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Jargon as a barrier to effective science communication: Evidence from metacognition

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Abstract

In this experiment ($N = 650$), we examine the negative consequences of jargon on individuals' perceptions of emerging scientific technology and aim to explain these effects. We find that the presence of jargon impairs people's ability to process scientific information, and that this impairment leads to greater motivated resistance to persuasion, increased risk perceptions, and lower support for technology adoption. These findings suggest that the use of jargon undermines efforts to inform and persuade the public through the cognitive mechanism of metacognition.

Keywords

metacognition, persuasion, processing fluency, science communication

In order for the public to support scientific endeavors, it is important that research findings are effectively communicated to lay audiences. However, there is growing concern that scientific communities and the public may not be successful at engaging with one another, resulting in an uptick of practical and scholarly work aimed at clarifying science communication. From these works, a common recommendation is to reduce jargon (e.g. Baron, 2010; Dean, 2009; Sharon and Baram-Tsabari, 2014). Although this recommendation stems from a desire to "speak the same language" as the target audience, little research has examined the mechanisms that underlie this recommendation.

Thus, the purpose of this study is to investigate and explain the ramifications of jargon use in emerging science and technology contexts. Guided by research in metacognition (Petty et al., 2007; Schwarz, 2015), we demonstrate that jargon impairs people's ability to easily process scientific information, and that this impairment leads to greater motivated resistance to persuasion (MRP), increased risk perceptions, and lower support for technology adoption. Taken together, these theoretically guided findings offer practical implications for science

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communicators who aim to engage, inspire, and persuade the public of their important, yet often complicated, pursuits.

1. Jargon and processing fluency

Jargon refers to specialized, technical vocabulary terms that are associated with a situational context or purpose and are rarely used outside of these particular circumstances (Sharon and Baram-Tsabari, 2014). Jargon is often used to demonstrate expertise, convey idiosyncratic knowledge, or reference highly particularized ideas (Grupp and Heider, 1975). In addition to being technical, jargon is also used primarily by members of a particular group or trade, such as scientists, lawyers, or medical professionals, and is less frequently used or understood by individuals who fall outside of these groups (Sharon and Baram-Tsabari, 2014). Research examining the problematic impact of jargon (Grupp and Heider, 1975; Sharon and Baram-Tsabari, 2014) theorizes that negative effects are observed because non-experts are unable to fully comprehend jargon-laden information due to their lack of understanding. Here, we offer and test an additional explanation guided by metacognition and the feelings associated with information processing. We argue that in addition to jargon impairing people's ability to comprehend information, the presence of jargon may also affect the difficulty with which people process information. By understanding *why* message features produce undesirable outcomes, future efforts can utilize this information to reduce communication barriers to scientific engagement (e.g. Mellor, 2018).

Research from social psychology in metacognition theorizes about how one's subjective experience with information processing can affect judgments and decision-making (Petty et al., 2007; Schwarz, 2015). *Metacognition* can be defined as people's perceptions of, or experiences with, their own thought processes (Schwarz, 2010). The specific type of metacognitive experience studied here, called *processing fluency*, refers to the ease or difficulty with which new information is processed (Schwarz, 2010). Processing fluency is associated with feelings of ease, speed, and familiarity during information processing and is hedonically marked such that an easy processing experience is associated with positive feelings (Schwarz, 2006), while a difficult processing experience is associated with negative feelings (Schwarz, 2010). Here, we test whether the presence or absence of jargon produces variance in how easily people are able to process complex scientific information and whether this variance affects perceptions of new scientific technologies.

Prior research has found that language difficulty can influence processing fluency (Shulman and Sweitzer, 2018a, 2018b). Specifically, the use of more challenging words significantly impairs processing fluency relative to easier language. This study extends this work by testing this notion with jargon. Namely, we expect that scientific information that includes jargon should be more difficult to process than ordinary terminology. Moreover, if this difference is attributable to processing fluency, as opposed to comprehension alone, then this difference should persist even when jargon words are defined. If this is the case, then we expect the following result:

> H1: Participants in the jargon condition will report lower levels of processing fluency than participants in the no-jargon frame condition, even when jargon definitions are provided.

2. Processing fluency and resistance to persuasion

The expected negative relationship between jargon and processing fluency suggests that *support*, an outcome pertinent to scientists, may be impacted by metacognition as well. Research suggests that processing fluency is hedonically marked such that when fluency is experienced as easy, positive affective responses occur, such as feelings of knowing (Schwartz and Metcalfe, 1994), safety (Song and Schwarz, 2009), liking (Dragojevic and Giles, 2016), interest, and efficacy (Shulman and Sweitzer, 2018a, 2018b). These positive responses evoke the *naïve theory* (Schwarz, 2010) that if something feels good, it must be safe and familiar. Taken together, under conditions of easier processing, individuals are less motivated to seek out or consider additional information in order to be persuaded (Briñol et al., 2013). A difficult processing experience, however, is associated with unfamiliarity, which leads to negative outcomes such as uncertainty (Nelson et al., 1998), risk (Song and Schwarz, 2009), and a lack of confidence, liking, and knowledge perceptions (Shulman and Sweitzer, 2018a, 2018b). As such, metacognitive experiences of difficulty produce scrutiny (Briñol and Petty, 2004) as individuals feel a greater need to seek out more information in order to render a valid judgment (Briñol et al., 2013).

The skepticism and scrutiny associated with disfluent processing has implications for why individuals may resist scientific information. MRP refers to a person's motivation to oppose, or resist, perceived efforts to change existing attitudes (Nisbet et al., 2015). MRP is conceptualized as a combination of two experiences: (1) counterarguing, which reflects the generation of thoughts that undermine a message's persuasiveness and credibility, and (2) reactance, which refers to an oppositional response that arises from a message that is perceived to be threatening (Moyer-Gusé and Nabi, 2010). This experiment uniquely integrates processing fluency with MRP to consider whether the heightened scrutiny that extends from a disfluent experience will lead people to resist the scientific information presented. Guided by research in metacognition (e.g. Schwarz, 2010), we expect that participants will misattribute negative affect from their difficult processing experience toward the subject under investigation. If this is the case, participants should be more likely to discredit scientific information following a disfluent processing experience evoked by jargon. This leads to the second hypothesis:

> H2: Processing fluency will mediate the relationship between exposure to jargon and motivated resistance to persuasion.

3. Risk perceptions and support

The notion that jargon will compel a difficult processing experience and increase MRP suggests that people's endorsement of the scientific technologies presented should be affected by these processes as well. When new technologies are introduced to the public, two outcomes become important for public acceptance: (1) the risk posed by these new technologies and (2) support for adopting these technologies. When people encounter something for the first time, a natural response is skepticism stemming from unfamiliarity (Song and Schwarz, 2009). Thus, scientists who need to communicate new findings must overcome a well-established cognitive obstacle—things that are new *feel* unsafe (Song and Schwarz, 2009). Here, we extend this idea to test whether communication strategies, such as the inclusion or exclusion of jargon and the processing fluency evoked by this manipulation, can improve or degrade people's responses to new information via MRP. If this is the case, then it stands to reason that variance in MRP should affect risk perceptions such that higher message resistance should lead to higher risk perceptions. This logic is reflected in the third hypothesis:

> H3: Jargon will indirectly influence perceptions of risk through multiple mediators of processing fluency and motivated resistance to persuasion.

The second persuasion-related outcome, support for, or willingness to adopt, these technologies, should also be affected by participants' response to the scientific information presented. If the MRP scale functions as intended, then those who report higher scores on this scale should also be less likely to support, or adopt, the technologies in question. This claim contributes to prior research by stating that this relationship is expected based on the presence or absence of jargon and the subsequent information processing experience induced from this manipulation. This leads to our final hypothesis:

> H4: Jargon condition will indirectly influence support through multiple mediators of processing fluency and motivated resistance to persuasion.

4. Method

Participants

Participants were recruited from Qualtrics' online general population panel in the United States (*N* = 650).[1] The sample was 62% female, and participants ranged in age from 18 to 80 (*M* = 44.04; *SD* = 16.19) years. The racial breakdown of the sample was 74.2% White; 12.6% African American or African; 7.1% Latino; 2.8% Asian; 1.8% American Indian or Alaska Native; 0.3% Native Hawaiian or Pacific Islander; and 0.9% mixed.

Procedure

Participants were randomly assigned to condition in a 2 (jargon vs no-jargon) × 2 (definitions vs no-definitions) between-subjects experimental design. All participants read three paragraphs about three different emerging scientific technologies: self-driving cars, surgical robots, and three-dimensional bioprinting. Three topics were chosen based on a message sampling approach, which ensures that findings are not unique to specific messages and are therefore more generalizable to other contexts (Jackson and Jacobs, 1983). For each of the three paragraphs, presentation order and condition assignment were held constant. Topic paragraphs were held on-screen for at least 4 seconds in an effort to ensure that individuals read the information presented. Processing fluency and risk were assessed after each message in order to capture participants' immediate information processing experience and risk perceptions. This sequence was repeated for the second and third topics. After exposure to all three paragraphs, participants responded to scales measuring MRP and support. The survey took about 20 minutes to complete (*M* = 21.45, *SD* = 17.41), and participants were paid through Qualtrics.

Stimuli

Before creating each experimental condition, information about the selected topics was obtained from credible science and technology sources (for details, see Supplementary Materials). This information was used to create three-sentence paragraphs about each scientific technology, where the first sentence provided context, the second described how it worked, and the third described possible risks (Supplementary Appendix A). In the jargon condition (*n* = 328), 10 jargon terms were included in each paragraph. In the no-jargon condition (*n* = 312), jargon was replaced by short explanations using simpler synonyms. Jargon was operationalized through terms that were technical or scientific, including descriptions of technologies, minerals, or chemicals, as well as acronyms. Acronyms were replaced with their full form in the no-jargon condition.

To control for comprehension, participants were randomly assigned to a definitions condition ($n = 323$) or a no-definitions condition ($n = 317$). Definitions were provided using a mouseover text feature. In this condition, participants were told they could scroll over underlined terms (jargon) to receive their definition. The definition provided was identical to the language in the no-jargon condition. Word count was held constant across topic and condition.

Measures

All items were measured using seven-point Likert-type scales wherein higher scores reflect stronger agreement with the concept (full scales available in the Supplementary Materials).

Processing fluency. After exposure to each paragraph, participants responded to a five-item measure assessing *processing fluency* (Shulman and Sweitzer, 2018a, 2018b). The scale included items such as "A lot of the terms felt familiar to me." To account for fluency across topics, the five items were averaged across the three topics to form a 15-item scale, with higher scores reflective of an easier processing experience ($M = 4.92$, $SD = 1.07$, $\alpha = .90$).

MRP. MRP was measured using an eight-item scale (Nisbet et al., 2015). Items included "The scientific messages tried to pressure me to think a certain way" and "The scientific messages were not very credible" ($M = 2.96$, $SD = 0.95$, $\alpha = .84$).

Risk. Risk was measured following exposure to each topic paragraph. Three-scale items were presented after each topic for a total of nine measures ($M = 3.52$, $SD = 1.26$, $\alpha = .89$). An example item includes "[self-driving cars/surgical robots/3-D bioprinting] pose a serious threat to human safety" (Kahan et al., 2012).

Support. Support was measured using a 15-item scale that assessed support for adopting each technology. A sample item includes "Self-driving cars can solve transportation problems" ($M = 4.25$, $SD = 1.09$, $\alpha = .91$).

5. Results

Hypothesis 1 predicted that jargon condition assignment would affect reports of processing fluency independent of definition condition. To test this hypothesis, a two-way analysis of variance (ANOVA) was conducted. As predicted, there was a significant main effect for jargon, $F(1, 636) = 76.03$, $p < .001$, $\eta^2 = .11$, such that those in the jargon condition ($M = 4.57$, $SD = 1.11$) reported significantly lower processing fluency than those in the no-jargon condition ($M = 5.27$, $SD = 0.90$). In addition, consistent with expectations, there was not a significant main effect for definition condition, $F(1, 636) = 0.37$, $p = .543$, $\eta^2 = .0005$, nor a significant interaction effect, $F(1, 636) = 0.17$, $p = .678$, $\eta^2 = .0002$. Although the manipulations of jargon use and definitions appear to be operating independently, to isolate the effect of jargon, the definition condition was used as a covariate for all remaining analyses.

Hypothesis 2 predicted that processing fluency would mediate the relationship between jargon condition and MRP. This hypothesis was tested using the mediation model from Hayes' (2013) macro PROCESS (Model 4, 95% bias-corrected bootstrap confidence intervals (CIs) based on 10,000 resamples). As expected, significant indirect effects were obtained in the predicted

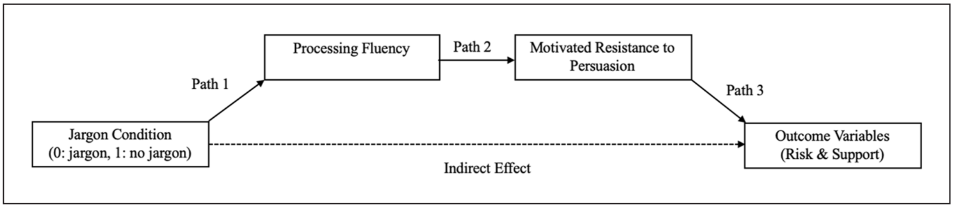

Figure 1. Model 6 from Hayes' (2013) PROCESS along with path labels that correspond with Table 1, wherein indirect effects are calculated as the product of paths 1, 2, and 3.

direction, $B = -.21$, $SE = .03$, 95% CI = [−.28, −.15], such that the no-jargon condition was associated with greater processing fluency, $B = .70$, $SE = .08$, $t = 8.71$, $p < .001$, which, in turn, reduced MRP, $B = -.29$, $SE = .04$, $t = 8.45$, $p < .001$. In total, this model explained 10% of the variance, indicative of a medium-to-large effect (Cohen, 1992). Thus, H2 was supported, even when controlling for the effect of definitions on MRP, $B = -.10$, $SE = .07$, $t = -1.41$, $p = .159$.

Hypothesis 3 predicted that the presence of jargon would indirectly influence perceptions of risk through the multiple mediators of processing fluency and MRP. This hypothesis was tested using Hayes' (2013) serial mediation model with two mediators, Model 6, 95% bias-corrected bootstrap CIs based on 10,000 resamples. Figure 1 represents this model and includes labels that correspond with each of the paths estimated in Table 1. In support of H3, the indirect effect was significant, $B = -.11$, $SE = .02$, 95% CI = [−.15, −.07], and explained 20% of the variance in risk, which is a large effect (Cohen, 1992). Once again, the covariate of definition condition never reached statistical significance ($-1.34 < t\text{'s} < -0.86$).

Finally, H4 predicted that the presence of jargon would indirectly influence support for emerging science technologies through the multiple mediators of processing fluency and MRP. The same serial mediation model from H3 (Figure 1) was used to test H4, with support as the outcome measure (see Table 1). As expected, the indirect effect of jargon on support through processing fluency and MRP was significant, $B = .08$, $SE = .02$, 95% CI = [.06, .12]. Unlike other models, definition condition was found to be a significant predictor of support, $B = .22$, $SE = .08$, $t = 2.79$, $p < .05$. Nevertheless, despite this finding, all relationships consistent with H4 were supported and explained 21% of the variance in technology support, which is a large effect (Cohen, 1992).

6. Discussion

This study examined the effect of jargon and processing fluency on individuals' resistance to persuasion, perceptions of risk, and willingness to support three different science technologies. Understanding how jargon impacts audiences has become particularly important amid concerns about a growing communication gap between scientific communities and the public. Here, we find support for the extant practical and scholarly recommendation that scientists reduce their jargon use but build on what is already known in several ways. First, we extend existing literature that recognizes how easy language can evoke engagement with science information (Scharrer et al., 2017) by offering processing fluency as another mechanism that explains these effects. Second, we believe that these findings generalize to other contexts where language difficulty has been found to alter judgments and decision-making, including politics and policy preferences (Carpenter and Boster, 2013; Goldberg and Carmichael, 2017; Sweitzer and Shulman, 2018).

We find that using jargon significantly disrupts processing fluency, in addition to and separate of comprehension. Furthermore, this reduction in processing fluency increases MRP,

Table 1. Results from the serial mediation analyses for hypotheses 3 and 4.

Outcomes	Path 1 *B* (*SE*)	Path 2 *B* (*SE*)	Path 3 *B* (*SE*)	R^2	Indirect effect *B* (*SE*)	95% CI [LL, UL]
H3						
Risk perceptions	.73 (.08)***	−.30 (.04)***	.51 (.05)***	.20	−.11 (.02)	[−.15, −.07]
H4						
Support	.70 (.08)***	−.31 (.04)***	−.39 (.04)***	.21	.08 (.02)	[.06, .12]

CI: confidence interval; LL: lower limit; UL: upper limit.
Path 1 denotes the path coefficient between the jargon condition (0: jargon, 1: no-jargon) and processing fluency. Path 2 denotes the relationship between processing fluency (higher scores = easier experience) and motivated resistance to persuasion. Path 3 indicates the relationship between motivated resistance to persuasion and outcomes (Figure 1). All models were run using Model 6 (Hayes' (2013) 95% bias-corrected bootstrap CIs based on 10,000 resamples), with definition condition as a covariate. Non-zero indirect effects indicate support for the serial mediation model hypothesized.
$^{*}p < .05$; $^{**}p < .01$; $^{***}p < .001$.

risk perceptions, and reduces overall support. Because science communication often serves to introduce scientific advancements to non-scientific audiences, these results suggest that initial messaging should strive to facilitate an easy processing experience and eliminate jargon where possible. In addition to this recommendation, the insight offered here extends to other communication techniques that also might impair processing fluency. This could include complex graphs, branding that includes acronyms, the offering of unintuitive data, or highly technical evidence, to provide just a few examples (see Shulman and Bullock, 2019). More broadly, we recommend that scholars not only consider information and comprehension in their communication to the public but also think about how message presentation may inadvertently impair information processing.

Despite these findings, there were methodological limitations of this study. First, we used an online experiment with a non-representative sample, thus limiting the generalizability of our findings. Second, these messages were free of any images, source cues, or context. The absence of these features hampers the ecological validity of our results, even though the information presented was obtained from real science communication sources. Finally, we asked participants to view three messages, rather than one. We chose to do this to increase the generalizability of our findings beyond any one science topic but recognize that these messages may have been differentially effective.

Theoretically, it is important to acknowledge that we did not directly measure comprehension. Our goal was to hold comprehension constant by including the same information across conditions. Furthermore, the manner in which we held information constant—through the use of mouseover text—introduced the behavior of searching for definitions if desired. Additional research should consider alternative strategies for capturing changes in comprehension without altering information presentation or adding a behavioral, and possibly affective, component.

Finally, we presented a serial mediation model despite using cross-sectional data. Because the measure of our dependent variables lacked a temporal element, we cannot be sure that we find causal effects between processing fluency, MRP, risk, and support. Nonetheless, we believe that the model presented has strong theoretical support and practical implications for science communicators.

In sum, this experiment provides evidence for the negative effects of jargon use on lay audiences. Our results imply that minimizing jargon within science communication should reduce resistance to persuasion and risk perceptions, and ultimately increase support. Future research should explore the effects of jargon, or other forms of language that may affect processing fluency, with the hopes of ultimately enabling communicators to craft more effective appeals.

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Supplemental material

Supplemental material for this article is available online.

Note

1. This dataset is used in another paper that also considers the effects of jargon on metacognition. However, that paper examines this topic with a different theoretical framework and outcome measures that are not reported here.

References

Baron N (2010) *Escape from the Ivory Tower: A Guide to Making Your Science Matter*. Washington, DC: Island Press.

Briñol P and Petty RE (2004) Self-validation processes: The role of thought confidence in persuasion. In: Haddock G and Maio G (eds) *Contemporary Perspectives on the Psychology of Attitudes*. London: Psychology Press, pp. 205–226.

Briñol P, Tormala Z and Petty R (2013) Ease and persuasion: Multiple processes, meanings, and effects. In: Unkelbach C and Greifeneder R (eds) *The Experience of Thinking: How the Fluency of Mental Processes Influences Cognition and Behavior*. London: Psychology Press, pp. 101–118.

Carpenter CJ and Boster FJ (2013) Modeling the effects of processing effort and ability in response to persuasive message arguments. *Communication Quarterly* 61: 413–430.

Cohen J (1992) A power primer. *Psychological Bulletin* 112: 155–159.

Dean C (2009) *Am I Making Myself Clear? A Scientist's Guide to Talking to the Public*. Cambridge, MA: Harvard University Press.

Dragojevic M and Giles H (2016) I don't like you because you're hard to understand: The role of processing fluency in the language attitudes process. *Human Communication Research* 42: 396–420.

Goldberg MH and Carmichael CL (2017) Language complexity, belief-consistency, and the evaluation of policies. *Comprehensive Results in Social Psychology* 2: 1–17.

Grupp G and Heider M (1975) Non-overlapping disciplinary vocabularies. In: Day SB (ed.) *Communication of Scientific Information*. Basel: Karger, pp. 28–36.

Hayes A (2013) *Introduction to Mediation, Moderation, and Conditional Process Analysis: A Regression-Based Approach*. New York, NY: Guilford Press.

Jackson S and Jacobs S (1983) Generalizing about messages: Suggestions for design and analysis of experiments. *Human Communication Research* 9: 169–181.

Kahan D, Peters E, Wittlin M, Slovic P, Ouellette LL, Braman D, et al. (2012) The polarizing impact of science literacy and numeracy on perceived climate change risks. *Nature Climate Change* 2: 732–735.

Mellor F (2018) Book Review: Kathleen Hall Jamieson, Dan Kahan and Dietram A. Scheufele (eds), The Oxford Handbook of The Science of Science Communication. *Public Understanding of Science* 27: 750–752.

Moyer-Gusé E and Nabi R (2010) Explaining the effects of narrative in an entertainment television program: Overcoming resistance to persuasion. *Human Communication Research* 36: 26–52.

Nelson TO, Kruglanski AW and Jost J (1998) Knowing thyself and others: Progress in metacognitive social psychology. In: Lories G and Dardenne B (eds) *Metacognition: Cognitive and Social Dimensions*. London: SAGE, pp. 69–89.

Nisbet EC, Cooper KE and Garrett RK (2015) The partisan brain: How dissonant science messages lead conservatives and liberals to (dis)trust science. *The ANNALS of the American Academy of Political and Social Science* 658: 36–66.

Petty R, Briñol P, Tormala Z and Wegener DT (2007) The role of metacognition in social judgments. In: Kruglanski AW and Higgins ET (eds) *Social Psychology: Handbook of Basic Principles*. New York, NY: Guilford Press, pp. 254–284.

Scharrer L, Rupieper Y, Stadtler M and Bromme R (2017) When science becomes too easy: Science popularization inclines laypeople to underrate their dependence on experts. *Public Understanding of Science* 26: 1003–1018.

Schwartz BL and Metcalfe J (1994) Methodological problems and pitfalls in the study of human metacognition. In: Shimamura AP (ed.) *Metacognition: Knowing about Knowing*. Cambridge, MA: MIT Press, pp. 137–156.

Schwarz N (2006) Feelings, fit, and funny effects: A situated cognition perspective. *Journal of Marketing Research* 43: 20–23.

Schwarz N (2010) Meaning in context: Metacognitive experiences. In: Mesquita B, Barrett LF and Smith ER (eds) *The Mind in Context*. New York, NY: Guilford Press, pp. 105–125.

Schwarz N (2015) Metacognition. In: Mikulincer M, Shaver PR, Borgida E and Bargh JA (eds) *APA Handbook of Personality and Social Psychology: Attitudes and Social Cognition*. Washington, DC: APA, pp. 203–229.

Sharon A and Baram-Tsabari A (2014) Measuring mumbo jumbo: A preliminary quantification of the use of jargon in science communication. *Public Understanding of Science* 23: 528–546.

Shulman HC and Bullock OM (2019) Using metacognitive cues to amplify message content: A new direction in strategic communication. *Annals of the International Communication Association* 43: 24–39.

Shulman HC and Sweitzer MD (2018a) Advancing framing theory: Designing an equivalency frame to improve political information processing. *Human Communication Research* 44: 155–175.

Shulman HC and Sweitzer MD (2018b) Varying metacognition through public opinion questions: How language can affect political engagement. *Journal of Language and Social Psychology* 37: 224–237.

Song H and Schwarz N (2009) If it's difficult to pronounce, it must be risky: Fluency, familiarity, and risk perception. *Psychological Science* 20: 135–138.

Sweitzer MD and Shulman HC (2018) The effects of metacognition in survey research: Experimental, cross-sectional, and content-analytic evidence. *Public Opinion Quarterly* 82: 745–768.

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