Author’s response to reviews

Title: How organisations promoting vaccination respond to misinformation on social media: a qualitative investigation

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Version: 1 Date: 05 Jul 2019

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Please note that I have attached the response to reviewer comments as a stand-alone document (Steffensetal_response to reviewer comments.doc’), categorised as 'supplementary material'. I have also pasted a version (without formatting) here.

Authors’ replies to reviewer comments for: How organisations promoting vaccination respond to misinformation on social media: a qualitative investigation

Authors: Maryke S. Steffens, Adam G. Dunn, Kerrie E. Wiley, Julie Leask

Thank you for the valuable feedback and recommendations for our paper. We have addressed each of the reviewers comments separately below. Please note that references to line numbers refer to lines in the 'clean' version of the amended paper.

Reviewer 1 (Salini Mohanty):

Reviewer 1, Comment 1: Introduction This section should be expanded to provide more of a background for readers--- Should include a statement that vaccine hesitant parents are more likely to turn to the internet for health info instead of healthcare providers and are less like to trust health care providers
Response: We have included a statement pointing to the notion that low confidence parents are likely to use the internet for health information (Line 41):

"The public are increasingly using social media to access health information (Fox, 2011), especially parents with low confidence in vaccination (Jones et al., 2012)."

Reviewer 1, Comment 2: Could also include that communicating messages to vaccine-hesitant parents can be difficult—Nyhan et al study—seeing pictures of kids who were sick with VPDs actually made their anti-vaccine beliefs stronger

Response: We address the notion that correcting misinformation may reduce intention to vaccinate among those with concerns about vaccine safety in the Discussion section of the paper. We chose to indicate the difficulties posed by these findings (referencing Nyhan et al.'s papers) in the discussion rather than the introduction.

Reviewer 1, Comment 3: Anti-vaccine parents have a strong presence online—one recent example was how they used the internet to help other parents find providers to provide medical exemptions in CA to avoid the new exemption laws.

Response: We have used Smith & Graham (2017) and Kata (2012) as useful references to cite evidence of the strong presence anti-vaccine activists have online (see Line 49).

Reviewer 1, Comment 4: This paper might be helpful to expand the intro—many of the points above are referenced in this paper: https://ajph.aphapublications.org/doi/10.2105/AJPH.2018.304567

Response: We have used this reference in our amendments to the Introduction (see Line 51).

Reviewer 1, Comment 5: Would also add something about trolls and bots from this paper as this is becoming a more prevalent issue

Response: We have added text to the Introduction referencing the role of bots and trolls in spreading misinformation (Line 51):

"Trolls and bots have been shown to post more frequently about vaccination than other users (Broniatowski et al., 2018), but their potential reach and impact has not been investigated."
Reviewer 1, Comment 6: Methods - Line 67—what was the specific criteria used to create this "shortlist" of organizations? Was there a way to determine how often they communicated about vaccines?

Response: We have added further detail in the methods section to clarify how we created our short-list (Line 83):

"Short-listed organisations were active on either Facebook or Twitter (posted in the last month) and were posting regularly (at least monthly) about vaccines and/or had run a vaccination-related campaign in the last 12 months. We chose to focus on activity on Twitter and Facebook as a marker of social media engagement because of their popularity as social media platforms in Australia (Sensis, 2016). Our final list consisted of organisations with a primary or major focus on vaccination in their social media communications."

Reviewer 1, Comment 7: - Data collection- were these interviews done in-person or over the phone?

Response: We indicate how interviews were conducted in the methods section (Line 93), and have updated the results section to explain how many interviews were conducted over the phone (Line 144):

"We contacted potential participants via email and phone, inviting them to participate in a 30 to 60-minute anonymous interview either in person or by phone."

"Each interview lasted approximately 1 hour; 16 took place over the phone."

Reviewer 1, Comment 8: It's not clear how the codebook was developed.

Response: We have amended the methods section to include further detail about how we used Framework Analysis to develop a ‘framework’ of index terms and used descriptions to help index the interviews in a systematic way (Line 113):

"We used Framework Analysis as it allows the use of pre-defined and emergent themes to guide analysis. Using NVivo 11 for Windows (NVivo qualitative data analysis software; QSR International Pty Ltd. Version 11, 2010), analysis followed the five stages outlined by Ritchie and Spencer: 1. Familiarisation, 2. Identifying a thematic framework, 3. Indexing, 4. Charting, and 5. Mapping and interpretation. We moved back and forth between stages throughout our analysis. After a small number of interviews, we familiarised ourselves with the data (stage 1). We then developed an initial framework (stage 2) from themes derived from the interview schedule and social media Risk Communication principles. Five a priori themes, derived from Veil et al's recommendations on incorporating social media tools in risk and crisis
communication, included: 1. Plan for using social media to communicate about risk; 2. Listen to and track audience concerns and issues; 3. Create a presence and interact to build credibility and trust; 4. Build partnerships; and 5. Be honest, forthcoming, and human. As we indexed the initial interviews (stage 3), we expanded and refined the framework into a useful structure with which to organise our data. Each index item within the framework was assigned a meaningful description. As we continued to interview, we indexed and summarised (stages 3 and 4) transcripts into a manageable data set, adapting the framework as necessary. In the final stage of data analysis (stage 5), we explored the data inductively and deductively using Risk Communication principles for patterns, attentive to similarities and differences between participant categories.

Reviewer 1, Comment 9: Are all the questions only based on the Risk Communication principles or did you have some a priori codes based on previous literature?

Response: We have amended the text to indicate that Risk Communication principles were used to guide the interview schedule, and while previous literature provided context, it was not explicitly used to determine the specific questions (Line 104):

"Previous literature provided context for the interview schedule; due to the limited availability of similar research, it did not inform specific questions."

Reviewer 1, Comment 10: What were the criteria for the participant to be eligible to participate in the survey? - It had to be the person who ran the social media page? Need more detail here.

Response: We have added more detail to the methods section to clarify that participants were eligible if they ran the social media page or developed the organisation’s social media strategy (Line 90):

"Eligible participants were consenting, English-speaking adults responsible for the day-to-day running of their organisation's social media page (individually or as part of a team) or for developing the organisation's social media strategy."

Reviewer 1, Comment 11: Results Line 109—were these 5 categories decided upon before data collection? Should include that in the methods—if you were purposefully trying to make sure you covered certain organizations then need to mention that in the methods first.

Response: As we created our initial list of organisations, seven categories of organisations became apparent. In line with our study aims, we wanted to sample organisations promoting vaccination. Thus, we sampled from the five categories that were obviously doing so, and
excluded organisations from the other two. We have amended the methods section to make this process clearer (Line 75):

"We compiled a list of Australian organisations promoting vaccination via a web search in October 2017 using the keywords immunisation, immunise, vaccination, and vaccine. We searched Facebook and Twitter using the same keywords, and explored their 'Following', 'Followers', and 'Friends' lists. When creating this list, we identified seven broad categories of organisations. We purposively sampled organisations from the following five unequivocally engaged in health promotion: advocacy groups, government health departments, health services, professional associations, and technical/scientific organisations. We excluded media and health information pages, and companies selling products or services related to vaccination, because they were providing information only, or selling a product."

Reviewer 1, Comment 12: Line 120- need to tell the reader the overall themes that were uncovered first then go through each of them in depth.

Response: We have amended the text to include a summary of the overall themes (Line 158) before we explore each individually:

"We identified multiple themes and sub-themes in our analysis. In this paper, we present five overarching themes relating expressly to vaccination promotion and misinformation. The first three themes pertain to participants' experiences and perceptions of the social media landscape and the actors in it: perceived threats to trust in vaccination on social media; how participants constructed their audience; and how participants saw themselves and their role. Figure 1 illustrates these themes and their associated sub-themes. The final two themes concern strategies to promote vaccination and neutralise misinformation. Figure 2 illustrates these themes and their associated sub-themes."

We have also included two figures to help the reader more fully grasp the themes (and associated sub-themes) relating to participant perceptions of the social media landscape and actors in it (Figure 1, see Line 166), and strategies to promote vaccination and neutralise misinformation (Figure 2, see Line 325).

Reviewer 1, Comment 13: Line 122- did they notice this in general while using Facebook or among people who interact with their page or posts? This is not clear

Response: We have amended the text to clarify that participants were describing comments attached to their own pages and posts as well as on other pages such as parenting groups or in relation to news media stories about vaccination (Line 173):
"Misinformation was encountered routinely, on Facebook in particular, both on participants' own pages and further afield. Vaccine-related news stories on Facebook, for example, were described as frequently inundated with comments containing distortions."

Reviewer 1, Comment 14: Line 188- the results up to this point really focuses on anti-vaxxers—the next section 'construction of their audience and themselves' might be better being introduced first to set up the rest of the themes. Knowing who their audience is important first.

Response: We have given this suggestion much consideration. After experimenting with rearranging the structure, however, we still feel that it is important to give the reader an understanding of how study participants viewed their environment before introducing themes relating to how they perceived of their audience. Some of the sub-themes in 'Constructions of audiences' (as well as 'Constructions of themselves') build on ideas introduced in 'Threats to trust in the social media landscape'. Thus, we have left the themes in the original order. We have, however, introduced a new figure (Figure 1, see Line 166), as well as the summary text outlining all the themes (Line 158), which we are confident improves how the reader is guided through the themes.

Reviewer 1, Comment 15: There seem to be multiple sub-themes under the larger headers—need to explore these in depth- for example, under 'construction of their audience and themselves' the authors talk about who the participants believe their audience is then another section within this larger theme talks about threats/hostility of anti-vaxxers- this to me in a sub-theme within itself…

Response: We have added sub-headings under each of the five main themes to improve the way the text guides the reader. The threat of anti-vaxxers is now identified as a clear sub-theme under the main theme 'Threats to trust in the social media landscape'. The new sub-headings are:

Under the main theme 'Perceived threats to trust in vaccination in the social media landscape': (Line 173) Misinformation; (Line 192) Anti-science sentiment; (Line 206) A complex narrative; (Line 218) Anti-vaccine activists as a further hazard.

Note that we have also split the theme originally titled 'Constructions of their audience and themselves' into two separate themes—'Constructions of their audience' and 'Constructions of themselves and their role on social media'. Because these ideas were distinct, we felt separating them would clarify the themes and sub-themes to the reader.

Under the main theme 'Constructions of their audience': (Line 265) Audience as information seekers; (Line 274) The silent audience.
Under the main theme 'Constructions of themselves and their role on social media': (Line 283) The role of information provider; (Line 298) Rational, reasonable, open and authentic.

Under the main theme 'Strategies to promote vaccination': (Line 328) Using facts and evidence; (Line 337) Humanising the threat of disease; (Line 353) Creating safe spaces.

Note that we moved the sub-theme 'Creating safe spaces' from under the main theme 'Constructions of themselves' to 'Strategies to promote vaccination'. Upon reflection, we felt that it was a better fit there because it described an action taken by participants, rather than a characteristic of themselves.

Under the main theme 'Strategies to neutralise misinformation': (Line 368) Partnering with the pro-vaccine community; (Line 367) A circumspect approach to responding; (Line 403) Tracking conversations; (Line 410) Strengthening the pro-vaccine voice.

Note that we have included 'Strengthening the pro-vaccine voice' as a sub-theme under the main theme of 'Strategies to neutralise misinformation'. Upon reflection, we identified this as a strategy working towards countering misinformation, rather than a stand-alone theme.

Reviewer 1, Comment 16: Do you have data generally on what other types of post these organizations post—is it strictly vaccine info or other health info? What format do they use? Mostly text? Text and images? Which do they think has been the most successful in engaging people?

Response: A little over half of participating organisations had an exclusive focus on vaccination; the remainder posted about vaccination as well as other health topics. We have added this detail to the results (Line 140):

"Eight organisations had an exclusive focus on vaccination; the remainder posted about vaccination as well as other health topics."

We did not specifically ask participants about the format of their posts. This topic did, however, come up indirectly in interviews when we asked them about strategies and challenges. While we agree that what constitutes an engaging post is an important topic, it did not fit within the scope, which was to focus on experiences of misinformation and perceived roles. We have not updated the manuscript to address this aspect of the comment.

Reviewer 1, Comment 17: Overall, there are many subthemes within the larger themes and they need to be explored more in-depth- with adding subtheme headers it will be easier for the reader to take away the main points.
Response: We have added headers to better identify the many sub-themes contained within the text (see response to previous recommendation). Where appropriate, we have expanded on ideas certain ideas to give the reader a richer understanding of the sub-theme. We provide three examples here. In this first example, we have added text further exploring health communicators' role as information providers (Line 283):

"Having cast their audience as information seekers—and hesitant parents as vulnerable to misinformation—participants' principal role was a provider of high quality information; an advocacy group participant (AG5) characterised their job as finding and sharing the "highest standard of information". More than a role, it was a 'responsibility'. Casting themselves as benevolent guides, they directed their audience to credible information in a misinformation-littered landscape and 'reassured' them of the value of vaccination with easy to understand information."

We also added text further exploring the notion of communicators promoting themselves as authentic (Line 313):

"Broadcasting their authenticity was a significant concern for advocacy group participants, who were mindful of reassuring their potentially wary audience of their trustworthiness and independence.

"I want [them] to go, 'Okay, so these guys are just quiet and rational, they provide information, they answer questions. They're not funded by the government, they're not funded by pharma. Maybe I should listen to what they're saying'." (Advocacy group participant AG7)

Some responded by highlighting shared experiences and concerns, such as being fellow parents. One advocacy participant (AG3), for example, pitched themselves to audiences as "just mums and dads" with "our own stories about how we came to be doing this" (Advocacy participant AG3)."

We added text exploring the meaning behind creating safe spaces on social media (Line 357):

"Almost all participants reported hiding or removing aggressive comments and reporting users to Facebook if necessary. Through these strategies, participants further revealed their impression of social media as a hostile environment, and audiences as in need of protection—mostly from belligerent anti-vaccine activists, but sometimes from unruly vaccine supporters as well."

Note that this is not an exhaustive list; we amended the text in multiple places in the Results section. Please refer to the main document for more examples.

Reviewer 1, Comment 18: Discussion Is the "silent observer" someone who doesn't comment on the public post but sends a direct message or someone who just observes comments? I'm not sure
the term works for the first part because these people still took some direct action by sending a message—these pages, at least on Facebook, can see who viewed their post and engaged with it—I'm sure a lot more people saw their post then engaged with it.

Response: The 'silent' audience are people on social media who are observing and listening. They are silent in the sense that they are not openly and publicly engaging on social media—commenting, liking or sharing posts—and thus do not have a voice and typical visible presence on social media. This is not to say that they do not respond or take action; they might discuss an issue offline or privately, for example, or even modify their attitudes or behaviour in response to something they observed. Some participants were aware of this audience because of private messages they received from people who indicated they had been watching but not participating. Despite this audience having sent messages, we believe our definition of silent observers is in line with Reviewer 1's definition as "someone who just observes comments" and the term is appropriate to use in this context. The term 'silent' is useful because it underscores a recommendation from our findings that health communicators must not merely focus on those people who are noticeable (visible or audible); they must also keep these silent observers in mind when developing their strategies.

We have amended the text in the Discussion to better define the 'silent' audience (Line 453):

"It may be important for those audiences who are silent, i.e. those observing but not openly and publicly engaging by commenting, liking or sharing posts."

Reviewer 1, Comment 19: The discussion is very long and hard to get through—consider drilling down to the main takeaways.

Response: We have made various edits to the text to reduce the word count of the discussion section by over 800 words (see Line 429 to Line 523).

Reviewer 2 (Amy E. Leader):

Thank you for the opportunity to review the manuscript entitled, "How organisations promoting vaccination respond to misinformation on social media". This is a well written manuscript on an interesting topic. Rarely do we hear from the personnel who are operating the social media accounts of organizations and how they are promoting vaccination and combating the anti-vaccine movement. A few comments for improvement:

Reviewer 2, Comment 1: In the abstract, include the total number of interviews conducted
Response: We have amended the abstract text to include the total number of participants interviewed (Line 12):

"Using qualitative methods, we purposively sampled 21 participants responsible for routine social media activity and strategy from Australian organisations actively promoting vaccination on social media."

Reviewer 2, Comment 2: In the main document, include a Table 1 that is a description of the participants who completed an interview

Response: We have added a table showing number of organisations, participants and participant background by organisation category (Line 152). We have also amended the text to remove the information now displayed in the table (Line 144):

"Participants represented organisations from each of the 5 categories. Most were media and communications professionals (communications or social media officers); some had a background in science and health (public health professionals, nurses, doctors). A small number were involved in social media for personal or other reasons. Participants held both paid and volunteer positions, and all contributed daily to their organisation's social media activity. Table 1 shows the number of participating organisations, participants and participant background by organisation category.

Reviewer 2, Comment 3: In the main document, consider including a Figure 1 that depicts the Risk Communication framework

Response: We have amended the Methods section to indicate how the themes we used were derived from Risk Communication principles (Line 119):

"We then developed an initial framework (stage 2) from themes derived from the interview schedule and social media Risk Communication principles. Five a priori themes, derived from Veil et al.'s recommendations on incorporating social media tools in risk and crisis communication, included: 1. Plan for using social media to communicate about risk; 2. Listen to and track audience concerns and issues; 3. Create a presence and interact to build credibility and trust; 4. Build partnerships; and 5. Be honest, forthcoming, and human."

Reviewer 2, Comment 4: Page 12, line 210: what are "bespoke schedules"? This American reviewer isn't familiar with that term!
Response: We have removed the word "bespoke" and replaced it with the more commonly used term "individualised" (Line 289):

"Audience questions focused on vaccine safety, eligibility, and cost; although some were more technical, like requests for individualised schedules."