A square world: Exploring the use of automated wearable cameras to measure screen use in adolescents

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Aims
Tablets, computers and mobile phones are an important aspect of modern living, however there is concern that excess recreational use of these devices increases sedentary activity and adversely affects sleep.

The aim of this research was to pilot the use of the Brinno TLC120 automated camera to investigate their potential to measure evening screen use in adolescents.

Sample
- n=15 (4 boys; 9 girls) 
- Dunedin, New Zealand teens 
- 13 to 17 years 
- Recruited via posters, Facebook posts and word of mouth

Camera
- Automated camera (Brinno TLC120) 
- 15 sec interval 
- 3 evenings: 5pm to bed 
- Actigraph (wGTX-BT) - 7 days and nights

Coding
- TimeLapse2 open source software 
- Type of device e.g. TV, phone 
- Activity e.g. gaming, social media 
- Environment e.g. living room, bedroom bed

Results
Table 1 Compliance to wearing camera until bedtime

<table>
<thead>
<tr>
<th>Wear time (mins)</th>
<th>n</th>
<th>Mean (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Evening 1</td>
<td>13</td>
<td>296 (241, 350)</td>
</tr>
<tr>
<td>Evening 2</td>
<td>13</td>
<td>288 (234, 342)</td>
</tr>
<tr>
<td>Evening 3</td>
<td>11</td>
<td>244 (188, 299)</td>
</tr>
</tbody>
</table>

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<thead>
<tr>
<th>Wear time (%)¹</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Evening 1</td>
<td>12</td>
<td>78 (65, 90)</td>
</tr>
<tr>
<td>Evening 2</td>
<td>12</td>
<td>67 (54, 80)</td>
</tr>
<tr>
<td>Evening 3</td>
<td>10</td>
<td>51 (38, 64)</td>
</tr>
</tbody>
</table>

¹ Wear time as a percentage of potential wear time (5pm until bed)

Some limitations in respect to measuring types of activities and wear time compliance were evident in this pilot trial.

Conclusions
Nearly half of evening time was spent using or watching screens. The automated cameras performed well in low light and have the potential to measure multi-tasking and intermittent screen use not easily captured in self-report. Some limitations in respect to measuring types of activities and wear time compliance were evident in this pilot trial.