

Ability, Integrity, and Benevolence: Re-examining Predictors of Trust for Scientists (Introduction)

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Introduction

The importance of public trust in science has been at the forefront of public discourse over recent years, with issues such as climate change and vaccination having shone a spotlight on the wider public's confidence in scientists and research dissemination (Badshah, 2020; Hillard, 2020; Sturgis et al., 2021). The prevalence of news stories of researchers engaging in unethical practices, and negative reports of researcher's integrity in conducting and disseminating their work are reported as barriers to the development and maintenance of trust in science (Crocker & Cooper, 2011; Gupta, 2023; Hansson 2011; Kennedy, 2008; Resnik 2014). It should therefore not be surprising that a recent survey conducted by the Pew Research Centre examining trust in scientific experts showed that despite overall confidence in science being generally positive, most people were sceptical about key areas of scientific integrity, with one fifth of people trusting scientists to be transparent (Funk et al., 2019). The remainder of this introduction will aim to provide a basic definition of what is meant by "trust", unpack the suggested underlying factors for trust, and suggest how an established method of analysing trust in communicators of risk (Eiser et al., 2009) might be employed to perform a secondary analysis of the Pew Research Centre's data (Pew Research Center., 2019) on perceptions of scientific experts.

Trust is a complex concept which has been widely studied across various the fields of research. Over time multiple streams of research in this area has developed in parallel, resulting in numerous philosophical perspectives (Fell and Bruza, 2022). Despite significant efforts across research disciplines, no universal definition of trust, or method of analysis has been established (Baier 1986; Bigely and Pearce, 1998; Blomqvist 1997; Braithwaite and Levi, 1998; Hardin, 2001; PytlikZillig and Kimbrough, 2016; Rousseau et al.,1998). However, in its most broad understanding, trust can be characterised as a relational concept that exists between individuals. This relationship can manifest both explicitly through formal

agreements or implicitly during day to day interactions (Blomqvist 1997; Govier 1997; Resnik, 2010; Tullberg 2008; Becker 1996). Regardless of its varied conceptualisations, a common thread within the literature is that when individuals, termed trustors, decide to trust, they are making themselves vulnerable to the actions or decisions of another party, the trustee. This act of trust is a behavioural choice, which is deeply rooted in perception of trustworthiness (Schoorman et al., 2007). While there is not a universally established terminology or definition for the underlying factors influencing perceptions of trustworthiness, they generally pertain to evaluations of the trustee's capability and motive. Specifically, these evaluations often encompass varying perceptions of ability, benevolence, and integrity (Mayer et al., 1995). Therefore, trustors' perceptions of trustees across these various dimensions of trustworthiness, drive the expectation that the trustee possesses both the capability and motivations to act in a manner deemed valuable by, and in the best interests of, the trustor (Baier 1986; Eiser et al., 2009; Hardin, 2002; Levi, 1998). These perceptions impact evaluations of whether to trust individuals, groups, and institutions alike. Eiser et al., (2009) examined these concepts in the domain of risk communication, specifically focusing on the trustworthiness of those communicating about contaminated land. Results of this study highlighted the nuanced differences in trust levels depending on the communicator's perceived expertise, motives, and shared values. Results showed that while scientists were generally perceived as having expert knowledge, their perceived independence and lack of vested interests played a significant role in determining their trustworthiness. In contrast, local councils, and developers, despite having the second highest rating of expertise, were distrusted due to being perceived as lacking in openness and shared values. Moreover, groups that were perceived as open, aligned in shared values, and exhibiting a cautious communication approach garnered high trust, even when their expertise was rated lower. These findings demonstrate the importance of not just perceived expertise,

but moreover, perceived motives and shared values in determining trust. In simple terms, being perceived as having expert knowledge may not be sufficient reason enough to be trusted in the face of negative perceptions regarding integrity and openness.

Numerous theories exist that have the potential to make sense of these findings. One such theory suggested by Eiser et al., (2009) is the Signal Detection Theory (SDT) (Swets, 1973) and its derivative, the Information Detection Theory (IDT) (White and Eiser, 2006; White and Johnson, 2010). These theories suggest that trust is influenced by both cognitive factors, like perceived expertise, and motivational factors, like perceived motives. Response criterion in these theories is influenced by costs and benefits, in that sources seen to share the values of their audience would be expected to evaluate risks in a manner consistent with the audience's interests (Eiser et al., 2009). Potentially, more readily applicable to trust in scientists may be the Integrative Model of Organizational Trust by Mayer et al., (1995). This theory suggests trustworthiness is perceived based on three main factors: ability, benevolence, and integrity. In the context of scientists, ability might refer to perceived competence, skills, and expertise in respective fields. Benevolence may refer to perceptions that scientists have good intentions and will act in the public's best interest, rather than for personal gain or under the influence of external pressures. Integrity may refer to ethical research practices, being transparent about methodologies and findings, and being honest about the implications and limitations of research. Applying this theory to trust in scientists would suggest that for people to trust scientists, they must believe that they are competent (ability), have society's best interests at heart (benevolence), adhere to ethical and transparent research practices, and are honest and accurate in their communication (integrity). With this theory in mind, and given the success of Eiser et al., (2009) in identifying and delineating relationships underlying trust in risk communication, there is a rationale for extending Eiser et al., (2009) method of analysis to examining trust in scientists. The Pew

Research Centre's dataset captures perceptions of trust in scientific experts across various measures (Funk et al., 2019). By replicating the analysis conducted by Eiser et al., (2009), it may be possible to gain deeper insights into the ways in which perceptions of trustworthiness influence public trust in scientists, whether requirements for trust vary across scientific disciplines, and to potentially identify areas where trust can be enhanced.

This considered, the research question developed for the current analysis is: How do perceptions of ability, integrity, and benevolence predict public confidence in medical scientists? And what factors shape perceived competence across scientific disciplines? From this question, and in line with the discussed findings of Eiser et al., (2009), a number of hypotheses were made:

- H1: Perceived ability (competence) will positively predict confidence in medical researchers.
- H2: perceived integrity (openness, responsibility, communication bias) will positively predict confidence in medical researchers.
- H3: perceived benevolence (shared values) will positively predict confidence in medical researchers.
- H4: Perceived integrity (openness), and benevolence (shared values) will positively predict confidence in medical researchers to a greater extent than ability (competence).
- H5: Perceived integrity (openness, responsibility, communication bias) will positively predict competence perceptions for each scientific group.
- H6: Perceived integrity (openness, responsibility, communication bias) will positively predict competence perceptions to a greater extent than benevolence (shared values) for each scientific group and.