Measuring media exposure: Age and memory complications

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Mass media campaign evaluations tend to depend on self-reported exposure measures in assessing effects. Many of these measures rely upon participant recognition of campaign material. Rather than accepting the utility of such measures at face value, however, we should probe their limits. We can predict at least one theoretically important limit on the basis of what we know about age-related memory changes.

Here we can make important distinctions between memory for specific detail and memory for the general gist of content. Age appears to bear a different relationship to detail memory, which corresponds to recognition-based tasks, than it does to gist memory, which we might expect to correspond to open-ended, free recall tasks. Relationships between information exposure, engagement, and memory vary with age [1]. Age predicts recognition error, for example [2, 3]. At the same time, free recall does not suffer the same decline as recognition memory and it also appears that older adults tend to depend on gist-based memory more than their younger adult peers [4, 5].

All of these patterns have implications for mass media exposure measures employing self-reported memory tasks. Specifically, the utility of a recognition item as an indicator of past exposure should decline as audience members age, especially among the most elderly, whereas recall items should not witness the same decline. A prominent evaluation measure, in other words, might suffer from differential validity across age groups.

Methods

Analysis of data from a science communication project evaluation offers support for these measurement hypotheses. Experimental data gathered as part of a project evaluation boasts two important strengths: participants were recruited by random digit dialing (from the Buffalo, NY, USA, 10-county Designated Market Area) and then randomly assigned to a level of science news story exposure. This means we have data from a reasonably generalizable sample (at least of the designated market area in question) and yet also can assess the impact of relatively carefully controlled exposure. We know who ostensibly had an opportunity to see material and can use that information to validate self-reported exposure measures that rely on memory tasks.

For this study, we focus on a subgroup (n = 347) from the total study sample (n = 667) who answered both recognition and open-ended, free recall questions a week after having the opportunity to view science news content. Randomly assigned participants entered either one of two treatment conditions (offered exposure to a partial or full diet of science news stories embedded in a week's worth of news programming) or a control group (offered the same general programming without any of the science stories in question). Assigned exposure consequently ranged from zero to six to 14 stories.

After receiving programming on a DVD or VHS tape, respondents were asked by telephone for their recognition of past engagement with a selection of the news stories in question roughly a week after they had been asked to view the shows. All respondents, regardless of condition, were asked about six different stories. We included in the recognition task a balance of stories, with three from those shown to the partial and full treatment conditions and three from those shown only to the full treatment condition. That permitted a recognition index which ranged from zero (stories recognized) to six (stories recognized). Before answering recognition items, participants also initially described the media content they had watched. A team of coders specifically looked for reference to one of the six stories in question, allowing us to create a similar free recall index.

Results

Results support our hypotheses. In short, the relationship between experimentally assigned physical exposure and subsequent self-reported recognition waned among adults 70 and older relative to their younger counterparts whereas the relationship between physical exposure and self-reported free recall for specific content remained essentially the same for both groups. Among those under 70 years old, the correlation between story recognition and physically assigned exposure was .67, $p < .01$, $n = 303$. Among those 70 and older, however, the correlation between story recognition and physically assigned exposure was substantially lower, $r = .32$, $p < .05$, $n = 44$. The picture was quite different for free recall. The correlation between story recall and physically assigned exposure was similar in both groups (under 70 $r = .35$, $p < .01$, $n = 303$ and 70 and older $r = .40$, $p < .01$, $n = 44$).

Conclusions

Evidence reported here supports the general hypothesis that recognition measures for mass media efforts do not work the same for all age groups. These results are centrally relevant to social science evaluation of media-based efforts involving older audiences. In short, they suggest that we might not be accounting for exposure in a uniform way across groups, a possibility that suggests either measurement noise or unanticipated theoretical complication in terms of potential effects. Accordingly, these results should give pause to practitioners and evaluators designing research to investigate media effects in elderly groups and warrant further investigation into the role that age plays in media exposure assessment.

References

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