Reviewer’s report

Title: Gender differences in the associations between age trends of social media interaction and well-being among 10-15 year olds in the UK

Version: 1 Date: 03 May 2017

Reviewer: Regina van den Eijnden

Reviewer's report:

Reviewer comments to author:

Although the topic of this paper is of great interest and the longitudinal sample with 5 measurement waves is very suitable for answering the research questions, there are several aspects of this paper that I find less satisfactory. The main issue I have with the paper is that it really misses a theoretical underpinning of why social media use would affect well-being, both in the introduction and in the discussion.

Below you find an overview of my comments regarding the paper.

Abstract

The abstract suggests that this longitudinal sample has 5 measurement waves among a total of 9859 participants, while this is not the case. It should be clearer to the reader about how many participants were involved in each measurement, and how many participants had longitudinal data on, for instance, at least 3 measurement waves.

Introduction

The authors use the term "young people" consistently throughout the paper but in the discussion the term "adolescents" is used. Maybe use the term "adolescents" consistently.

It is interesting to mention previous research on the relationship between media and physical health, but you should clarify earlier, or more precisely from the beginning on, that this study concerns mental health/mental well-being.
The introduction paper really misses a theoretical underpinning about why social media use would affect well being. Why would this be the case? What are the expected mechanisms, having in mind that active use of social network sites is much more than simply screen time and sedentary behaviour? These questions are not answered in the introduction.

p. 3, line 30: "..social media is…” should be "..social media are..". Social media is a plural.

p. 3, line 52-53. What exactly are the results of these longitudinal studies? Also I am missing relevant longitudinal studies, such as Kross et al., 2013!

p. 4, 7-16: This section about the meta-analysis on the longitudinal studies with the « negative but non-significant » and « positive and significant when lower quality studies are removed » is a bit confusing and could be improved.

p. 4, line 12-16: What does a positive longitudinal association between increased screen time and depression risk exactly mean. Is screen time predicting later depression, or is depression predicting later screen time?

p. 4, line 48-54: The conclusion that there may be differences in the relationship between social media use and positive and negative markers of well-being is in my view not sufficiently substantiated by the described literature in this paragraph.

Methods

As a reader, I would like to have more information about the longitudinal sample. How many adolescents are included in all 5 measurement waves, and how many adolescents participated in at least 3 (or 4) waves? Also, during which years the measurements took place (this is important because of the rapid changes in social media use)?

p. 5, line 24-25: Information about the adult sample is confusing, since the paper focusses on the youth sample.

p. 5, line 24: 16 year olds are not adults.
p. 5, line 30: Is it really ethical to only get verbal consent from the parents? How do you check this?

p. 5, line 54-60: The measurement of social media use is somewhat problematic. The first question about 'belonging to a social web-site' is oddly phrased. I would say that one has a profile on a social network site, and not that one belongs to a social media web-site. Also, the follow-up question is not including all forms of social media use. Why do the authors not include passive use of social network sites? A proportional amount of people do not chat or interact with others while being on a social media web-site, they just look at the posts of others. Additionally, the concept 'friend' is used. With this word you exclude interacting or chatting with for instance family members. Finally, what the authors call social media use is actually only the 'active use of social network sites' since it is not measuring the use of instant messenger functions, which is another important social media platform. I would therefore suggest to systematically use the term 'active use social network sites' or 'chatting on social network sites'.

p. 6, line 27: Which responses were possible with the 3-point scale?

p. 7, line 48-50: Do the authors have references for this specific method of model testing (change by age averaged across individuals)?

p. 7, line 52: "Four models were estimated, one for each well-being outcome, i.e. happiness and SDQ-models". Which four SDQ-models do the authors mean? In the method section the authors are not very clear about these four concepts. Also, in the result section the authors report on two models, the happiness and the SDQ total difficulties model. The authors are not consequent in the use of variable names and in the number of reported models, which I regard rather sloppy.

Results

In my view, the first paragraph of the result section should be included in the method section under participants.

p. 8, line 44-46 and 58-60: Please clearly specify which differences are significant (like is done later in the results section).

p. 8, third paragraph: Concerning the happiness standard deviation, I would suggest to put these values between brackets after the score (SD = 0.73). The point difference and SD for females should also be accompanied by the description of the decrease in happiness scores (now line 50-
52), to make the reading of the results somewhat easier. Thus something like: "A decrease in happiness scores was observed for females with a 3.60 point difference (SD = 0.73) from a high of 36.93…"

p. 9, line 24-25 and 30-32: Either write age in words or in numbers, not do both.

p. 11: Although I appreciate that the authors controlled for education level and ethnicity, I think the authors put too much effort in describing the results regarding these control variables, both in the result section as well as in the discussion. In my view, these analyses are of minor importance given the focus of this study as outlined in the introduction. Also the authors report quite some information about differences between ethnic groups, although I expect that the sample size is rather small. Are all ethnic groups of females and males large enough to report these findings? Please report n's in Table 3.

Discussion

First paragraph, conclusions could be stated more precisely. For instance the sentence "In the SDQ model only…… at age 10" (p. 12, line 4-5) could be written more clearly.

p. 12, line 9: "The findings indicate that……." Please add a sentence that this is not the case for males.

p. 12: I really miss a theoretical discussion about reasons why well-being at older ages is associated with active use of social network sites at age 10 among females. Why would this be the case? What are the expected mechanisms; having in mind that active use of social network sites (online communication with peers) is much more than simply screen time and sedentary behaviour? And what about third factor explanations?

p. 12, line 26-28 and 42: Is it allowed to refer to non-published data? I think not!

p. 13, line 16: It was unclear from the measurement section that the questions about social media use were specifically targeted for computer use, rather than smartphone apps.

p. 13, line 28-34: This particular limitation was not clear to me from the method section. This could be improved
p. 14, line 9: It is recommended to educate young people about the consequences of high levels of social media use. However, on basis of these data it seems advisable to educate parents (of 10-year olds) about strategies to prevent excessive social media use in their children as well.

References

p. 17 line 18 and 24. There is no time indication in the reference.

Text and grammar

p. 2, line 15: "The aim of this study is to...." should be "The aim of this study was to....".

p. 4 line 41-44. The construction of this sentence can be improved.

p. 4 line 52.: "...but not with lower levels of...

p. 5 line 16. Sentence needs to be in the past tense.

p. 5 line 42. The grammar in this sentence is not correct.

p. 5 line 46. Missing a 'dot' at the end of this sentence.

p. 5 line 52. Add the word question in the sentence and change the word asked to was: 'The first question was...'.

p. 7 line 2-6. This sentence is not correct.

p. 9 line 57: 'was' should be 'were'.

p. 12, line 2: 'was' should be 'were'. Social media is plural.

p. 13 line 22-26: This sentence is not correct.
Are the methods appropriate and well described?
If not, please specify what is required in your comments to the authors.

Yes

Does the work include the necessary controls?
If not, please specify which controls are required in your comments to the authors.

Yes

Are the conclusions drawn adequately supported by the data shown?
If not, please explain in your comments to the authors.

Yes

Are you able to assess any statistics in the manuscript or would you recommend an additional statistical review?
If an additional statistical review is recommended, please specify what aspects require further assessment in your comments to the editors.

I recommend additional statistical review

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