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"Trust me, I'm a Scientist (Not a Developer)": Perceived Expertise and Motives as Predictors of Trust in Assessment of Risk from Contaminated Land

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Previous authors have argued that trust may be based on the extent to which risk communicators are seen as good at discriminating safety from danger, are unbiased in their assessments, and share their audience's values. Residents of two English urban regions rated their trust in six potential sources of information about the risk of contaminated land in their neighborhood (independent scientists; local council property developers; residents' groups; friends and family; local media), and how expert, open, accurate, or biased these sources were and how much they had residents' interests at heart. Overall, scientists were trusted most and developers least, but this was only partly due to their greater perceived expertise. Resident groups and friends/family were also trusted, despite being seen as relatively inexpert, since they scored highly on openness and shared interests, these latter two attributes being more important predictors of trust in individual sources than perceived expertise. We conclude that, where a source is seen as motivated to withhold, distort, or misinterpret information, this will undermine public trust even in apparently knowledgeable sources, hence supporting the view that trust depends on a combination of perceived expertise and perceived motives as complementary processes.

KEY WORDS: Contamination; expertise; trust

1. INTRODUCTION

1.1. Perceived Expertise

A recurrent theme in risk research has been the discrepancy often observed between the assessments of risk made by experts and the perceptions held by the less-informed "lay" public. Earlier attempts to account for this discrepancy (Fischhoff *et al*., 1978; Slovic, 1987) tended to focus on the vulnerability of individuals to a variety of cognitive (Kahneman & Tversky, 1984; Tversky & Kahneman, 1974) and social (Pidgeon *et al.,* 2003) biases that affect how risk information is processed and could lead to overestimations or underestimations of the likelihood of particular outcomes. Such researchers were careful to point out that such biases were not exclusively a feature of lay perceptions: people with more expert knowledge could also be shown to be selective in their processing of information and to make elementary errors of statistical reasoning (e.g., Eddy, 1982). Nonetheless, a persistent feature of many risk controversies is the tendency for representatives of either side to bemoan the apparent irrationality or bias of those with whom they disagree (see Eiser & van der Pligt, 1979, for an early example). When, in addition, the general public have less access to scientific information than other stakeholders (e.g., industry, government), this can still too frequently lead to their concerns being discounted in policy debates as not merely irrational but ignorant.

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We regard this deficit interpretation of public understanding of risk as unhelpful—not because there are no differences between the quality of information and analysis on which different individuals base their risk assessments (experts should indeed be better informed and more competent at analysis, otherwise they are not experts)—but rather because it ignores the relationships between experts and the public, and in particular the extent to which the latter may or may not rely on judgments provided by the former. If the only reason experts and the public view risks differently is a difference in knowledge, then any discrepancy in risk perception should be eliminated by fuller provision of information. However, the fact that discrepancies still remain even when such information is provided suggests that additional factors need to be considered, in particular the extent to which individuals *trust* information provided by different sources.

Although the *actual* expertise of any given source may be disputed, *perceived* expertise may be expected to facilitate trust. In the context of risk assessment, this involves the source being seen as able to evaluate the level of risk and hence to differentiate between danger and safety. Other things being equal, communicators who are seen as better at such differentiations should be seen as more expert and hence be more trusted. But what does "better" mean? Signal detection theory (SDT; Swets, 1973) provides a possible framework for considering this question. The basic problem this theory addresses is that of describing the discrimination performance of a decisionmaker who has to distinguish a signal from noise on the basis of uncertain evidence. For instance, how reliably can a safety inspector distinguish danger from safety? SDT distinguishes two parameters of performance: (a) sensitivity and (b) response criterion or bias. The first reflects the overall likelihood of correct responses, and hence corresponds more closely to knowledge or expertise in its everyday sense. The second reflects the direction of any errors, and thus corresponds to whether the decisionmaker shows a bias toward risk (declaring some dangerous situations to be safe) or caution (declaring some safe situations to be dangerous, i.e., false alarms). Importantly, there is no single correct setting for a response criterion—it depends on a judgment of the relative costs and benefits and whether a more precautionary or risk-tolerant approach is deemed appropriate.

Extending these ideas, White and Eiser (2006, 2007; see also Eiser, 1990) propose what they term an "intuitive detection theorist" (IDT) approach. This assumes that trust in a person or agency responsible for managing or assessing risk depends at least partly on intuitive judgments of that person or agency's discrimination performance. At its simplest, trust should be higher if the person or agency is seen as (a) sensitive to actual differences in level of risk and (b) neither excessively cautious nor excessively risky in their choice of a criterion or threshold for declaring a potential hazard safe or dangerous. A further distinction is then introduced to take account of whether any such response bias is seen as located at the assessment or *interpretation* stage (how inclined is the decisionmaker to *see* an ambiguous hazard as safe or dangerous?), as opposed to the stage of *communication* of any risk assessments to others (how inclined is the decisionmaker to *say* a hazard is safe or dangerous?).

1.2. Shared Values

Alongside the predominantly cognitive processes implied in this IDT approach, a number of authors have emphasized more affective factors (Slovic *et al*., 2004). In particular, if risk managers or communicators are seen as sharing the same core values as their public or audience, this leads to greater social trust (Earle *et al*., 2007; Cvetkovitch & Löfstedt, 1999; Siegrist & Cvetkovitch, 2000). This notion can easily be traced back to classic theories of cognitive balance and congruity (Heider, 1946; Osgood & Tannenbaum, 1955), in that we tend to like others more if they share our values, and be more easily persuaded by (or believe messages from) others whom we like. In this sense, trust offers a kind of heuristic to allow people to accept or reject messages without needing to examine the facts closely for themselves on the basis of whether they like or dislike the source of the message.

These theoretical approaches may be complementary rather than opposed, however. Earle *et al*. also see "knowledge" and "attributed performance" as influencing "confidence" and hence risk perception. In other words, risk managers or communicators should be more trusted if they are seen as more accurate in their judgments. Similarly, within both SDT and its IDT derivative, the setting of a response criterion is influenced by expected costs and benefits and hence values. It is likely that sources seen to share the values of their audience would be expected to assess risks in a manner consistent with the audience's interests, and communicate such assessments

honestly. This means that earning trust is not merely a matter of avoiding errors, but of avoiding the *kinds* of errors that are costly to the audience in question. In any situation where the potential benefits and costs of some activity are unevenly distributed, acting in the interests of any one group or public can mean either accepting a higher level of risk (for those who stand to gain most from the activity) or adopting a more precautionary approach (for those who bear more of the risk). Hence both theoretical approaches comprise elements relating, on the one hand, to more cognitive aspects such as the perceived expertise, knowledge, or discrimination accuracy of the risk manager or communicator and, on the other hand, to more motivational aspects such as openness, shared interests, and the direction of any bias toward risk or caution. This study is designed to assess the relative contribution to trust of these cognitive and motivational aspects.

1.3. Contaminated Land

Having identified some of the theoretical factors that can lead some sources to be more or less trusted, we can address the question of how these map onto people's perceptions of specific social roles and actors in the context of potential exposure to an actual hazard. The present research was designed within the context of the UK government policy that most new housing and other development should take place on so-called brownfield (i.e., previously developed) land, with the aim of limiting the spread of urbanization into the countryside (for a discussion of UK policies relating to brownfield and contaminated land, see Catney *et al*., 2006). However, many urban brownfield sites may be contaminated by residues from previous industrial processes and the disposal of chemical and other waste. Apart from adding to the cost of remediation and/or redevelopment, contamination can pose potential health risks for local residents. The extent of any contamination may be difficult to predict in advance, since it may have built up over several decades from periods of less regulation, recording, or awareness of the hazards involved. For this reason, determining the level of existing risk posed to local residents living near a previously contaminated site, or any residual risk following remediation to allow new development on that site, requires detailed scientific assessment. In short, it demands expertise. But are the risk assessments provided by those claiming such expertise typically trusted and accepted at face value? From our earlier theoretical discussion, we should anticipate that an attribution of knowledge by itself is not enough. The motives attached to any given person or agency will also determine the extent to which they are seen as a trustworthy source of information.

Our research therefore investigates the views of members of the public regarding six classes of actors, or potential sources of information, about the level of risk from contaminated land. In particular, we are interested in how attributed knowledge or expertise on the one hand, and attributed motives on the other, may contribute to levels of trust. In terms of their social role, *scientists* should by definition be seen as most expert and knowledgeable. Hence they should be highly trusted, provided they are seen as independent of any special interest group. Two sets of actors may be regarded as relatively knowledgeable, but having more complex motives. The local *council* (local government authority) has responsibilities for assessing contamination risk and undertaking remediation where possible, but also for promoting economic development and (in the urban areas considered) addressing local housing needs. *Developers* are clearly motivated to make a profit from new housing or commercial or industrial development, but the profitability of any scheme will depend, among other things, on the cost of remediation, so they, too, will have an interest in forming an accurate assessment. Other actors may have less claim to expert knowledge, but a greater claim to represent the interests of residents themselves, and so should earn trust through shared values. These include *residents' associations*, *friends and family*, and the *local media*. The last of these is possibly more problematic, in that they could also be seen as having a commercial interest in presenting information in such a way as to sell more newspapers or attract more publicity, rather than necessarily aiming for accuracy above all else.

The geographic settings for this research comprised two large urban areas within Greater Manchester and the Thames Gateway (East London). Both areas included brownfield sites with significant levels of contamination.

2. METHOD

2.1. Sample

In total, 11,400 copies of a questionnaire were distributed by post, including freepost reply envelopes, to addresses in selected wards within two English metropolitan areas (Greater Manchester and

Thames Gateway/East London). Depending on the size of the ward, either all or alternate households were included in the sample. A total of 951 (8.3%) questionnaires were returned. Of those responding, 46.9% were male, 65.4% owned their own home, 62.5% were employed or self-employed, with 8.5% seeking work, and the remaining 29.0% being homemakers, retired, or in education. Their average age was 51.0 years (SD = 16.2). In terms of these demographic indicators, there is no evidence that respondents differed demographically from other households in the sampled areas, although available census data do not allow for direct statistical comparisons. Nonetheless, we can expect that there was a self-selection bias toward individuals with greater interest in the issue.

2.2. Questionnaire

The questionnaire was entitled "Redeveloping Urban Land: Tell us what you think" and covered a variety of topics, including attitudes to brownfield redevelopment, preferences for different forms of redevelopment (e.g., housing, recreation), and perceived impact on their area of new housing developments. We here report the findings of a subset of questions relating specifically to perceptions of exposure to, and trust in alternative sources of information about, risk from contaminated land.

Perceived exposure was measured by a single item "Do you think any brownfield land in your local area might be contaminated" in terms of five response categories (definitely no, no, not sure, yes, definitely yes).

Trust. Respondents rated their general trust in six potential sources of information about possible risks from contaminated land (independent scientists; the local council (local government); property developers; residents' associations and local groups; friends and family; local media, such as the local paper) by responding to the question: "How much would you *trust* what each of the following might tell you about risks from contaminated land?" (wouldn't trust at all = 1, would trust completely = 5).

Each of these sources was also rated in terms of five aspects of decision making and communication that might contribute to such trust:

(1) *expertise*: not at all able to judge how safe or dangerous it was = 1; extremely able to judge = 5;
(2) *openness:* not at all prepared to tell what they know = 1; extremely prepared to tell = 5.
(3) *shared interests:* definitely hasn't got my interests at heart = 1; definitely has got my interests at heart = 5.
(4) *interpretation bias*: would definitely see the risk as safer than it really was = 1; would definitely see the risk as more dangerous than it really was = 5; responses on this item were transformed (5 = 1, 4 = 2) to yield a further three-point *interpretation accuracy* score from definite under/overestimation = 1 to no bias = 3.
(5) *communication bias:* would definitely underplay the risks when communicating to the public = 1: would definitely exaggerate the risks when communicating to the public = 5; an equivalent transformation was performed on this item to yield a further three-point measure of *communication accuracy* from definite underplaying/exaggeration = 1 to no bias = 3.

2.3. Analysis Methods

Statistical analyses involved repeated measures analysis of variance and multiple regression.

3. RESULTS

3.1. Perceived Exposure

The item asking whether they believed any local land was contaminated was omitted by 24 respondents. The remaining sample of 927 included 460 (49.6%) who responded affirmatively (247, 26.6% saying yes; 213, 23% saying definitely yes), 404 (43.6%) who said they were not sure, with only 49 (5.3%) saying no and 14 (1.5%) saying definitely no. For subsequent analyses, we divided the sample by median split into the 460 individuals who believed land in their area was contaminated (*exposed)*, and the 467 who were unsure or did not (*unsure*). We stress that these terms refer only to individuals' *beliefs* in whether contamination is present, not to whether it actually is.

3.2. General Trust

Fig. 1 presents the mean ratings by participants of how much they would trust what each of the six information sources "might tell you about risk from contaminated land" (from 1 = wouldn't trust at all

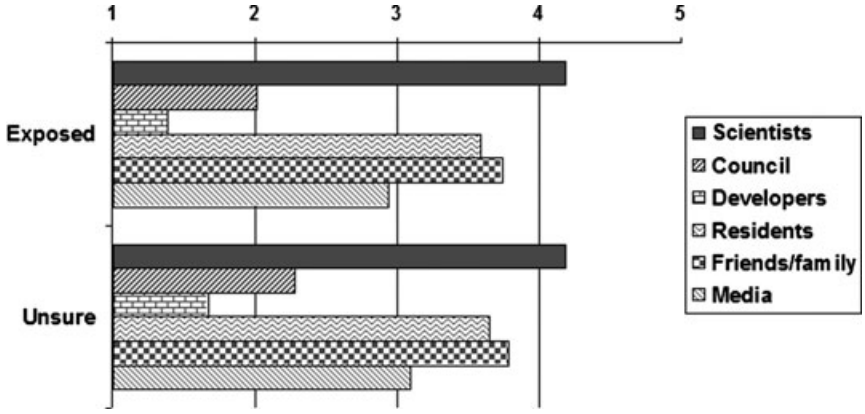

Fig. 1. Mean general trust in different sources among residents who believed themselves exposed to risks from contaminated land or were unsure. Scale: 1 = "wouldn't trust at all" to 5 = "would trust completely" what each source "might tell you about risks from contaminated land."

to 5 = would trust completely) as a function of participants' perceived exposure. These data were submitted to a 2 × 6 (Exposure × Source) analysis of variance with repeated measures on the last factor. The main effect for Exposure indicated that, taking the six sources together, the exposed respondents expressed slightly less trust than the unsure group, *M*s = 2.98, 3.11, F (1,854) = 7.45, $p < 0.001$, this effect being mainly attributable to univariate differences in ratings of the local council ($p < 0.01$) and developers ($p < 0.001$). Combining the two exposure groups, there are striking differences between the six sources, F (5,850) = 613.31, $p < 0.001$. Independent scientists are highly trusted as communicators of contamination risk information ($M = 4.19$ on the five-point scale), and significantly ($p < 0.001$) more so than any of the five other sources. Friends/family and residents' associations attract moderate trust and local media are rated close to neutral, whereas the local council and especially property developers are actively distrusted. The Exposure × Source interaction was nonsignificant, F (5,850) = 1.94, $p = 0.09$.

3.3. Aspects of Trust

Equivalent analyses were performed on the separate aspects hypothesized to contribute to trust. However, except in the analysis of communication accuracy, where it just attained significance ($p < 0.03$) due to slightly higher scores for the exposed group (*M*s = 1.75 vs. 1.68), the main effect of (perceived) Exposure was nonsignificant and negligible compared with the main effect of Source. Fig. 2 presents the means for each source and aspect, collapsing over exposure. (The precise wording corresponding to the numerical scores varied according to the different aspects as detailed above.)

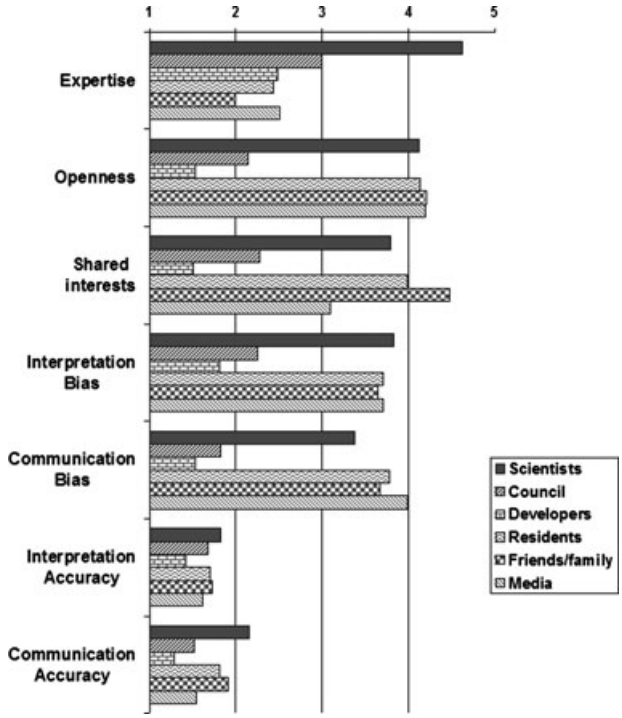

Fig. 2. Mean ratings of each source in terms of separate aspects of trust.

The most salient findings are as follows. Regarding *expertise*, the effect of Source is highly significant, F (5,850) = 623.08, $p < 0.001$, with scientists scoring very highly, $M = 4.61$, and far higher than any of the other sources. Regarding *openness,* Source is again highly significant, F (5,847) = 688.98, $p < 0.001$, but here the rating for scientists ($M = 4.14$) differs significantly only from the ratings given to the council and developers ($p < 0.001$). Similarly, both the council and developers score significantly ($p < 0.001$) worse than all other sources on this aspect. In terms

of *shared interests*, a strong main effect for Source, F (5,846) = 770.96, $p < 0.001$, reflects scientists (M = 3.80) scoring significantly ($p < 0.001$) higher than the council, developers, and even local media, but significantly ($p < 0.001$) lower than residents' associations ($M = 4.00$) and friends/family ($M = 4.48$). For both *interpretation bias* (Source: F (5,830) = 316.96, $p <$ 0.001) and *communication bias* (Source: F (5,824) = 409.93, $p < 0.001$), the council and developers are seen as very likely to underestimate or underplay the risks whereas all other sources, including scientists, are seen as likely to overestimate or exaggerate the risks. All these means differ significantly ($p <$ 0.001) from the midpoint of the scale (3) representing no bias. For *interpretation accuracy*, scientists (M = 1.84) score higher ($p < 0.001$) than all other sources (Source: F (5,830) = 39.28, $p < 0.001$). A similar pattern is found for *communication accuracy* (Source: F (5,824) = 158.70, $p < 0.001$) with scientists again coming top at 2.17.

The Exposure × Source interaction was significant for expertise (F (5,850) = 5.38, $p < 0.001$), due to scientists being rated higher ($p < 0.001$), but the council and developers lower, by the exposed than the unsure group. The interaction was also significant for interpretation accuracy (F (5,830) = 2.59, $p < 0.03$) and communication accuracy (F (5,824) = 4.47, $p < 0.001$), again reflecting higher ratings of scientists by the exposed group. These findings suggest that perceiving oneself to be potentially exposed to a risk may accentuate the differences in individuals' preferences for different sources.

3.4. Predicting General Trust from Specific Aspects

We next conducted a series of multiple regressions to determine how much trust in each of the sources separately was predictable from their scores on the different aspects. Our main interest here was with respect to the relative importance of aspects relating broadly to attributed motives (openness, shared interests, interpretation, and communication bias) as compared with attributed knowledge (expertise, interpretation, and communication accuracy). Initial analyses including all seven aspects as predictors indicated that most of the variance in trust was accounted for by expertise, openness, and shared interests, leaving little room for differentiating between the bias and accuracy aspects in terms of their impact on trust. We therefore revised our analysis strategy so as first to consider the three major predictors (expertise, openness, and shared interests) by themselves, and then separately to compare the impacts of interpretation/communication bias/accuracy.

Hence, we first present the findings of the analyses where (general) trust was regressed onto expertise, openness, and shared interests for each of the six sources. Fig. 3 presents the t-values calculated from the β coefficients for each predictor in each analysis. (All ts > 2 are significant at $p < 0.05$.) These show remarkable consistency across the different analyses. Overall, expertise appears a less important predictor of trust than both openness and shared interests. (Local media provide the one exception to this pattern, in that expertise is a more important predictor than openness, but still far less important than shared interests.) For scientists, where the three predictors accounted for 49% of the variance, the contribution of expertise is dwarfed by those of shared interests and openness. This, of course, does not mean that scientists are not seen as experts—we know that they are from their high mean score on this aspect (see Fig. 2). Rather, scientists' expertise is more-or-less taken for granted, whereas what makes more difference to levels of trust is the extent to which scientists are viewed as open and sharing the public's interests. With regard to the other sources, the amounts of variance accounted for were 58% for the council, 31% for developers, 33% for residents' associations, 25% for friends and family, and 46% for local media.

3.5. Predicting General Trust from Interpretation/Communication Bias/Accuracy

Next we performed similar analyses in which general trust in each of the six sources was regressed on the four predictors of interpretation and communication bias and accuracy. Following our earlier argument, perceived accuracy of interpretation and (to a lesser extent) communication should broadly reflect an attribution of knowledge, whereas perceived bias (especially of communication) should reflect an attribution of motive to the source. Fig. 4 presents the t-values for each coefficient. (As in Fig. 3, all ts > 2 are significant at $p < 0.05$.) As may be seen, communication bias comes out as the most important predictor in five of the six analyses. For scientists, where the four predictors account for just 14% of the variance, interpretation accuracy is not merely nonsignificant, but even inversely related to trust ($\beta = -0.045$, $t = -0.99$). For the council, 29% of the variance is accounted for; again interpretation accuracy is nonsignificant, whereas the other three predictors are of

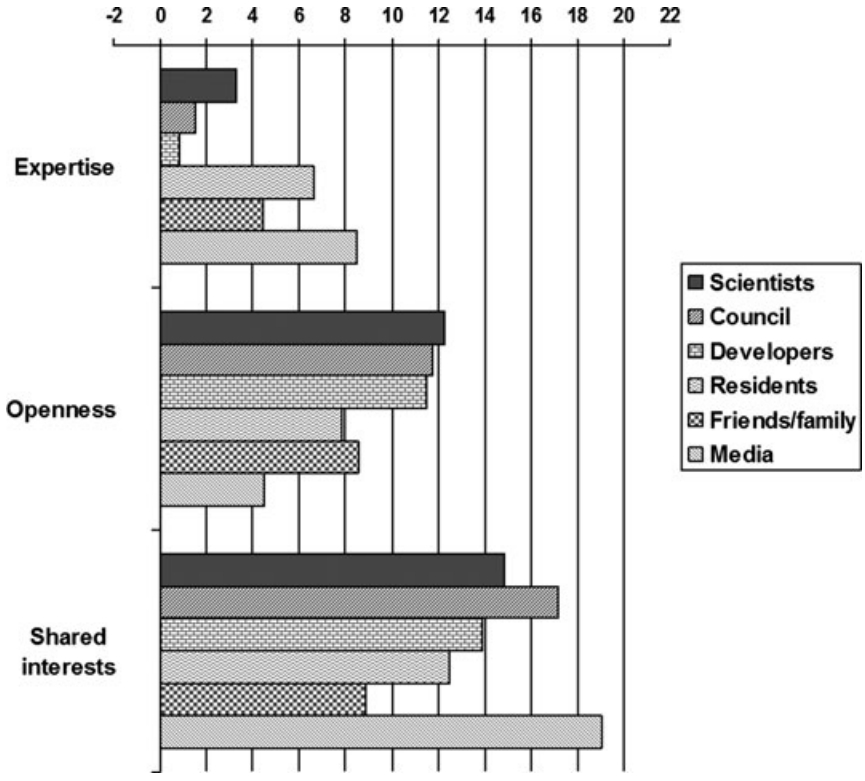

Fig. 3. Predicting general trust in each source from expertise, openness, and shared interests; *t*-values associated with β weights for each predictor from multiple regression analyses. All *t*s > 2 are significant at $p < 0.001$.

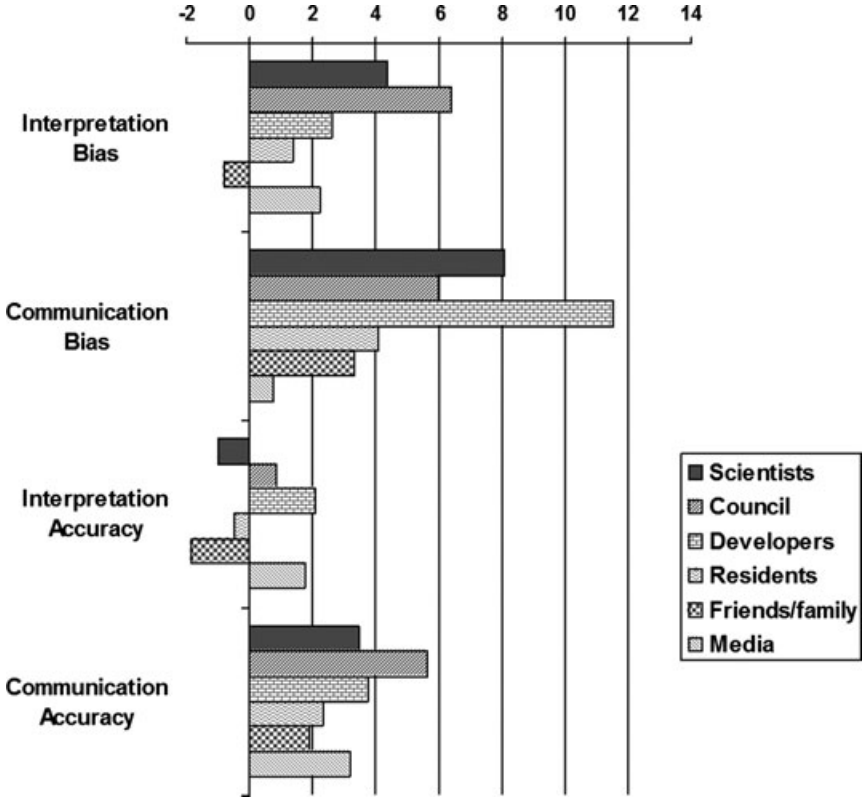

Fig. 4. Predicting general trust in each source from interpretation and communication bias and accuracy; *t*-values associated with β weights for each predictor from multiple regression analyses. All *t*s > 2 are significant at $p < 0.001$.

comparable strength. For developers (31% of variance accounted for), all four predictors are significant but the strongest by far is communication bias ($\beta = 0.395$, $t = 11.52$). Bearing in mind that developers (and similarly the council) were found to show a highly significant bias in the direction of underplaying any risk, what this means is that the more developers are seen as underplaying the risk, the more they are distrusted. Communication bias remains a significant predictor also for residents' associations, even though only 3% of the variance is accounted for, and it is a similar picture for friends and family (2% of variance accounted for). For the media (again, just 3% of variance accounted for), communication accuracy is the more important predictor.

4. DISCUSSION

In considering these findings, consideration must be given to the possible reasons for, and implications of, the low response rate from our mail survey. Response rates from unsolicited mail surveys are variable, but generally low and, according to informal comments from some survey practitioners, becoming lower. White *et al*. (2007) employed a similar methodology in a UK survey relating to perceived risk of cell phones, obtaining a higher, but still low, response rate of just 16.5%. Both that study and our own used a commercial distribution system in which questionnaires were delivered to addresses, rather than named individuals, along with similarly unsolicited advertising material. This system was chosen as a low-cost means of accessing large potential samples over a wide geographical area, since resource implications precluded the use of more labor-intensive methods such as individual interviews.

At least as important a reason for variable response rates may be the motivation of individuals to give time to completing the survey, which may well depend on their perceptions of the personal relevance of the issue. Importantly, the questionnaire was focused on urban redevelopment generally and only introduced the potentially more involving issue of contamination risk on later pages. Even though the sampling areas included a number of contaminated sites, respondents' attention was not drawn to this fact within the questionnaire and no such sites were identified.

The sampling areas were somewhat biased toward less affluent socioeconomic groups, and this is reflected in the reported demographic characteristics of the respondents. (For example, owner-occupation at 65.4% compares with a national UK average of around 70%; the 8.5% seeking work compares with a national unemployment rate of 2.9%.) Such a bias (not applicable, for instance, to White *et al*., 2007) might have further suppressed the response rate and/or contributed to missing data on some items.

The important issue for this study, however, is how much any of this weakens the specific conclusions we are seeking to draw from our data. We are not claiming representativeness for our findings of the absolute levels of trust in specific sources, but rather drawing attention to the *relative* differences between such sources, and to factors that appear to predict levels of trust in these sources. While acknowledging that our final sample may overrepresent those with an interest in urban redevelopment generally, there is no obvious reason why this should have distorted the specific analyses here presented. In a major review of surveys relating to residents' views of earthquake hazards, Lindell and Perry explain why conclusions can still be drawn from surveys with low response rates, the following reason being especially pertinent to our study: "even if there is bias in the estimated means and proportions . . . there will be little effect on correlation coefficients unless there are 'ceiling' or 'floor' effects that cause the correlation to be systematically underestimated" (2000, p. 469).

Thus, while not disregarding these methodological difficulties, our findings indicate that, within the specific context of land contamination, independent scientists are a highly trusted potential source of information. Developers, on the other hand, are actively distrusted, as perceived both by individuals who believed they lived close to contamination and those who did not. (In fact, there were several locations of more or less severe contamination within most of the sample areas.) Perceived exposure to contamination had remarkably little effect on trust in the different sources, apart from the council, which was more distrusted by those who saw themselves as exposed, presumably because they saw the council as failing to protect them from any risk (for a more in-depth analysis of residents' views of their respective councils, see Eiser *et al*., 2007).

Subsequent analyses offer insight into these differences between levels of trust for the different sources. The council and developers were both distrusted, despite coming runners-up to scientists in perceived knowledge of risks, that is, expertise. Fig. 2 provides a strong indication why this is so. These two sources were seen as particularly lacking in openness and shared interests (with residents) and most

likely to underestimate or underplay any risks. Conversely, residents' groups and friends and family (as well as local media, to a slightly lesser extent) are quite highly trusted despite not being seen as particularly expert. This appears to be because these sources are seen as scoring highly on openness and shared interests, and showing a more precautionary bias in interpretation and communication.

The sets of multiple regression analyses summarized in Figs. 3 and 4 investigate these differences in more detail, specifically comparing the independent effects of more cognitive and motivational factors as predictors of general trust. In the first set (Fig. 3), expertise is shown to be an important predictor across the six sources but, even in the case of scientists, less so than openness and shared interests. The fact that we used the phrase "*independent* scientists" may be crucial here. Developers and the local council could both also be presumed to have access to scientific or technical knowledge, but if this was not offered independently of vested interests, it might be seen as suspect.

The second set offers a similar message based on respondents' answers to the questions about the extent to which the sources might veer toward risk or caution in their interpretations and communications. It should be noted that our use of the term "accuracy" for the derived scores here should be interpreted carefully. It refers merely to a lack of bias toward either risk underestimation or overestimation. Lack of bias could in principle be achieved without any increase in accuracy if a decisionmaker responded completely randomly. The meaning of the bias scores, however, is based more firmly on their conceptualization within the SDT/IDT approach. The analyses summarized in Fig. 4 showed that a bias toward caution, especially in communicating risk, enhances trust, even after controlling for accuracy (as here operationalized).

For members of the scientific research community, these results are reassuring. Scientists *are* trusted and seen as having expert knowledge. However, their expertise is not the only, nor a sufficient, reason for receiving trust. The fact that they are *independent*, and hence unlikely to withhold or distort information because some interested party is paying them, is at least as important. Nonetheless, it is worth noting that scientists were still expected to show a significant bias (in a precautionary direction) in their interpretations and communications. At the other end of the scale, developers may be seen as reasonably knowledgeable (about contamination risks) but are actively distrusted, since the public image of them is of an industry motivated primarily by its own profits.

In between these extremes, we find the less "expert" sources who nonetheless are trusted because of their affinity to the audience. The local media attract moderate trust, despite limited expertise and even though they are seen as the most likely to exaggerate any risks, because they are seen as high on openness and, to some extent, shared interests. However, friends and families and residents' groups, though the lowest in expertise, come nearest to scientists in terms of general trust, since these are seen as having respondents' interests closest to heart. Taken together, then, these findings underline the message that trust in risk communication is as much a social as a cognitive process. It depends not just on the perceived quality of information on which any message is based, but on the characteristics of the communicators, their socially defined roles, and their relationships to their audience.

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