**Applying the COM-B model to understand wearable activity tracker use in children and adolescents**

Supplementary materials

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| **Supplementary Table S1.** Survey questions and response options | | | |
|  | | **Question** | **Responses** |
| Demographic data | | * What is your Country of Residence? * What is your (parent/guardian) highest educational qualification? * What ethnicity is your child? * What gender does your child identify with? * What age is your child? | * Australia, Canada, New Zealand, United Kingdom, United States of America, Other: please state * No schooling, Primary education, Secondary education, Advanced subsidiary level, Advanced level, Undergraduate degree, Master’s degree, Professional degree, Doctoral degree (or equivalent for all), Other: please state. * White (e.g., English, Irish, Scottish, German), Black (e.g., African, Caribbean), Hispanic, Latino or Spanish original (e.g., Mexican, Cuban, Puerto Rican), Asian (e.g. Indian, Pakistani, Bangladeshi, Chinese, Korean), American Indian or Alaska Native (e.g. Navajo nation, Blackfeet tribe), Middle Eastern or North African (e.g. Egyptian, Syrian, Moroccan), Native Hawaiian or other Pacific Islanders (e.g. Fijian, Samoan), Mixed: White and Black Caribbean, Mixed: White and Black African, Mixed: White and Asian, Other: please state. * Male, Female, Non-binary, Rather not say, Other: please state. * 5 years, 6 years, 7 years, 8 years, 9 years, 10 years, 11 years, 12 years, 13 years, 14 years, 15 years, 16 years, 17 years. |
| **Psychological Capability**  Knowledge  Memory, attention and decision processes | | * Please select the statement that best described the term “moderate-to-vigorous physical activity” * According to the World Health Organisation, how many minutes of moderate-to-vigorous physical activity should children (5 to 17 years) participate in per day? | * Any bodily movement that results in energy expenditure, Any physical activity that is planned, and aimed to improve or maintain physical fitness, Any physical activity that makes your heart beat faster, Unsure. * Less than 15 minutes, 15 minutes, 30 minutes, 45 minutes, 60 minutes, More than 60 minutes, Unsure. |
| * How much does your child understand the term “moderate-to-vigorous physical activity”?   How much do you agree with the following statement:   * “My child understands what a wearable activity/fitness tracker is”.   How much do you agree with the following statement:   * “My child does physical activity without thinking about it” | * No understanding at all, Little understanding, Some understanding, A lot of understanding, Unsure. * Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Unsure. * Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Unsure. |
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| **Physical Capability**  Physical skills | How much do you agree with the following statements:   * “My child has the physical abilities to be active” * “My child has the technology skills to use a wearable activity/fitness tracker” | | * Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Unsure. |
| **Social opportunity**  Social influence | | Do you (parent/guardian) use, or have you previously used, a wearable activity/fitness tracker (e.g. Fitbit, Garmin, Misfit, Apple)? | * I currently use a wearable activity/fitness tracker, I have previously (but no longer) used a wearable activity/fitness tracker, I have never used a wearable activity/fitness tracker. |
| **Physical Opportunity**  Environmental context and resources | | Does your child have access to:   * WiFi/internet? * a smart device, such as a smartphone, computer or tablet? | * Yes, No, Unsure. |
| **Reflective Motivation**  Identity | | How much do you agree with the following statement:   * “My child is a physically active person” | * Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Unsure. |
| **Automatic Motivation**  Emotion | | How much do you agree with the following statement:   * “My child does not enjoy being physically active” | * + Strongly agree, Agree, Neither agree nor disagree, Disagree, Strongly disagree, Unsure. |
| Wearable use | | * Does your child use, or have they previously used, a wearable activity/fitness tracker (e.g. Fitbit, Garmin, Misfit, Apple)? | * My child currently uses a wearable activity/fitness tracker, My child has previously (but no longer) used a wearable activity/fitness tracker, My child has never used a wearable activity/fitness tracker. |
|  | | **Currently using/previously used:**   * What is/was the reason(s) for your child using a wearable activity/fitness tracker?   **Previously used:**   * What was the reason(s) for your child stopping using a wearable activity/fitness tracker?   **Never used:**   * What is the reason(s) for your child not using a wearable activity/fitness tracker? | * Interest in new technology, Track/monitor physical activity, Increase physical activity, Track/monitoring health unrelated to physical activity (e.g. diet, sleep, water intake), Aid weight loss, Their peers use similar devices, They are fashionable, Unsure, Other: please state. * My child lost interest in the device, The device broke, Lost the device, The device did not accurately track my child’s physical activity, The device did not increase my child’s physical activity, The device did not aid weight loss, My child did not enjoy using the device, The device became unfashionable, My child’s peers no longer used similar devices, Unsure, Other: please state. * Too expensive, No interest in using a device, Uses another way to track/monitoring their physical activity (e.g. app), Devices are unfashionable, Would not enjoy using a device, Does not need to increase their physical activity, Does not know what a wearable activity/fitness tracker is, Unsure, Other: please state. |
|  | | **Currently using/previously used:**   * How long has/did your child used a wearable activity/fitness tracker? * On average, how often does/did your child use a wearable activity/fitness tracker?   **Previously used:**   * When did your child stop using a wearable activity/fitness tracker? | * Less than 1 month, 1-5 months, 6-11 months, 1 year – 2 years, More than 2 years, Unsure. * Multiple times a day, At least once a day, At least once a week, At least once a month, At least once a year, Less than once a year, Unsure.      * Less than 1 month ago, 1-5 months ago, 6-11 months ago, 1 year – 2 years ago, More than 2 years ago, Unsure. |

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| **Supplementary Table S2.** Parent and child capability, opportunity and motivation for physical activity and wearable use, n (%) | | | | |
|  | **Currently using** (*n=*252) | **Previously used** (*n=*150) | **Never used** (*n=*429) | **Total**  (*n=*831) |
| **Psychological capability** | | | | |
| **Knowledgea** |  |  |  |  |
| **Parent’s understanding of the definition ‘MVPA’b**  Any bodily movement…c  Any PA that is planned…d  Any PA that makes your heart beat faster  Unsure | 43 (17.1%)  35 (13.9%)  169 (67.1%)  5 (2%) | 27 (18%)  18 (12%)  103 (68.7%)  2 (1.3%) | 71 (16.6%)  60 (14%)  288 (67.1%)  10 (2.3%) | Total *n=*652  111 (17%)  91 (14%)  439 (67.3%)  11 (1.7%) |
| **Parent understanding of PA guidelines (minutes of daily MVPA)b**  <15 minutes  15 minutes  30 minutes  45 minutes  60 minutes  >60 minutes  Unsure | 0  10 (4%)  83 (32.9%)  16 (6.3%)  108 (42.9%)  23 (9.1%)  12 (4.8%) | 0  7 (4.7%)  57 (38%)  4 (2.7%)  53 (35.3%)  16 (10.7%)  13 (8.7%) | 0  8 (1.9%)  169 (39.4%)  19 (4.4%)  145 (33.8%)  39 (9.1%)  49 (11.4%) | Total *n=*652  0  21 (3.2%)  245 (37.6%)  32 (4.9%)  234 (35.9%)  63 (9.7%)  57 (8.7%) |
| **Child’s understanding of MVPA**  No understanding at all  Little understanding  Some understanding  A lot of understanding  Unsure | 11 (4.4%)  35 (13.9%)  117 (46.4%)  83 (32.9%)  6 (2.4%) | 4 (2.7%)  18 (12%)  74 (49.3%)  47 (31.3%)  7 (4.7%) | 65 (15.2%)  90 (21%)  192 (44.8%)  63 (14.7%)  19 (4.4%) | 80 (9.6%)  143 (17.2%)  383 (46.1%)  193 (23.2%)  32 (3.9%) |
| **Child understands what a wearable is**  Strongly agree  Agree  Neither  Disagree  Strongly disagree  Unsure | 180 (71.4%)  64 (25.4%)  6 (2.4%)  1 (0.4%)  1 (0.4%)  0 | 97 (64.7%)  50 (33.3%)  0  2 (1.3%)  0  1 (0.7%) | 124 (28.9%)  160 (37.3%)  40 (9.3%)  43 (10%)  38 (8.9%)  24 (5.6%) | 401 (48.3%)  274 (33%)  46 (5.5%)  46 (5.5%)  39 (4.7%)  25 (3%) |
| **Memory, attention and decision processesa** |  |  |  |  |
| **Child does PA without thinking about it**  Strongly agree  Agree  Neither  Disagree  Strongly disagree  Unsure | 99 (39.3%)  87 (34.5%)  31 (13.3%)  26 (10.3%)  8 (3.2%)  1 (0.4%) | 57 (38%)  50 (33.3%)  22 (14.7%)  19 (12.7%)  2 (1.3%)  0 | 192 (44.8%)  155 (36.1)  38 (8.9%)  43 (10%)  1 (0.2%)  0 | 348 (41.9%)  292 (35.1%)  91 (11%)  88 (10.6%)  11 (1.3%)  1 (0.1%) |
| **Physical capabilities** | | | | |
| **Physical skillsa** |  |  |  |  |
| **Child has the physical abilities to be active**  Strongly agree  Agree  Neither  Disagree  Strongly disagree  Unsure | 208 (82.5%)  42 (16.7%)  0  2 (0.8%)  0  0 | 126 (84%)  22 (14.7%)  2 (1.3%)  0  0  0 | 354 (82.5%)  70 (16.3%)  2 (0.5%)  3 (0.7%)  0  0 | 688 (82.8%)  134 (16.1%)  4 (0.5%)  5 (0.6%)  0  0 |
| **Child has the technology skills to use a wearable**  Strongly agree  Agree  Neither  Disagree  Strongly disagree  Unsure | 181 (71.8%)  66 (26.2%)  4 (1.6%)  1 (0.4%)  0  0 | 94 (62.7%)  50 (33.3%)  3 (2%)  2 (1.3%)  0  1 (0.7%) | 158 (36.8%)  156 (36.4%)  45 (10.5%)  34 (7.9%)  23 (5.4%)  13 (3%) | 433 (52.1%)  272 (32.7%)  52 (6.3%)  37 (4.5%)  23 (2.7%)  14 (1.7%) |
| **Social opportunity** | | | | |
| **Social influencesa** |  |  |  |  |
| **Parent/guardian wearable use b**  Currently uses  Previously used  Never used | 201 (79.8%)  29 (11.5%)  22 (8.7%) | 85 (56.7%)  39 (26%)  26 (17.3%) | 200 (46.6%)  81 (18.9%)  148 (34.5%) | Total *n=*652  380 (58.3%)  119 (18.3%)  153 (23.4%) |
| **Physical opportunity** | | | | |
| **Environmental context and resourcesa** |  |  |  |  |
| **Child has access to Wi-Fi**  Yes  No  Unsure | 244 (96.8%)  8 (3.2%)  0 | 147 (98%)  3 (2%)  0 | 399 (93%)  27 (6.3%)  3 (0.7%) | 790 (95%)  38 (4.6%)  3 (0.4%) |
| **Child has access to a smart device**  Yes  No  Unsure | 248 (98.4%)  4 (1.6%)  0 | 147 (98%)  3 (2%)  0 | 396 (92.3%)  32 (7.5%)  1 (0.2%) | 791 (95.2%)  39 (4.7%)  1 (0.1%) |
| **Reflective motivation** | | | | |
| **Identitya** | | | |  |
| **Child is a physically active person**  Strongly agree  Agree  Neither  Disagree  Strongly disagree  Unsure | 133 (52.8%)  86 (34.1%)  18 (7.1%)  15 (6%)  0  0 | 71 (47.3%)  47 (31.3%)  18 (12%)  13 (8.7%)  1 (0.7%)  0 | 208 (48.5%)  152 (35.4%)  32 (7.5%)  31 (7.2%)  5 (1.2%)  1 (0.2%) | 412 (49.6%)  285 (34.3%)  68 (8.2%)  59 (7.1%)  6 (0.7%)  1 (0.1%) |
| **Automatic motivation** | | | | |
| **Emotiona** | | | |  |
| **Child does NOT enjoy PA**  Strongly agree  Agree  Neither  Disagree  Strongly disagree  Unsure | 8 (3.2%)  19 (7.5%)  29 (11.5%)  89 (35.3%)  107 (42.5%)  0 | 6 (4%)  24 (16%)  17 (11.3%)  44 (29.3%)  57 (38%)  2 (1.3%) | 10 (2.3%)  45 (10.5%)  70 (16.3%)  137 (31.9%)  165 (38.5%)  2 (0.5%) | 24 (2.9%)  88 (10.6%)  116 (14%)  270 (32.5%)  329 (39.6%)  4 (0.5%) |
| 1. TDF component. b. Total number of parent respondents *n=*652, but responses have also been sub-divided based on child wearable use (*n*=252, 150 and 429), c. Any bodily movement that results in energy expenditure, c. Any physical activity that is planned and aimed to improve or maintain physical fitness. | | | | |