

## Presentation Transcript

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Hello everyone, this is Q. J. Yao, associate professor at the Department of Communication & Media, Lamar University, Beaumont, Texas. I'm reporting to the ICA virtual conference a survey-experiment study that I conducted to test the levels of message effects and the hierarchy of responses with a new scientific issue of water-energy-food nexus. If you have questions or comments, please do not hesitate to send them via my email, [qyao@lamar.edu](mailto:qyao@lamar.edu).

The study was designed based on a theoretical framework of media effects that we have worked for a long time and was published last year. The framework holds that media stimuli and audience responses both accumulate, conspicuously, across five levels, from attention to agenda, knowledge, attitude, and behaviors. Following Weber's law, when the media stimuli or audience responses accumulate enough at one level to pass a perceived threshold, they trigger the stimuli or responses at a higher level. Media stimuli normally generate the greatest amount of audience responses at the same level. Lower levels of media effects, such as agenda-setting, are easier to be captured in studies, rendering agenda-setting a robust finding. Since media coverage of complicated issues, with the moderation of audience predisposition, generates both positive and negative stimuli among the audience at the same time, which makes measuring the amount of media stimuli a complicated task, the framework is better tested on a new issue that has no predisposition in the public's minds.

Water-Energy-Food nexus, abbreviated as WEF nexus, is such an ideal issue. the concept promotes governing water, energy, and food in a nexus approach in stead of the existing dominating approach of governing them separately. The concept was first proposed in the Bonn Nexus Conference in 2011. To promote the concept, the German federal government opened a website on the concept soon after the conference, and the United Nations published three reports about it in 2013 and 2014. But the concept is still relatively new to scientists and largely unknown to the public, creating little predisposition in the public's minds like issues such as climate change do.

So based on the framework of media effects, seven hypotheses are developed. H1 is the classic agenda-setting hypothesis, predicting that exposure to a message on WEF nexus increases the subjects' agenda on the nexus concept. H2a is derived from the framework's part about the hierarchy of responses, predicting that subjects' agenda on the nexus concept is positively associated with their knowledge or frame of the nexus. H2b is about media effects at the knowledge level, predicting that exposure to a message with an informational component increases subjects' knowledge or frame of the nexus concept. H3a, along the dimension of the hierarchy of responses, predicts a positive association of subjects' knowledge or frame with their attitude. H3b predicts the media effects at the attitudinal level that exposure to a message with the attitudinal component increases subjects' attitude supporting the nexus concept. H4a predicts a positive association of subjects' attitude with behavioral intention. H4b, the hypothesis of media effects at the behavioral level, predicts that exposure to the message with a behavioral component increases subjects' behavioral intention to support the nexus concept.

The survey-experiment collected 149 completed responses from 102 colleges across the U.S., which were randomly assigned into five groups: the control group, the agenda-message group, the knowledge-message group, the attitudinal-message group, and the behavioral-message group. We will talk more about the four types of messages starting the next slide.

The study has five response variables on the subjects' side, namely, their agenda or perceived importance of the topic on governing the three resources, their knowledge (score from a 5-question test about the nexus concept), their frame (how much they agree with the nexus concept), their attitude (how much they think the nexus concept as urgent, serious, important, or useful), and their behavioral intention (how much they want to promote, donate, help, tell others, or urge others to support the nexus concept).

The study also has three control variables: how much the subjects keep up with science news, how much they know about the nexus concept before this study, and a measurement of the quality of their answers.

Those two are the agenda message, which only has a title-like sentence on the nexus concept, and the knowledge message, which contains three informational paragraphs about the nexus concept.

Those two are the attitudinal message, which has an attitudinal paragraph in addition to the three informational paragraphs, and the behavioral message, which contains a behavioral description paragraph and a call to action ending in addition to the three informational paragraphs and the attitudinal paragraph.

Five hierarchical multiple regression models were built to test the hypotheses about the four levels of media effects, namely, H1, H2b (for which two models with knowledge and frame being the response variable respectively were built), H3b, and H4b. Only H2b with knowledge as the response variable was confirmed. Subjects exposed to an informational message performed better in the five-item knowledge test compared to those in the control group or those exposed to a title-like sentence. Interestingly, for H2b with frame as the response variable, a negative association was considered significant at the level of  $\alpha = .1$ . Exposure to an informational message made the subjects less likely to recognize the nexus concept.

A bivariate correlation analysis and a partial correlation analysis controlling the three control variables plus age and education were conducted to triangulate the hypotheses about the associations between agenda, knowledge/frame, attitude, and behavioral intention, namely, H2a, H3a, and H4a. Both correlation analyses confirmed the associations between agenda, frame, attitude, and behavioral intention, but only the bivariate correlation analysis confirmed the association between agenda and knowledge.

In a sum, this study uses a survey-experiment design to test the five-level framework of media effects. Perhaps because survey-experiment, although having the strength in external reliability, lacks lab control, this study only confirms the media effects at the knowledge level. Media effects at other levels, including the robust agenda-setting level, are not confirmed. On the other hand, the negative contribution of exposure to an informational message to the nexus frame almost gains statistic significance.

Meanwhile, the control variable keeping up with science news positively predicts subjects' agenda, knowledge (but not frame), attitude, and behavioral intention on the nexus concept, showing long-term media effects.

The bivariate and partial correlation analyses show that frame is better than knowledge to be the middle step in the hierarchy of responses, because both correlation analyses confirm the positive associations between agenda, frame, and attitude. On the other hand, only the bivariate correlation analysis confirms a positive association of knowledge with agenda. The nature of, and relationships among, agenda, knowledge, and frame need further research to clarify.

Thank you! Again, please email your questions and comments via [qyao@lamar.edu](mailto:qyao@lamar.edu).