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Principles of good research communication

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Introduction

Science communication and public engagement are becoming increasingly important in the research landscape. A surge in dedicated courses and research groups in science communication have fostered a community specifically dedicated to investigating design and methods for research communication. As a field of research, science communication uses case studies, evaluation and knowledge from multiple fields including (but certainly not limited to) sociology, science and technology studies, journalism, marketing, museum studies, and media studies, to build recommendations for effective, inclusive and strategic research communication. In this chapter, I will outline three key principles (purpose, audience, and mutually beneficial communication), which researchers should consider when designing research communication initiatives. These principles are by no means a comprehensive set of guidance and advice. For a more comprehensive summary of the principles of research communication, I would recommend larger dedicated texts (Cormick, 2019; Wilkinson & Weitkamp, 2016). However, I will set out some of the core concepts illustrated with examples from existing engagement efforts within linguistics.

Principle 1: Purpose

The first thing to consider when embarking on communicating your research to a popular audience is your motivations for engaging and objectives for your engagement. The objective of your engagement should be at the heart of every decision you make; your engagement should be objective-led, not method-led. What do I mean by that? Often, researchers come up with an idea for an engagement activity (e.g. a podcast, a video series, a public lecture) before they decide what they're trying to achieve with that idea and why they're trying to achieve it. Our objectives should be specific enough to be manageable, but broad enough to allow yourself creative freedom. If you start with an objective which has an obvious, specific solution, think about how to change your objective to give yourself space for creativity in your solutions. In this section, I will discuss how to build a creative and effective communication objective, and think critically about what it is we're trying to achieve with public engagement as a first step.

As a first point, we should make sure our objectives are audience-centered, thinking not only about what we want to achieve as researchers, but also about what we want our audience to get out of it. When framing our objectives, it is crucial to identify specific audiences, their needs and their insights – and this can be gained through communicating with our audience; empathising with who they are, what they need and what they want. I'll talk about this a bit more in the section about audience below, but I want to mention it briefly here too.

Researchers often initially consider objectives that involve a transfer of knowledge, belief or behaviour from the academic party to an non-academic audience. These objectives can range from influencing public opinion about a certain topic, influencing behaviour in some way, or transferring some piece of information or knowledge to a certain population. However, these objectives rely on a model of communication called the "deficit model" (Wynne 1991, Ziman 1991) which models the audience or public as being people who have a deficit in knowledge or understanding which needs rectifying. This model has caused some critical attention among the research communication community because it assumes a power dynamic where the public are an ignorant or skeptical party due to a lack of knowledge. Consequently, the deficit model has fallen out of favour among science communication professionals, who often prefer communication via dialogue and participation. However, the deficit model can prove to be a useful approach if you are engaging an audience who are enthusiastically participating on their own terms by seeking out your communication through a self-motivated interest.

The deficit model is often difficult to avoid when using certain modes of communication, such as videos, journalism, podcasts and broadcast media, which are asynchronous in nature, where the delivery and reception don't happen in the same time and place. These conditions create something that isn't an interaction, it is a message without a right to reply, ask questions or offer insights. For linguistic communication, there are many examples of such methods being used to great effect (some of them discussed in this book!). However, it's good to think critically about whether the deficit model is well placed to deliver your objectives in the best way given the lack of engagement from audiences who are not enthusiastically opting-in to your communication.

If communication objectives do not assume a one way deficit in knowledge, we can consider the audience as having something important to contribute to the interaction as participants, or even consultants. In linguistic research communication, I think the most obvious thing your audience can offer you is their own linguistic experiences, whether that comes in the form of a conversation about how their linguistic experience relates to your research, or them directly giving you data you can use in your research. I'll cover how research can be mutually beneficial a little bit later in the chapter, but for the moment I will focus on other aspects of engagement-orientated objectives, using the participation model of communication (Trench, 2008).

The participation model works on the principle that all participants in a public engagement initiative are able to contribute, and that all have a stake in the outcome. Objectives linked to the participation model might be, for example, to embed linguistic ideas in culture, or to excite people about linguistic careers. Objectives may be to change attitudes towards signed or minority languages, or to recruit people on to a linguistics or language learning course. All of these objectives require you to gain the trust and engagement of your audience, which might require you not only to win them over to you as a person, but to the academic endeavor as a whole.

An audience's comfort and trust with academics and academic content is difficult to attain in a day. However, there are ways to help you both assess and enhance people's comfort with your engagement. An important concept in science communication literature is "science capital"

(Archer et al., 2015). Science capital is the accumulation of everything that would make someone, especially children, more likely to participate in science-related activities, including choosing science as a career. The things which might accumulate through someone's development include their experiences with science (e.g. museum visits), relationships (e.g. having parents working in STEM) and resources (e.g. books or a chemistry set), and our job as science communicators is to try and anchor the science we're talking about to the existing experiences and interests of participants. This anchoring might manifest as linking the interests of our audience to the topic in question, or it may be simply making sure we talk about our lives outside of research alongside our research lives, as well as being open and curious about the lives and values of our audience. These practices make the research feel more human, real and accessible. If we were to consider "linguistic capital" as a special subset of science capital, it's likely that we would find capital being influenced positively by linguistic experiences, relationships with people working in language-related fields and linguistic resources (e.g. books or language learning resources). However, there always seems to be an advantage for research communication when talking about linguistic topics in comparison to other fields, simply because most people have at least some capacity for language and so participants immediately start relating what they are told about language to their own experiences. Having a topic that's so omnipresent and human is certainly an advantage here, but don't let that make you complacent in making an effort to anchor your communication in examples your audience can relate to.

Finally, it's important to think carefully about how you will assess whether you've met your objectives. What difference are you trying to make with your communication? How will you know if you have succeeded in reaching your objectives? Evaluating your communication shouldn't be something that you only think about once you have finished your project, but should be part of your plan from the beginning. As with the communication itself, it's easy to have a method for evaluation in mind before thinking about what it is you are trying to achieve. Instead of deciding to build an evaluation plan based on information that is immediately available after the fact (even if this can be useful), take each objective you have identified, and work out a plan for how you will measure it. Measuring the objectives of your communication from the start of the process may also be helpful for researchers who need to provide evidence of their research reach and impact, e.g. researchers in working within the parameters of the Research Excellence Framework (REF) in UK Higher Education.

There is no catch-all advice I can give for planning evaluation given how varied objectives can be. However, if your objectives are centred on engagement, entertainment or increasing interest/science capital then a researcher's usual intuition is to simply ask participants either via a verbal or written survey. However, it's important to think about whether people will engage. By asking for feedback, you are asking for a favour - your audience won't gain anything from filling in your survey unless they plan to return for more and would like future experiences to be better. If the event is a one-off and in a world where every service we use requests feedback, you're likely to get a low return. People will be more likely to respond if they can see the survey is very brief. Further, there are now many techniques developed to turn feedback into a fun activity for

audiences, from using stickers on publicly displayed Likert scales, to using feedback cards attached to strings that can be hung on a tree, to public chalkboards giving an unfinished sentence for the audience to complete.

In addition to encouraging participation, it's important to consider how likely you are to get an honest response. I don't know about you, but when asked if I have had an engaging, entertaining or insightful time by someone I know has spent a lot of time designing, building and carrying out some public engagement event, I usually smile and say yes, even if my opinion is a lot more nuanced. Humans, for the most part, like to be polite and sometimes that means telling white lies. So how do we get an honest response? Make sure the questions you're asking are not leading in any way. For example, asking "Did you find the experience engaging?" puts words in the mouths of respondents and makes it clear what answer you want (a yes!). A question asking the same thing without leading the audience might be "How did you find the experience today?" with an open text box. Allowing for open-ended responses increases the likelihood you'll get richer, more useful information about what people think. Further, if you can find a way to let people be anonymous in their feedback, that will improve honesty.

Once you've gathered your evaluation data, take some time to reflect on it and build the feedback into your future practice. For instance, feedback might indicate your audience got bored towards the end of an activity, so you might make the activity shorter. Or feedback might indicate a participant found something specific confusing so you can implement measures to clarify that content.

Principle 2: Audience

In linguistics, we know that people alter the way that they speak to accommodate the person they are talking to (Bell, 1984). In research communication, audience design is exactly the same concept where the language you use should be tailored to your audience. However, as well as audience design being a consideration of accessible language, in research communication we need to consider the audience's needs, and make all aspects of the communication accessible and engaging for our primary audience, including communication medium, venue, and tools for communication beyond linguistic tools. For instance, if you're designing some new media project (e.g. a podcast, web series, or blog), it's useful to think about where your audience hang out online, why they typically visit that space online, and whether they even have a habit of consuming a particular type of new media. A podcast for children may not work well in 2021, because most children do not listen to podcasts. A TikTok channel won't work if your audience isn't on TikTok, or only uses TikTok for learning silly dances, rather than seeking research communication (that's certainly the case for me).

Instinctively, when researchers sit down to think about who their audience is, they think about demographics in broad strokes: the audience's age, their gender, their educational background and maybe even their socio-economic status. Sometimes, demographics may well offer a useful way to identify who you want to communicate to, and in some respects, help you to design your communication. For instance, age and education might give you a good indicator of

what level to pitch your content at, as well as cultural references relevant to certain generations. However, some demographic features are less useful for thinking about how to communicate with an identified audience – especially when there is a stereotype attached to a particular demographic feature. For instance, many engagement and communication initiatives within STEM (Science, Technology, Engineering and Maths) fields often aim to reach under-represented demographic groups within the field in question. For example, an initiative may want to engage girls with engineering topics in order to encourage parity between the number of women choosing engineering as a career and the number of men. The audience here is clearly defined and justified by using the demographic feature of gender. However, when considering how to engage girls, research communicators often begin with the question "what do girls like?". But asking this question is likely to lead to audience design that reinforces stereotypes of gender, potentially alienating some proportion of your audience who don't fit the assumed stereotype, creating an adverse reaction. This audience design may cause your intervention not only to fail in its aims, but perhaps even actively put the stereotyped group off engaging with engineering altogether. In my professional life as a research communicator, I have seen this happen on a few occasions: with pink lab coats, activities around the science of makeup and organised cult-like chants of "science is for girls". Aside from alienating those girls who don't like pink things and makeup, it leaves participants wondering why you are making so much effort to appeal to their gender; reminding them about harmful stereotypes about science not being for girls. Of course, science is for everyone. So how might we go about audience design in a better way?

To overcome the pitfalls of the design-by-demographic approach, there are newly evolving methods for thinking about audiences using personality-based metrics rather than demographics. Psychometric marketing often evokes dark visions of the sort of microtargeting Cambridge Analytica[1] engaged with, but methods used in visitor studies use personality-based approaches without microtargeting.

The museum studies scholar, John Falk, came up with the concept of what he terms 'big "i" identities' and 'little "i" identities' (Falk, 2016). Big "i" identities are our sense of the demographic categories we fall in to, e.g. our gender, our age, or our race. Little "i" identities, on the other hand, are identities that are more related to the roles we act out day to day which help explain the places we visit and the activities we do, and why we do them. To take a linguistic example, one person might read a magazine article about language acquisition because linguistics is their hobby; someone else might read it because they are a parent worried about the development of their child; and someone else might read it because they have a date with a linguist (lucky them!) and want conversation topics. Each of these motivations is attached to people acting out an identity that is not related to their age, gender, class, etc., but the more nuanced identities and motivations we act out day to day. I don't go to an exhibition at a museum because I'm a woman in my thirties from the north of England, but because I'm being social with friends with a similar interest, or

[1] Cambridge Analytica were a company who acquired and used personal data of users on Facebook. They gained data by breaking Facebook's terms of service by claiming the data was for academic purposes. However, evidence suggests they used the data to target users with microtargeted political messaging.

trying to be good at my job by collecting examples for a lecture I'm teaching, or taking my nephew on a day trip to give my sister a break. By trying to understand our audience not through their demographic features, but through their little identities, we can make our audience design much more effective and our activities much more accessible. Falk (2016) has done a lot of work mapping out why different audiences visit a museum in order to design a space that can appeal to different audiences for different reasons (e.g. creating a space that appeals to those who are there to learn, to socialise, to recharge, etc.). You can do this too by (i) thinking about the reasons people read articles, listen to podcasts, watch videos on YouTube etc. and (ii) trying to create something that's suitable for the little identities people have. Attempting to map little identities can also help you revise assumptions you are making about why people might want to engage with your work. Thinking critically about the little identities of our audiences is often quite challenging, especially if you have decided beforehand who you're trying to engage, because it forces you to consider the possibility that you have chosen the wrong method of communication for your audience. We often think about our objectives in terms of what we, as researchers, want to achieve, rather than what our audience wants. If the identities you identify aren't aligned with who you are interested in talking to, it is perhaps time to go back to the drawing board.

Identifying motivations for why people might engage with your work is often seen to be easier for some subjects than others. Of course, if a piece of research has really direct and obvious implications for your audience, it is very easy to work out why people might be tempted to engage with you. This makes research topics such as health, climate and society much easier to create engaging material about than more theoretical concepts. Linguistics offers a wide range of topics highly relevant to people and their everyday lives, from the development of children and understanding language disorders, to learning foreign languages and thinking about linguistic diversity. However, some topics within linguistics are a lot tougher to tackle in terms of finding the relevance for the audience. In my own field of linguistic expertise, evolutionary linguistics, finding the relevance for people outside the field is sometimes difficult. Much research presented in evolutionary linguistics has implications for our knowledge of human origins, but the implications for current and future humans often remain unclear, creating a "relevance gap". On top of that, most evolutionary research in linguistics is based on models (computational or experimental) which are abstract in nature and don't refer to concrete artefacts (e.g. fossils or living examples), which creates a barrier for explanation even when explaining to experimental participants what they just did and why they did it. However, there has been some work within language evolution that has attempted to tackle this relevance gap. For instance, there have been many examples of explaining the abstractness of artificial languages by evoking aliens (e.g. Cuskley, 2018), creating something fun and exciting for kids, some communication initiatives have used art installations as a vehicle for engaging the public (Kirby, 2017), creating communication with art-interested audiences who may engage to recharge and reflect, and there are examples of focussing on animal language and abilities, evoking a fascination with our connection to other animals and what does or does not make us unique as a species (e.g. Quillinan & Roberts, 2013).

Once you have mapped the little identities for your communication activity, it is a good idea to go back to the primary audience you had in mind for your communication and determine the little identities that define them. A piece of advice often given in journalistic writing is to have a very clear picture of the person you want to communicate with: the clearer the better. Think about their hobbies, their interests, their values, their cultural references and why on earth they should care about what you are telling them. When I'm writing, I always imagine I am chatting to someone I know very well over a text chat application, giving advice or explaining some aspect of my research that is exciting or frustrating me. With a clear picture in your mind, it is much easier to write engagingly for a wider audience, even though intuitively you're trying to write for an audience much narrower than that which you wish to reach. After you've done this, you can go back and make sure you're not assuming too much by way of shared knowledge between you and your audience. However, editing after you've written something targeted at an individual, rather than trying to make a piece of writing optimally accessible from the get go, will result in something a lot more organic and readable. I often think this is why podcasts with two or more hosts or guests work better than one person talking to a microphone; by having a person in front of you (physically or digitally) it is suddenly much easier to communicate.

The last thing to think about in relation to audiences is not primarily about creating a public engagement initiative your audience want to engage with, but also one that they know about. Just because you build it, does not mean they will come. It is once again difficult to give exhaustive guidance on this given the diversity of audiences and communication activities, so I'll simply leave you with the advice that you should think about it in your plan. If you publish a magazine, how will your audience find out it exists? If you produce a podcast, how will your audience find it? If you hold an event at a museum, how will your audience know it is happening? It is good practice to come up with a marketing strategy that also pays attention to the little identities of your audience. Where do they hang out? Are you communicating in a space they already visit? If not, how will they find you?

Now we've thought thoroughly about our audience, it's important to not lose sight of the objectives we have for ourselves as researchers.

Principle 3: Mutually Beneficial Communication

While it seems obvious that we should think about the benefits of research communication from our own perspective, we can sometimes lose sight of the potential benefits to ourselves if we only think about our audience, or only think about participating in research communication to keep our funders happy. Good research communication should be mutually beneficial. Achieving your objectives might be relatively straightforward if they are purely centred on your audience – for example, if your objectives are getting more people into linguistic careers, recruiting for a degree programme or trying to change people's perceptions of signed languages or linguistic diversity. However, there is also an increasing number of examples of public engagement activities where researchers have benefited by collecting data during the activity.

A lot of empirical work in linguistics has recruited members of the public as participants (e.g. Cluskley, 2018; Morin et al., 2018; Raviv & Arnon, 2018; Verhoef et al., 2015). Good practice when people offer their time to give us data is to offer a debrief after their participation, explaining what the research is about and why it is important. Often, a debrief comes as a short document summarising the research, given to the participant as they are on their way out of the door, or a brief chat before or after the data collection to explain the study. Other times, researchers will collect email addresses from interested participants in order to send an email that comes many weeks, months or years after the data has been processed, analysed and published in order to disseminate the findings. While these debrief methods most certainly count as research communication, they often aren't given a lot of thought and feel like obligatory additions in order to tick a box about transparency on an ethics form. So how do we make debriefs more beneficial for our participants, and also for us as researchers wanting to engage people with our work?

In cognitive linguistics, there is a growing number of studies which have collected data not on campus or in the lab, but at public events such as science centres and museums (e.g. Cluskley, 2018; Raviv & Arnon, 2018), or through games on mobile phones (e.g. The Color Game, Morin et al., 2018). These initiatives have involved not only the interaction one gets from participating in a study, but also innovative ways to display and communicate the data within an informal learning environment. At one event I attended in 2015, at a science festival in Leiden, researchers at the Max Planck Institute for Psycholinguistics were running experiments in a nightclub and the results were being visualised live on a projector screen (Verhoef et al., 2015). Not only did this offer some night-club appropriate futuristic projections, it also gave the researchers something to refer to when debriefing their participants afterwards, or explaining to curious clubbers passing by.

While creatively debriefing research participants may be an improvement on simply giving people a piece of paper to take away, it's still true that without fully understanding the context and setup of a study, participants may lack a sense of understanding or lack the feeling of having a stake in the outcome of the research, even if you're gathering data in the context of a museum or a festival. There are ways to involve our audiences in our research at other stages via the use of techniques from citizen science (Irwin, 1995). Citizen science is a method of research communication which engages members of the public within the research process. I have seen many studies, though not necessarily in linguistics, calling public participation in studies "citizen science". However, citizen science comes with its own set of principles which emphasise not only a contribution to the research process, but also collaboration in the process. Some linguistic studies have started to use citizen science, not to collect data, but to help in the analysis of existing data. This creates opportunities for audiences to participate in more steps of the research. It also helps the researchers, who receive hours of data analysis that they would otherwise need to recruit specialist staff to do.

The Zooniverse[2] is an online citizen science web portal which can be used to host various projects where members of the public can assist with data processing. The Bergelson Lab at Duke

[2] https://www.zooniverse.org/

University in the US used the Zooniverse to tag clips of speech as either being child directed or adult directed (Bulgarelli & Bergelson 2020), while other researchers used it to tag baby sounds as being crying, babbling, or laughing (Semenzin et al. 2020). Others have used it as a way to get reliable translations or transcriptions of data. It is clear here how these initiatives are benefitting the researcher as long as the analysis undertaken by volunteers online is reliable, but it is also important to keep sight of why these tasks benefit your audience as well. The tasks posted to Zooniverse are usually too large to afford the labour of graduate students, and too nuanced and context dependent to be automated. While it may seem exploitative to ask unpaid volunteers to analyse any data (never mind massive unmanageable data!), they are tasks that might not be done without the assistance of unpaid analysts; and by emphasizing their contribution using this framing, there are many people who will happily spend hours categorising, transcribing and labelling data as they find it fun and enjoy feeling that they are helping to further human knowledge. They are sometimes even credited for their time with authorship or acknowledgements in the published papers arising from citizen science efforts.

As well as data, other benefits that researchers can achieve from research communication includes the development of their professional skills. While it is clear you can develop your communication skills through practicing communication, other benefits may be less obvious. Research has looked at how engaging with popular science writing can help researchers think, contextualise, and gain new perspectives on their science, making them better scientists. For example, one study in Sweden showed that students who engaged with a popular science course found that it improved their science literacy as they were better able to understand the aims of their own work, and the implications of their findings (Pelger & Nilsson, 2016).

I hope if you do go ahead and participate in some research communication of your own, you take time to reflect on your success as well as the improvements you might make next time, and reflect not only on the benefits for your audience, but also for yourself.

TEN TOP TIPS

- Communicate with popular audiences. This can help you think, contextualise, and gain new perspectives on your research.
- Define your communication objectives and make sure they are at the heart of every decision you make.
- Anchor your communication using the interests of your audience. Making the communication audience-led can help with linking your content to what the audience care about.
- Try to have the audience see you as a human. Make sure you talk about your life outside of research alongside your research life. Be open and curious about the lives and values of your audience too.
- When communicating, try to have someone in front of you. Or, if that isn't possible, imagine you are chatting to someone specific that you know very well.

- Make sure you think about how to market your communication initiative or event, as well as making the communication itself optimally engaging.
- Find your audience where they are. Do the research on where your audience are (online and in the real world) and why they are there.
- Be honest with yourself, and listen to your audience, about why they are engaging with your research and public engagement activity.
- Think about how you will evaluate your communication as part of your plan from the start.
- Turn your evaluation activities into a fun activity for audiences.

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