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Letter to the Editor

Is poor sleep, and loneliness linked by increased use of technology?

Using data from a UK nationally-representative cohort, Matthews and colleagues found that young adults who report feeling lonely were also likely to report poor sleep (Matthews *et al.* 2017).

The researchers were able to attribute the findings to individual experiences of loneliness and account for shared environmental exposures and genetic factors between the twins by examining differences in loneliness and sleep between monozygotic twins. In a second key finding, it was reported that exposure to victimisation moderated the association between loneliness and sleep quality. Whilst the effects found were modest, they appeared robust, even if no casual effect could be determined; however, they did find a dose-response relationship between reduced sleep and increased level of victimisation.

It is already known that the link between loneliness and sleep is not accounted for by: depression; BMI; or other health-related behaviours (Cacioppo *et al.* 2002; Hawkey *et al.* 2010). Furthermore, not all children who were lonely suffered from poor sleep, so draws debate to the potential moderating factors. The researchers established that individuals exposed to victimisation experienced greater loneliness and poor sleep, and this was exacerbated by severe victimisation. Whilst this study controlled for many confounders and moderators one of the few individual widespread exposures not able to be controlled for in this study was the use of screen-based technology (herein defined as device use). There is already an argument that the effect of loneliness is associated with both increased device use, and poorer sleep, as bored children turn to their device for companionship (Carter *et al.* 2016; Lleras & Panova, 2016; Ndasauka *et al.* 2016). Health consequence may follow in the extreme cases, as highlighted by Henry David Thoreau who wrote that the problems that arise when people become 'tools of their tools' and today many children are addicted to their device (Thoreau, 1864). The consequence of heavy usage has already been linked to loneliness (Cacioppo *et al.* 2002) as well as a multitude of poorer health outcomes,

including loss of sleep, and poorer physical and mental health (Gradisar *et al.* 2013; Owens & Committee a ASWG, 2014). It has been reported that greater loneliness traits have been reported in those children with the greatest intensity of device usage (Ndasauka *et al.* 2016). Recent evidence has pointed to device use (or merely access) being linked to poorer sleep quantity, and quality, even when the device are not being used, but were present in the bedroom.

It has been argued that evening device use led to cognitive engagement, linked with poorer sleep (Carter *et al.* 2016), and a possible cause of the loneliness (Cacioppo *et al.* 2002; Carter *et al.* 2016). Examples of engagement may be wide ranging from: peer engagement in social media; anticipation; fear of missing out; or in extreme cases cyber bullying; or victimisation, as highlighted by Matthews *et al.* (2017).

Whilst the overriding net effect of technology on our lives is positive, it is not without consequence (Lleras & Panova, 2016; Ndasauka *et al.* 2016). There is limited guidance on media device use by the American Academy of Pediatrics (Chassiakos *et al.* 2016; Hill *et al.* 2016), but it needs development and translation into practical implementation for parents and schools. Since harmful use of technology by children would be seen by teachers, as the first to notice the signs and symptoms of daytime sleepiness, or withdrawal due to loneliness or victimisation.

I conclude, there is need to differentiate between our devices, and our relationships, that education on the short-term consequences of device is warranted. We need to recognise chronic sleep deprivation sooner, and explore the cause, if for no other reason to rule out screen-based addiction and victimisation.

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