Supplementary material

Design Fidelity Coding Manual

The aim of this coding manual is to facilitate the reliable identification of core intervention components in the audio-visual content of eMotion. This manual enables coders to identify content that conveys particular types of information or prompts specific actions which are theoretically essential to the interventions success. The coding categories are mutually exclusive and based on theory based constructs used to increase physical activity and reduce depression.

**Coding procedure**

Analysis should take place for **all content** including the introductory, core and unlockable and problem-solving modules. All coders should read through this manual and ensure they understand all categories especially the nuances between similar categories. Below are the steps a coder should go through when analysing each eMotion module.

1. Go through the entire intervention to get an idea of the common categories which may be present.
2. Go back through each module separately and rate ‘present’ or ‘absent’ for each category based on the combined audio/visual content.
3. Repeat Step 2, making any changes necessary.

**Tips for coders:**

* A **module** will be the basic unit of analysis.
* A category should be marked as ‘present’ as soon as the module has fulfilled that definition.
* A category should only be marked as ‘present’ or ‘absent’ once per module.
* All BCT’s referring to routine, pleasurable and necessary activities should be coded under **A** and all BCT’s referring to physical activities should be coded under B.
* Each module can have the same BCT for the both behaviours (e.g. goal setting for physical activity and routine, pleasurable and necessary activities), if this is the case then code for both.
* If you are not sure whether a technique is present, then rate ‘unsure’
* Each technique should specifically be in reference to the target behaviour (i.e. physical activities or routine, pleasurable and necessary)
* Each technique contains the term **“behaviour”** referring to a single action or sequence of actions that includes the performance of **wanted** behaviour(s) and/or **inhibition** (non-performance) of **unwanted** behaviour(s)

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| **No.** | **Technique** | **Definition** | **Example Content** |
| 1 (a/b) | Credible source | Present verbal or visual communication from a credible source in favour of or  against the behaviour | Present information given by an expert to emphasise the importance of following subsequent advice about (physical) activity |
| 2(a/b) | Information about  emotional consequences | Provide information (e.g. written, verbal, visual) about emotional consequences of  performing the behaviour | Explain that increasing (physical) activity increases happiness and life  satisfaction |
| 3(a/b) | Information about  health consequences | Provide information (e.g. written, verbal, visual) about health consequences of  performing the behaviour | Explain that increasing (physical) activity decreases risk of Type 2 diabetes |
| 4(a/b) | Demonstration of the  behaviour | Provide an observable sample of the performance of the behaviour, directly in person or indirectly e.g. via film, pictures, for the person to aspire to, or imitate | Demonstrate to participant how to be more (physically) active via a case study/example |
| 5(a/b) | Self-monitoring of behaviour | Establish a method for the person to monitor and record their behaviour(s) as part of a behaviour change/therapeutic strategy | Prompt patient to keep a record of their (physical) activity over the coming week |
| 6(a/b) | Monitoring of emotional consequences | Prompt assessment of feelings after attempts at performing the behaviour | Agree that the person will record  how they feel after (physical) activity |
| 7(a/b) | Graded tasks | Set easy-to-perform tasks, making them increasingly difficult, but achievable, until  behaviour is performed | Ask the person to walk for 100 yards a day for the first week, then half a mile a day after they have successfully achieved 100 yards, then two miles a day after they have successfully achieved one mile |
| 8(a/b) | Action planning | Prompt detailed planning of performance of the behaviour (must include at least one of context, frequency, duration and intensity). Context may be environmental (physical or social) or internal (physical, emotional or cognitive) (includes ‘Implementation Intentions’) Note: evidence of action planning does not necessarily imply goal setting, only code latter if sufficient evidence) | Prompt planning the  performance of a particular  (physical) activity (e.g. running/ going to the shops) at a particular time (e.g. before work) on certain days of the week |
| 9(a/b) | Goal setting (behaviour) | Set or agree on a goal defined in terms of the behaviour to be achieved Note: only code goal-setting if there is sufficient evidence that goal set as part of intervention; if goal unspecified or a behavioural outcome, code Goal Setting (outcome); if the goal defines a specific context, frequency, duration or intensity for the behaviour, also code Action planning | Agree on a daily (physical) activity goal  (e.g. 3 miles / go to friends house) with the person and reach agreement about the goal |
| 10(a/b) | Problem-solving | Analyse, or prompt the person to analyse factors influencing the behaviour and generate or select strategies that include  overcoming barriers and/or increasing facilitators (includes ‘Relapse Prevention’  and ‘Coping Planning’) | Prompt the patient to identify barriers preventing them from starting a new (physical) activity e.g., lack of motivation, and discuss ways in which they could help overcome them e.g., going to the gym with a buddy |
| 11(a/b) | Behavioural experiments | Advise on how to identify and test hypotheses about the behaviour, its causes and consequences, by collecting and interpreting data | Ask participant to do some (physical) activity rather than be sedentary and to note whether they feel better or worse. |
| 12(a/b) | Review behavioural goal | Review behaviour goal(s) jointly with the person and consider modifying goal(s) or behaviour change strategy in light of achievement. This may lead to re-setting the same goal, a small change in that goal or setting a new goal instead of (or in addition to) the first, or no change | Examine how well a person’s performance corresponds to agreed goals e.g. whether they were (physically) active at least twice this week and consider modifying future behavioural goals accordingly e.g. by increasing or decreasing physical activity target or changing type of physical activity |
| 13(a/b) | \*Internal prompts/cues | Introduce or define internal stimulus with the purpose of prompting or cueing the behaviour. The prompt or cue would normally occur at the time or place of performance Note: when a stimulus is linked to a specific action in an if-then plan including one or more of frequency, duration or intensity also code Action planning. | Recognise when feeling down to cue being (physically) active |
| 14(a/b) | Social reward | Arrange verbal or non-verbal reward if, and only if, there has been effort and/or progress in performing the behaviour (includes ‘Positive reinforcement’) | Congratulate the person for each day they were (physically) active |
| 15(a/b) | Framing/reframing | Suggest the deliberate adoption of a perspective or new perspective on behaviour (e.g. its purpose) in order to change cognitions or emotions about performing the behaviour (includes ‘Cognitive structuring’); If information about consequences then code 5.1, Information about health consequences, 5.6, Information about emotional consequences | Suggest that the person might  think of the tasks as reducing sedentary behaviour rather than increasing (physical) activity |
| 16(a/b) | Associative learning | Present a neutral stimulus jointly with a stimulus that already elicits the behaviour repeatedly until the neutral stimulus elicits that behaviour (includes ‘Classical/ Pavlovian Conditioning’) | Repeatedly pair (physical) activity with an increase in mood to encourage increase in physical activity |
| 17(a/b) | Instruction on how to perform a behaviour | Advise or agree on how to perform the behaviour (includes ‘Skills training’) | Advise the person how to be more (physically) active by increasing the frequency |