# PEER REVIEW HISTORY

# ARTICLE DETAILS

| TITLE (PROVISIONAL) | From "Screen Time" to the Digital Level of Analysis: Protocol for a Scoping Review of Digital Media Use in Children and Adolescents |
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| AUTHORS | Browne, Dillon; May, Shealyn; Hurst-Della Pietra, Pamela; Christakis, Dimitri; Asamoah, Tracy; Hale, Lauren; Delrahim-Howlett, Katia; Emond, Jennifer A; Fiks, Alexander; Madigan, Sheri; Prime, Heather; Perlman, Greg; Rumpf, Hans-Jürgen; Thompson, Darcy; Uzzo, Stephen; Stapleton, Jackie; Neville, Ross |

# VERSION 1 – REVIEW

| REVIEWER | Samantha Marsh<br>University of Auckland, New Zealand |
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| REVIEW RETURNED | 11-Jul-2019 |

| GENERAL COMMENTS | This manuscript presents the protocol for a scoping review on screen use measures, with the goal of developing a comprehensive screen use screening toolkit in children (0-18 years).<br><br>The scooping review aims to address an important gap in the field and will hopefully offer a much-needed solution to this ongoing issue.<br><br>The methodology is appropriate for the research question and is detailed, clear, and comprehensive.<br><br>My only two (very) minor comments would be (1) is an assessment of study quality beyond the scope of this type of review?, and (2) it would be good to see a definition of 'screening tool' at the outset (does it refer to a measurement tool or more than this, e.g. screening for problematic use).<br><br>I look forward to reading the results of this scoping review once it is completed. |
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| REVIEWER | Leigh Vanderloo<br>The Hospital for Sick Children, Canada |
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| REVIEW RETURNED | 23-Jul-2019 |

| GENERAL COMMENTS | Thank you for the opportunity to review this paper. Given the omnipresence of screens, gaining a stronger understanding of the conceptual, definitional, and methodological challenges in digital media use research. I have provided some comments that I believe will help strengthen the overall quality of the review. |
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| | The rationale for this scoping review could be more poignant. Past reviews have been conducted exploring total screen use in this population. Why is this specific scoping review necessary? What will it add to the literature beyond what has already been released (new national screen and digital sue guidelines for children and youth). |
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| | I understand the authors plan to confirm to the guidelines released by the Joanna Briggs Institute – however, it was unclear throughout their protocol of their adherence to these standards. As well, why did the authors not employ the new PRISMA guidelines for scoping reviews (Tricco et al., 2018)? |
| | I question whether a scoping review (versus a systematic review and/or meta-analysis) will be sufficient to address your third objective - integrate these findings into a consolidated screening toolkit. Too premature? |
| | Please elaborate and clarify what is meant by the following statement: "...exposure variable to theoretically integrating the "digital level of analysis" into models of human development". (pg 8) |
| | Should PubMed also be used to search for relevant papers? |
| | How will authors be searching for, screening, and evaluating the quality of grey literature? How will the findings from this work be synthesized with the per-reviewed papers? |
| | Please elaborate on the implications of the proposed review, specifically. This paper would be strengthened by the addition of some sort of discussion piece discussing next steps and implications. |

| REVIEWER | Dot Dumuid<br>University of South Australia<br>Australia |
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| REVIEW RETURNED | 30-Aug-2019 |

| GENERAL COMMENTS | Thank you for the opportunity to review this scoping review protocol paper. |
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| | This is a timely study. The findings will be of great interest and usefulness to researchers and clinicians. |
| | Some comments for the authors to consider: |
| | The second aim of the study includes mapping existing measurement tools, yet the third aim and much of the discussion talk about screening instruments/screening tool kits. Measurement tools for screen use and screening tools for screen use are not the same thing. In my understanding, measurement tools attempt to describe/quantify the phenomenon, whereas screening seeks to identify, for example, if someone is at risk of something. Can the authors please clarify if they are looking for measurement tools or screening tools, and whether they are planning to develop a measurement tool or screening tool or both? |
| | Abstract: typo in line 3 (should be "…are the methodological…") |
| | Aims: in Aim 2, are the "key dimensions" mentioned here the "core concepts" from Aim 1? Suggest using the same wording for both for better clarity. |
| | Strengths and limitations: have the authors identified any potential limitations other than restriction to the English language? |
| | Page 8: "screentime" written as one word here, but elsewhere as two words. |
| | I notice the search strategy key words do not include "Time-use recalls" or "time-use surveys" which are potential sources of screen time / media use. For example, the MARCA captures |

| | information on use of media such as TV, videogames and computers<br>Ridley K, Olds TS, Hill A. The Multimedia Activity Recall for Children and Adolescents (MARCA): development and evaluation. Int J Behav Nutr Phys Act. 2006;3:10. Published 2006 May 26. doi:10.1186/1479-5868-3-10<br>I look forward to reading about the findings from this study. |
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**VERSION 1 – AUTHOR RESPONSE**

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| Is an assessment of study quality beyond the scope of this type of review? | We agree with the reviewer that assessing study quality may be beyond this type of review. However, the majority of the workgroup felt very strongly about including this metric, thus, it was retained for the purposes of data collection. |
| It would be good to see a definition of 'screening tool' at the outset (does it refer to a measurement tool or more than this, e.g. screening for problematic use). | Examples added to the manuscript (pg. 7) to further clarify. |
| The rationale for this scoping review could be more poignant. Past reviews have been conducted exploring total screen use in this population. Why is this specific scoping review necessary? What will it add to the literature beyond what has already been released (new national screen and digital sue guidelines for children and youth). | We have added to the rationale for this review – specifically, that there is a need for integration in studies at the level of measurement. While much research has explored screen time and digital media interaction in children and adolescents in relation to child outcome, there are noted inconsistencies and inadequacies in the measurement of digital media use. This scoping review aims to identify and map empirically tested measurement tools in this area to begin to address these challenges. Therefore, we will not be studying actual digital media use in this population or clinical outcomes, but rather the measurement of digital media use; something novel and important to the field. This is outlined in the rationale section of the manuscript. |
| I understand the authors plan to confirm to the guidelines released by the Joanna Briggs Institute – however, it was unclear throughout their protocol of their adherence to these standards. As well, why did the authors not employ the new PRISMA guidelines for scoping reviews (Tricco et al., 2018)? | To further clarify, the Joanna Briggs Institute Reviewer's Manual will be used to guide the development of the review methodology and the reporting of the scoping review methods, results and analysis will conform to the PRISMA-ScR guidelines. This has been clarified in the manuscript. |
| I question whether a scoping review (versus a systematic review and/or meta-analysis) will be sufficient to address your third objective - integrate these findings into a consolidated screening toolkit. Too premature? | The reviewer is correct in that the scoping review will not yield a consolidated toolkit and we apologize for that ambiguity. Our scoping review will be used as the very first step in the process of creating a preliminary screening toolkit that will be further informed by a comprehensive and intensive psychometric measurement program. Notably, we have |

| | representation on our workgroup committee of scientists have undertaken this type of initiative in the past, including the developers of the NIH Toolbox system of measurement. These details have been added to the manuscript. |
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| Please elaborate and clarify what is meant by the following statement: "...exposure variable to theoretically integrating the "digital level of analysis" into models of human development". (pg 8) | Elaboration has been added to the manuscript. |
| Should PubMed also be used to search for relevant papers? | The OVID platform was chosen to search the MEDLINE database content due to its advanced search functions, including the adjacency operator (adj). This allowed for a good balance of precision vs recall in the search results for the screen time concept. PubMed does not have this search functionality and has therefore not been used. |
| How will authors be searching for, screening, and evaluating the quality of grey literature? How will the findings from this work be synthesized with the peer-reviewed papers? | We will use a systematic approach for evaluating the grey literature, consistent with recommendations for grey literature integration into knowledge synthesis by CADTH, Centre for Reviews and Dissemination, and chapter 6 of the Cochrane Handbook. These findings will be synthesized by comparing extracted data with and without grey literature to see if there is any substantive difference in results. This has been added to our manuscript. |
| Please elaborate on the implications of the proposed review, specifically. This paper would be strengthened by the addition of some sort of discussion piece discussing next steps and implications. | Implications of the proposed review are outlined in the "Objectives" section. Next steps have been added to this section as well. |
| The second aim of the study includes mapping existing measurement tools, yet the third aim and much of the discussion talk about screening instruments/screening tool kits. Measurement tools for screen use and screening tools for screen use are not the same thing. In my understanding, measurement tools attempt to describe/quantify the phenomenon, whereas screening seeks to identify, for example, if someone is at risk of something. Can the authors please clarify if they are looking for measurement tools or screening tools, and whether they are planning to develop a measurement tool or screening tool or both? | Both measurement and screening tools will be included in our study and considered in the development of toolkit. This has been clarified in the manuscript. |
| Abstract: typo in line 3 (should be "…are the methodological…") | Changes made as suggested. |
| Aims: in Aim 2, are the "key dimensions" mentioned here the "core concepts" from Aim | Changes made as suggested. |

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| 1? Suggest using the same wording for both for better clarity. | |
| Strengths and limitations: have the authors identified any potential limitations other than restriction to the English language? | Additional limitations added to manuscript. |
| Page 8: "screentime" written as one word here, but elsewhere as two words. | Changes made as suggested. |
| I notice the search strategy key words do not include "Time-use recalls" or "time-use surveys" which are potential sources of screen time / media use. For example, the MARCA captures information on use of media such as TV, videogames and computers<br>Ridley K, Olds TS, Hill A. The Multimedia Activity Recall for Children and Adolescents (MARCA): development and evaluation. Int J Behav Nutr Phys Act. 2006;3:10. Published 2006 May 26. doi:10.1186/1479-5868-3-10 | The suggested phrases "time use recalls" or "time use surveys" were not included as key words. However, the search strategy developed for this scoping review accounted for time, usage, and measurement tools as separate concepts. Thus, we are confident that our search strategy will capture these methods. The Ridley article cited by Reviewer 3 will be captured in the results from the search strategy provided in the protocol, however it is excluded because it was published before our 2014 date limit. |

## VERSION 2 – REVIEW

| REVIEWER | Leigh Vanderloo<br>Canada |
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| REVIEW RETURNED | 06-Oct-2019 |

| GENERAL COMMENTS | The authors of addressed all of my comments - thank you. I recommend a final read-through of the manuscript to catch any remaining typos or grammatical errors. I also did not see the addition of limitations to this paper. |
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| REVIEWER | Dot Dumuid<br>University of South Australia, Australia |
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| REVIEW RETURNED | 07-Oct-2019 |

| GENERAL COMMENTS | The authors have addressed all my comments. |
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