



City Research Online

City St George's, University of London

Citation: Martin, J. S., Chater, A. & Lorencatto, F. (2013). Effective behaviour change techniques in the prevention and management of childhood obesity. *International Journal of Obesity*, 37(10), pp. 1287-1294. doi: 10.1038/ijo.2013.107

This is the supplemental version of the paper.

This version of the publication may differ from the final published version. To cite this item please consult the publisher's version.

Permanent repository link: <https://city-ref-test.eprints-hosting.org/id/eprint/14188/>

Link to published version: <https://doi.org/10.1038/ijo.2013.107>

Copyright and Reuse: Copyright and Moral Rights remain with the author(s) and/or copyright holders. Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge, unless otherwise indicated, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way. For full details of reuse please refer to [City Research Online policy](#).

Supplementary Table 1

Additions and amendments to CALO-RE taxonomy items

Technique	Revised description (additions or amendments in bold)
T1	Information about the relationship between the behaviour and its possible or likely consequences in the general case. Information could be based on epidemiological data, presented in relation to health in general, or a particular health condition/behavioural change, aiming to raise general awareness and knowledge usually for a group of people , and not personalised for the individual (contrast with technique 2).
T2	Information about the <i>benefits and costs</i> of action or inaction to the individual or tailored to a relevant group based on that individual's characteristics (i.e. demographics, clinical, behavioural or psychological information). This can include any costs/ benefits of healthy behaviour and not necessarily those related to health, e.g. feelings, social consequences .
	NB. For both of the above codes: Where it is clear that information is provided on the consequences of behaviour to participants but the nature of that information is unclear (e.g. provision of 'health education leaflets', 'information sheets' or 'education'), further clarification should be sought regarding which type of information has been provided, or code as absent.
T4	Involves providing information about what other people are <u>doing</u> i.e., indicates that a particular behaviour or sequence of behaviours is common or uncommon amongst the population or amongst a specified group relevant to the intervention participants (e.g., norms in the local area) – presentation of case studies of a few others is not normative information. NB this concerns other people's actions and is distinct from the provision of information about others' approval (technique 3 [Provide information about others' approval]).
T5	The person is encouraged to make a behavioural resolution or pledge (e.g. take more exercise next week, eat healthily, switch off TV). This is directed towards encouraging people to decide to change or maintain change. For example, plan further lifestyle changes to improve nutrition and physical activity. NB This is distinguished from technique 6 and 7 as it does not involve planning exactly how the behaviour will be done and either when or where the behaviour or action sequence will be performed. Where the text only states that goal setting was used to achieve behaviour change , without specifying the detail of action planning involved then this would be an example of this technique (not technique 7 [Action

planning]). If the text states that 'goal setting' was used if it is not clear from the report if the goal setting was related to behaviour or to other outcomes, technique 6 should be coded. This includes sub-goals or preparatory behaviours and/or specific contexts in which the behaviour will be performed. The behaviour in this technique will be directly related to or be a necessary condition for the target behaviour (e.g. shopping for healthy eating; buying equipment for physical activity). NB check if techniques applied to preparatory behaviours should also be coded as instances of technique 9 (Set graded tasks).

T9

Set graded tasks

Breaking down the target behaviour into smaller easier to achieve tasks and enabling the person to build on small successes to achieve target behaviour. This may include increments towards a target behaviour, or incremental increases from baseline behaviour. NB The key difference to technique 7 lies in planning to perform a sequence of preparatory actions (e.g. remembering to take gym kit to work), task components or target behaviours which are in a logical sequence or *increase in difficulty over time* - as opposed to planning "if-then" contingencies when/where to perform behaviours. General references to *increasing* physical activity as intervention goal are not instances of this technique. **Also, this technique is different to technique 5, in that goals or recommendations made to participants that will enable them to achieve the target behaviour are not the same as setting smaller tasks to achieve and then moving on to the next task.**

T12

Provide rewards contingent on effort or progress towards behaviour

Involves praising or rewarding the person for attempts **towards** achieving a behavioural goal. This might include efforts made towards achieving the behaviour, or progress made in preparatory steps towards the behaviour (**e.g. rewarding small steps as participants are on their way toward achieving or maintaining the goal**), but not merely participation in intervention. This can include self-reward. NB This technique is not reinforcement for performing the target behaviour itself, which is an instance of technique 13 (Provide rewards contingent on successful behaviour).

T13

Provide rewards contingent on successful behaviour

Reinforcing successful performance of the specific target behaviour. This can include praise and encouragement as well as material **rewards (e.g., behaviour charts, reward stickers)** but the reward/ incentive must be explicitly linked to the achievement of the specific target behaviour i.e. the person receives the reward if they **have performed** the specified behaviour **task, or goal 100 %** but not if they do not perform the behaviour. This can include self-reward. Provision of rewards for completing intervention components or materials are not instances of this technique. References to provision of incentives for being more physically active are not instances of this technique unless information about contingency to the performance

of the target behaviour is provided. NB Check the distinction between this and techniques 7 (Action planning) and 17 (Prompt self-monitoring of behavioural outcome) and 19 (Provide feedback on performance).

T15

Prompting generalisation of a target behaviour

Once a behaviour is performed in a particular situation, the person is encouraged or helped to try it in another situation. The idea is to ensure that the behaviour is not tied to one situation but becomes a more integrated part of the person's life that can be performed at a variety of different times and in a variety of contexts. **For example, children might be encouraged to learn or adapt physical activities so they can be performed at home or in breaks at school, by themselves or with others.** This code is distinct from 26 in that the behaviour is then performed in a variety of situations rather than repeated, practiced or developed.

T16

Prompt self-monitoring of behaviour

The person is asked to keep a record of specified behaviour/s as a method for changing behaviour. This should be an explicitly stated intervention component, as opposed to occurring as part of completing measures for research purposes. This could e.g., take the form of a **lifestyle diary**, **habit log** or completing a questionnaire about their behaviour, in terms of type, frequency, duration and/or intensity. Check the distinction between this and techniques 17 (Prompt self-monitoring of behavioural outcome).

T21

Provide instruction on how to perform the behaviour

Involves *telling*, **teaching or giving training** to the person **on** *how* to perform a behaviour or preparatory behaviours, either verbally or in written form. Examples of instructions include; how to use gym equipment (without getting on and showing the participant), instruction on suitable clothing, and **suggestions, strategies or** tips on how to take action. Instructions to follow a specific diet or programme of exercise without instructions how to perform the behaviours are not included in this definition. Cooking and exercise classes as well as personal trainers and recipes should always be coded as this technique, but may also be coded as 22 (Model/ Demonstrate the behaviour). *Showing* a person how to perform a behaviour without verbal instruction would be an instance of technique 22 only. NB Check whether there are also instances of techniques 57, 8, 9, 22 **and** 35.

Providing instruction in new skills or behaviours is also part of this technique, as some intervention skills such as portion control, meal planning, preparing healthy food, label reading, and goal setting will be new to participants. Giving “instructions for making behavioural changes” or providing “nutritional education” does not give enough information to assign this code. The description of this technique must specify a behaviour(s) for which instruction is being provided (e.g., behavioural goals set in the intervention or explaining healthy lifestyle

T24 Environmental restructuring	activities) and does not simply involve telling participants to do something, but how they might achieve the change. The person is prompted to alter the environment in ways so that it is more supportive of the target behaviour e.g. altering/eliminating cues or reinforcers for the unhealthy behaviour, or breaking habits. For example they might be asked to lock up or throw away or their high calorie snacks, or take their running shoes to work. Interventions in which the interveners directly modify environmental variables (e.g. the way food is displayed in shops, provision of sports facilities) are not covered by this taxonomy and should be coded independently. The participant themselves must instigate these changes - Where it is specifically stated that the intervention itself alters the individual's environment to influence choices (e.g., advertising, altering school policies, school canteens or educational curriculum) this is not an example of this technique, check technique 23. This technique might also be referred to as 'stimulus control'.
T26 Prompt practice	Prompt the person to rehearse and repeat the behaviour or preparatory behaviours numerous times. Note this will also include parts of the behaviour e.g., refusal skills in relation to quitting smoking. This could be described as “building habits or routines” or “skill development” but is still practice so long as the person is prompted to try the behaviour (or parts of it) during the intervention or practice between intervention sessions, e.g. in “practice sessions” as “homework” or engaging in or practising specified intervention techniques (e.g. physical activity and other lifestyle changes) outside of the intervention setting. This code is distinct from 15 in that the aim is to repeat or practice behaviour rather than generalise to other situations.
T30 Prompt identification as role model/ position advocate	Involves focusing on how the person may be an example to others and affect their behaviour e.g., Parents setting a good example to children and acknowledging the impact of behaviour on others. Also includes providing opportunities for participants to persuade others of the importance of adopting/ changing the behaviour. For example, giving a talk or presentation, advocating a healthy lifestyle, or running a peer-led session.
T41 Exposure to healthy choices	Participants are encouraged to make their own choices between, for example, different healthy foods and physical activities as a means of increasing motivation and acceptance of healthy choices in a non-coercive way. Participants might be exposed to new foods or physical activities and are given opportunities to explore them, for example by tasting and handling unfamiliar foods. This technique is distinct from setting personalised goals, check technique 5 (Goal setting – behaviour).