



Curiosity, Culture, and Engagement with Science Documentaries



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INTRODUCTION

- Although interest in science extends to a diverse range of citizens, premier science documentaries attract an audience that is disproportionately affluent, well educated, less religious, and more politically liberal. Why is this the case?
- One explanation is that these members of the public are those most suited to comprehend and enjoy science documentary programming. They are the “natural audience” for premier science documentaries.
- We, along with science filmmakers, question this view. It is possible that the audience for science documentaries is not as high as it should be because the content of the documentaries might implicitly threaten the values of particular cultural groups in a way that discourages engagement—including interest, comprehension and enjoyment—by that groups members (e.g., Kahan et al., 2015)

Primary Objective

To gather evidence regarding what might explain the demographic homogeneity of the audiences for high-quality science documentaries: (a) differences in individuals’ desires to learn about science or (b) characteristics collateral to the films scientific content that makes them less appealing to certain cultural styles?

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STUDY DESIGN

METHOD

Data was collected from an online, nationally-represented panel in September 2015.

Participants (N=2,764) answered self-report and behavioral items that were embedded in blocks related to an array of topics (e.g., sports, business, entertainment, science, etc) to disguise the purpose of the study.

Now we'd like to get your reactions to an interesting news story. One story will be drawn randomly from the story set of your choice. After you read the story, we'll ask you some questions about it. Please pick the story set that contains the stories you'd be most interested in reading.

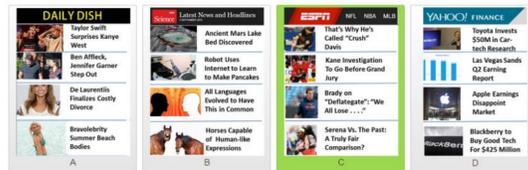
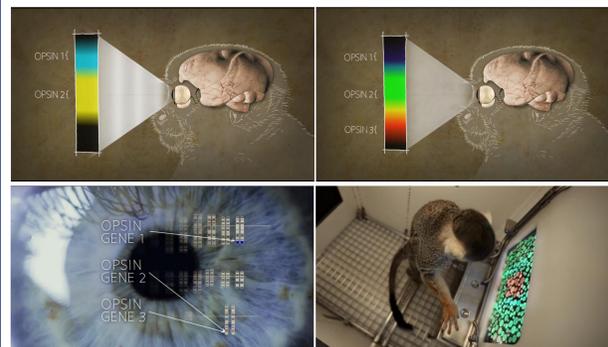


Figure 1. “Story-set” selection task. Subjects were instructed to pick one of four news story sets, from which a story would then be selected for them to read and answer questions on. The task was conceived of as a performance-based measure of interest in science.

Then, participants viewed and answered questions about a video clip from *Your Inner Fish* on the origins and evolution of color vision. This included behavioral measures such as (a) whether the participant watched the whole video (and how long he or she watched for) and (b) whether the participant answered in the affirmative when we asked whether he or she would like a link to watch the rest of the video.



We developed measures of *science curiosity* (i.e., SCS) and *viewer engagement* using item-response theory.

We used latent class modeling to explore whether the relationship between curiosity and engagement varied across cultural styles.

RESULTS

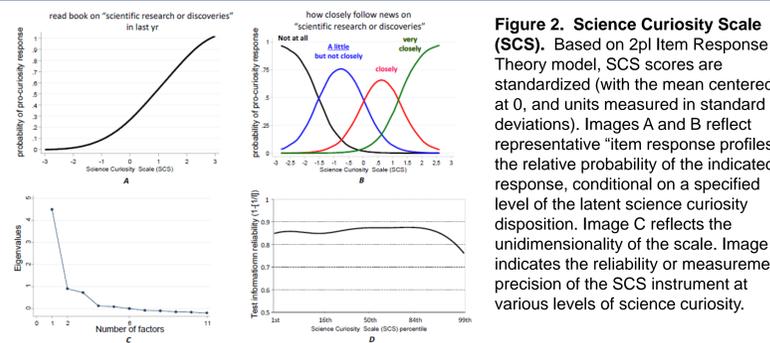


Figure 2. Science Curiosity Scale (SCS). Based on 2pl Item Response Theory model, SCS scores are standardized (with the mean centered at 0, and units measured in standard deviations). Images A and B reflect representative “item response profiles”: the relative probability of the indicated response, conditional on a specified level of the latent science curiosity disposition. Image C reflects the unidimensionality of the scale. Image D indicates the reliability or measurement precision of the SCS instrument at various levels of science curiosity.

Figure 3. Science Curiosity Scale predicts Engagement with a Science Documentary Film. Image A shows our engagement index as a function of SCS. Image B shows how long participants watched the film before turning it off as a function of SCS. Image C shows how interesting participants reported finding the clip based on their SCS scores. And image D reflects the probability of participants at each level of SCS requesting the full documentary.

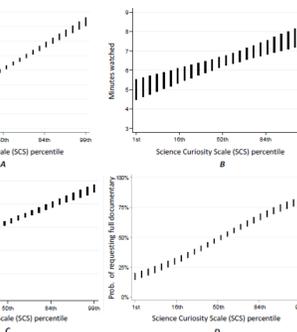
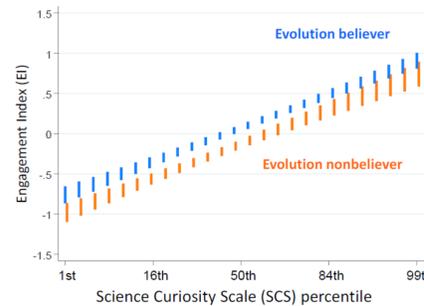
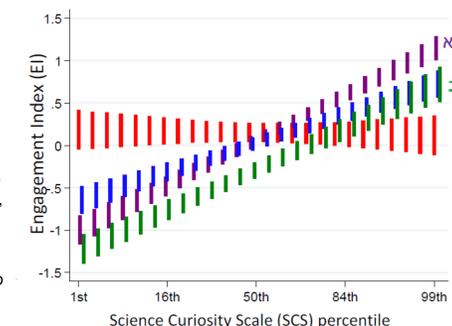


Figure 4. Science Curiosity predicts engagement with film for both evolution “believers” and “disbelievers”. As measured by our SCS scale, science interest had the same strong, positive effect on engagement for believers and non-believers alike. Indeed, the small engagement gap (seen from 16th to 84th percentile) attenuates as members of the two groups approach the upper end of the SCS scale.

Figure 5. There is a group of individuals (τ) for which science curiosity does NOT predict engagement with the film. Latent class model of engagement conditional on SCS. N=2192. Image is based on multivariate regression. Colored bars reflect 95% confidence intervals. Note that individuals belonging to the *dalet* (τ) group, unlike the other three groups, do not show increased engagement with the video clip as their SCS scores increase. This does not mean that they are less amenable to engagement with high-quality science documentaries, after all they are not less curious than the other groups, nor are they short on individual members displaying high levels of curiosity.



CONCLUSIONS

- By combining subtle self-report items with behavioral and performance-based items, it is possible to construct a valid scale for measuring individuals’ general motivation to consume information about scientific discovery for personal satisfaction (i.e., “science curiosity”).
- By similar means, one can construct a satisfactory scale for measuring viewer engagement with material such as that featured in the *Your Inner Fish* clip (i.e., “engagement”).
- Engagement with the *Your Inner Fish* clip did **not** vary to a meaningful degree among subjects who had comparable science curiosity but opposing beliefs about human evolution.
- However, engagement with the clip did vary across culturally identifiable groups.
- Additional, fine-grained analysis of the data is necessary.

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