



## Behaviour change communication targeting four health behaviours in developing countries: A review of change techniques

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### ABSTRACT

Behaviour change communication is vital for increasing the enactment of particular behaviours known to promote health and growth. The techniques used to change behaviour are important for determining how successful the intervention is. In order to integrate findings from different interventions, we need to define and organize the techniques previously used and connect them to effectiveness data. This paper reviews 24 interventions and programs implemented to change four health behaviours related to child health in developing countries: the use of bed nets, hand washing, face washing and complementary feeding. The techniques employed are organized under six categories: information, performance, problem solving, social support, materials, and media. The most successful interventions use three or even four categories of techniques, engaging participants at the behavioural, social, sensory, and cognitive levels. We discuss the link between techniques and theories. We propose that program development would be more systematic if researchers considered a menu of technique categories appropriate for the targeted behaviour and audience when designing their studies.

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### Introduction

Behaviour change communication is used by health programs to provide tailored messages and a supportive environment that persuades individuals and communities to make positive health behaviour changes. Many studies have examined behaviours like quitting smoking, dieting and exercise, since these are important contributors to urgent health issues in developed countries (Glanz & Bishop, 2010). However, it is becoming increasingly critical to address health issues in the developing world and to find new methods of promoting behaviours that might prevent illness. This is particularly the case for young children, namely those under 5 years of age, whose health is a priority. The need to improve the health of young children is reflected in Millennium Development Goal No. 4: to reduce by two-thirds, between 1990 and 2015, the under-five mortality rate. Despite this objective, the under-five mortality rate remains “unacceptably high” (United Nations, 2008) with approximately 7.6 million children dying before age five in 2010 (UNICEF, 2010). Specific health behaviours are known to prevent disease and mortality. This paper addresses four that are vital in reducing death and disability due to malaria, diarrhoea, trachoma and malnutrition.

The difficulty in eliciting healthy behaviour changes in spite of programs targeting these outcomes has been explored in both the developing and developed world (e.g., Bentley, Wasser, & Creed-Kanashiro, 2011; Hurley, Cross, & Hughes, 2011). A major limitation of many health behaviour change programs is the lack of a clear statement about the process of change and how it was implemented. This omission was raised by Davidson et al. (2003) and followed several years later by a taxonomy of change techniques (Abraham & Michie, 2008). For example, Davidson advised authors to report the concrete strategies used to bring about change, such as the message given, the medium used, and who delivered it. Specific processes of change are often tied to specific theories of change; for example, social learning theory emphasizes techniques such as modelling, reward, and practice (Bandura, 1986), whereas the Elaboration Likelihood communication theory emphasizes a match between the message and the recipient's ability and willingness to elaborate the message (Petty & Cacioppo, 1986). A number of recent articles have focused on the desirability of using theory to inform behaviour change programs (Glanz & Bishop, 2010; Painter, Borba, Hynes, Mays, & Glanz, 2008). The current paper complements this approach by addressing the need to specify techniques of change, in part because program developers search for techniques with evidence of success rather than theories. In other words, their goal is first to find an effective mix of techniques rather than to test a specific theory.

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Abraham and Michie (2008) provided an initial list of 26 change techniques used in research. These included techniques such as “provide information about others’ approval,” derived from theories that stipulate subjective norms as importantly related to behaviour and thus to behaviour change. Another was “model or demonstrate the behaviour,” from social-cognitive theory. A third was “prompting practice,” said to be associated with operant conditioning. There are a number of controversial issues to be noted here. One is that techniques are derived from more than one theory, and so their use does not directly test one theory over another. For example, prompting practice is associated not only with operant conditioning but also with social-cognitive learning theory, indeed with most learning theories, and is a cornerstone of improving self-efficacy. Thus, practice may be a particularly powerful technique if one’s goal is to change behaviour, though it will not allow for a test of one theory.

A second issue is that many techniques listed by Abraham and Michie (2008) are highly cognitive in nature and so are not techniques of choice with populations that are not “cognitively willing and able” to engage in the change message (Petty & Cacioppo, 1986). Most of the listed techniques are found in individual-focused interventions to change behaviour, such as providing information about others’ approval (called subjective norm), but not group-based interventions where actual norms are to be changed. Because so many individual-focused techniques are tied to cognitive constructs, such as subjective norms and intentions, the techniques are described largely in terms of the cognitive construct, while the activity or means of changing the construct is stated vaguely as “provide” or “prompt”. Additional techniques must be added to the list to cover those commonly used by programs found in developing countries, for example techniques based on practice rather than solely information, and delivered to groups rather than to individuals. Many program developers rely on a limited number of techniques, such as adult education (Holford, 1995), not because they are theory- or evidence-based, but because they have face validity.

In order to derive a more complete list of behaviour change techniques, we reviewed a limited number of high quality interventions from developing countries to identify the techniques used in each one. The focus was on four behaviours that are common goals for many child health interventions delivered in developing countries: caregivers using insecticide-treated bed nets (ITN) to prevent malaria; caregivers washing their own and their children’s hands at key times to prevent child diarrhoea; washing children’s faces regularly to prevent trachoma; and providing adequate amounts and diversity of complementary foods to prevent malnutrition in children. We examined six programs for each behaviour in order to identify the techniques used and their success. Our objectives were therefore to identify techniques of behaviour change used in developing countries to reduce child morbidity and mortality, to compare their use and effectiveness across studies, and to examine the role of theory in informing behaviour change techniques.

## Method

The co-authors identified intervention programs separately. One of the co-authors used review articles on complementary feeding and hygiene (e.g., Dewey & Afu-Afarwuah, 2008), while the other co-author searched databases, such as Medline and Global Health Ovid. Reference lists of recent publications and an ongoing systematic review of parenting interventions were also used. To be included in this selective review, an article needed to: report an evaluation of an intervention involving one of the four behaviours (use of bed nets, hand washing, face washing or complementary feeding); target children’s health (particularly age 5 and under); be

delivered in a low-income country; be delivered in a geographic community; be available in English and published between January 1980 and December 2010; preferably have a behavioural outcome or if not, then a health outcome, one of which showed significant change. In addition, we looked for high quality studies that provided detailed information about the intervention. For some behaviours, such as feeding, there were many papers, while for bed nets there were fewer because it may now be unethical to have a control group. To keep the number of studies across targeted behaviours equal, we selected the six that best fit our criteria. Final decisions about the inclusion of articles were made through discussion and consensus between the co-authors. This was a selective, not systematic, review.

Each intervention was described in terms of the characteristics of the change program and its evaluation (see Table 1), and in particular the behaviour change techniques used. Concerning the techniques, the co-authors independently identified techniques using the Abraham and Michie (2008) list of 26 techniques. After coding several, we reworded and defined some more clearly, and added nine more. For example, “teach to use prompts or cues” (#15) was reworded as “provide home-based cues to action”; “plan social support” (#20) was reworded as “arrange who would provide social support and how”. On the first 12 articles coded, agreement was 80%. One problematic code was “use follow-up prompts” after the intervention (#18) which was then reworded to refer to a delayed “booster session” or home visit that was nonetheless part of the intervention and not part of the assessment. Disagreements and remaining studies were coded by consensus.

The effectiveness of each intervention was assessed by nothing whether the result for each outcome was positive (desired direction), non-significant, or negative (undesired direction). Outcomes were categorized as observed behaviour (or behavioural indicator), self-reported behaviour, knowledge, and objective indicator of health. The knowledge outcome was included because many researchers felt it was important to change knowledge along with practice; although it could be tested as a mediator, no study had tested it as such. Objective indicators of child health were included because they are often the only outcome of interest to health researchers. Our primary interest was observed behaviour change, though the other outcomes provided useful evidence of change.

## Results

The results are organized to present techniques of behaviour change before describing the effectiveness of the interventions (see Table 2).

### *Techniques of behaviour change*

The goal was to examine techniques of behaviour change that may or may not overlap with those on the Abraham and Michie (2008) list. To their list we added others such as prompting recall of the message, arranging for authority/community/peer support, eliciting specific facilitators, engaging in problem solving, arousing competition among groups, providing materials, and providing or encouraging the development of visual or interpersonal media. However, rather than simply expanding the list, we found it more useful to organize techniques into six categories: Information, Performance, Problem solving, Social support, Materials and Media. The usual strategy of organizing into content versus mode of delivery was less useful because for most techniques the content was the practice itself, not a cognitive construct, and the mode of delivery was face-to-face oral communication. So, categories reflected the psychosocial domain through which participants were engaged to learn and maintain the practice, i.e., mode of

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