Author’s response to reviews

Title: Selling health and happiness How influencers communicate on Instagram about dieting and exercise: mixed methods research

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Author’s response to reviews:

Thanks and Comments to the Editor and the Two Reviewers

Dear Dr. Cosson,

We kindly thank you for your reply on May 15th and for inviting us to revise our manuscript for consideration in BMC Public Health as the largest open access public health journal in the world. We carefully considered your comments as well as those offered by the two reviewers Mrs. Danielewicz and Mrs. Sahlqvist to improve the quality of the initial draft of the manuscript. Please find below a point-by-point response in which we describe how we have addressed the reviewers’ input. All changes are highlighted in yellow in the revised manuscript. I also provided a word document with this point-by-point answer in the upload section.

Again, thank you for taking the time to critically review the paper. We truly appreciate the constructive input and comments and hope that our revisions meet your approval.

Yours sincerely,

Katharina Pilgrim

Walcker Endowed Professor for Management and Innovation in Health Care

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Reviewer #1 Anna Danielewicz, M.Sc.

No.   Comment

Authors’ Response

1   [...] the introduction should not be structured.

Thank you for your comments. We deleted the subheadings ‘state of knowledge’ and ‘objectives’ on pages 3 and 4.

2   Does "influence" range of selected accounts reaches the targeted population?

Thank you for your question. Special socio-demographic features of the followers are not visible to third parties. On the basis of published national Instagram user figures it is concluded that users between 13 and 24 are represented with an average of 56% on all accounts of individuals with a reach of over 100,000 followers. In addition we contacted a selected group of influencers in order to gain insights in the socio-demographic statistics of their followers. With a share of on average 40% followers were between 13 and 17.

3   What was the reason for selecting 50 accounts? How the change of accounts number could influence the results? Have considered any sample size justification?

Thank you for this comment. We added the necessary information regarding this question on page 6 line 148:

‘The 50th account selected had a count of 100,000 followers. In context of influencer-marketing, accounts with less than 100,000 followers are categorized as micro-influencers. Since our research aims to derive results for the most influential accounts (regarding follower counts) we chose all relevant accounts with 100,000 followers and more.’
4  Does selection of newest posts might be a source of bias (caused, e.g. time of year) here? Could a random selection of posts be more suitable?

Thank you again for this important question. We added additional information regarding this topic on page 6 line 154:

‘In order to assure the up-to-dateness of the data as quality criteria, the selection of newest posts is suitable for our research. The included postings, with the defined characteristics, were posted over different total periods from 5 to 40 weeks, eliminating the selection of newest posts as a source of bias.’

5  Does the selection of 20 posts is enough to characterise the content shared with the community by influencer?

Thank you for your question. With a total dataset of 1000 (20 postings of 50 influencers), a representative sample size was generated. Since we did not aim to investigate differences between the 50 influencers, a characterization of content by influencer was not necessary.

6  You mention quantitative analysis of 38 items - Could you list them?

Thank you very much for pointing out this issue. We added a list of the 38 items (page 7, line 162)

‘We coded the following 38 items for content analysis:

1. Total number of followers
2. Total number of likes
3. Like-rate
4. Total number of comments
5. Comment-rate
6. Number of hashtags
7. Display of food (yes/no)
8. Specification of displayed food (free text)
9. Unprocessed (yes/no)
10. Processed (yes/no)
11. Supplement (yes/no)
12. Display of sports related item (yes/no)
13. Person in sportswear (yes/no)
14. Display of naked body part (yes/no)
15. Display of naked arm (yes/no)
16. Display of naked chest (yes/no)
17. Display of naked back (yes/no)
18. Display of naked bottom (yes/no)
19. Display of naked abdomen (yes/no)
20. Display of naked leg (yes/no)
21. Number of displayed naked body parts
22. Display of visible muscles (yes/no)
23. Display of person during a sport-related activity (yes/no)
24. Display of brands (yes/no)
25. Specification of displayed brands (free text)
26. Segmentation of displayed brands (exercise/nutrition/other)
27. Food supplement (yes/no)
28. Healthy food (yes/no)
29. Diet programme (yes/no)
30. Energy drink (yes/no)
31. Sports apparel (yes/no)
32. Sporting footwear (yes/no)
33. Sports equipment (yes/no)
34. Fitness programme (yes/no)
35. Advertising labelling (yes/no)
36. Tag in picture (yes/no)
7. What was the reason for selecting the mentioned keywords? Where they searched as "hashtags" or free-text terms?

Thank you for your comment. We added further information on how we determined the keywords in the manuscript as well as in a new table. You can find the additional information starting on page 6 line 138

‘For the sample definition, relevant accounts communicating on nutrition and exercise needed to be identified. In order to generate a sense of the wording used on Instagram in this context, the research team examined the 100 most frequently used hashtags worldwide (1).

We identified the following hashtags as being relevant and employed them as keywords for searching in account names and profile descriptions:

- gym, fit, fitness, sport, nutrition, train, food.

Accounts were screened manually.

Figure 1 shows a flow chart of the quantitative sample selection.

8. Description of methods includes reseasoning for their selection as well as strengths and limitation which should be preferably done in the discussion, not in the method section. The section is hard for the reader to understand. Authors even in case of limited literature should try to describe their findings in the context of the previous findings. Furthermore, results should be critically discussed in the context of possible methodology limitation. In general, this section should be improved.

Thank you very much, we moved the mentioned paragraph to the discussion section, added more information (page 15 line 347) and improved the entire language and grammar used and added relevant recent results of previous literature:

‘There are some limitations to content analysis of Instagram-based data. Abbreviations, neologisms, mixed languages and an incomplete syntax characterize online conversations (2). This prevents automatic content analysis by programs or may lead to misinterpretations. Furthermore, there is no way to verify the accuracy of the user information. Instagram users may change their location, choose a different language, or provide incorrect information (e.g. their age) (3). The absolute numbers of followers, likes and comments must also be assessed as critical; a high interaction rate and large coverage increase the market value of an influencer (4). For this reason, different strategies can be used to artificially increase key figures and supposed
popularity (ibid.). So-called fake followers (also known as ghost followers) can be purchased from third-party providers (ibid.). In addition, it is possible to manipulate the number of likes and comments with the help of automated chat bots (ibid.).

Recent research shows that young women with low self-esteem, depression, the urge for perfectionism and being thin as an ideal of beauty are exactly those user groups who feel more attracted to social networks in order to experience confirmation and satisfy their personal need for security (5, 6).

Previous studies also provide helpful insight into the use of social networks as a tool for positive change in personal eating habits or body image: Social media channels are well suited as nudging tools with the aim of changing behaviour. The more social media content promotes identification, the more it is perceived as realistic. By containing meaningful images and highlighting the perceived parallels between sender and recipient, it has the power to influence users and shift perception (7, 8). Our results suggest that nutrition and movement content is received at a higher rate than the integrated advertising message. Products presented are commented on or scrutinised to a relatively negligible extent. The focus of observable reactions is on the person and personality of the influencer. Her (or his) figure and clothing, physical assets, and life story/history, are of special interest to followers. Our findings support results of previous research and call attention to Instagram’s effects on health behaviour (9, 10). Propagating esteem for one's own person, especially through influencers, may offer an innovative way of counteracting the negative effects that social media has on the contentedness of young women.'

In my opinion, the description of the quantitative part is highly limited here. You have mentioned of calculating frequencies, correlation coefficients etc. However, they are not described in any tables (only mentioned in some places in Result section) neither discussed in the manuscript.

Thank you for pointing this out. We used a sequential mixed method design with a preliminary quantitative study. Results built the baseline of the purposeful quantitative sample plan. We added this information on page 5 line 109 and page 8 line 206:

‘This study used a non-experimental cross-sectional research design. We applied a mixed methods approach. The sequential two-phase design begins with a quantitative study, followed by a qualitative one (11, 12). The qualitative sample depends on the findings of the quantitative analysis (13).’

‘Based on the frequencies, we selected cases for qualitative content analysis. A case was defined as a caption being the starting point of the digital interaction between influencer and followers, as well as any comments made by followers on the caption or content of the picture shared. The sample size was not determined by a quota but rather it was based on theoretical saturation. The final 27 cases split up in to 18 extreme and 9 typical cases based on the results of the qualitative
analysis (14). For example, one of the items in the quantitative codebook counted the types of food displayed in one picture. If you rank all types of food identified from being displayed least often to most often, processed food was displayed most and was therefore defined a case (maximum) in the qualitative sampling plan.’

10 There are some grammatical and punctuation mistakes. The used language is hard to understand in many places.

Thank you for reviewing the manuscript carfulls and pointing the language problems out. We went over the entire manuscript with the support of a native lector (Canadian) and improved the style, wording and grammar. All improvements regarding the language are highlighted in in manuscript in green.

Point-by-Point Response to the Comments of the Reviewers (PUBH-D-19-00368)

Reviewer #2 Shannon Sahlqvist

No. Comment Authors’ Response

1 The focus of the paper seems to be young people, yet the sample includes the top 50 accounts regardless of whether they target young people or not? Is it possible that some of these accounts are not aimed at young people, and if so how does this effect the results? Could the authors comment on this in the paper.

Thank you for your question. Special socio-demographic features of the followers are not visible to third parties. On the basis of published national Instagram user figures it is concluded that users between 13 and 24 are represented with an average of 56% on all accounts of individuals with a reach of over 100,000 followers. In addition we contacted a selected group of influencers in order to gain insights in the socio-demographic statistics of their followers. With a share of on average 40% followers were between 13 and 17.

2 Also, what proportion of the accounts were male influences and what proportion were female influencers?

Thank you for pointing this out. We added the information on page 6 line 153:
‘The sample consisted of 8 male and 42 female influencers regarded by the defined screening criteria.’

3 What is meant on page 8, line 174 - ‘we have evaluated the generated research material inductively, meaningfully reconstructing and interpretively’. Could the authors go into more detail about how the analysis was conducted?

Thank you for your advice. We deleted this sentence and described the method chosen for qualitative research in depth (page 9, line 232):

‘Reflecting analysis techniques in the field of qualitative social research, the qualitative content analysis according to Mayring was chosen. The process model according to Mayring is designed to simplify the starting material (15) and is therefore suitable for the large amount (8,089 comments) of material available within the scope of this research study. The aim is to work out the meanings of the selected communication strands in nine stages by means of a data-controlled, step-by-step coding. The individual case turns into a collection of characteristic features. The aim of the summary as an analytical technique is the systematic reduction of qualitative data sets to main contents, with abstraction creating a manageable corpus of data that still maps the basic material (16).’

4 Could Table 1 be made clearer please? While features 1, 2 & 3 are self-explanatory, the remaining are unclear. How were these data derived and what do they mean? On page 6, the authors write, 'In order to gain further insights, we selected 27 cases for qualitative content analysis'. The authors mention that a case is a heading being the starting point but this is not clear to me. And why these 27? The authors mention saturation - but could they go into a little more detail. The authors mention 18 extreme and 9 typical - what did they define as 'extreme' and what is 'typical'.

Thank you for pointing out this issue. We split up the table 1 into two tables (1 and 2) in order to describe our sample procedure better and added a source about purposive sampling with extreme and typical cases. (page 8, line 193)

‘Based on the frequencies, we selected cases for qualitative content analysis. A case was defined as a caption being the starting point of the digital interaction between influencer and followers, as well as any comments made by followers on the caption or content of the picture shared. The sample size was not determined by a quota but rather it was based on theoretical saturation. The final 27 cases split up in to 18 extreme and 9 typical cases based on the results of the qualitative analysis (14). For example, one of the items in the quantitative codebook counted the types of food displayed in one picture. If you rank all types of food identified from being displayed least
often to most often, processed food was displayed most and was therefore defined a case (maximum) in the qualitative sampling plan. Tables 1 and 2 summarise the selected features and their attributes.’

Table 1. Quantitative content analysis data on a cardinal scale, creating cases 1 to 15 for qualitative content analysis.

Table 2. Quantitative content analysis data on an ordinal scale, creating cases 16 to 27 for qualitative content analysis.

5 What are the 38 items that are referred to on page six, line 153?

Thank you very much for pointing out this issue. We added a list of the 38 items (page 7, line 162)

‘We coded the following 38 items for content analysis:

1. Total number of followers
2. Total number of likes
3. Like-rate
4. Total number of comments
5. Comment-rate
6. Number of hashtags
7. Display of food (yes/no)
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16. Display of naked chest (yes/no)
17. Display of naked back (yes/no)
18. Display of naked bottom (yes/no)
19. Display of naked abdomen (yes/no)
20. Display of naked leg (yes/no)
21. Number of displayed naked body parts
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23. Display of person during a sport-related activity (yes/no)
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30. Energy drink (yes/no)
31. Sports apparel (yes/no)
32. Sporting footwear (yes/no)
33. Sports equipment (yes/no)
34. Fitness programme (yes/no)
35. Advertising labelling (yes/no)
36. Tag in picture (yes/no)
37. Mention in post (yes/no)
38. Self-advertisement (yes/no)
On line 154 of this page, should it be techniques not technology?

Thank you for catching this. It should be techniques indeed, we changed it.

What is meant on page 3, line 64 - the ever increasing share of minors with morbid over-underweight poses major public health challenges?

This was expressed poorly. We changed it to:

‘The high rate of minors with morbid over- and underweight is of continuing public health relevance.’

Page 4 line 90 - is this per day?

Thank you for pointing this out, it is per day. We added this information.

As a whole, the results section is written like a discussion. It is not clear how the authors derive at most of the points. Adding illustrative quotes would add support to what the authors are saying. As an example, the authors write that 'sporting success is not measured by physical performance, but exclusively by visual appearance'. How did the authors derive at this? And 'on the one hand, the position of an expert is attempted with the help of rhetorical means and specifically selected content'. Could an example be provided? How does the influence consciously intend to create or increase perceive similarity between themselves and their followers?

A description of how the results were gathered was added in the methods section (see point 3). We decided to abstain from illustrative quotes as the analysed content is in German, mostly “textspeak” and with liberal use of emoticons. A translation would have been inadequate.

While the Chances and Risk section in the Discussion is interesting, I am not sure it is relevant to the results presented. It’s almost as if this could go in the introduction to reiterate the importance of the work. Perhaps the results and discussion could be combined.

We restructured the discussion section by moving limitations from the methods to the results section. Furthermore we added some critical discussion regarding results and recent research findings from a literature review, which makes the chances and risk section more clear. We followed the manuscript structure by BMC and therefore have the separate chapter results and discussion.
Literature


4. Hu Y, Manikonda L, Kambhampati S, editors. What We Instagram: A First Analysis of Instagram Photo Content and User Types. Eighth International AAAI Conference on Weblogs and Social Media; 2014; Tempe, AZ, USA: Association for the Advancement of Artificial Intelligence.


