the social sciences identifying negative biases in human information processing and behavior (8–12).

What explains the apparently widespread preference for negative information? One account is rooted in evolutionary theory. Attention to negativity may have been advantageous for survival. Negative information alerts to potential dangers (13); it has special value in terms of “diagnosticity” (14), or the “vigilance” (15) that is required to avoid negative outcomes. This account of the negativity bias is evident in literatures in physiology (16), neurology (17, 18), and, particularly, work on the importance of “orienting responses” in evolutionary biology (19). This account leads to the expectation of a negativity bias present across all human populations.

Another account is evident in work on cultural psychology and anthropology, as well as recent work on “media systems.” This research emphasizes the possibility that there are cross-cultural differences in negativity biases. There is, after all, work examining cross-cultural variation in related psychological phenomena, including self-assessments (20, 21), self-esteem (22), satisfaction (23), optimism (24), and reasoning (25). One frequent contrast in this work is between what seem to be more optimistic countries in the West (typically the United States) and less optimistic countries in the East (typically Japan). And, while cross-cultural explorations into negativity biases specifically are rare, several important exceptions find evidence of cross-national differences (23, 26, 27).

Systematic cross-national differences in responsiveness to news content might provide clues about how this negativity bias arises. What might drive this cross-cultural variance? The literature on cultural values points to some possibilities (28). Societies deal with anxiety about future uncertainties in different ways, and the extent to which members of a culture feel threatened by ambiguous or unknown situations may well affect the tendency to focus on negative information. A range of institutional factors may also matter. Societal tension between groups, and especially conflict that has crystallized in the polarization of political-party systems, may matter for negativity, at least where attentiveness to news coverage is concerned. Another dimension of variability is rooted in the institutionally coded professional practices of journalists (29). A strong professional requirement that journalists routinely cover politics in conflictual terms may also lead to viewers' habitual expectation and attention to negativity.

Note that neither the evolutionary nor the cultural-institutional account depends on a conscious desire for negative information so much as an unconscious adaptation or learned tendency to prioritize negative information. Note also that the 2 accounts are not in competition—negativity biases are almost certainly conditioned by both. Consider work on the importance of “social learning,” alongside biology, as the basis of culture (30) and work in neurology and physiology on culture–gene coevolution (31, 32). We also do not want to discount the possibility

that variation in negativity biases is not a primarily cross-cultural phenomenon, but an individual one. There already is work suggesting that negativity biases in reactions to video news vary across gender, for instance (33). And there is a growing literature focused on differences in negativity biases across political ideologies (34–36).

Individual-level variables may be at the root of cross-cultural variation, insofar as individual-level factors vary across cultures. Individual-level variation may also be entirely independent of culture or work differently across cultures. Thus far, we simply do not know the extent to which heightened activation in response to negative news content is a culturally determined phenomenon. This not only limits our understanding of negativity biases generally, it limits our understanding of the demand and supply of negative news content.

Cross-National Physiological Responses to News

Our cross-national work responds to growing pleas for a more comparative approach to (political) psychology (37) and more comparative work in political communication as well (38). We also build upon a small, but growing, literature focused on cross-national experimentation in psychology and economics (39, 40).

Our analyses are based on laboratory experiments run in 17 countries: Brazil, Canada, Chile, China, Denmark, France, Ghana, India, Israel, Italy, Japan, New Zealand, Russia, Senegal, Sweden, the United Kingdom, and the United States. We also have 2 separate samples in Canada, Anglophone and Francophone, and 2 separate samples in Israel, Jewish and Palestinian. Our results are based on 1,156 respondents; to our knowledge, this is the largest and most broadly comparative psychophysiological study in the social sciences to date. (*SI Appendix* discusses sampling decisions in detail; *SI Appendix, Fig. S1* shows the distribution of respondents by country and gender, and *SI Appendix, Fig. S2* shows the distribution of age by country.) The study protocol is straightforward: Respondents watched 7 randomly ordered BBC World News stories on a laptop computer while wearing noise-cancelling headphones and sensors on their fingers to capture skin conductance and blood volume pulse. (Videos were subtitled where necessary, and tests suggested that subtitles do not change the results presented here. See *SI Appendix, Table A5*.)

There already is a considerable body of work examining negativity biases in psychophysiology; there is a growing literature on psychophysiological reactions to political news content as well (33, 41, 42). Physiological measures have the advantage of capturing real-time, often subconscious, reactions to news content. We examined normalized skin-conductance levels (nSCLs), indicating physiological activation connected to, e.g., “orienting responses,” and the “fight or flight” response. We also relied on heart-rate variability (HRV)—specifically, the root mean square of the successive differences (RMSSD), capturing a combination of activation (increasing heart rate) and attentiveness (decreasing heart rate). (For more thorough accounts of both measures, see, e.g., refs. 43 and 44.) Note that past work also views HRV as a measure of “emotional regulation” (45). The 2 perspectives are similar—each focuses on variation caused by the excitatory sympathetic nervous system and inhibitory parasympathetic nervous system, and each views higher HRV as an indicator of both activating and calming/focusing responses.

The tone of video content was the primary independent variable. Negativity was measured as an interval-level measure based on the average of second-by-second coding by expert coders (outlined in more detail in *SI Appendix*). Expert coders' assessments were in line with assessments from study participants. (Average story ratings, by country, are shown in *SI Appendix, Fig. S3*.)

substance and nature of news content, individual-level variability in negativity biases highlights the possibility for the audience-seeking success of news coverage that is less systematically negative.

Materials and Methods

There are 6 sections included in *SI Appendix*. *SI Appendix, section A* describes the experimental protocol. *SI Appendix, section B* includes the script used to introduce participants to the experiment. This study was reviewed and approved by the Comité d'Éthique de la Recherche des Arts et des Sciences at the Université de Montréal. Written informed consent was sought from and provided by all participants, using text included in *SI Appendix, section C*. *SI Appendix, section D* discusses both sampling and location in each country. *SI Appendix, section E* describes the processing of physiological data. *SI Appendix, section F* briefly reviews alternative estimation strategies. For the purposes of education and research, data and replication materials are available through the Harvard Dataverse (48).

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