

Communicating What We Know, and What Isn't So: Science Communication in Psychology

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Abstract

The field of psychology has a long history of encouraging researchers to disseminate our findings to the broader public. This trend has continued in recent decades in part due to professional psychology organizations re-issuing calls to “give psychology away.” This recent wave of calls to give psychology away is different, because it has been occurring alongside another movement in the field—the credibility revolution (Vazire, 2018)—in which psychology has been reckoning with meta-scientific questions about what exactly it is that we know. This creates a dilemma for the modern psychologist: how are we to “give psychology away” if we are unsure about what we know, or what we have to give? In the current paper, we discuss strategies for navigating this tension by drawing on insights from the interdisciplinary fields of science communication and persuasion and social influence.

Keywords

Science communication, meta-science, ethics, generalizability

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*“Tell the truth, to yourself first”
-Maya Angelou*

Psychology has long discussed the importance of science communication. In the 1940s, social psychologist Kurt Lewin (1946) famously argued that it was not sufficient for us to conduct research and share it among ourselves, but rather it was our duty to conduct ‘action research’ and share our findings for the betterment of society. In developmental psychology, Urie Bronfenbrenner not only conducted research on child-rearing and human ecology, he shared that research broadly and even used it to co-found the United States’ Head Start program for young children living in poverty (Lang, 2005). In the 1990s, scholars studying psychology and the law discussed the importance of using psychological evidence in legal decisions (Ellsworth, 1991). And in the modern era—2010s to the present—professional psychological organizations like the Association for Psychological Science and the Society for the Psychological Study of Social Issues have been re-issuing George Miller’s (1969) challenge for psychologists to “give psychology away”—to ensure that our field has a broader impact in the world (see also Gruber et al., 2019; Teachman et al., 2015).

These calls for more science communication are, in principle, a good thing. We agree with Lewin (1946), Miller (1969), Roe (1953), and others that there is little point in doing psychological research if the research never leaves the silos of our ivory towers; that only writing academic articles for the small fraction of people that typically read them (American Psychological Association, 1963; Kirchherr & Biswas, 2015) might not be the best use of the public’s money that directly or indirectly funds our research. That being said, we have been wondering about how we, as a field, might communicate the science of psychology *responsibly*—sharing both what we know, and what isn’t so (Gilovich, 1993), particularly in light of recent evidence about insufficient robustness of our findings.

If we want to give psychology away then we must heed the advice of Maya Angelou that we opened this paper with, and tell the truth about what we do and do not know. We first need to be honest with ourselves, and then to be honest with others who rely on our work for making decisions (Gilovich & Ross, 2016; Ijzerman et al., 2020). What exactly is that truth? That is a question many of us have been wrestling with over the past decade since Daryl Bem (2011) published evidence for what we currently understand to be metaphysically impossible in one of the most prestigious journals in our field. That publication, which presented a series of experiments documenting ostensible evidence of the existence of extrasensory perception, led many to ask how something like that could get through our quality control filters (Simmons et al., 2011). And, if one can easily publish papers in the field’s premier journals while operating under the principle that: “I’m all for rigor...but I prefer other people do it. I see its importance-it’s fun for some people-but I don’t have the patience for it” (Engber quoting Bem, 2017), what does that mean for the credibility of our field (Vazire, 2018; Wai & Halpern, 2018)?

These questions have led the field to launch large meta-scientific investigations to give us greater insights about what we know (Gilbert et al., 2016; Motyl et al., 2017; Open Science Collaboration [OSC], 2015) and how we know it (Anderson & Maxwell, 2016; Nelson et al., 2018; Simmons et al., 2011). These investigations have elicited a deep sense of uncertainty (at least among some people in the field) because estimates of the replicability of our findings suggest that we are only able to replicate somewhere between one-third and two-thirds of our findings (Klein et al., 2018; OSC, 2015). Even findings once thought to be “fundamental” principles of human psychology—for example, that people tend to explain their own behavior with situational

causes and other people's behaviors with dispositional causes (Jones & Nisbett, 1971) - appear not to be when the body of work is examined more closely (Malle, 2006). Many of our findings seem to suffer from a "context sensitivity" problem—an effect found in one context often cannot be reliably reproduced in another context, and we often do not know what the critical contextual variable is that explains the difference (Goroff et al., 2018; Laajaj et al., 2019; Yarkoni, 2019).

In addition to difficulties with replication, meta-scientific investigations have unearthed, or in some cases refocused our attention on other issues that make it difficult to know what exactly it is that we know. Our samples are drawn largely from Western, Educated, Industrialized, Rich, and Democratic nations (Henrich et al., 2010). And, as Syed and Kathawalla (2020) appropriately emphasize, the lack of national diversity is not the only problem; within those nations we have an ethnic diversity problem: we oversample White and other ethnic and racial majorities, leaving little space for ethnic/racial minorities whose lives are also affected by the policies developed as a result of our science (Lewis, 2019; Shelton, 2000). Another area of struggle is with measurement and ecological validity (Flake & Fried, 2020). Most of our studies, at least within the social-personality area of psychology, rely on self-reports and other computerized tasks done in the laboratory (Baumeister et al., 2007) or online (Anderson et al., 2019). They are conducted with measures that we seldom bother to check are valid indicators of our constructs of interests (Flake et al., 2017; Maul, 2017). Unsurprisingly, then, there is often a large gap between what those measures tell us people intend to do, and what people actually do (Webb & Sheeran, 2006). These issues make it difficult to know when and whether it is appropriate to apply our findings (DeAngelis, 2010; Earl & Lewis, 2019; Goroff et al., 2018; IJzerman et al., 2020).

In addition to recent reflections about methodological rigor, the field has simultaneously been reflecting (though perhaps to a lesser degree) on the makeup of the discipline (e.g., Duarte et al., 2015; Lin et al., 2018; Syed & Kathawalla, 2020). These issues too, have tremendous implications for the questions that get asked in psychological research (Ellsworth, 2016), which issues get studied and by whom (Roberts et al., 2020), the inferences that can be made from the research we conduct (Ritchie, 2020; Sears, 1986; Simons et al., 2017), and the applicability of those inferences to real problems in the broader world (IJzerman et al., 2020; Navarro, 2019). Together, these issues create an interesting dilemma for science communication in psychology. If we cannot consistently reproduce a large portion of our own findings, and it is unclear the extent to which those findings generalize beyond the narrow slivers of the population (Syed & Kathawalla, 2020) and toy problems that we often study (Dunnette, 1966; Navarro, 2019), then what exactly are we to "give away?" What should we be communicating to the broader public? And precisely how are we to do that? The goal when psychologists communicate is to share psychological "truths," but the issues we have highlighted thus far make it difficult to discern what those truths are, and what are the best ways to share them.

Our goal in this article is to wrestle with these questions in hope of starting a field-wide conversation about what responsible science communication might mean in an age of great scientific uncertainty. We believe that psychology and other sciences can emerge from this state of scientific uncertainty much stronger than before, especially if responsible scientific communication is taken to heart as part of that process of improvement (see also, Ellsworth, 2016).

Who Needs to Say What to Whom with What Effect? An Old Lens for a New Issue

In some ways, the issue of modern science communication that we are wrestling with in this paper can be viewed through the lens of some of the earliest research on the psychology of

communication. In their seminal book *Communication and persuasion; psychological studies of opinion change*, Hovland and colleagues (1953) described the importance of the interactions between source, message, and audience in persuasion attempts and other forms of communication. Those old lessons are useful for considering the modern issue of communicating about our science in the new “credibility revolution” era (Vazire, 2018).

Who Should Be Communicating? Hovland and colleagues (1953) argued that credibility and trustworthiness are two important qualities that determine whether a (science) communicator will be effective in persuading audiences to pay attention to, and act on, information that is provided to them (see also Earl & Nisson, 2015). But what makes a psychologist a credible communicator? In a recent (in)famous special issue of *Perspectives on Psychological Science*, Sternberg (2016) and others discussed “eminence” and other varieties of fame (Roediger, 2016) as factors that can influence a psychologists’ ability to have a transformative impact within and outside of the field (see Merton, 1968, for historical discussion on this topic). Setting aside the differential opportunities to gain such eminence and fame for the moment (though see Eagly & Miller, 2016; Ray, 2019; Syed, 2017 for longer discussions), there are a few good reasons to consider factors other than fame when discussing credible science communication within psychology.

First, eminence does not appear to be a predictor of producing more credible (e.g., replicable) research (Bench et al., 2017). In other words, just because a psychologist is famous does not mean the things they have to say (or the research they produce) is any more insightful than the things other people have to say. Survival in the academy, and, for some, “fame” in psychology is often achieved by crafting well-honed narratives around a research program (e.g., De Los Reyes, 2020) as well as chasing ill-fated metrics of success (Freund, 2017). What we have learned from the meta-science movement in the field over the past decade is that the most efficient strategies for optimizing the metrics that lead to fame (see Simmons et al., 2011) are strategies that run counter to the most efficient strategies for producing research that is credible (Lewis, 2020; Nosek et al., 2012), generalizable (Yarkoni, 2019), and useful outside of our disciplinary bubble (Giner-Sorolla, 2019; Ijzerman et al., 2020).

Second, we have to remember that expertise is domain specific, and therefore we all - both the eminent and the up and coming—need to practice intellectual humility in our communication (Leary et al., 2017). Having the designation “PhD” at the end of our names does not make us all knowing, and does not give us a license to speak confidently on any issue we so choose; it means we have demonstrated to our peers that we know a lot of things about a very narrow sliver of the world. It is a specialist degree, not a generalist degree; let us keep that reality in mind. Our training may give us the skills to be able to pick up a journal article or two and quickly learn a few things about a new area or a new field (e.g., public health—an area many psychologists seem to now be interested in due to COVID-19; see Syed, 2020). But we must be cautious of what Sanchez and Dunning (2018) have dubbed “the beginner’s bubble:” confidence in our knowledge grows much faster than our actual knowledge. So while eminence and fame may breed a level of overconfidence that leads psychologists to want to speak authoritatively on a range of issues, remember that feeling superior about our beliefs does not mean that our feelings of superiority are justified by superior knowledge (Hall & Raimi, 2018). Given these well-documented gaps between our skills, and our perceptions of our skills (Kruger & Dunning, 1999), we should consider the possibility that sometimes the best thing we can do from a science communication perspective is to heed the advice of Lamar (2017): be humble, and sit down and make room for, and elevate the voices of, those whose expertise has more bearing on the topic at hand

than our own. And we should be more openly willing to say to our students, colleagues, the media, and practitioners: “I don’t know.”

This genuine humility is important given the broad implications science communication has on the field and broader world in short, medium, and long-term time horizons. Science communication has an immense impact on not only the individual scientists who communicate with the public, but also on the larger collective of scientists and scientific institutions (Hoffman et al., 2015). That is, in part due to the high-prestige social position that scientists occupy in society (Smith & Son, 2014), the messages that individual scientists communicate can be (mis)perceived, via normative influence processes (see Tankard & Paluck, 2016), as reflecting larger views of the scientific community. This is important to remember when thinking about who should be communicating with the public. We cannot rely just on our most eminent and famous psychologists at the most prestigious universities, we must rely on those with the most relevant expertise on a particular topic, or even those who are actively working in their communities who have the local requisite knowledge to understand and explain how research can be useful to those with “boots on the ground.” That on-the-ground experience is invaluable for ensuring that research is not conducted or applied in ways that may inadvertently cause harm.

This scientific humility is particularly important during times of crisis. During those times, the public looks to scientists for expert guidance on what to do—a fact that is particularly salient as we write this article during the COVID-19 global pandemic (Albertson & Gadarian, 2020). Given those factors, eminent psychologists and psychological organizations can use their platforms to elevate the voices of our lesser-known, but most relevant, experts in psychology and/or other fields when their expertise should be brought to bear in public and political discourse (see also Hoffman et al., 2015).

What Should We Communicate? What exactly, should psychologists communicate to the public? That is a tricky question for at least a few reasons. First, the scientific enterprise—at least in its idealized form—allows each scientist the freedom to pursue the ideas they find most interesting and contribute them to the so-called marketplace of ideas. That individualistic system implicitly implies that it is up to each scientist to decide what of their work is worthy of broad dissemination. While scientists have a lot of individual agency when it comes to science communication, an important thing to remember is that freedom is not without consequences: our individual decisions about what to communicate matter for the broader collective enterprise.

The effects of individual scientists’ communication decisions on collective areas of science has been felt in several domains. In educational psychology for example, Yeager (2019) noted that the history of communicating new findings in a sensationalistic fashion has led to teachers becoming skeptical of research and researchers. When new findings are presented in teacher training sessions, teachers have come to expect them to be the latest “fad” that will soon pass, just as so many others have in the past (Yeager, 2019; see Tyack and Cuban, 1995, for some history on this repeated process). As Gelman (2020) noted, reputational inferences work in bidirectional ways. Our research can have a broad impact in the world when we conduct it credibly and communicate it responsibly. When we hype up flawed research in our public communication however, that comes with a cost: the next studies “will have a little less of that credibility bank to borrow from” (Gelman, 2020).

Educational psychology is not the only area of psychological research that has had issues with a “hype-cycle;” media psychology may be headed down a similar path. Over the past decade there has been a rise in public concern about the effects of smartphones and other new digital technologies on mental health and well-being; these concerns are fueled in part by scientists who

have written popular books and articles proclaiming that the new “iGeneration” is less happy and prepared for adulthood due to their technology use (Twenge, 2017). Large-scale analyses have found, however, that the association between digital technology use and adolescent well-being explains less than 1% of the variation in well-being, suggesting effects are too small to warrant public panic and policy changes (Orben & Przybylski, 2019).

Psychology is of course not the only field in which what individual scientists say can have cascading effects on social discourse. In the health realm, we have seen that although the scientific community has long had consensus about the benefits of vaccinations for treating and even eradicating a variety of diseases (Cohen, 2019; Leslie, 2015; You, 2017), all it took to fuel the modern anti-vaccination movement was one publication giving credence to the claim of a connection between the MMR vaccine and the development of autism that has been debunked (Hussain et al., 2018). In climate change communication, researchers have found that the vocal doubts expressed by few scientists about climate change’s existence leads the majority of Americans - including those who are most concerned—to underestimate the actual level (97%) of scientific consensus (Gustafson & Goldberg, 2018). Findings like these underscore the importance of considering the collective—and not just individualistic—implications of science communication. The things we say can have dire consequences, especially when all it takes for someone to make a persuasive argument to their family or friends is to be able to cite an ostensible expert of some kind. Researchers sometimes like to blame journalists for over-hyping findings in news reports, but studies on this topic suggests that exaggerations of scientific findings often begin in university press releases, which scientists themselves approve (Sumner et al., 2016). Being the experts that add fuel to the misinformation fire can have dangerous and long-lasting consequences. To use a proverb that has once again re-entered popular discourse, all it takes is a few bad apples to spoil the bunch.

With those consequences in mind, what should you communicate? Our view is that responsible scientific communication should do at least two things: it should make clear to your audience both *what* you know (and do not know), and *how* you know it (Lewis, 2020). In other words, science communicators should let their audience(s) know the facts as they currently understand them, as well as the *process of knowledge generation* used to generate those facts. That latter portion—the knowledge-generation process—is often left out when we disseminate our findings, which is unfortunate, as it hinders audiences’ ability to understand scientific findings and the conditions under which they are useful (or not) for practical application (IJzerman et al., 2020).

One thing the recent meta-science movement has reminded us of is the unbearable humanity of scientific inquiry. Scientific studies are conducted by humans whose background and experiences influence the questions that we ask and topics we study (Roberts et al., 2020), the methods we use to study those topics (Devezer et al., 2020; Lewis, 2020; Zuberi & Bonilla-Silva, 2008), the process we use to review and edit studies that come before us (Bauer, in press), and ultimately the conclusions we reach from those studies (Jones-Rooy, 2019; Navarro, 2019), some of which are then communicated to the public. This reality was highlighted in a meta-scientific study titled “Many Analysts: One Data Set” (Silberzahn et al., 2018). The researchers sent 29 teams the same dataset to answer the same research question: are soccer referees more likely to give red cards to dark-skin toned players than to light-skin toned players. Since the research question and datasets were identical, one might think all teams would have arrived at the same conclusion. That is not what Silberzahn and colleagues (2018) found. The 29 teams analyzed the data 21 different ways; 20 teams found a statistically significant and positive effect, 9 found no

significant relationship, and effect sizes ranged from 0.89 to 2.93 in odds-ratio units. Those differences suggest that the answer to the research question depends, in part, on which team happened to analyze the data.

A related issue also resurfaced more recently due to the publication, and ultimate retraction, of an article in *Psychological Science* on the relationship between religion, IQ scores, and homicide rates around the world (Clark et al., 2020). We are not going to waste more ink on the problems with the article itself as other scholars have written thorough critiques of it. What we will discuss is the process by which the article got published, and the message that process sends about psychology as a discipline and whether we're a discipline worth listening to on matters important to society. In an editorial, the current editor of *Psychological Science*—who, it should be noted, was not the editor who accepted the article in question—revealed the publication trajectory of the now retracted article (Bauer, in press). She noted that the article went through a “thorough review from two members of the *Psychological Science* editorial team and four independent reviewers.” After conducting an after-the-fact review of the publication process, the editor noted that she is “wholly satisfied that [the review process] conformed to the policies and procedures established for review of submissions to the journal.”

Bauer's (in press) message and apology to the field and the broader society for one of our flagship journals publishing an article with not only egregious methodological issues, but also troubling “racial overtones¹” suggests something quite damning about the field. It suggests that despite multiple rounds of reviews from a large team of experts, either no one on the reviewing or editorial team noticed the obvious and egregious errors, or they noticed but did not care enough about the issues to stop the article's publication. As a result, the journal “failed to act to mitigate the potential harm to which the message could contribute.” To connect *Psychological Science's* response to that retraction to the broader point we are discussing in the current article, Bauer's (in press) willingness to “vigorously defend the editorial process to which the article in question was subjected” is emblematic of the differences in social power and status between those editing and doing most of the research in our field (Roberts et al., 2020), and those whose lives are often adversely affected by our research (for a longer discussion, see Brick et al., 2018). Those differences matter for what we have to say, and the implications of those messages for the policies and practices that are developed due to the knowledge we generate (Lewis, 2019).

To highlight a recent and relevant report on this, Roberts and colleagues (2020) analyzed over 26,000 papers published between 1974 and 2018 in cognitive, developmental and social psychology journals to ask: who is editing papers, writing papers, and participating in research studies about race. They found that most editors and authors are White, and the representation of participants in studies depends on the race of the authors of studies. White authors study mostly White people, whereas authors of color are more likely to study people of color (Roberts et al., 2020). It is well documented that race and other dimensions of social identity and categorization shape the way we interpret and make meaning of the world around us (Oyserman & Lewis, 2017; Roberts & Rizzo, in press), and engage with information we encounter (Earl & Nisson, 2015). This is in part because from very young ages people of different races are differentially socialized to notice different patterns in the world (Perry et al., 2020), and we spend our lives embedded in institutions and other social structures that make it easy for some to overlook patterns that are right in front of their eyes (Anderson, 2015; Ray, 2019). Our lived experiences

¹The refusal to use the term “racist” is noteworthy (see also Bonilla-Silva & Baiocchi, 2001)

shape the questions we ask (or don't ask) and how we seek to answer them much more than we often want to admit.

These are realities that we must contend with in order to conduct credible psychological science and communicate it responsibly. In a recent chapter on how representation in the field affects methodology and broader inferences, Syed and Kathawalla (2020) discuss the short and long-term harm to the field's credibility from continuing with the "diversity as chapter 13" model of research practice in our field. That model refers to the practice of starting with so-called "basic processes," moving into topic domains, then ending with context, diversity, and culture as afterthoughts (Syed & Kathawalla, 2020). This assumption, that our findings are "universal unless demonstrated otherwise" (Syed & Kathawalla, 2020), willfully ignores decades of our own field's research on culture and subcultures around the world (Oyserman, 2017). It matters not for scholars to just "gaze" upon societies from which they are culturally alien (Pailey, 2020), but for us to recognize how our own histories and social positions affect the way that we construct and disseminate knowledge (Boykin, 1977; Guthrie, 2004; Page, 2008).

Without reckoning with this reality in every aspect of the discipline—in the participants we study (Cheon et al., 2020; Henrich et al., 2010), the contexts in which we study them (Lewis, 2019), the reviewers we ask to evaluate them, and editors who make decisions about the publication worthiness of that knowledge (Roberts et al., 2020), the field will continue to communicate things to the world that will, at best embarrass itself as it did with the now retracted Clark and colleagues (2020) paper, and at worst inflict harm on the parts of society that often bear the brunt of policies enacted due to scientific findings published and disseminated without critically important perspectives (see also Brick et al., 2018). No amount of sensitivity statements and other "further reflection" stop-gap solutions (Bauer, in press) will save the field from itself if it continues on its current path (for a longer discussion, see Roberts et al., 2020).

We raise this issue because it matters greatly not just for how science is conducted, but also for how science ought to be communicated. To understand our truths about our science, our audiences need to hear from a diverse scientific workforce that is more representative of the populations that exist around the world (Syed & Kathawalla, 2020), and a window into the approaches those scientists take when conducting their research (Lewis, 2020). For decades, qualitative researchers have made transparent how their positions or human biases in the research process shape the questions they ask and their interpretations, and have made that part of both their science, and science communication practices (see Denzin & Lincoln, 2000). We believe this is an important lesson for more quantitatively oriented disciplines like psychology to incorporate into our own practices, as there is danger in simply assuming that using quantitative methods removes these biases (e.g., Akerlof, 2020).

When sharing what we know, we should be clear about our level of confidence in findings and why we have (or lack) confidence (for one framework on this, see IJzerman et al., 2020). Are we confident in the validity of the underlying measurement and methods of the studies? That the contexts and populations studied are relevant to the contexts and populations our audiences are dealing with? Are we confident because there is convergence and replication across studies? Or are we just relying on heuristics like the prestige of the journal where something was published? Hopefully we are more confident due to the former reasons than the latter, but regardless, it should be clear to our audiences why we are confident (or not). These are questions we should all ask ourselves before we write Twitter threads or op-eds about new studies or get on the phone to talk to journalists about findings and their relevance for social issues. To any journalists who may read this paper, please ask researchers these questions when interviewing them.

Ideally, messages will go beyond presenting a particular individual or lab's perspective on an issue, and instead will incorporate a broader view that reflects the current state of knowledge in the research area, given that area's ways of knowing (e.g., theoretical orientation, methodological approaches, etc.). Importantly, they will also convey the research area's current understanding *and* our understanding of what findings are robust (e.g., Plomin et al., 2016; Revelle et al., 2013; Soto, 2019; Zwaan et al., 2018) and what findings are not (e.g., OSC, 2015). Since sub-disciplines, and even particular labs within those sub-disciplines may vary substantially in their approaches, when communicating findings it is important to situate them in their broader context—the process used to generate the findings and how those findings fit in the broader literature that inspired the research, and that the research hopes to inspire (Lewis, 2020). And, ultimately, the researcher will need to convey clearly how their own lens or bias shapes their evaluation of the evidence they are sharing, which would include being able to clearly articulate reasonable opposing points of view and the evidence for those diverging viewpoints.

The last recommendation may feel unrealistic to most “basic” researchers, but it is one that “applied” researchers routinely have to deal with. Ellsworth (2016) noted that in the sub-field of psychology and law, part of science communication (e.g., being an expert witness) involves preparing to respond to adversaries who will try to discredit your testimony. In the education policy domain—a domain in which both of us have worked with practitioners and policy-makers—policy makers often want to know what their opponents or various entrenched interest groups would have to say about research findings given the politicized nature of education in the U.S. (Greene & McShane, 2018; Tyack & Cuban, 1995). The process of having to think through those counter-arguments and considering the interests of multiple parties not only leads to more careful science communication, it also motivates one to ensure that the science is conducted more carefully in the first place so that it can stand up to that greater scrutiny.

Communicating To Whom? One of the first lessons that is taught in science communication workshops is the importance of knowing one's audience (Carpenter, 2020). That lesson is emphasized due to research showing that publics vary substantially in their understanding of science (Lewenstein, 1992; 2015; 2017). Lest you believe the folklore that education and literacy are the only or primary variables explaining these differences, it is important to note that those with *high* levels of science literacy and education have the most polarized views about scientific topics (Drummond & Fischhoff, 2017). Why is knowing your audience so important? As discussed earlier, people's lived experiences as well as cultures and identities provide lenses through which they view and make sense of the world around them (Oyserman, 2015; 2017). Those lenses guide whether people selectively view and pay attention to messages (Earl & Nisson, 2015; Knobloch-Westerwick, 2015) that may or may not be congruent with their identities and broader world views (Lewis & Oyserman, 2016; Oyserman & Lewis, 2017; Oyserman & Schwarz, 2017).

Due to the processes just outlined, it is not useful to think of “communicating to the public” as an exercise in which one's job is to share the gospel of psychological science with a monolithic audience. Instead, it is more helpful to acknowledge up front that there are multiple publics that have varied interests, and that communication is a process between all parties involved that requires a meeting between the person(s) delivering a message and the audience(s) receiving it. From that lens, the first question to ask oneself is “who am I trying to engage?” Different audiences care about different things, use different platforms, have different sets of assumptions (e.g., about which findings are robust), and so forth, and thus the message must be tailored accordingly. This is not that different than other forms of academic communication. When you write an

academic article, your science communication is directed to a specific academic audience, meaning you work to position what you are doing appropriately within the expected space of ideas of those people. Engaging with the public is similar; science communication is an exercise first in understanding the public audience(s) you seek to communicate with. Talking to people who do not share your expertise and sharing what you know with them is a good first step. Seeking to learn about the numerous ways different publics think is another useful approach.

Communicating With What Effect? The opportunities for scientific engagement have never been greater and are increasingly open to scholars at every stage of their careers (Hoffman et al., 2015). Scientists no longer have to wait for a journalist or policy maker to set up an interview or meeting to engage; we all have communication tools at our fingertips or in our pockets that allow us—when appropriate—to reach both big and boutique audiences, though with unpredictable effect. How to engage with those audiences, and when to engage with them are complex questions—questions we will address in this section.

Communicating with the public can take many forms: Tweeting a short thread about your or others' work, doing interviews with journalists, podcasters, and other mass media outlets, meeting with policy makers to weigh in on decisions that are related to your area of expertise, blogging, or even writing books for broad audiences. You do not need to be a “star” to engage in science communication. What is essential is to use one's expertise—when it is appropriate—to weigh in on matters that are relevant to public discourse (Hoffman et al., 2015). While it is important for scientists to contribute our expertise to public discourse when that expertise is relevant, it is also important to be cautious of becoming the kind of “public intellectuals” that just expound irresponsibly about topics we may not be qualified to speak about (Ritchie, 2020).

Like everything else in life, being an effective science communicator requires some training and practice (and our online supplemental materials provide some strategies for getting started; also see Carpenter, 2020). At present, most academic psychology training programs (i.e., PhD programs) devote most of their energy to training students to be researchers (and occasionally devote some time to training students to be good teachers). That training is of course essential. However, if we truly want to “give psychology away” as so many of our professional organizations continue to emphasize, then we need to provide adequate training and support for scholars in our field to learn how to communicate their research responsibly. There are multiple ways this could be achieved beyond that received from university media offices. Lewis teaches a unit on “Engaging in Public Discourse” as part of his research methods course for new PhD students; Wai teaches through both writing about psychological science for the public and as a component of improving academic writing (Wai & Miller, 2015) and incorporates those lessons into his courses; some graduate programs hold stand-alone science communication workshops; the Society for Personality and Social Psychology subsidizes op-ed writing training for a few of its members. These are but a few examples of ways psychologists can be trained to engage with the public about our research.

It is important to consider timing—on a few dimensions—when deciding whether and how to engage in science communication. Like other elements of scholarly life, public engagement is hard work and will take time. This is time and intellectual energy—your personal scarce resources—that will not be spent on something else. Think carefully about the opportunity costs when making decisions about public engagement. Where does engagement fit in your personal value system, as well as in the reward structure of your department, university, and the broader field (given your current career stage in the field)? Having an understanding of those factors can help you decide how much time and energy to devote to engagement. Our (perhaps

controversial) view is that *some* amount of engagement with the broader public is part of our duty as scientists, for the reasons outlined by Hoffman and colleagues (2015), including sustaining the relevance and credibility of our field in the public eye, but we will resist prescribing amounts of engagement, given the heterogeneity in how engagement affects scientists and also the strength of a pluralistic approach (see also Lewis et al., 2018).

General Discussion

Psychologists have long discussed the value of disseminating our research to the public, but recent field-wide reflections about the reliability of our findings (OSC, 2015) and other issues have culminated into a credibility revolution (Vazire, 2018) that has made it difficult to know what we should be communicating, and how we should communicate. Our view is that the current credibility revolution should not stop psychologists from communicating our research with the public, but instead that we take greater caution in doing so: to make clear what we know (and do not know) and how we know (or do not know) it, and therefore still need to learn.

The process of engaging in science communication in the ways we have described has not only the benefit of sharing our knowledge with the broader world, but also has the potential to improve our science. Communicating our research to non-specialist audiences can help us to better understand our own thinking about scientific problems, and thus improve the way we approach future research and update our theories as the evidence base is continually improved (Wai & Miller, 2015). In the long run, we believe this can help build a more cumulative and credible psychological science that we can responsibly give away.



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Declaration of Conflicting Interests

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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