A behavioural analysis of a locally produced public health intervention: Optimisation of the LiveWell Dorset service

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Abstract

LiveWell Dorset (LWD) is an integrated health improvement service that tackles physical activity, weight management, smoking and alcohol consumption, developed using the Behaviour Change Wheel framework. LWD is delivered by Health Coaches who help users eliciting barriers to change and deliver behaviour change techniques (BCTs) mapped onto these barriers. This paper reports a pragmatic formative process evaluation of the LWD by conducting an external behavioural analysis of the interventions' active ingredients, and identifying opportunities for optimisation. Two independent researchers conducted the process of behavioural analysis used to identify users' barriers to behaviour change by mapping these barriers onto COM-B categories (capability, motivation, or opportunity). The barriers were mapped onto the COM-B model with 88% agreement between raters, demonstrating the reliability of the process of behavioural analysis. This pragmatic formative process evaluation provided a validation of the intervention's active ingredients and recommendations to further specify the barriers.

Keywords: *Behaviour change, Intervention development, Public health, Health coaching*

Introduction

LiveWell Dorset is an integrated health improvement service launched in April 2015. As part of the service, health coaches support people to quit smoking, be more physically active, lose weight and drink less alcohol, based on an evidence-based behaviour change model. The LiveWell Dorset service aims to match and prioritise individual specific barriers to appropriate interventions most likely to support behaviour change. Health coaches aim to support clients in identifying goals, eliciting specific barriers and link intervention content to these individual barriers (Please see table 1 for TIDieR table).

The LiveWell Dorset service was designed and developed using a behaviour change framework; the Behaviour Change Wheel (Michie, Atkins, & West, 2014). The service focus primarily on the provision of support at scale and on behaviour change based on an evidence-based model as recommended by the NICE guidance PH49 (National Institute for Health and Care Excellence, 2014).

The present study focus on a pragmatic formative process evaluation (Evans, Scourfield, & Murphy, 2015) and optimisation of an existing intervention which has been implemented since April 2015 and used by just over 17,000 people until April 2018. Process evaluation aims to understand the implementation process, in particular the fidelity of interventions before continuing its dissemination (G. F. Moore et al., 2015). The term pragmatic formative process evaluation is used here to describe the process evaluation of an intervention currently

Table 1: TIDieR table (Hoffmann et al., 2014) for the LiveWell Dorset intervention.

TIDieR checklist item	LiveWell Dorset intervention
What	The LiveWell Dorset service provides telephone health coaching to support people to quit smoking, be more physically active, lose weight and drink less alcohol. The intervention includes an introductory call to explain the service and to support client to set a SMART goal. If more than one behaviour is raised, the client is asked to identify the most important. The health coach then establishes barriers, by using the questions provided in the intervention guide to identify barriers the client faces. In each subsequent coaching calls, the health coach talks through possible solutions, by using the BCT Plan on the COM-B tab (the customer relationship management solution – CRM).
Who delivered	The LiveWell Dorset intervention is delivered by Health Coaches with experience in working with behaviour change theories (e.g. Stages of Change) / coaching models (e.g. GROW) and experience of working with people in a coaching environment. Health Coaches have a recognised coaching qualification or demonstrable experience of supporting people using coaching models within a behaviour change setting (e.g. including, but not limited to RSPH Level 1 or 2 Health and Wellbeing accreditations, Qualifications in MECC). The intervention was delivered by 5 Health Coaches
How	Individual, telephone-based intervention
Where	Telephone-based delivery
When and How much	Up to 6 coaching calls of 10-20 minutes each. A review is completed at session 3. Follow ups completed at 3, 6 & 12 months.
Tailoring	Behavioural intervention is matched to the specific barriers mentioned by the client, using the COM-B model. Each specific barrier has a list of BCTs aligned with it. The Health Coach works with the client to decide which BCT the client will try from that list.
Fidelity	BCTs used for each specific barrier are recorded within the CRM system.

implemented in routine practice, but lacking systematic development and evaluation. This study aimed to conduct a behavioural analysis of the key processes involved in the development of the LiveWell Dorset service, and to provide recommendations for the optimisation of the service. Specifically, we wanted to understand if the process of conducting a behavioural analysis of identified barriers, according to the COM-B model is reliable.

Methods

A mapping exercise was conducted to match identified barriers to intervention activities, through the lens of the COM-B model (Michie et al., 2014). The list of identified barriers for the different behaviours was provided by the LiveWell Dorset management team.

Two reviewers from the research team at Newcastle university (NCL) independently classified each barrier under relevant categories of the COM-B (capability, motivation, or opportunity) (Michie,
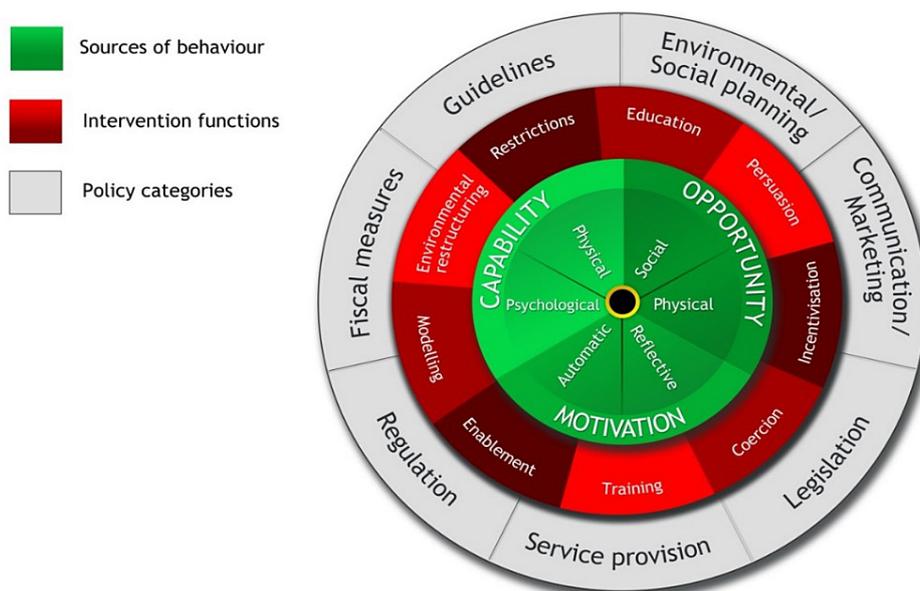
Figure 1: The Behaviour Change Wheel (1).

van Stralen, & West, 2011), applying more than one category where appropriate. Inter-rater reliability (i.e. the degree of agreement between the two reviewers) was compared by calculating percent agreement and Kappa of agreement, and any discrepancies were reconciled through discussion. These results were compiled and compared to the coding performed by LiveWell Dorset (LWD).

After this initial coding, we shared our findings with the LiveWell Dorset team and any discrepancies were solved through discussion.

Results

There was excellent agreement between the coding produced by both teams (NCL and LWD),), who independently categorized the barriers using the COM-B model (88% agreement for all barriers across the four behaviours; Kappa= 0.75). Please see Table 2 for details on the degree and percentage of agreement between both teams across the COM-B model. The degree of agreement

between the coding performed by both teams ranged from fair (Psychological Capability) to very good (Social opportunity).

There were ten (13%) discrepancies in the COM-B coding. The main discrepancies occurred in cases where barriers related to self-efficacy, self-confidence and self-esteem were classified differently (i.e. one of the reviewers classified these barriers under 'motivation', the other reviewer classified these as 'psychological capability'). Barriers related to automatic processes (e.g. impulses, fears) also generated some discrepancies, with reviewers using 'automatic motivation' and 'psychological capability to classify those barriers.

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Some of the discrepancies were linked to different interpretation of the barriers and, for this reason, a list of scenarios was proposed to better support health coaches implementation of the

Table 2. Summary of agreement for the classification of identified barriers according to the COM-B model.

COM-B components	Agreement	
	Kappa	*% observed agreements*
Physical capability	0.54	91.3
Psychological capability	0.27	71.3
Social Opportunity	0.84	95.0
Physical opportunity	0.66	86.3
Automatic motivation	0.42	80.0
Reflective motivation	0.65	85.0

LiveWell Dorset service (please see Table 3 for details).

Discussion

The process of identifying behaviour change techniques appropriate to the barriers as part of the LiveWell Dorset service, using to the COM-B model was reliable. The COM-B coding revealed challenging for some components (i.e. Psychological capability) and when barriers were too vague. The barriers were mapped onto the COM-B behaviour change theory with an excellent level of agreement between raters. Comparable levels of agreement have been found by studies conducting a similar procedure of COM-B coding (J. E. Moore et al., 2014). Psychological capability coding seemed to pose the most discrepancies in coding. Other authors have also stated the difficulty of matching COM-B components to barriers that were too general or vague (Seppälä, Hankonen, Korkiakangas, Ruusuvuori, & Laitinen, 2018). The vagueness of the barriers might be a necessary element of the service as the barriers fit two different purposes: 1) they help the mapping within the CRM; and 2) the support the identification of BCTs according to the COM-B model. If the barriers are further specified, we might risk the individual narrative to be constructed around the barriers. However, for the purpose of developing the interventions further specifying the barriers, perhaps by providing different the scenarios, could facilitate the identification of barriers and potential BCTs in a more reliable way. Matching individual specific barriers to appropriate interventions is an innovative approach and recent studies show that interventions are more likely to influence change if they are tailored to target the factors underlying barriers to behaviour change (Michie, Johnston, Francis, Hardeman, & Eccles, 2008). Another advantage of this mapping is that it provides a schema through which implementers can easily identify potential strategies to overcome barriers that are relevant at the local level.

The pragmatic formative process evaluation was conducted as a desk-based research, capitalising on available funding and time. The main focus of this research was to be responsive to the research request from LiveWell Dorset and produce rapid, responsive and relevant research evidence to inform

Table 3: Example Scenarios to facilitate specification of barriers within the LiveWell Dorset service.

Barrier	NCL coding	Scenario
Alcohol		
1. Something to do	Automatic motivation/ Physical Opportunity/ Social Opportunity	Automatic motivation: drinking alcohol would occur as an impulse/reflex (e.g. always having a glass of wine when home from work). Physical opportunity: the availability of alcohol would facilitate the use of alcohol (e.g. having alcohol in the house). Social opportunity: the availability of alcohol would facilitate the use of alcohol (e.g. having a drink on the table when in group).
Weight loss		
2. Eat when feel down	Automatic motivation/ Psychological capability/ Physical capability	Automatic motivation: Individuals may feel down about their lives and turn to food to comfort them (e.g. Emotional eating). Psychological capability: Individuals may lack knowledge of emotional eating and might need skills to deal with low mood (e.g. lack of knowledge of alternative things to do when feeling low). Physical capability: Individuals might need skills to use tools to record low mood (e.g. skills to use a digital tool or paper-and-pencil tool to monitor mood).
3. Portion size difficulty - too big	Physical Opportunity/ Psychological capability/ Physical capability	Physical Opportunity: Individuals may not have the physical opportunity in terms of the necessary tool to measure portion size (e.g. having a digital scale to measure portion size). Psychological capability: Individuals may lack knowledge of the potential negative effect of over-eating and might need skills to monitor portion size (e.g. unaware of link between portion size and overeating). Physical capability: Individuals might need skills to use tools to record portion size (e.g. skills to use different methods of measuring portion size).

the service. This research was conducted in the context of Fuse: Centre for Translational Research in Public Health, which mission includes the translation public health research into value-for-money policy and practice in a relevant and timely manner (http://www.fuse.ac.uk/).

More flexible and rapid research designs are needed to answer the increasing demands to produce timely and relevant research findings (Riley, Glasgow, Etheredge, & Abernethy, 2013). The

slow pace of health research contributes to findings that are less relevant and potentially even obsolete. An approach to increase relevance of research is through stakeholder involvement by increasing the likelihood of findings being readily adopted into practice (Riley et al., 2013).

The current financial climate of LAs brings a further challenge for public health evaluation with greater constraints on research funding and research capacity. Several guidance documents to support public health evaluation exist and a recent project produced an integrative tool of existing evaluation guides (Denford et al., 2017). A recent study also found that practitioners felt that there was a need to consult and collaborate with academic partners who are more skilful and resources to complete evaluations (Denford, Lakshman, Callaghan, & Abraham, 2018). Practitioners also acknowledged the need to enhance their own evaluation skills in order to produce high quality public health evaluations (Denford et al., 2018). Pragmatic format process evaluation might offer practitioners the opportunity to better understand the process of theoretical development that due to dissonant policy and research timescales might not be conducted before implementation.

LiveWell Dorset is an integrated health improvement service, supporting people to quit smoking, be more physically active, lose weight and drink less alcohol, based on a behaviour change framework; the Behaviour Change Wheel (12). Our

pragmatic formative process evaluation provided a validation of the intervention's active ingredients.

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