



SCIENTISTS AND SOCIAL MEDIA

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*A REPORT OF THE SCIENCE, MEDIA, AND THE PUBLIC RESEARCH GROUP*

*DEPARTMENT OF LIFE SCIENCES COMMUNICATION*

*UNIVERSITY OF WISCONSIN-MADISON*

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To date, scientists' attitudes toward social media, motivations to use social media, and social media habits are not well understood. Surveys that have assessed social media use have been focused on isolated disciplines<sup>1</sup> or have had substantial methodological concerns. For example, Pew Research Center's recent survey<sup>2</sup> considers "scientists" to be all members surveyed in a prominent national organization of science-supporters which is not representative of the wider population of scientists in the United States (Table 1). This report provides an overview of university scientists' social media use habits, attitudes, and motivations, based on a 2013 survey of University of Wisconsin-Madison scientists whose respondents are demographically similar to the national population of scientists (see "About the survey" section below). Although males are over-represented in the Pew and UW-Madison samples compared to the NSF data, the UW-Madison scientist breakdown by field of research more accurately reflects the population of scientists represented by NSF data.

**Table 1.** Gender and discipline comparisons for scientists from the American Academy for the Advancement of Science (AAAS), National Science Foundation (NSF), and University of Wisconsin-Madison (UW-Madison). AAAS is the national organization whose members' social media habits were surveyed and reported in 2015 by Pew. UW-Madison scientists closely match the demographics of NSF scientists for both gender and discipline.

	AAAS (1)	NSF (2)	UW-Madison
Gender			
Male	71.0%	66.1%	66.5%
Discipline			
Biological Sciences	48.1%	37.2%	36.2%
Physical Sciences	27.4%	26.9%	29.9%
Social Sciences	8.9%	35.9%	29.9%
Other	15.6%		2.4%
Multiple			1.6%

(1) AAAS member demographics<sup>2</sup>.

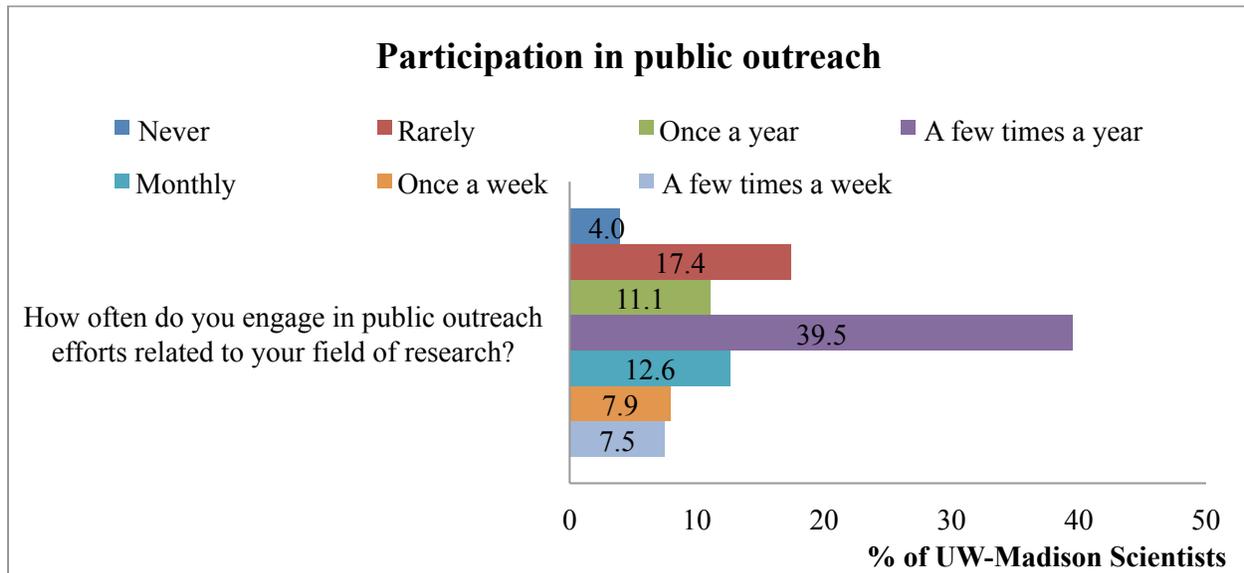
(2) Number of scientists in the U.S. with doctorates in Biological, Physical, and Social Sciences<sup>3</sup>

<sup>1</sup> Allgaier, J., Dunwoody, S., Brossard, D., Lo, Y.-Y., & Peters, H. P. (2013). Journalism and Social Media as Means of Observing the Contexts of Science. *Bioscience*, 63(4), 284-287. doi: 10.1525/bio.2013.63.4.8

<sup>2</sup> Pew Research Center, February 15, 2015, "How Scientists Engage the Public" Available at: <http://www.pewinternet.org/2015/02/15/how-scientists-engage-public/>

<sup>3</sup> National Science Foundation. (2013). *Characteristics of Scientists and Engineers in the United States: 2008*. Retrieved from: [http://www.nsf.gov/statistics/nsf13302/content.cfm?pub\\_id=4214&id=2](http://www.nsf.gov/statistics/nsf13302/content.cfm?pub_id=4214&id=2)

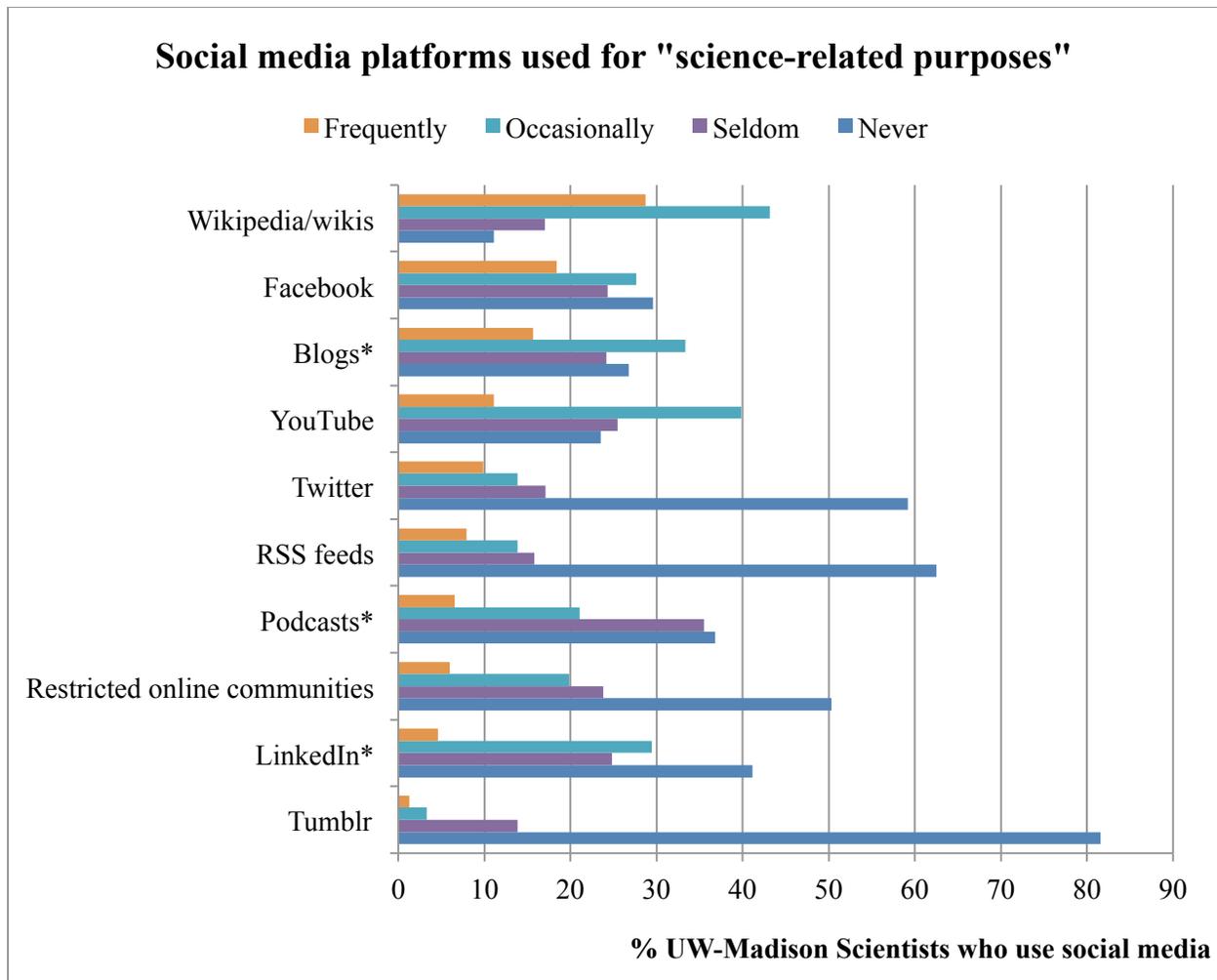
**Findings**



**Figure 1.** Respondent ( $N=253$ ) participation in public outreach efforts related to their research. Participants are generally active in outreach efforts. (7 point scale, from 1="Never" to 7="A few times a week"; Missing values excluded.)

The University of Wisconsin-Madison scientists surveyed reported being engaged in public outreach efforts related to their research. Over 75% of respondents participated in outreach efforts at least once a year, with well over half (68%) participating at least a few times per year (Figure 1). Social media is touted as having the potential to assist scientists in outreach efforts or to help scientists engage with their peers. There is even empirical evidence that among nanotechnology scientists, social media use is positively associated with a greater academic impact<sup>4</sup>. In an effort to shed light on why and when which scientists use social media, we offer the following information focusing on university scientists' interactions with social media.

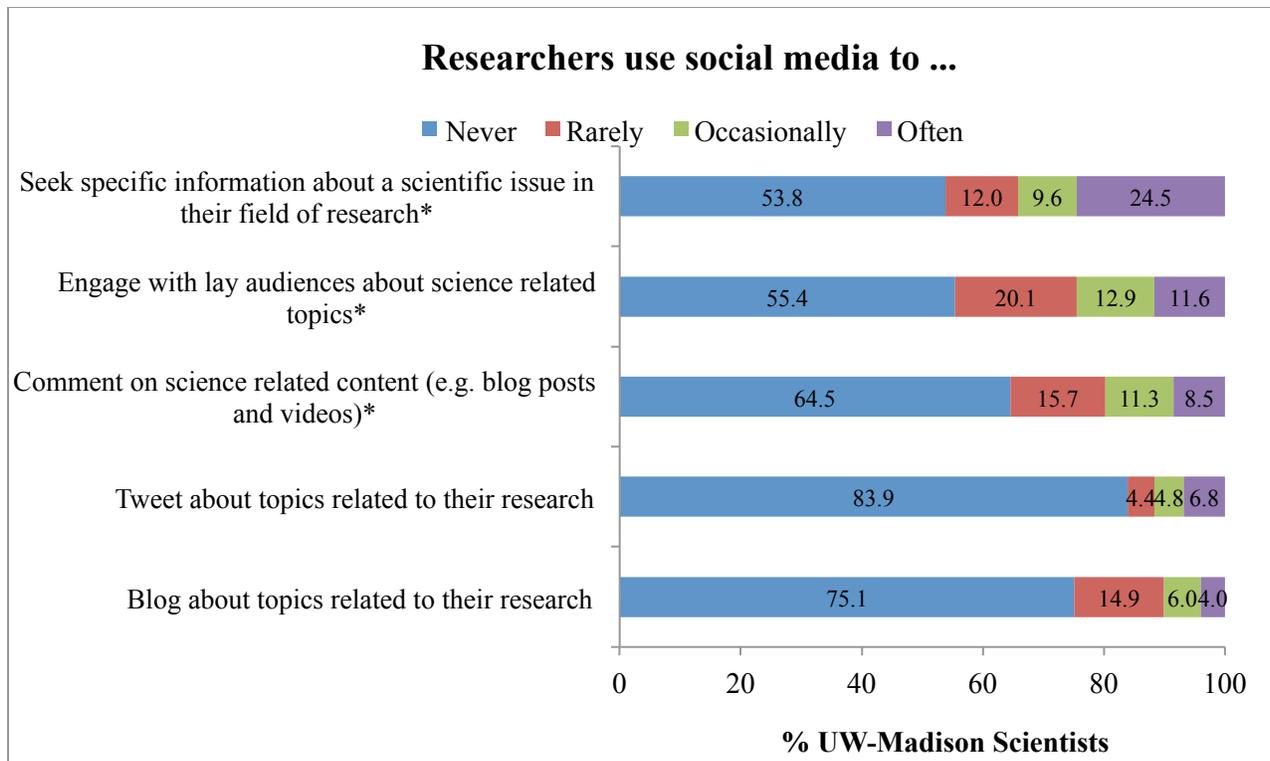
<sup>4</sup> Liang, X., Su, L. Y.-F., Yeo, S. K., Scheufele, D. A., Brossard, D., Xenos, M., Nealey, P., & Corley, E. A. (2014). Building buzz: (Scientists) communicating science in new media environments. *Journalism & Mass Communication Quarterly*, 91(4), 772-791. doi: 10.1177/1077699014550092



\* Significant difference in social media platform use across discipline or age.

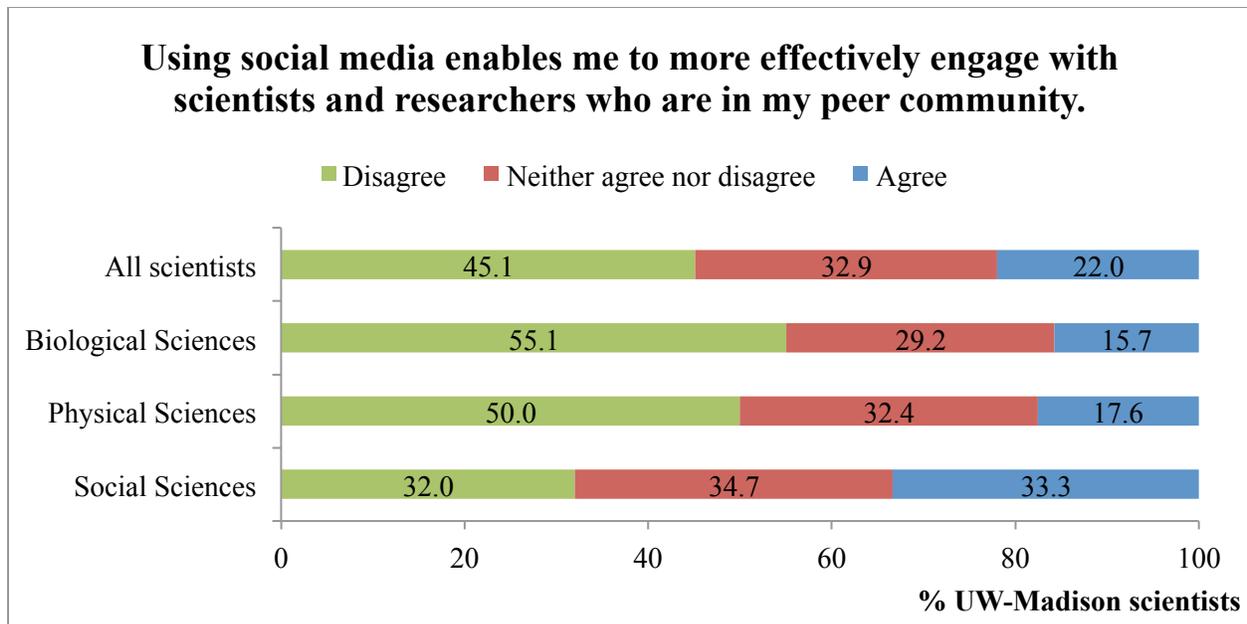
**Figure 2.** Social media platform use for "science-related purposes" by participants who responded positively to using social media ( $N=153$ ). Wikipedia was reported to be the most commonly used social media platform. Tumblr was the least used for science-related purposes. (4 point scale, from 0="Never use" to 4="Frequently use"; Missing values excluded.)

The majority of participants (61%) reported using social media for any purpose. For "science-related purposes," most respondents reported using Wikipedia/wikis at least occasionally (72%), as seen in Figure 2. Facebook, Blogs, and YouTube were the next most frequently used platforms, with approximately half of respondents using them at least occasionally (46%, 49%, and 51% respectively). Over half of participants reported never using Restricted online communities (e.g., ResearchGate, Mendeley), Twitter, RSS feeds, or Tumblr (50%, 59%, 63%, and 82% respectively). LinkedIn and Blog use varied by discipline, with participants in the social science discipline reporting less use of LinkedIn (compared to physical scientists) and more use of Blogs. Podcast use varied by age, with participants who were in the 65+ age group using podcast more frequently than younger participants.



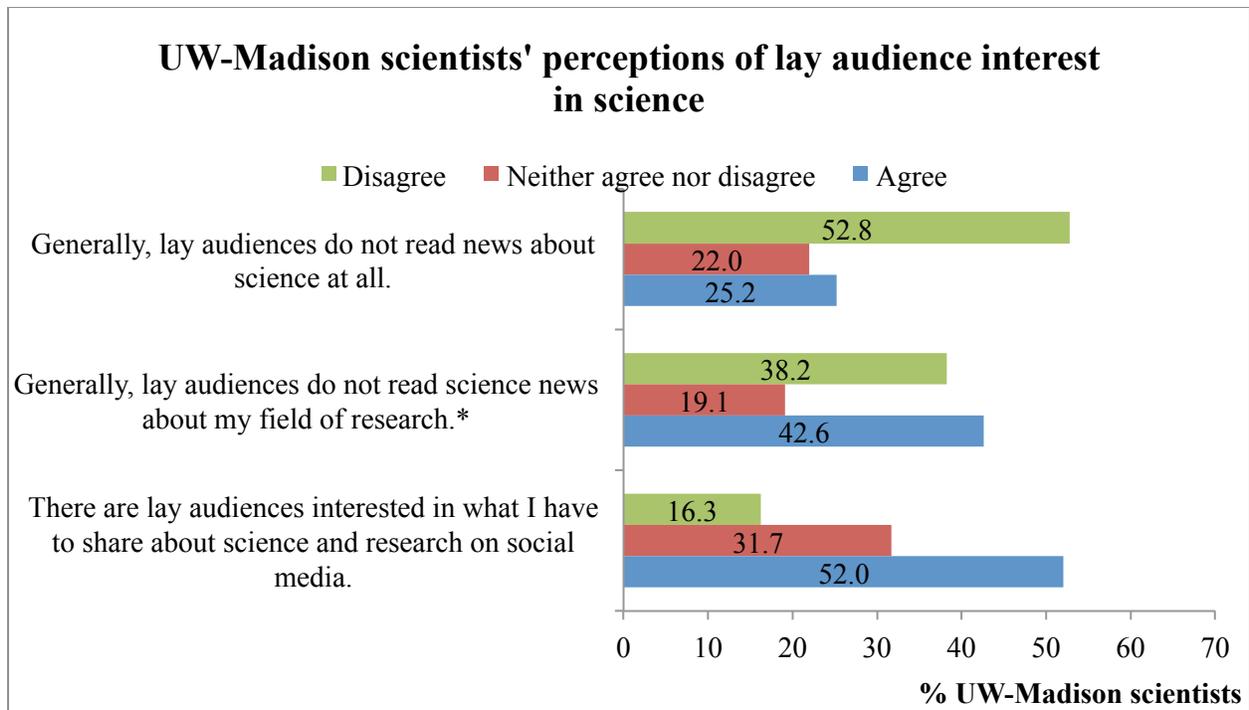
**Figure 3.** Respondent ( $N=248$  to  $N=249$ ) use of social media for activities related to their research. The majority of respondents did not use social media for any of the activities. (7 point scale, from 1="Never" to 7="Many times per day"; see Appendix A for information on categories; Missing values excluded.)

The majority of respondents never used social media for activities related to their research (Figure 3). The research related social media activities most engaged in by participants were seeking science information (34% at least occasionally) and engaging with lay audiences (25% at least occasionally). Seventy-five percent or more of participants reported that they never Tweeted (84%) or blogged (75%) about their research. Engagement in some of these social media activities varied by discipline, with participants in the social science discipline reporting more frequently using social media to seek science information (compared to physical scientists), engage with lay audiences, and comment on science content (compared to physical scientists). While some respondents did indicate they at least occasionally participated in social media activities related to their research, the vast majority do not.



**Figure 4.** Participant ( $N=246$ ) views of social media as a means of engaging with their peers. Participant views varied by discipline, with more social scientists agreeing that social media helps them engage with their peers compared to other disciplines. (5 point scale, from 1="Strongly disagree" to 5="Strongly agree"; Missing values excluded.)

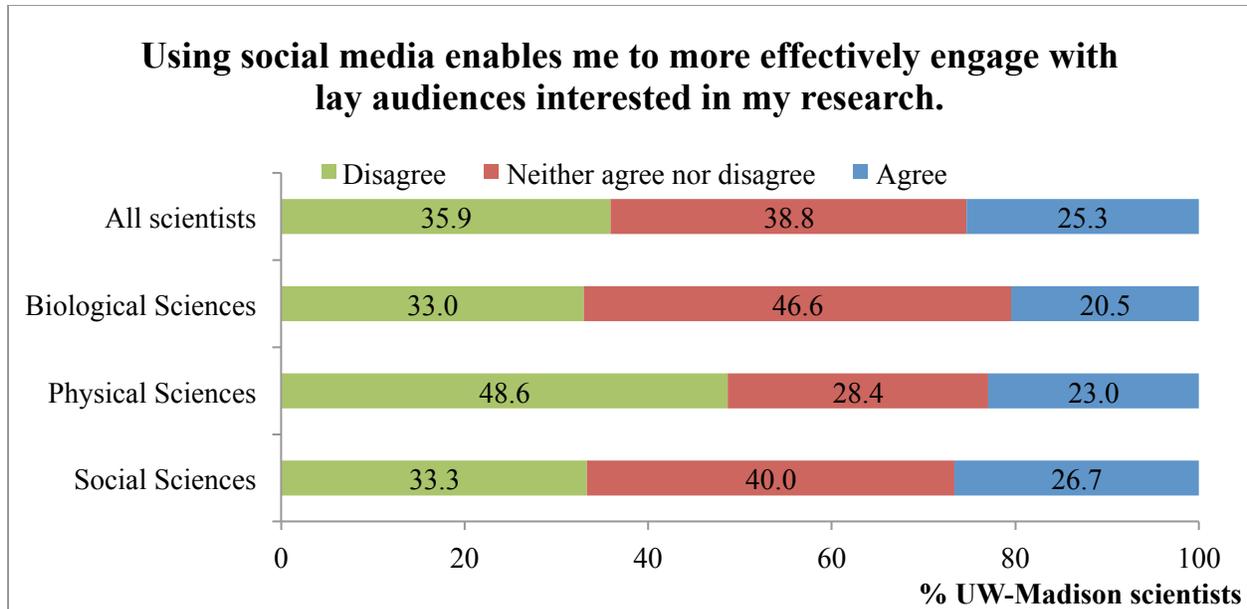
While almost a quarter of the UW-Madison scientists surveyed reported that social media helps them to engage with their peers (22%), the percent varied by science discipline (Figure 4). At least half of scientists in biological (55%) and physical (50%) disciplines indicated that social media does not help them to engage with their peers, while social scientists were more likely to indicate that it does. Despite the large portion of participants who do not view social media as a tool to facilitate peer engagement or are ambivalent, some researchers are beginning to use social media for their work.



\* Significant difference in social media platform use across discipline.

**Figure 5.** Participant ( $N=246$  to  $N=251$ ) views of lay audiences' attention to science news and social media. Participants were split on whether lay audiences read news about their field of research, but a majority believed lay audiences were interested in science and their research. (5 point scale, from 1="Strongly disagree" to 5="Strongly agree"; Missing values excluded.)

The majority of participants reported that lay audiences read science news (53%) and were interested in science and their research presented through social media (52%), as shown in Figure 5. However, participants were split on whether or not lay audiences read science news specifically about their research field, with approximately equal numbers indicating lay audiences did not read that news (38%) and did read that news (43%). Participant agreement that lay audiences read science news related to their research field varied by discipline, with social scientists being more likely to indicate that lay audiences read this news (compared to biological scientists). Overall, respondents were generally optimistic about public interest in science and their research.



\* Significant difference in social media platform use across discipline.

**Figure 6.** Participant ( $N=245$ ) views of social media as a means of engaging with lay audiences. Participant views were divided on whether social media helps them engage with lay audiences. (5 point scale, from 1="Strongly disagree" to 5="Strongly agree"; Missing values excluded.)

Respondents indicated that they were divided on lay audience engagement through social media (Figure 6). A quarter of participants reported that social media helps them to engage with lay audiences interested in their research (25%), but differences exist across disciplines. Physical science participants were more likely to indicate that social media does not help them engage with lay audiences (compared to social scientists). Overall, when scientist views toward social media as a tool for effective engagement with lay audiences is compared to engagement their peers, participants were more likely be ambivalent toward or agree that social media helps with lay audience engagement (Figures 4 and 6). While the majority of participants remained ambivalent or did not view social media as helpful for lay audience engagement, 25% of researchers viewed social media as a tool to engage with interested lay audiences.

## Conclusion

Overall, the UW-Madison scientists surveyed were active in public outreach efforts related to their research. However, while most respondents use social media themselves and at least occasionally participated in social media activities related to their research, using social media for these activities is not yet the norm. Considerable portions of scientists use social media for a variety of research purposes, including to seek out information about their field and to reach out to lay audiences. Scientists in different disciplines sometimes use social media for different purposes and hold different views of social media. Despite beliefs that lay audiences were interested in science and their research on social media, respondents were divided on the usefulness of social media for engaging with their peers and interested lay audiences.

## About the survey

In order to obtain a sample representative of tenure-track scholars at a large research institution, we began with a complete list of fulltime tenure-track and tenured faculty engaged in scientific research at the University of Wisconsin-Madison<sup>5,6</sup>. This was done by accessing websites of relevant departments, colleges, and schools. The university we studied has four tenure-track divisions: biological sciences, humanities, physical sciences, and social studies/social sciences. All tenure-track and tenured faculty members in these divisions were included and categorized based on particular research interests in addition to department affiliations. We identified 1,306 scientists for participation in the survey. After accounting for researchers on sabbatical, those who did not consent to data analysis, and humanities researchers, the survey instrument was sent to 1,239 scientists. The survey was programmed and administered online using Qualtrics survey software with the help of a survey-programmer.

The survey was fielded in March 2013 with three email waves. Timing and templates for email solicitation are described in Dillman, Smyth, and Christian (2009). The first email was personalized, following Dillman et al.'s recommendations. The second email served as a thank-you and reminder, thus it was sent to all participants. The final follow-up email was sent only to those who had not yet responded. The response rate was 20.5%, resulting in a final sample size of  $N=254$ .

The breakdown of scientists into their broad research disciplines is fairly consistent between the sample and population (Table 1). Statistics for the population of research scientists comes from the National Science Foundation's "Characteristics of Scientists and Engineers in the United States: 2008" (2013). Of those who responded, 66.5% are male and 26.8% are female, which closely reflects the national breakdown of scientists, 66.1% male and 33.9% female<sup>7</sup>. The mean number of years since receiving their doctorate in our sample was 21.1 years ( $SD = 10.8$  years). On a 7-point Likert scale ranging from "very liberal" to "very conservative," the mean ideology of our sample was 2.42 ( $SD = 1.23$ ).

## Suggested citation

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<sup>5</sup> Simis, M. J. (2013). *Scientists' perceptions of how lay individuals form attitudes toward controversial science issues*. (Masters of Science), University of Wisconsin-Madison. Committee members: Dominique Brossard, Dietram A. Scheufele, Michael Xenos.

<sup>6</sup> Simis, M. J. (2014). *Predicting adherence to the deficit model: Research I scientists' perceptions of how lay individuals form attitudes toward nanotechnology*. Paper presented at the Paper presented at the 13th International Public Communication of Science and Technology Conference, Salvador, Brazil.

<sup>7</sup>A breakdown of tenure-track and tenured faculty by gender for UW-Madison scientists is not available. The gender breakdown for UW-Madison is only available on the level across all tenure-track divisions at the university, which in addition to the divisions of interest—biological sciences, physical sciences, and social studies/social sciences—includes the humanities division.