Author's response to reviews

Title: Combined television viewing and computer use and mortality from all-causes and diseases of the circulatory system among adults in the United States

Authors:

Earl S. Ford (eford@cdc.gov)

Version: 3 Date: 14 December 2011

Author's response to reviews:

Reviewer: Anders Grøntved
Reviewer's report:

Minor Essential Revisions
Please make it explicit in the Discussion that the analysis did not discriminate between TV viewing and other screen based exposures when discussing why the study failed to show an association. Exposure to prolonged TV viewing is probably a package of sedentary behavior and other unfavorable lifestyle exposure such as unhealthy diet. Thus, the total screen time exposure in this study is probably not the same as in the pure TV viewing studies. This should be highlighted.

Reviewer: David W Dunstan
Reviewer's report:

Major Compulsory Revision:
The Author States that "The reasons for the dissonant findings are not entirely clear. All four studies used self-reported information to assess screen time although the questions in the studies differed." One of the other differences between some of these four studies and the present study is the wording of the TV question. For example, the AusDiab study explicity requested respondents to report the time spent where this was the primary activity being undertaken. This therefore did not include the time when the television was on, but other tasks were being undertaken (eg: preparing meals). With this approach it is assumed that the TV viewing time encompasses only the time spent sitting watching the TV. In the present study, this distinction was not made, thereby making it possible for some of the TV time recorded to include time where non-seated TV watching was undertaken. Could the author please speculate on whether this may have contributed to the dissonant findings? The other limitation of not capturing weekend and weekdays separately has already been addressed in the revised manuscript.

RESPONSE: Because both of the reviewers raise issues related to the
measurement of screen time, I thought it might be appropriate to expand the discussion concerning this topic. Therefore, I removed the following material from the limitations (“Unfortunately, the question asked of participants in NHANES combined television viewing with computer use which did not allow the separate estimation of risk of the two sedentary behaviors. An additional limitation of the assessment of screen time in NHANES is that the surveys did not include separate questions for days during the week and weekend.”) and incorporated these thoughts into the following new text:

“Because the question or questions used to measure screen time constitute a critical aspect of the prospective studies, it is interesting to note that all prospective studies to date differ in their assessment of screen time. The Aerobics Center Longitudinal Study assessed average weekly time spent watching television; the Australian Diabetes, Obesity, and Lifestyle Study assessed total time spent watching television during the previous 7 days excluding time that the television was turned on but was not being watched; the European Prospective Investigation into Cancer and Nutrition Norfolk Study asked about time spent watching television on weekdays and weekends; and the Scottish Health Survey assessed the time spent watching television, using a computer, or playing video games on weekdays and weekends.

Consequently, some of the heterogeneity in the findings of the four studies examining the relationship between screen time and all-cause mortality and five studies of screen time and cardiovascular mortality might be attributable to the differences in questionnaires used to assess screen time. First, three of the previous studies assessed only the time spent watching television or watching videos [13,14,16], whereas the third study, like the present one, assessed the time spent watching television, using a computer, or playing video games [15]. However, one of the first three studies failed to produce a significant association between screen time and cardiovascular disease whereas of the two studies that included time spent watching television, using a computer, or playing video games, one study reported a significant association [15] and the present study did not. Thus, it seems unlikely that this aspect of the questions about screen time explains the variation among studies. Nevertheless, the health effects of prolonged television viewing, which has been related to other unhealthy lifestyle behaviors notably unhealthy dietary elements, conceivably differ from those of prolonged use of a computer or playing video games.

Second, one study that reported significant associations between screen time and mortality from all-causes and cardiovascular disease attempted to limit screen time to the time that participants specifically watched television and not to the time that the television was turned on [13]. However, among the remaining four studies that did not involve this methodological twist, two studies produced positive findings for mortality from cardiovascular disease [15,16] and two studies, including the present one, produced negative findings [14]. This aspect of the study questionnaires also does not appear to readily explain the different findings of the studies.

Third, some studies measured screen time separately on weekdays and weekend days [15,16] although not all studies were clear about this aspect of the
exposure assessment. In the present study, screen time was not separately assessed for days during the week and weekend.”