

The development of the “Water Campaign” Combining social marketing and intervention mapping

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Abstract

Purpose – This paper aims to present a description of the development and implementation of a combined school- and community-based intervention for the prevention of overweight among children, using the combined methods of social marketing (SMk) and intervention mapping (IM).

Design/methodology/approach – The SMk total process planning (TPP) framework was used, a simple but robust framework that consists of five stages: scoping, development, implementation,

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evaluation and follow-up. In addition, IM tools were embedded in the development stage to strengthen the development element of the campaign.

Findings – The use of the SMk TPP framework led to the selection of one specific target segment and behaviour. IM tools helped to select the most important and modifiable determinants and behaviours in the target segment, as well as to select and appropriately apply theoretical methods for influencing determinant and behaviour change. The resulting “Water Campaign” was aimed at Turkish and Moroccan mothers and their 6-12-year-old-children (target segment). This intervention addresses the consumption of sugar-sweetened beverages through the promotion of tap water drinking (target behaviour). The systematic involvement of key stakeholders resulted in capacity-building and co-creation.

Originality/value – A key finding of the present work is that the SMk TPP framework and IM tools can be successfully combined in intervention development, helping to develop enhanced interventions. Combining these methods led to a theory-based and client-oriented intervention, which was directed at multiple ecological levels and which systematically involved key stakeholders. With this detailed description of the intervention development, this paper aims to assist other researchers and practitioners in their quest to develop better interventions.

Keywords Health promotion, Social marketing, Intervention development, Intervention mapping, Overweight prevention, School community

Paper type Case study

List of abbreviations

EPODE	= ensemble prévenons l'obésité des enfants (together let's prevent childhood obesity);
EBF	= enjoy being fit!;
EnRG-framework	= environmental research framework for weight gain prevention;
IM	= intervention mapping;
SMk	= social marketing;
SSB	= sugar-sweetened beverages;
TPP	= total process planning.

Background

Obesity in children is linked to numerous adverse health outcomes later in life, making the high worldwide prevalence of childhood overweight a major public health concern (Hu, 2013; de Ruyter *et al.*, 2012; Ebbeling *et al.*, 2012). There is a call for integrated, effective and sustainable interventions at multiple ecological levels (Flynn *et al.*, 2006; Fagg *et al.*, 2014; Braun *et al.*, 2014; Van Koperen *et al.*, 2014).

In response to the high prevalence of overweight amongst children, the Enjoy Being Fit! (EBF) primary school programme was implemented in Rotterdam (The Netherlands) in 2005 (Jansen *et al.*, 2011). The programme was a success both regarding uptake by the stakeholders and impact on health outcomes and is currently run in approximately 50 per cent of primary schools in the Rotterdam area.

In 2010, a pilot intervention based on Social Marketing (SMk) was developed to improve the positive effects of the existing EBF programme. This pilot focused on parents' involvement in encouraging positive behaviour change with regard to their children's energy balance-related behaviours. Subsequently, the aim was to increase community involvement of stakeholders, given combined school- and community-based

interventions are more effective and sustainable than either school- or community-based interventions alone (Bleich *et al.*, 2013).

SMk has led to successful childhood obesity prevention interventions (UK Government, 2010; Evans *et al.*, 2010; Huhman *et al.*, 2010; Stead *et al.*, 2007; Mathews *et al.*, 2010). A major strength of SMk is its “client-oriented” focus, resulting not only in tailored interventions but also in improved intervention reception and acceptance (Borys *et al.*, 2012; French *et al.*, 2010; Griffiths *et al.*, 2008). In recent years, SMk methods have integrated the involvement of key stakeholders at various ecological levels (French *et al.*, 2010; US Government, 2014b). This is in line with best practice principles for community-based interventions (King *et al.*, 2011).

Interventions that make extensive use of theory tend to have larger and more sustainable effects on behaviour than interventions that make less or no use of theory (Brug *et al.*, 2005, Webb *et al.*, 2010). However, SMk methods currently provide limited guidance about how to embed the use of theories, models and theoretical behaviour change methods (Van Koperen *et al.*, 2014; Luca and Suggs, 2013). In addition, in a recent review analysing the use of different theories and models in SMk health interventions, it is argued that too often no report is being made about which theory is being used or how it is being used (Luca and Suggs, 2013). This lack of detailed guidance may lead to less adequate intervention design, which in turn may lead to interventions which are not as effective as they could be. General health promotion methods such as intervention mapping (IM) are frequently suggested when developing interventions because they can easily be used in combination with other methods (Griffiths *et al.*, 2008). IM is known to produce encouraging results with regard to health behaviour change interventions, including interventions that address childhood obesity (Taylor *et al.*, 2013; Verbestel *et al.*, 2011). The strength of IM is its extensive and structured use of behavioural and social science theories, as well as its provision of detailed tools to understand and influence behaviour (Bartholomew *et al.*, 2011). The city of Rotterdam therefore used IM tools in combination with SMk to develop a combined school- and community-based intervention for the prevention of overweight among children.

This paper presents a description of the development and implementation of this intervention, called the “Water Campaign”; a pilot intervention aimed at reducing children’s consumption of sugar-sweetened beverages (SSB) by promoting the intake of water. The effectiveness study of the “Water Campaign” showed positive intervention effects (van de Gaar *et al.*, 2014). This detailed description aims to assist other researchers in their quest to develop better interventions.

Methods

The pilot intervention was to be implemented in two relatively socially more deprived neighbourhoods in Rotterdam (The Netherlands). The Medical and Ethical Review Committee of the Erasmus Medical Centre issued a “declaration of no objection” (i.e. formal waiver) for this study (reference number MEC-2011-183).

IM tools were integrated and embedded in the SMk total process planning (TPP) framework. This TPP framework is a simple but robust framework to support effective intervention planning, development and delivery (French *et al.*, 2010). It was expected that the combination of the TPP framework with IM tools would allow the team to take full advantage of the strengths of each of these methods.

The TPP framework consists of five stages: scoping, development, implementation, evaluation and follow-up (French *et al.*, 2010). In this paper, we address the first four stages.

Scoping stage

The scoping stage is an iterative process which aims to build an in-depth understanding of the issue at stake and of the lives and behaviours of the target population, as well as identifying relevant stakeholders, barriers to change and community assets that can assist in bringing about positive change. Additionally, scoping involves gathering evidence about what types of intervention work. The scoping stage results in the choice of target behaviours and target segments.

Development stage

The objectives of this stage are threefold:

- (1) to develop a tailored intervention based on previously gathered information and selected behavioural goals;
- (2) to pre-test the intervention within the target segment; and
- (3) to refine the work if required.

In addition, involving key stakeholders during the scoping and development stages provides valuable expertise, ensures stakeholders buy-in and helps to turn potential opposition into allies.

IM tools were embedded in this stage. IM tools helped to select the most important and modifiable determinants for the target segments, as well as to select and appropriately apply theoretical methods for influencing determinant change (Bartholomew *et al.*, 2011).

Implementation stage

The objectives of this stage are to launch, implement, manage, monitor and, if necessary, adjust the intervention based on evaluation and feedback.

Evaluation stage

This stage aims to determine the extent to which the intervention objectives have been reached; what worked well, what did not and why; whether there were any unintended outcomes, both positive and or negative; and finally, what can be learned from this project to improve practice and other projects.

Findings

The results are described per stage of the TPP framework.

Scoping stage

A wide range of research was carried out, including:

- analysis of local epidemiologic data;
- selection of a behavioural model;
- information gathering about leisure activities;
- health;

- values and norms regarding upbringing of children;
- behaviour (change); and
- community groups.

Additionally, interviews and focus groups were conducted with the target audience to verify research findings and to gather more in-depth information on the potential target segments and their behaviours. Topics included themes such as:

- daily activities and issues that matter to parents and children;
- differences/similarities to citizens of Dutch descent;
- family roles and parenting practices;
- what is a good mother/father; and
- lessons learned from attempts to change lifestyle.

The most important findings were:

- children of Turkish and Moroccan descent together made up almost 60 per cent of the 6-12-year-old-children in Rotterdam who are overweight, whereas children from Dutch origin made up less than 10 per cent of this group (Krul *et al.*, 2012; Jansen *et al.*, 2011);
- citizens of Dutch descent of low socio-economic status are less receptive than other groups to information and interventions provided by the government and health professionals (Heutink *et al.*, 2010);
- when encouraging positive behaviour change with regard to their children's energy balance-related behaviours, more focus should be on parental involvement (Golley *et al.*, 2011; Sleddens *et al.*, 2011);
- more specifically, in migrant families it is the mother who is – in practice – the most closely and directly involved in the upbringing and care of the children (Pels *et al.*, 2009; Snoek *et al.*, 2010);
- the selection of the Environmental Research Framework for Weight Gain Prevention (EnRG-framework) as behaviour model (Kremers *et al.*, 2006); and
- the identification of 21 potential target behaviours in children through literature (Barlow and Expert, 2007; Swinburn *et al.*, 2004; van der Horst *et al.*, 2007).

In addition to target audience interviews, 15 professionals were interviewed (e.g. teachers, religious leaders and welfare workers) to inform the design of the intervention. The earlier findings were confirmed and the choice for mothers of Turkish and Moroccan descent as the potential target segment was supported (Krul *et al.*, 2012).

Four focus groups ($n = 24$) were conducted in which individuals from the potential target segments participated. The first two focus groups showed differences in parenting practices within this segment of mothers (Krul *et al.*, 2012). A distinction could be made between mothers who immigrated to The Netherlands either during adolescence or as an adult (≥ 12 -year-old, hereafter named “traditional mothers” and estimated to represent approximately 70 per cent of the Turkish and Moroccan mothers) and mothers who either had been born in or had immigrated to The Netherlands at a

young age (<12-year-old, so who attended primary school in The Netherlands, hereafter named “modern mothers”).

The other focus groups, one with “traditional mothers” and one with “modern mothers”, revealed that both groups of mothers appear to be deeply motivated to be “good mothers” (being a kind, loving and good caregiver and educator), in addition to having aspirations for a good future for their children (Krul *et al.*, 2012). Relevant differentiating beliefs between the two types of mothers are that “traditional mothers” appear to see being overweight as a sign of prosperity that can provide the individual with reserves in the event of ill health. While “traditional mothers” have lower levels of self-efficacy with regard to their parenting practice – “modern mothers” tend to be more confident – some are in search of practical tips and skills with regard to this aspect.

Using the gathered information, the following primary target segment was defined as: Turkish and Moroccan mothers of 6-12-year-old-children (both “modern” and “traditional mothers”).

For the selection of the target behaviour, we scored the potential target behaviours in children ($n = 21$) on their suitability for the intervention based on what was known on the prevalence of these behaviours among the children in Rotterdam (Krul *et al.*, 2012; Barlow and Expert, 2007; Swinburn *et al.*, 2004; van der Horst *et al.*, 2007). Given the knowledge that was gained about the target segment, decreasing the child’s SSB consumption was considered to be the most suitable potential behavioural target for further intervention development. The professionals verified our findings and acknowledged their shared observation of the widespread high daily consumption of SSB in children (4-7 SSB servings per day) (Krul *et al.*, 2012). In addition, the professionals claimed to have achieved encouraging results in decreasing consumption of SSB in practice, making this behaviour the most promising potential target behaviour. The widespread high consumption of SSB (35 per cent > 2 SSB servings per day) was further confirmed through analysis of local epidemiological data (Krul *et al.*, 2012).

During the focus groups, participants discussed the benefits and costs of this potential target behaviour. For example, participants identified “my child finds SSB delicious” as a benefit and “SSB is bad for the teeth” as a cost of the target behaviour. The costs and benefits of the desirable behaviour (no SSB) were also discussed with the target groups. Examples of answers provided are, namely, “my child is less busy and excited and can concentrate better” (benefit) and “I am a strict/severe mother if I give less SSB” (cost). These insights provided relevant information as to which determinants influenced the behaviour of the mothers and children and to what extent.

Given the information that we had gained, the target behaviour for children was therefore “decreasing consumption of SSB”. The desired behaviour was then specified as “drinking at least two servings of tap water per day”. There were several reasons for selecting this specific behaviour. First, interventions known to be effective in promoting water drinking have also shown results in decreasing consumption of SSB (Daniels and Popkin, 2010; Muckelbauer *et al.*, 2009; Sichieri *et al.*, 2009; Tate *et al.*, 2012). The literature indicates that working with a positive message often leads to positive results (Michale, 2004). A negative message, i.e. the advice to consume less or no SSB, could discourage or even provoke the opposite behaviour. Another reason for selecting this behaviour target was the necessity to keep the objective of the intervention as simple and specific as possible. There was a perceived need to avoid complicated advice

concerning total recommended daily amounts of liquids, as well as any advice about the consumption of beverages containing artificial sweetener. Finally, the fact that tap water is easily available and accessible, at no financial cost, was yet another argument in favour of a focus on the promotion of drinking tap water. The target behaviour goal for mothers was logically derived from the target behaviour goal for children, namely, “effectively serving tap water to their children (6-12- year-old) at least twice a day”.

Identification of relevant stakeholders. Two schools that had been selected for the evaluation of the “Water Campaign” were formally involved in the project development and implementation as partners. In addition, a neighbourhood analysis served to identify additional relevant stakeholders:

- the water supply company;
- local health professionals; and
- community and welfare organizations were also engaged in developing and delivering the intervention.

Development stage

Mobilization and involvement of stakeholders. For the “Water Campaign”, school partners (such as physical education teachers) were closely and directly involved in the development, pre-testing, planning and delivery of the intervention’s components which were to be implemented at school. Other stakeholders, in particular the local health professionals and community organizations, were encouraged to co-create and deliver the “Water Campaign” intervention’s components where applicable. Throughout the process, the project team made sure that the input of partners and stakeholders was acknowledged.

Intervention development. In addition to the mobilization and involvement of the stakeholders, the development stage comprised three other elements:

- (1) marketing mix analysis;
- (2) behaviour determinants analysis (i.e. IM); and
- (3) intervention development.

The marketing mix analysis. The starting point for the development of the intervention is to understand what it is that will assist individuals in the target segment in adopting or sustaining health behaviours. This involves positively and effectively connecting the recommended target behaviour to the reality experienced by these individuals (day-to-day life, priorities, challenges) and their deep motives (their dreams and what they value). Based on the findings from the scoping stage, a marketing mix analysis was performed. To begin with, we clarified the underlying benefits that individuals in the target segment obtain by performing the target behaviour. The most compelling benefits became part of the tailored “exchange” proposition. This proposition is a working proposition that serves to clearly establish how the desired behaviour of the target segment will consistently be framed and connected (i.e. positioned) to the deep motives of the target segment. All subsequently developed components of the intervention would have to conform to this exchange proposition. In this study, the tailored exchange proposition for the target segment was the mother sees giving water to her children at least twice a day as an important part of being a good mother and a prerequisite for the development of her child. This connected the target behaviour to the

mothers’ deep motive to “be a good mother” (being a kind, loving and good caregiver/educator) and to their aspirations for a good future for their children.

Then, the following elements were clarified:

- the real or perceived “costs” and barriers that the target segment faced when changing to the desired behaviour;
- the features and characteristics which could make the intervention attractive for the target segment (e.g. preferred types of activities/resources);
- the “places” where the various intervention components should be made available; and
- the “promotion”, i.e. how the various intervention components should be made known to the target segment.

The behaviour determinants analysis. To provide a strong theoretical basis for the development of the intervention, the EnRG-framework and IM were combined with the gathered knowledge and information. The team used the EnRG-framework – an integrated behaviour model combining an ecological perspective and the theory of planned behaviour – to help obtain a comprehensive overview of possible determinants of the selected target behaviour. Costs (i.e. price) and benefits of the desired and undesired behaviours identified earlier were integrated into this determinant analysis. IM tools were applied to score the importance and modifiability of the determinants for the target segment based on previously gained information. The analysis of these scores resulted in the selection of the most relevant and promising determinants. Thereafter, appropriate theoretical methods – i.e. general techniques or processes for influencing changes in determinants of behaviours of the target segment – were identified for each of the determinants selected. This was done using the IM summary of theoretical methods (Bartholomew *et al.*, 2011). Herein, it was important that the parameters of the method, i.e. the conditions under which the methods are shown to be effective, were carefully taken into account. Additional information about the determinant analysis can be obtained via the authors.

Campaign interventions development. A “brand” was developed as an overarching marketing concept for the entire campaign (PersuasiveBrands, 2008). For the development of the actual intervention, the types of activities and resources preferred by the target segment (e.g. group activities, magazines) served as the starting point. The specific “content” of the preferred activities and resources was then further developed through the embedding of various combinations of previously selected determinants and their associated theoretical methods. This provided sound theory-informed content for the preferred activities and resources. For each intervention component that had been developed, the theoretical parameters of the selected methods had to be addressed. The other elements of the marketing mix analysis such as “price”, “place” and “promotion” were also taken into account in the design of each of the intervention components, as was conformity to the exchange proposition.

Intervention components for mothers. Information from the focus groups revealed that mothers enjoy social contacts with other mothers in groups, in a convivial and cosy atmosphere. Taking “group activities” for the mothers as a preferred form of intervention design, the specific “content” was then further developed by integrating the previously selected “important and modifiable” determinants and their associated

theoretical methods. For example, knowledge (through the theoretical method active learning), attitude (through persuasive communication), skills (through modelling), self-efficacy (through goal setting) and subjective norm (through mobilizing social support) were combined together and formed the “pimp up my water jug” workshop.

Intervention components for children. Given that for the “traditional mothers” the determinant analysis showed a “modifiability” that was generally lower than expected (and considering that in Rotterdam approximately 70 per cent of the Turkish and Moroccan mothers are “traditional mothers” (Krul *et al.*, 2012), it was concluded that the intervention would also need to be directly aimed at children. In this way the mothers and children would “reinforce” each other in their “family system” (Kremers *et al.*, 2006).

A similar process was used for the development of intervention components for children. School interventions were given preference above interventions in other settings to ensure and contribute to optimal reach and implementation fidelity. Examples of activities are the “water lessons at school”.

Additional intervention activities. Water breaks during physical education lessons were introduced, targeting both parents and children. These breaks were facilitated and reinforced by giving the children a free water bottle and sending a letter to parents asking them to fill up the children’s water bottles at home at least three times a week for use during these physical education lessons. A full-colour, glossy magazine about water was specifically developed and produced. This was a direct result of the feedback provided by mothers during the pre-testing of the “pimp my water jug” workshop, in which mothers mentioned that they would like to have written information. Promotional materials such as posters (Figure 1) were offered to partners and local stakeholders, along with tips on how to promote tap water drinking.

Several stakeholders, inspired by the SMk principles and newly gained knowledge about the target segment, adapted some of their own interventions; some even created and implemented their own tap water promoting activities. For instance, by providing free water bottles during their summer activities for children. Another example of such an initiative was a family card game developed by the water supply company.

Implementation stage

The “Water Campaign” was launched in April 2010. In the following 15 months, all 14 intervention components were implemented (Table I). Though the “Water Campaign” was developed based on information of the target segment, the intervention itself was available for all children and families living in the two intervention neighbourhoods.



Figure 1.
The “Water
Campaign” posters

Timeline	Intervention components	For whom?	By who delivered?	Location?
April 2010	Kick-off "Water Campaign"	Children and parents	Sport city councilor and school director for parents; local sport role model for children	School
April 2010	Promotion materials and information for local professionals ^a	Children and parents	Local professionals	School, local professionals and community organizations ^b
June 2010-June 2011	Pimp up my water jug	Parents	Project staff	School and community organizations
June 2010 July-August 2010	Pimp up my water bottle Free water bottles for children during summer activities	Children Children	Project staff Welfare organizations ^c	School Community organizations
October 2010-June 2011	Water drinking during lessons at school	Children	Teacher	School
October 2010-June 2011	Water break during physical education lessons and free refillable bottles	Children and parents	Physical education teacher	School
November 2010	"Fill your water bottle here" – stickers	Children and parents)	Project staff and sport organizations	Sport facilities
March-April 2011	Water week, consisting of: Kick-off/water show Water week lessons Fun games/card game Storytelling/theatre Glossy water magazine Water ambassadors	Children and parents Children Children and parents Parents Parents Parents	Children's local sport role model Teacher Teacher Theatre group Home-school liaison officers School director	School

Notes: ^aLocal professionals: general practitioners, dieticians, dentists, physiotherapists, lifestyle advisors, youth health services; ^bCommunity organizations: local Turkish associations, local women associations, local migrant associations; ^cWelfare organizations: community development workers, youth work organizations

Table I.
"Water Campaign"
overview

During the summer months of 2010, several stakeholders hosted several “tap water drinking promoting activities” for children – on their own initiative. At the beginning of the subsequent school year (2010/2011), the intervention components aimed at habitual behaviour were incorporated into school policies and practices; they were later reinforced through other activities. Various actors were responsible for the implementation of intervention components, depending on the time, place and for whom the activities were intended.

Evaluation stage

To test the effectiveness of the intervention a controlled trial was set up (van de Gaar *et al.*, 2014). Intervention and control schools both took part in the regular EBF programme, the intervention schools additionally took part in the “Water Campaign”. The outcome measures used were the reported child’s consumption of SSB by mothers, by children themselves and the observed child’s SSB consumption at schools. Positive intervention effects were found, which gave a good indication that the “Water Campaign” was successful in reducing children’s consumption of SSB. Details about the effect study are reported elsewhere (van de Gaar *et al.*, 2014).

A process evaluation was conducted to evaluate implementation fidelity and acceptability to providers and target segment, as well as to assess reach and participation of both children and mothers. An anonymous online stakeholders’ survey was conducted among stakeholders ($n = 42$) during the second part of the development and implementation year. This survey explored the stakeholders’ motivations for wanting to collaborate (or not), the collaboration processes itself, as well as the results and consequences of collaboration. Results will be reported elsewhere.

Discussion

This paper presents a detailed description of the development of the “Water Campaign” with the aim of helping to advance future intervention development. During the development of this campaign, the various stages of the TPP framework were processed; the target segment and the target behaviour were then selected, and the marketing mix was used to develop intervention components that addressed the most important and modifiable behavioural determinants.

This paper describes how IM tools were embedded in the TPP framework and illustrates how this combination can be operationalized to develop interventions. The resulting integration of the strengths of both methods may well improve the effectiveness and sustainability of the resulting intervention and allows integration of various ecological levels.

According to French and colleagues, to succeed in implementing effective strategies, we need to focus on a “value to user” approach (French *et al.*, 2010). In terms of methods, the TPP framework offers detailed guidance and techniques leading to client orientation, as illustrated in this article.

The findings from the extensive iterative scoping stage led to the selection of one specific target segment. This focus on one fairly homogenous target segment with similar needs, beliefs, attitudes and behaviours meant that the intervention components were better matched to the target segment’s specific perceived needs (thus going beyond selection primarily based on socio-demographic characteristics). By doing so, it becomes easier for people in the target segment to adopt and sustain positive behaviours.

Therefore, the “Water Campaign” may have been more effective than when designed for a more heterogeneous target group (Stead *et al.*, 2007).

The scoping stage provided a deeper understanding of the problem at hand, as well as of the lives of the target segment as a whole and what they value. These in-depth insights guided the selection of one specific behavioural goal at a time, making it easier to conceive, develop and implement a realistic and achievable intervention for the specific target segment. It also meant that there was a precise way of measuring progress and intervention’s impact on behaviour. This is in line with for instance the ensemble *prévenons l’obésité des enfants*, meaning together let’s prevent childhood obesity (EPODE) approach, where the focus is always limited to one specific theme at a time (Borys *et al.*, 2012). However, it contrasts with findings of several systematic reviews in the field that recommend addressing complex problems such as childhood obesity by intervening on multiple energy balance-related behaviours (Brown and Summerbell, 2009; Kelishadi and Azizi-Soleiman, 2014). The choice to focus on one specific behavioural goal is inherent to the choice to use SMk. This one specific behaviour was, however, selected and substantiated on the basis of an extensive scoping stage.

The marketing mix analysis enabled clarification of the most compelling motives of the target segment, the benefits and costs to them of performing the desired behaviour and target segments’ preferences (French *et al.*, 2010). On the basis of this knowledge, marketing techniques allowed the project team to connect the target behaviour, the value system and the deep motives of the target segment, thus contributing to a tailored intervention (Griffiths *et al.*, 2008; Stead *et al.*, 2007).

Having recognized the importance of theory-informed intervention development, the EnRG-framework contributed to a more comprehensive understanding of the behaviour of the target segment and provided a clearer picture of potential determinants. IM tools allowed to select those determinants in our target segment that were the most important and most modifiable. Furthermore, they enabled the project team to first consider and select appropriate theoretical methods for influencing changes in determinants of behaviour before proceeding to the development of specific interventions.

The fact that key stakeholders at various ecological levels were systematically identified and involved in the campaign resulted in bi-directional sharing of knowledge and expertise, co-creation and active participation among partners and stakeholders (French *et al.*, 2010). These findings are supported by a study that found that the involvement of stakeholders in programme development and implementation appears to increase programme receptivity and acceptance (Flynn *et al.*, 2006). Furthermore, the successful EPODE approach also includes as part of its working principles the mobilization and involvement of stakeholders in combination with capacity-building strategies (Borys *et al.*, 2012).

The team’s choice for the target behaviour “reducing children’s SSB consumption” was supported by studies in the literature (Barlow and Expert, 2007; de Ruyter *et al.*, 2012; Ebbeling *et al.*, 2012; Hu, 2013; Swinburn *et al.*, 2004; van der Horst *et al.*, 2007) and local epidemiological data (Krul *et al.*, 2012). This target behaviour was modified into the specific behaviour “drinking at least two servings of water per day”. Although the literature supports both the choice for the promotion of water (Daniels and Popkin, 2010; Muckelbauer *et al.*, 2009; Sichieri *et al.*, 2009; Tate *et al.*, 2012), as well as the choice for a positive message (Michale, 2004), one could argue that the specification of “two servings

per day” is somewhat arbitrary. However, this message was chosen because pre-testing within the target segment (mothers) indicated that the advice of consuming at least two servings of water per day seemed to be a realistic, acceptable and achievable target behaviour.

The follow-up and sustainability of the “Water Campaign” depended on the results of the evaluation stage. Given the successful behavioural change, several intervention components were implemented on a wider scale (in 90 schools throughout the city of Rotterdam). New collaborations were set up with local sport clubs and community organizations participated more actively to promote the intake of water among children in various ways. The continuation of the intervention, the process and its effects on behaviour is monitored and evaluated by the local Municipal Health Service. Evaluation of the effects on the longer term is necessary for intervention sustainability. Subsequently, the “Water Campaign” was disseminated nation-wide, reaching more than 70 cities across The Netherlands.

Lessons learned

Throughout the process of applying SMk, some of the lessons learned went beyond intervention development alone. Two issues stand out in this respect. The first issue is the sharing of knowledge about the principles and application of SMk and the insights about the target segments and behaviours (capacity building); second, the co-creation with partners which resulted in considerable enthusiasm, active participation, ownership and embedding of the “Water Campaign” among partners. Some partners used the new knowledge and skills in the context of their own core business, thereby multiplying the benefits not only for the target segment but also, in this case, for local government.

SMk further provided the project team with a shared “marketing language” that could be used when cooperating with private partners. On the other side, some tensions between the political context and the consequences of applying SMk were noticeable. The choice of a specific behaviour for a specific segment may not always appear to match the broader government mandate and policies. The transferability across policy fields of the knowledge and skills gained can, if well organized, form a strong argument in favour of SMk in combination with IM.

The project team was made up of experienced people from research, practice and policy, as well as private (marketing) partners, thereby providing a variety of skills and knowledge. Furthermore, it is noteworthy that the “Water Campaign” was developed in a local context with limited time and resources. The scoping and development phases in particular took more time than anticipated. This was partly because of the project team’s lack of experience in specifically combining SMk and IM tools. Planners of future health interventions that intend to combine SMk and IM are advised to ensure that various team members have experience with using either one or both of these methods. They should also ensure that team members and commissioning parties are committed to the combined approach and are willing to invest time and effort into understanding each other’s methodological paradigm and methods.

A number of limitations should be mentioned. A first limitation is that we chose the TPP framework of French *et al.* and not any other SMk development method (US Government, 2014a). A second limitation is that only in the development stage the IM method was partly used. Future intervention development studies should provide

additional insight into the value of combining complementary methods such as SMk and IM, for instance, by expanding the integration of these methods.

Conclusions

This paper describes the development of an intervention through the combined application of SMk and IM tools. This led to a theory-based and client-oriented intervention for the prevention of overweight among children.

The intervention was school- and community-based, directed at multiple ecological levels and systematically involved stakeholders. Future research should focus on whether this combination of complementary methods leads to the development of effective interventions.

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