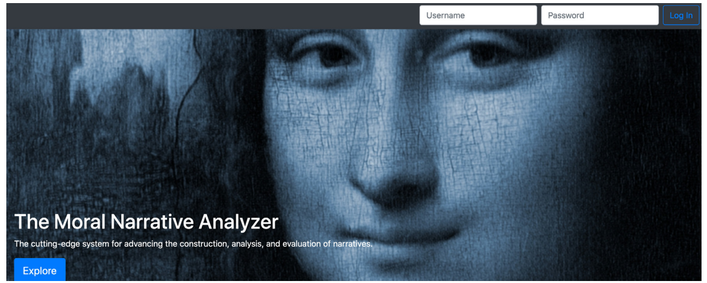
The Moral Narrative Analyzer (MoNA):

A Platform for Extracting Moral Emotions and Conflict from Messages at Scale

Messages that present moral information and trigger moral emotions capture individuals' attention and motivate actions. Messages that represent moral conflict (i.e., simultaneously uphold and violate moral norms) are especially motivating. Evidence shows that messages about what is (perceived as) wrong or right diffuse more quickly, shape public opinion and contribute to successful persuasion and advertising. Thus, adjusting organizations' communication from the perspective of moral framing is of important value for successful marketing.

Measuring moral information in messages is challenging. The majority of moral message cues are latent and context-dependent. Furthermore, individuals differ in how they interpret the moral content of messages. To overcome these challenges, we have created the Moral Narrative Analyzer (MoNA; https://mona.medianeuroscience.org/), an online platform designed to analyze moral messages at scale. MoNA combines human annotations with algorithmically-driven analyses to provide a moral profile of messages. These analytics can be used to predict their diffusion, message effectiveness on both behavioral and neurological level, and to suggest potential target audiences. We herein describe the development and applications of MoNA, focusing on extracting moral information from messages at scale.

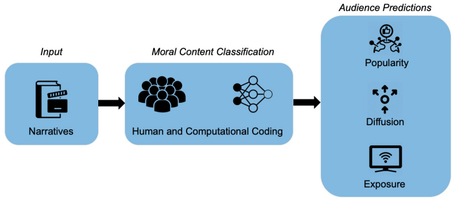


Approach

In order to develop a cutting-edge platform for extracting moral information, we adopted an approach that combines sound theory with rigorous methodology. To define what is "moral," we relied on the pragmatic utility of Moral Foundations Theory. MFT suggests that there are five innate, universal moral foundations that exist among individuals across cultures and societies: care/harm, fairness/cheating, loyalty/betrayal, authority/subversion, sanctity/degradation, a proposal that has garnered formidable evidential support.

Relying on MFT, we conducted a series of six content-analytic studies using the MoNA platform to probe the representation of moral foundations in real-world news stories (for a comprehensive report, see Weber et al., 2018). Studies 1-4 asked human coders to indicate which moral foundation(s) they understood to be primarily represented within selected stories, whereas studies 5-6 relied on a crowd-truth annotation procedure to extract moral intuitions from large, diverse audiences. During this task, over 800 human coders made use of a digital highlighting tool to mark text snippets that they understood to be related to a moral foundation.

The rationale for adopting such a crowd-sourced procedure was twofold: First, mounting evidence demonstrates that seemingly complex tasks, which typically require highly skilled experts, can be accomplished faster and more accurately by a crowd of minimally trained coders. Second, while study 5 relied on a small set of student coders, our sixth study recruited a large, representative US coder sample, producing nearly 64,000 annotations of over 1,000 text documents. Accordingly, the high number of produced annotations has successfully been used to develop an extended Moral Foundations Dictionary (eMFD) for the automated, computational extraction of moral content from text.



Results

Our results suggest that an intuitive highlighting task as implemented via the MoNA platform produces reliable, valid, and efficient moral content codings. Critically, these crowd-sourced annotations were found to be more reliable than a traditional approach relying on a smaller set of highly trained coders.

Our latest studies show that MoNA lends itself to analyze moral content in a much broad variety of messages, including (political) speeches, public service announcements, advertising campaigns, and many others. In fact, MoNA is currently being used to analyze moral content contained in movie scripts, song lyrics, and even human rights reports. Recent studies in our lab suggest that the advanced understanding of moral content in persuasive messages may lead to improved study designs in neuromarketing studies that are based on a "brain-as-predictor" approach.

Finally, the content annotations produced in these studies have enabled the development of a scalable tool for algorithmically analyzing the moral profile of messages. This extended Moral Foundations Dictionary (eMFD) outperforms previous automated moral content extraction tools. In addition, the eMFD is useful for understanding real world questions such as the virality of messages in social networks.

Conclusions

The MoNA platform provides a promising, cutting-edge system for classifying the moral content that permeates a variety of messages. Given the behavioral and neuro-cognitive relevance of moral emotions and conflict, we foresee MoNA becoming a vital resource within both marketing and academic research. Research using MoNA will help advance our knowledge of how moral message framing guides and shapes audiences' attention, motivates individuals to act upon and share messages within their social networks, and ultimately facilitates successful persuasive communication.

REFERENCE

Weber, R., Mangus, J. M., Huskey, R., Hopp, F. R., Amir, O., Swanson, R., ... & Tamborini, R. (2018). Extracting latent moral information from text narratives: Relevance, challenges, and solutions. Communication Methods and Measures, 12(2-3), 119-139.

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