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Who is a credible source of preventive advice? An experimental vignette study of general public attitudes towards role expansion in health and social care

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Objectives. To investigate the general public's source credibility attitudes towards health and social care professionals when giving advice associated with their 'traditional role' versus an 'expanded health behaviour change' role, to facilitate the implementation of the health behaviour change agenda.

Design. A 3x3 experimental between-subjects vignette questionnaire study with nine scenarios in which a general practitioner (GP), health visitor, or firefighter offered advice on either stopping smoking, preventing cot death, or fire safety. Combinations were either congruent with a traditional role (e.g., health visitor and cot death) or an expanded role (e.g., firefighter and stopping smoking).

Methods. Adults were recruited from metropolitan locations in northern England. Participants were randomized to one scenario and complete a validated 18-item source credibility questionnaire. Factor analysis explored source credibility components; ratings for traditional and expanded role scenarios were compared using Mann–Whitney tests.

Results. 369 participants completed the questionnaire (49.3% women, 64% White British, age range: 16–83). Factor analysis confirmed three source credibility dimensions: competence, caring, and trustworthiness. Ratings were generally high across professions and scenarios; participants rated professionals as significantly more 'competent' where scenarios related to their traditional roles than expanded roles (U 9778.5, p <.001) but equally as caring ($U = 14467.5$, p< .485) and trustworthy (U 14250.5, p .348).

Conclusions. GPs, health visitors, and firefighters were all perceived as credible sources of health behaviour change advice, but may be viewed as 'less competent' sources of messages associated with an expanded job role. Effective professional training and public engagement regarding the role expansion agenda are needed to support policy implementation.

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Statement of Contribution

What is already known on this subject?

- Source credibility surrounds people's perceptions of the source of advice and includes competence, caring, and trustworthiness dimensions.
- This may have an important influence on people's attitudes and behaviour, especially when messages are complex or emotive.
- A wide range of public sector workers is now expected to routinely offer preventive health and safety advice, as part of role expansion.

What does this study add?

- This experimental survey study compared source credibility perceptions of GPs, health visitors, and firefighters giving advice on topics associated with a traditional or expanded role.
- Professionals were perceived as less 'competent' when giving advice on 'expanded role' topics, such as a firefighter discussing smoking, with a small reduction in source credibility.
- This highlights that source credibility may be specific to professional identities.
- Policymakers may need to explore this further as part of implementing role expansion for prevention and self-management in health and social care.

Source credibility has been defined as the perception of the audience towards a communicator (Hovland & Weiss, 1951), specifically how competent, trustworthy, and caring they appear to be (Benoit & Strathman, 2004; McCroskey & Teven, 1999; Porpitakpan, 2004; Rieh &Danielson, 2007). Understanding source credibility in relation to persuasive health-related communication may have important theoretical and practical applications for health psychology in terms of key drivers and moderators of attitude change. In several socio-cognitive models of behaviour commonly applied in health psychology, attitudes are a key predictor of intentions and behaviours (e.g., Ajzen, 1991, Bandura, 1986, Hochbaum et al. 1952). In applied research, source credibility has been shown to be an important factor influencing people's buying, voting, and other behaviours, especially when messages are complex or recipients are under elevated stress (Chaiken &Maheswaran, 1994, Hussein, Mann & Cohen, 2014; Umeogu, 2012). In health psychology, researchers have explored how information seekers report selecting and evaluating sources of written health information (e.g., Sbaffi & Rowley, 2017). Experimental studies have also sought to manipulate the source credibility of written messages to determine their influence on health-related attitudes (e.g., Lin, Hwang & Lai, 2017) and behaviours (Lee & Walker, 2019). In terms of in-person health professional– public interactions, questionnaire studies have reported that the public regard health professionals as key sources of health information, alongside family and friends (Austin et al. 2017, Garrett Wagner et al. 2018). Experimental studies suggest that medical doctors' mere appearance and clothing can even influence medical and placebo treatment efficacy (Brase & Richmond, 2004; Howe, Goyer & Crum, 2017).

Only rarely have studies directly explored the perceived source credibility of health and social care professionals (e.g., Paulsel, McCroskey & Richmond, 2006). Further exploration can shed light on the specificity and definitions of source credibility. For example, regarding the competence dimension, it is unknown whether health and social care professionals are perceived as generally competent (i.e., clever/knowledgeable/

expert) about a wide range of health-related matters, or whether perceptions of competence are more specific, such as bounded by a professional's identity. What it takes to change perceptions of source credibility has also not been thoroughly explored, nor the relationship between the three dimensions of source credibility amongst health and social care professionals. This also has important practical applications given recent changes to global health policy, which are expanding the range of professionals who are expected to deliver a range of health advice and messages.

Worldwide, many countries are experiencing unprecedented pressures on public services, in the context of a rise in preventable long-term conditions and an ageing population (WHO, 2014, National Audit Office, 2016, 2018, Robertson, Wenzel, Thompson & Charles, 2017; Smith, McKeon, Blunt & Edwards, 2014). For many years, globally countries have been urged to reorganize health care systems to focus on prevention of health conditions and complications. Indeed, back in 2002, the influential Innovative Care for Chronic Conditions World Health Organization report (2002) argued for better integration between health and social care services, a flexible approach to roles within the health and social care workforce and suggested that 'every health care interaction should include prevention support' to provide patients with 'information and skills to reduce health risks' (p.44, WHO, 2002). Equally, globally, national fire and rescue services have increasingly also focussed on prevention activities, including performing home advice visits to try to prevent the damaging health consequences of fires and other accidents in the home (Fenton, 2015).

To meet these needs, some countries have successfully established new roles, such as the 'community health worker' model adopted across sub-Saharan Africa (UN AIDS, 2018). Many have employed 'Role Expansion' or 'Task Shifting' (Potvin and Jones, 2011). This is defined as 'expanding tasks undertaken by a cadre of health workers or shifting tasks from one cadre to another, to include tasks not previously part of their scope of practice' (p.2, Cochrane, 2015). In the United Kingdom, in a policy innovation called Making Every Contact Count (NHS England, 2014a; NHS Scotland, 2012), all public sector workers who interact routinely with the public have been encouraged to work flexibly, such as expanding their roles to deliver preventive advice and messages. It is thought that a wide range of public sector staff, from community-based health professionals to ambulance staff and firefighters (Knight, 2013; Smalldridge, 2017), could be trained to have brief, supportive, and cost-effective conversations with the public, offering health promotion advice and referrals to specialist support (NHS England, 2014b, NHS Scotland, 2012, Lawrence *et al.*, 2016). Equally, general practitioners (GPs, also known as family doctors) have also been asked to work more flexibly, such as addressing many topics related to the social determinants of health such as financial security, home safety, and mental health within their consultations (Kings Fund, 2011). In many cases, information and advice given in conversations aim to be persuasive, in changing attitudes (e.g., 'healthy eating is important to me'), to increase intentions to engage in health-protective behaviours (e.g., 'I will eat more fruits and vegetables'). Therefore, persuasion theories would argue that the success of such policy initiatives likely depends on whether the recipients of this advice perceive the communicators as credible sources of this information.

The characteristics of effective or persuasive communicators have been studied since ancient times (Aristotle, 2007). However, social psychologists began to explore source credibility experimentally in the second half of the 21st century, sparked by interest in the effectiveness of government propaganda aiming to influence public attitudes and behaviours during the Second World War (e.g., Asch, 1948). Several theories of persuasion posit that when information is relayed from a source that is perceived as

credible by the recipient, it is more likely to result in attitude change (e.g., Self, 1996). For instance, the elaboration likelihood model (ELM) is a key social psychology theory of persuasion processes (Petty & Cacioppo, 1984). This suggests that much of the time, we do not evaluate a message based on careful scrutiny of the message content and quality (known as 'central route processing'). Indeed, unless we are highly motivated and able for such effortful processing, the ELM posits that we tend to rely on simple rules, such as perceptions of source credibility, to determine whether we allow a message to influence our attitudes on a subject ('peripheral route processing').

As mentioned, factor analytic studies suggest there are three dimensions to source credibility, such that to be perceived as a credible source, people must perceive professionals as competent, trustworthy, *and* caring (McCroskey & Teven, 1999). Research has suggested that in general, public sector workers such as firefighters and doctors are amongst the most publicly trusted types of professionals (Addicott & Ham, 2014; Local Government Association, 2015). No study has so far explored public perceptions of the dimensions of professional source credibility in relation to role expansion agenda. However, it might be expected that perceptions of competence could be reduced when professionals deliver messages that are associated with their 'expanded' role (discussing topics not traditionally associated with their professional role) rather than a 'traditional' role. It is important to explore whether this is the case and whether changes in one part of the triad are enough to affect perceptions of trustworthiness or caring, or overall perceptions. This is important to explore since if preventive information and advice aim to promote attitude and behaviour change, a lack of source credibility could impact on the effectiveness of the role expansion agenda.

The current study

The aim of the current study was to begin to explore the source credibility of professionals within 'expanded' prevention vs 'traditional' roles, as perceived by a sample of the general public in northern England. The study was a survey experiment focussing on combinations of three types of public sector professional and three types of prevention topic, which have been at the forefront of the role expansion in England, as some initial examples of this wide topic. We aimed to explore differences in ratings of source credibility using a validated credibility measure (McCroskey & Teven, 1999), with systematically varying combinations of professional and advice topics (Steiner, Atzmüller & Su, 2016), congruent with either a traditional or expanded prevention role. We hypothesized that where participants were presented with a professional operating in an 'expanded' rather than 'traditional' role, their ratings of the competence dimension of source credibility would be lower. We did not expect that a change in role would affect the overall perceptions of trustworthiness and caring, since these are not task-specific but are related more to the characteristics of the individual.

Methods

Design

A cross-sectional between-subjects experimental survey design was applied in which participants rated their views of the source credibility if one of three types of professional (GP, health visitor, and firefighter) had a conversation with them about one of three kinds of preventive health and safety topics (smoking cessation, cot death, and fire safety).

General practitioners in the United Kingdom are traditional providers of smoking cessation advice, but have recently expanded their roles to an increasing array of topics related to social determinants of health (Kings Fund, 2011). In the United Kingdom, health visitors are registered community nurses and midwives who are specialists in the health of young children and make home visits to advise parents on preventive health issues such as cot death, but have been, amongst those, asked to widen their remit to other prevention issues (NHS England, 2014b). As discussed previously, firefighters have for many years been involved in offering information and advice relating to fire safety, but have recently expanded their roles to include responding to first-aid emergencies and giving advice on smoking and other well-being issues (Knight, 2013, Byrne-Davis *et al.*, 2018). Whilst by no means the sole agents of role expansion, these three professionals and topic areas were chosen as relevant and feasible examples.

Therefore, the topics and professionals were combined so that one was congruent with a more traditional role (GP with stopping smoking, health visitor with preventing cot death, and firefighter with fire safety) and the remaining two with an expanded role (e.g., firefighter with stopping smoking or preventing cot death) for each of the three professional types. The permutations were discussed with a convenience sample of ten public sector professionals who agreed that those conversation topics corresponded with relevant traditional or expanded public health roles in each case and made sense, and all contained a number of behaviours so were specified at 'topic' rather than 'behaviour' level. For instance, stopping smoking includes setting a quit date, eliminating cigarettes from the house, and several other behaviours; preventing cot death and fires similarly includes various preventive behaviours.

Procedure

Full university ethical approval was granted for this study, and participants received no financial or other compensation for taking part. A purposive convenience sampling method was applied: A researcher recruited participants from public spaces in inner city areas of a large metropolitan borough in northern England (shopping centres, libraries, and a university campus) over a three-month period. The researcher attended public spaces in person with the survey, information sheet, and consent form on an electronic tablet and asked each person who passed if they would like to take part in a brief study regarding changes to ways of working in health and social care. The study took place in the public locations immediately following recruitment. Potentially interested participants were screened by the researcher asking them if they lived in the United Kingdom, were aged above 16, and could understand English. Those meeting the inclusion criteria were invited to read the information sheet about the study and provide their informed consent to take part. The researcher offered to read the information to participants if they preferred, to maximize inclusivity for those with lower written English or IT literacy, visual impairments, or otherwise preferred this. Participants then were randomly allocated to one of the nine professional/issue combinations using a computerized random number generator and completed the source credibility questionnaire, followed by the short demographic questionnaire. If participants preferred, the researcher could enter the participant's verbal responses for them onto the tablet, with assurances of confidentiality and that there was no 'right answer'. After this was submitted, the researcher asked the participant how they found completing the questionnaire and if they had any questions or concerns, and provided debrief information with signposting to relevant services and contacts. The procedure

took between 5 and 15 minutes to complete. The anonymous data were then transferred to SPSS (version 22, IBM, 2013).

Measures and materials

Each participant was randomized to be shown one of nine combinations of professional and topic, displayed on an electronic tablet for example: *What would be your opinions about a **Firefighter** if they had a conversation with you about **Fire Safety**?* They were then asked to complete a validated multidimensional 18-item source credibility measure (McCroskey & Teven, 1999). In this measure, six items relate to each of the component dimensions of competence, caring, and trustworthiness, on a 7-point Likert scale with single-word anchor points (an example included in Figure 1). Both total scores and scores on each dimension can be examined. Reverse scoring was applied as recommended by McCroskey and Teven (1999). Participants then completed a short demographic questionnaire regarding ethnicity, age bracket (both based on the UK census categories), gender, and whether they were a staff member of a health or fire service. The latter question was included since staff member respondents may have a different perspective to members of the public without a dual professional–public role, so this group's data could be analysed separately if it formed a significant minority (considered to be> 10% of the total sample size). Three pilot tests of the questionnaire with a convenience sample of the general public checked user interface and participant understanding of materials. As a result, small changes to format and wording were made before the study began.

Rate on the scales below

What would be your opinions about a *Firefighter*
if they had a conversation with you about *Fire Safety*?

1)	Intelligent	1 2 3 4 5 6 7	Unintelligent
2)	Untrained	1 2 3 4 5 6 7	Trained
3)	Cares about me	1 2 3 4 5 6 7	Doesn't care about me
4)	Honest	1 2 3 4 5 6 7	Dishonest
5)	Has my interests at heart	1 2 3 4 5 6 7	Doesn't have my interests at heart
6)	Untrustworthy	1 2 3 4 5 6 7	Trustworthy
7)	Inexpert	1 2 3 4 5 6 7	Expert
8)	Self-centred	1 2 3 4 5 6 7	Not self-centred
9)	Concerned with me	1 2 3 4 5 6 7	Not concerned with me
10)	Honourable	1 2 3 4 5 6 7	Dishonourable
11)	Informed	1 2 3 4 5 6 7	Uninformed
12)	Moral	1 2 3 4 5 6 7	Immoral
13)	Incompetent	1 2 3 4 5 6 7	Competent
14)	Unethical	1 2 3 4 5 6 7	Ethical
15)	Insensitive	1 2 3 4 5 6 7	Sensitive
16)	Bright	1 2 3 4 5 6 7	Stupid
17)	Phony	1 2 3 4 5 6 7	Genuine
18)	Not understanding	1 2 3 4 5 6 7	Understanding

Figure 1. Example questionnaire (based on McCroskey & Teven, 1999).
Note. For each of the nine combinations, the questionnaire appeared exactly the same except the name of the professional and topic of discussion (italics and underlined) varied.

Participants and setting

Adult members (16+) of the general public who were living in the United Kingdom as potential users of health and social care services, and who could understand written or spoken English were eligible to take part in the study. The post-graduate psychology researcher was trained and supervised by an experienced health psychologist. This included a thorough grounding in researcher bias and mitigation strategies. This included systematically inviting all who passed by, rather than those a researcher expects may meet inclusion criteria or be 'interested' in the study to increase representation from different population subgroups, and also ensuring researcher neutrality when participants gave responses verbally. The sample size required for this study was calculated via https://c lincalc.com/stats/samplesize.aspx and indicated that a minimum of 225 participants was required (21 participants for each of the nine combinations shown). This was based on alpha at 0.05 and 80% power to detect effects (as is common in psychological studies) and anticipated mean competence dimension ratings of between 37.1 (standard deviation: 5.8) and 40.2 (standard deviation: 3.6), for nurses and physicians, respectively, in a previous study (Paulsel, McCroskey & Richmond, 2006).

Data analysis

Variables were recoded as necessary and scores calculated for the 18 items of the three source credibility dimensions and for each permutation of professional and topic. A principal component analysis (PCA) with an oblique rotation was applied, as recommended by McCroskey and Teven (1999), to explore source credibility factor structure, checking whether our sample's ratings followed the usual pattern of the three subscale dimensions of competence, trustworthiness, and caring, followed by Cronbach's alpha tests to check the internal consistency reliability of the measure in this sample. Exploratory descriptive statistics were applied to explore data distribution and missing values. For inferential statistical analysis, Shapiro–Wilk tests for normality were applied, and if violated, Mann–Whitney tests were applied to explore between-group differences in the overall and subscale scores, with $p < .05$ indicating statistical significance. Exploratory post-hoc tests were conducted within individual items to explore statistically significant subscale scores. To calculate effect size, Cohen's d was calculated, based on Lenhard and Lenhard (2016), with $d = .2$, .5, and .8 interpreted as representing small, medium, and large effect sizes, respectively.

Results

Initially, 373 participants consented to take part in the study; four withdrew at an early stage reporting hesitancy to offer judgments without more information about the fictional practitioner such as their level of training in the topic. Amongst the final sample of $n = 369$, seven missing data points belonging to seven items and six participants were identified. Given the very small proportion of missing data in the sample (0.1% of source credibility ratings), and spread amongst items and participants, these were likely to be missing at random and so were imputed with the participant's own median rating on the remaining items. The sample included an even split of men and women, with 64% reporting their ethnicity as white British or Irish (Table 1). This broadly aligned with the last UK census which reported 86% of the population in England and Wales to be white and women, and girls made up 51% of the population (Office for National Statistics, 2013).

Table 1. Participant Characteristics

Total (*N*)	369
Gender	
Male	182 (49.3%)
Female	182 (49.3%)
Not Specified	5 (1.4%)
Age	
16–27	93 (25.2%)
28–37	71 (19.2%)
38–47	73 (19.8%)
48–57	56 (15.2%)
58–67	42 (11.4%)
68–77	23 (6.2%)
78+	8 (2.2%)
Not specified	3 (0.8%)
Ethnicity	
White British or Irish	236 (64%)
Indian	15 (4.1%)
Mixed/multiple ethnic groups	15 (4.1%)
Black	12 (3.3%)
Pakistani	12 (3.3%)
White European	11 (3%)
African	10 (2.7%)
Other Asian	9 (2.4%)
Other	36 (9.6%)
Not specified	13 (3.5%)
Employment	
NHS	21 (5.7%)
Alternative health service	3 (0.8%)
Fire service	0 (0.0%)
Other	345 (93.5%)

Only 24 respondents (6.5%) reported being employed by health services and none by fire services. This represented a small proportion of the overall sample so no action was taken to separate their data from that of respondents without a dual professional/public role. The sample size exceeded the required sample size (*n* = 225) to detect effects with 80% power according to our sample size calculation.

Source credibility dimensional structure

Initial analyses suggested the data set was suitable for factor analysis. Three factors had eigenvalues over one, collectively explaining 57.6% of the variance. Kaiser's criterion suggested selecting three factors. Examining the loading values, these strongly matched McCroskey and Tven's (1999) proposed domains of competence, caring, and trustworthiness; scores on the six items for each had strong internal consistency reliability (competence: α = .83; caring: α = .80; and trustworthiness: α = .84).

Descriptive analyses

Following the factor analysis and using McCrosky and Teven's guidance (1999), competence, caring, and trustworthiness ratings were calculated by summing each of

the 6 constituent 1- to 7-item ratings, yielding possible ratings from 6 to 42 for each. Descriptive statistics for the three subscales, as the main focus, are displayed in Table 2 and Figure 2 Overall sample means and medians were high (means for the three dimension subscales from 31.15 to 36.33; medians from 32 to 37). Visual inspection suggested highest ratings for 'traditional role' combinations, combinations where the message source was a firefighter and message topic was fire safety, and overall in the dimension of trustworthiness. An overall score was also calculated for the 18 items, with scores from 18 to 126. The mean overall score was 101.43, median 103, minimum score 47, maximum 126, and IQR 22. Shapiro–Wilk tests for normality were all $p < .05$ ($df = 369$) so a non-parametric Mann–Whitney test was applied to explore group differences

Inferential analyses

The Mann–Whitney test compared differences in source credibility ratings (overall score and competence, caring, and trustworthiness subscales) for participants rating professionals in traditional ($n = 123$) vs. expanded ($n = 246$) roles. Mean ranks were higher for traditional compared to expanded roles for the overall score (208.82 vs. 173.09) and all three domains (competence: 234.88 vs. 160.06; caring: 186.82 vs. 184.09; and trustworthiness: 193.50 vs. 180.75). Differences were statistically significant with a small effect size for the overall score ($U = 12199, p = .002, d = .32$) and significant with a large effect size for the subscale of competence ($U = 8994, p < .001, d = .70$). There were no significant differences for the subscales of caring ($U = 14905, p = .816, d = .02$) or trustworthiness ($U = 14083, p = .277, d = .11$).

As a post-hoc exploratory test, the six competence-related items were analysed separately. Again, mean ranks of items were higher for combinations which placed professionals in traditional rather than expanded roles ('intelligent' 212.44 vs. 171.28, 'trained' 238.54 vs. 158.23, 'expert' 235.25 vs. 159.87, 'informed' 221.18 vs. 166.91, 'competent' 212.97 vs. 171.01, 'bright' 198.55 vs. 178.22), with the biggest difference for the items 'trained' and 'expert'. Differences in mean ranks were statistically significant for all competence items ('intelligent' $U = 11754$, 'trained' $U = 8543.5$, 'expert' $U = 8948$, 'informed' $U = 10678.5$, 'competent' 11688.5; all $p < .001, d = .37$ to 0.76) except the item 'bright' ($U = 13462, p = .073, d = .18$).

Discussion

Findings and implications

This experimental survey study examined general public perceptions of the source credibility of health and social care professionals offering prevention-related health and safety advice congruent with expanded vs. traditional roles. As hypothesized, where combinations of professional and topic were congruent with 'expanded' prevention roles, participants perceived professionals as significantly less 'competent' (large effect size) than those congruent with their traditional prevention roles. They were seen as overall less credible (small effect size), but equally 'caring' and 'trustworthy'. Exploratory analyses of individual competence subscale items suggested professionals were seen as more 'trained' and 'expert', and also more 'intelligent', 'informed', and 'competent' (but not 'brighter') in a traditional role.

Table 2. Descriptive statistics for the three source credibility subscales (*n* = 369)

|	Competence	Caring	Trustworthiness
Overall sample			
n = 369	Mean = 32.55	Mean = 33.52	Mean = 35.36
	Median = 33	Median = 34	Median = 36
	IQR = 8	IQR = 8	IQR = 8
	Minimum = 13	Minimum = 10	Minimum = 11
	Maximum = 42	Maximum = 42	Maximum = 42
Role			
Traditional (*n* = 123)	Mean = 35.33	Mean = 33.54	Mean = 35.59
	Median = 35	Median = 34	Median = 37
	IQR = 7	IQR = 8	IQR = 7
	Min = 19	Min = 10	Min = 11
	Max = 42	Max = 42	Max = 42
Expanded (*n* = 246)	Mean = 31.15	Mean = 33.50	Mean = 35.25
	Median = 32	Median = 33	Median = 36
	IQR = 9	IQR = 8	IQR = 8.25
	Min = 13	Min = 11	Min = 21
	Max = 42	Max = 42	Max = 42
Profession			
Firefighter (*n* = 123)	Mean = 32.77	Mean = 34.02	Mean = 36.33
	Median = 34	Median = 33	Median = 37
	IQR = 11	IQR = 9	IQR = 8
	Min = 13	Min = 11	Min = 23
	Max = 42	Max = 42	Max = 42
GP (*n* = 123)	Mean = 31.91	Mean = 32.44	Mean = 34.25
	Median = 33	Median = 33	Median = 36
	IQR = 8	IQR = 10	IQR = 7
	Min = 14	Min = 10	Min = 11
	Max = 42	Max = 42	Max = 42
Health visitor (*n* = 123)	Mean = 32.96	Mean = 34.10	Mean = 35.50
	Median = 33	Median = 35	Median = 36
	IQR = 8	IQR = 7	IQR = 8
	Min = 14	Min = 19	Min = 24
	Max = 42	Max = 42	Max = 42
Message issue			
Fire safety (*n* = 123)	Mean = 32.94	Mean = 34.37	Mean = 36.07
	Median = 33	Median = 35	Median = 37
	IQR = 9	IQR = 7	IQR = 7
	Min = 14	Min = 18	Min = 21
	Max = 42	Max = 42	Max = 42
Stopping smoking (*n* = 123)	Mean = 33.41	Mean = 33.12	Mean = 34.94
	Median = 33	Median = 34	Median = 36
	IQR = 8	IQR = 9	IQR = 8
	Min = 20	Min = 10	Min = 20
	Max = 42	Max = 42	Max = 42
Preventing cot death (*n* = 123)	Mean = 31.29	Mean = 33.06	Mean = 31.29
	Median = 32	Median = 33	Median = 32
	IQR = 9	IQR = 8	IQR = 9
	Min = 13	Min = 11	Min = 21
	Max = 42	Max = 42	Max = 42
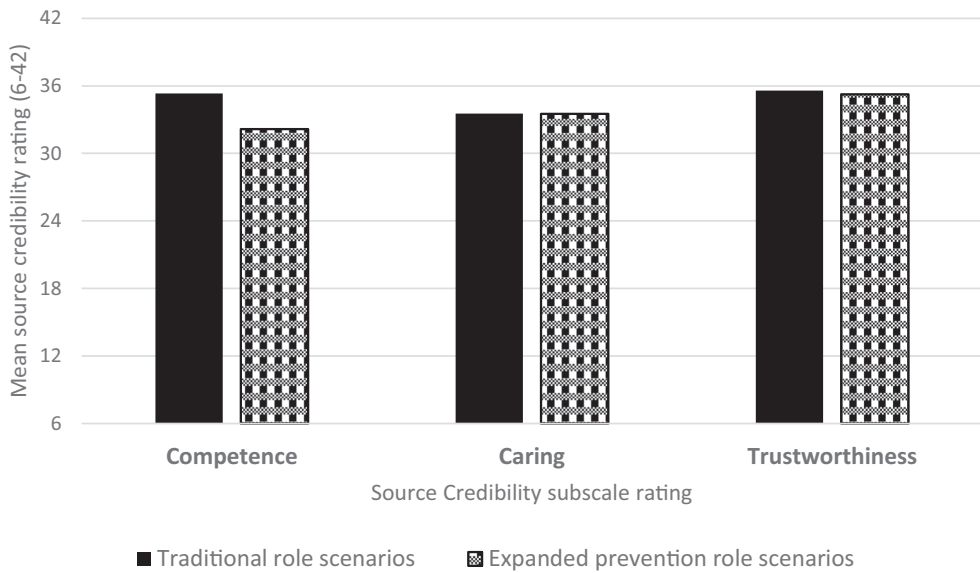
Figure 2. Mean source credibility attitudes for the three dimensions, professionals giving 'traditional' or 'expanded' prevention role advice.

These findings suggest that from a theoretical perspective, it may be possible to change specific dimensions of source credibility perceptions, without affecting perceptions of the other dimensions, and that may have a statistically small effect on overall perceptions of source credibility. It also provides initial evidence that the general public may perceive health and social care professionals' competence to be bounded by their professional identity and be specific to certain prevention topics, but that they are perceived to be caring and trustworthy across topics.

The findings make intuitive sense and are perhaps unsurprising. However, this issue has not previously been explored, especially with regard to the verbal interpersonal interactions that make up so much of health and social care professionals' roles, rather than written messaging (Sbaffi & Rowley, 2017). This adds an important public perspective to the literature on role expansion, which emphasizes professionals' roles in initiating prevention-focussed conversations (Lawrence *et al.*, 2016). Further research is needed to explore further this important issue of which professionals may be most effective in expanding their role towards conversations aiming to spark attitude and behaviour change. Firefighters themselves have also pointed to a perceived competence gap in their expanded prevention roles, indicating triangulation of research in this research area (Byrne-Davis *et al.*, 2018). If source credibility is indeed linked to attitude and behaviour change (e.g., Lee & Walker, 2019; Lin Hwang & Lai 2017), such perceptions would be important for policymakers and practitioners to consider when developing and evaluating role expansion initiatives to support the global health challenges of prevention and self-management (WHO, 2014; Lawrence *et al.*, 2016). There may also be a need for awareness-raising positive media communication to inform the public to expect a wider variety of professionals to initiate prevention-focussed conversations on health and safety topics. This would need explanation about the rationale behind this and assurance that they are competent to do so.

In general, source credibility scores were high and ratings for caring and trustworthiness dimensions remained high across different combinations. This confirms previous general research suggesting that the public hold public sector professionals such as GPs, firefighters, and health visitors in high regard (Addicott & Ham, 2014; Meredith, Eisenman, Rhodes, Ryan & Long, 2007; Rieh & Danielson, 2007). Ratings were slightly higher overall for messages relating to fire safety rather than to health, irrespective of the communicator. One explanation for this could be that health-related advice naturally involves more value-laden and difficult behaviour change, such as stopping smoking, compared to safety precautions such as switching off electricity plugs when not in use. It may also reflect that health-related advice is more apt to change over time with scientific developments and thus perhaps less reliable, or could be a recent phenomenon given the mixed portrayal of heath in the media (Benelli, 2003; Moberly, 2014) and exponential growth of online health advice available, including much misleading and poor quality advice (Diviani, van den Putte, Giani, van Weert, 2015) This may be reducing the public's willingness to accept advice provided personally by any professional (Sillence et al., 2006), and further work is needed to explore this.

Strengths and limitations

This cross-sectional study explored combinations of systematically varying topic and professional, in an imagined conversation, to explore their effects on ratings of source credibility by members of the public. The study gathered data from a relatively large convenience sample from the north-west of England and thus was adequately powered. The study researcher was mindful of researcher and response bias and so took care to recruit systematically to enhance representation from varied population groups and attempt to avoid any influence on participants' responses. However, given that there was only one researcher operating in busy public spaces, some participants who may have wished to take part may have missed the opportunity. Also, it is possible that the mere presence of the researcher could have influenced participants' responses. This was especially a risk where participants preferred to provide their responses verbally for the researcher to enter into the e-tablet. This was only the preference for a minority of participants, but should be regarded as a study limitation. The sample was recruited only from the north-west of England and, whilst health and social care role expansion is occurring across the United Kingdom, this may limit study generalizability.

The study asked participants about their initial impressions of hypothetical set of combinations rather than asking them to recall any real-life experiences of role expansion. This was to reduce recall bias and include those who may not have yet had direct experience of the role expansion phenomenon. Yet, we relied on participants accurately reflecting on their responses if in real-life, and using imagination if the combination did not directly apply to them (e.g., cot death for non-parents, or smoking advice for non-smokers). It is also likely that in a real-life scenario, impressions of source credibility may change across the course of a live conversation. Finally, three professionals and three topics were chosen and checked as representing a relevant set of examples pertinent to role expansion (e.g., NHS England, 2014b). It could be argued that GPs may be unlikely to be routinely delivering fire safety or cot death advice, yet these fall into the remit of social determinants of health (Marmot *et al*., 2008) and may arise in their day-to-day work. There are many other professional groups and topics involved in role expansion, so this study represents an initial exploration of the phenomenon.

Future research

Future research could explore the construct of source credibility further by manipulating the two other dimensions of source credibility or indeed all three, with a larger sample, to see how they interact with one another to form an overall perception. Replications of the study testing different combinations of public sector professionals and topics, as well as specific messages or behaviours, would also enable greater understanding of their source credibility. Live monitoring of multiple source credibility ratings along the course of a health behaviour change conversation would also be useful to establish if participants' initial impressions tend to change or be sustained. Replications in other geographical areas with different population groups are also important. Linking in with previous research in this area, qualitative or 'think aloud' studies could help build a more in-depth understanding of the influences on participants' perceptions of source credibility in a rapidly evolving digital culture and the implications for which professionals may be the ideal source of public health messages. Finally, it would be useful to test the effect of varying source credibility ratings on actual attitudes and health-related behaviours. Indeed, some researchers doubt the impact of source credibility, especially over time, where people may forget message source but remember and become more persuaded by content (the so-called 'sleeper effect', Hovland & Weiss, 1951).

Conclusions

In conclusion, this cross-sectional experimental questionnaire study found that source credibility may be somewhat linked to professionals' perceived specific area of expertise. Members of the public may perceive firefighters, GPs, and health visitors as caring and trustworthy sources of health and safety advice, but significantly more competent when delivering advice on topics congruent with their traditional rather than expanded prevention roles. Public-facing communications about role expansion could help this important global agenda become more acceptable for the public and facilitate its implementation.

Acknowledgements

Conflicts of interest

All authors declare no conflict of interest.

Author contributions

Eleanor Bull (Conceptualization; Formal analysis; Methodology; Supervision; Writing – original draft; Writing – review & editing) Matthew Mills (Data curation; Formal analysis; Project administration; Writing – original draft; Writing – review & editing) Lucie M.T. Byrne-Davis (Conceptualization; Formal analysis; Supervision; Writing – review & editing) Jo K. Hart (Conceptualization; Supervision; Writing – review & editing).

Data availability statement

The data that support the findings of this study are available on request from the corresponding author. The data are not publicly available due to ethical approval restrictions.

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