

Comment on “Providing Information Promotes Greater Public Support for Potable Recycled Water” by Fielding, K.S. and Roiko, A.H., 2014 [Water Research 61, 86-96]

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Highlights

- We comment on a recent study on information provision on potable recycled water.
- Worldviews moderate effects of information on knowledge and positive responses.
- Significant effects only exist among those already comfortable with new technology.
- Those least likely to support recycled water are unaffected by new information.

Abstract

Recently, Fielding and Roiko found that information provision affects knowledge of and support for potable recycled water. However, recent cultural-sociological insights suggest that such effects are not universal. A re-analysis of the original data reveals the relevance of cultural predispositions: significant effects only exist in specific subgroups of the population. Only those who are comfortable with new technologies prove receptive to new information about potable recycled water. These findings are relevant for scholars aiming to uncover the mechanisms through which information affects public opinion, and for policymakers trying to overcome community resistance to alternative water sources.

Keywords

Communication research; Cultural sociology; Information provision; Persuasive communication; Potable recycled water; Public acceptance

1. Introduction

In a recent volume of *Water Research* Fielding and Roiko (hereafter: FR) test whether providing brief information increases the public's perceived knowledge of and positive responses to potable recycled water (2014). FR rightly observe 'the critical role that community acceptance plays in uptake and implementation of alternative water systems' (pp.86-87), which strongly underlines their work's relevance.

Like many studies on science and technology communication, FR's research is based on a simple and attractive 'information deficit model'. It assumes that people tend to dislike newly emerging technologies because they are largely unaware of the intricacies of these technologies. As such, it predicts that as information deficits are removed, people will show more positive responses. Although the old adage 'to know it, is to love it' seems to contain a 'grain of truth' (Allum et al., 2008:52), studies in this tradition tend to find small or modest effects (Allum et al., 2008), as is also repeatedly observed by FR (p.87).

FR find partial confirmation for their hypothesis that information provision leads to more perceived knowledge and more positive responses among the public. This is an important finding. However, as stressed by FR themselves in discussing the limitations of their study, more research 'is needed to identify the mechanisms that can optimize information transfer and diffuse opposition to recycled water schemes.' (p.95). FR note that it is particularly worthwhile to assess 'whether there are particular characteristics of community members that might influence reactions to the information about recycled water' (p.95). Based on recent advances in cultural-sociological research, we re-analyze FR's data and demonstrate that information provision only has an effect among specific sections of the public: a modest 'overall' impact of information provision on perceived knowledge and positive responses obscures from view that there is no effect at all among some groups, whereas there is a large effect among others.

2. A cultural-sociological approach to information provision

The cultural-sociological approach to information provision breaks with the idea that all members of the public will unequivocally accept the information provided to them in roughly the same fashion (e.g., Kahan, 2010). Not everyone translates information on new technologies into perceived knowledge of and support for these technologies. Some people are culturally predisposed to dismiss such information, whereas other people's worldviews and values stimulate the acceptance of this information, resulting in more positive stances.

This means that it is crucial to scrutinize which social groups are responsive to information campaigns, and which groups are not inclined to respond in the expected fashion. Recent work on information provision about suspended sentences (De Koster et al., 2014) and hydrogen energy (Achterberg, 2014) found that cultural worldviews strongly moderate the effects of information provision.

Reflecting on their findings, FR also briefly note that 'participant characteristics such as their worldviews' (p.94) may be important factors shaping the way in which information provision leads to knowledge of and positive responses to recycled water. However, they did not explore this promising possibility, although their data are well-suited. The foregoing suggests that only people who are at ease with technology in general will embrace new information about potable recycled water. Hence, we expect that information provision only has an effect on perceived knowledge (*hyp.1*) and positive responses (*hyp.2*) among people who are already comfortable with new technologies. These hypotheses can be tested by means of the 'Comfort with Technology Scale' available in FR's data (p.89), which measures how comfortable respondents are with a wide range of technologies, such as genetically modified plants for food, nuclear power plants, and windfarms.

3. Data, results, and discussion

We analyze the community survey data generously provided by FR.

After completing a reliable ($\alpha=0.87$) 12-item ‘Comfort with Technology Scale’, participants were exposed to one out of four conditions: 1) ‘No information’ (control group), 2) ‘Basic information’ (explaining that the water ‘is cleaned and purified to very high standards using advanced technologies and that it meets strict water quality and health standards’ (p.89), 3) ‘Basic + pollutant information (adding the fact that the pollutants in the water are undetectable). 4) ‘Basic + perspective information’ (putting ‘risks associated with chemicals in the water into perspective’ (p.91)).

FR’s data contain various dependent variables. We measured *perceived knowledge* combining two available items ($r=0.68$).¹ Principal component analysis shows that FR’s dependents ‘comfort with recycled water’, ‘support’, ‘perceived risk’ (reversed), ‘positive emotions’, ‘negative emotions’ (reversed), ‘trust’, and ‘voting intentions’ constitute a single dimension, which forms a highly reliable scale ($\alpha=0.95$) on which higher scores denote more *positive responses* to recycled water. We recoded the dependents to a uniform 1-11 range.

We test our hypotheses with two regression analyses ($N=299$), containing effects of the three experimental conditions (reference category: ‘no information’), comfort with technology, and the interaction of the experimental conditions and comfort with technology. Such models should be interpreted graphically (Brambor et al., 2006). Therefore, we have depicted the results in Figure 1.

[Figure 1]

Figure 1’s left panel demonstrates that the strength of the effect of all three experimental conditions on *perceived knowledge* of recycled water depends on respondents’ comfort with

technology. Only among those with much comfort with technology, a significant ($p < 0.05$) effect exists. Among people with little comfort with technology, the effect does not significantly differ from 0. The crucial relevance of the moderation by this cultural predisposition is underlined by comparing those with least (2.2) and most (11) comfort with technology. Among the former there are no significant effects, while the different types of information provision have substantial and significant effects among the latter: among those most comfortable with technology, information provision leads to *perceived knowledge* scores that are 1.82 to 1.88 points higher than the perceived knowledge of similarly comfortable people in the control condition.

A similar picture emerges from the right panel. Among those most comfortable with technology, the three types of information have a large impact on the extent to which respondents have a *positive response* to recycled water (the differences with the control condition range from 2.16 to 2.29). Again, no significant effect exists among those with little comfort with technology.

4. Conclusions

FR rightly conclude that information provision affects knowledge of and support for potable recycled water. However, it is important to realize that such effects are not universal: consistent with cultural-sociological insights on the relevance of cultural predispositions, significant effects only exist in specific subgroups of the population. Only those who are comfortable with new technologies prove receptive to new information about potable recycled water. This is not only highly relevant for scholars aiming ‘to identify the key mechanisms through which information has its effects’ (p.87), but also for policymakers trying to overcome community resistance to alternative water sources. Our results indicate, ironically, that information provision only works for those who are already culturally predisposed to

accept new technologies such as water recycling. This indicates that information campaigns aimed at the general public will have a polarizing effect: those least likely to support recycled water will remain unaffected, whereas those who already were likely to be supportive will become even more enthusiastic.

Acknowledgements

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Notes

¹ “How much do you think you know about recycled water for drinking water purposes?” and “How confident would you feel about providing someone else with information about water recycling?”

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Conditional marginal effects of information provision

Effect of three types of information, by comfort with technology (95% CIs in curved lines)

