

ARTICLE

The use of Core Processes when applying Intervention Mapping

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Abstract

Core Processes are a helpful and systematic way to address questions that need to be answered to find evidence-based solutions in a problem-driven context. A valuable planning framework, such as Intervention Mapping, poses the right questions. While Core Processes are valuable to any planning framework, they are particularly well-suited to Intervention Mapping as they align with its foundational perspectives. These perspectives include embracing a participatory approach, using theory and evidence, and adopting an ecological approach. This article briefly explains Core Processes and how they align with Intervention Mapping and its foundational perspectives.

Key words: Core processes; Intervention Mapping; Perspectives

Core Processes are a helpful and systematic way to address questions that need to be answered to find evidence-based solutions in a problem-driven context (Ruiter and Crutzen, 2020). Using Core Processes reduces the risk of incomplete understanding of specific problems and their causes, as well as the selection of ineffective solutions. Core Processes are useful to answer questions that arise in each step of Intervention Mapping: an approach to systematically develop, implement, and evaluate behaviour change interventions. While Core Processes are often associated with Intervention Mapping, their origins predate it. Veen (1984) first described these processes before the initial publications on Intervention Mapping by Bartholomew et al. (1998; 2001). They are deeply rooted in applied social psychology (Buunk and Van Vugt, 2008; Ruiter et al., 2013), a foundation that underpins the field of behaviour change more broadly (Varol et al., 2024). While Core Processes are valuable to any planning framework (O’Cathain et al., 2019), they are particularly well-suited to Intervention Mapping as they align with its foundational perspectives. These perspectives include embracing a participatory approach, using theory and evidence, and adopting an ecological approach. Recognizing their importance, the fifth edition of the Intervention Mapping book features a chapter dedicated to Core Processes. This article briefly explains Core Processes (see Figure 1 for an overview) and how they align with Intervention Mapping and its foundational perspectives. In addition to the book, reviewing past applications of Core Processes is an excellent way to learn more about them. And learning begins - just like Core Processes - with asking questions.

Core Processes 1: Pose questions

The first Core Process involves posing questions that need to be answered in a problem-driven context. Intervention Mapping facilitates the posing of relevant questions at appropriate times. In Step 1 of Intervention Mapping, understanding the problem more comprehensively requires asking, for example, “What behaviours and environmental factors are related to the problem?”. “What do people need to do to perform the desired behaviour?” is an example of a useful question to answer when identifying performance objectives in Step 2 of Intervention Mapping.

Core Processes 2: Explore possible answers by engaging community members, implementers, and other interested parties

The second Core Process involves exploring possible answers to the posed questions. In Intervention Mapping, this initial exploration is often carried out through brainstorming with planning group members. There are several aspects that need to be considered in the selection of the planning group members, such as having expertise in the problem and its causes, responsibility and authority to make decisions (e.g., about implementation and resource allocation). Most importantly, diverse perspectives from community members need to be included, ideally as early on as possible (e.g., during problem identification) to draw on their lived experiences with the problem. This aligns with the foundational perspective of Intervention Mapping to embrace a participatory approach. Multiple rationales for participatory research in health promotion are identified (Harting et al., 2022), reflecting both idealistic and utilitarian reasons to embrace a participatory approach. Embracing such an approach is not without challenges. For example, while offering incentives to community members for their participation is justified, these very incentives can create dependencies and affect the already complicated power dynamics between community members and researchers (Ebata et al., 2020) or reduce intrinsic motivation (Zutlevics, 2016).

Behaviour change expertise is a crucial aspect that needs to be present among at least one of the planning group members. However, when engaging with other planning groups members, behaviour change experts need to be mindful of using technical



Fig. 1. Overview of Core Processes.

terminology (e.g., determinants, behavioural outcomes). Part of the role of behaviour change experts is to ‘translate’ possible answers to adequate terminology that can be applied when reviewing evidence. For instance, when developing a sexual health intervention for adolescents in Uganda, we first sought to understand multiple concurrent sexual partnerships (Nalukwago et al., 2018). Brainstorming sessions were held with adolescents, community leaders and policy makers, and other experts (e.g., behavioural change experts, health promotion practitioners). Adolescents highlighted the issue of transactional sex, which was later explored further through reviewing evidence from previous research.

Core Processes 3: Review evidence from previous research

The third Core Process aims to evaluate the provisional answers developed during the second Core Process by either supporting or refuting them. This aligns with the foundational perspective of Intervention Mapping to use theory and evidence (as does the fourth Core Process), rather than attempting to reinvent the wheel. Different types of studies offer varying kinds of evidence. For example, a systematic review may provide a broad overview of determinants of physical activity behaviour in the cardiac population in general (McGowan et al., 2023), whereas an individual study provides in-depth insight into physical activity preferences and motivation among patients in cardiac rehabilitation centres in Austria specifically (McGowan et al., 2024).

In some cases, evidence from previous research may be limited. For example, there might be limited evidence available when trying to answer the question: “What factors predict cervical cancer screening in young women in Ghana?” In that case, the search can be broadened by looking for (1) studies in populations that are somewhat similar (e.g., sharing demographic and cultural characteristics) to young women in Ghana (e.g., young women in other West African countries) or (2) studies about somewhat similar behaviours (e.g., other cancer screening-related behaviours). It is important to first review evidence, even if it pertains to somewhat different populations or behaviours, before relying on theories, which are inherently more generic.

Core Processes 4: Find theoretical support using the topic, concept and general theories approaches

The fourth Core Process involves identifying theoretical support to address the questions posed in Core Process 1, after the initial exploration in Core Process 2 and the review of evidence in Core Process 3. The goal is to expand the list of potential answers as much as possible before conducting new research (Core Process 5) and evaluating all answers (Core Process 6).

A theory is a set of concepts and/or statements with specification of how phenomena relate to each other. Theory provides an organising description of a system that accounts for what is known, and explains and predicts phenomena (Davis et al., 2014). Since theories deal with bounded aspects of reality (Peters and Kok, 2016) and real-life problems are often complex, applying theory to real-life problems is like solving a jigsaw puzzle. Different forms of theoretical support need to be combined to provide a more complete explanation or answer to a question than any single theory could offer (Peters and Crutzen, 2017).

There are three approaches to finding theoretical support: the topic, concept and general theories approaches. These approaches should be used together, in sequence. The topic approach involves reviewing the theoretical concepts and/or statements used in previous research identified during Core Process 3. The concept approach focuses on exploring concepts generated during Core Process 2. For example, Social Exchange Theory posits that social exchange involves a series of interactions that generate obligations and these interactions are usually seen as interdependent and contingent on the actions of another person (Cropanzano and Mitchell, 2005). When examining the role of transactional sex in multiple concurrent sexual partnerships among adolescents in Uganda, this helps to understand certain actions based upon a priori calculation of expected returns (Nalukwago et al., 2018). The general

theories approach involves exploring theoretical concepts and/or statements that may offer additional insight into the question at hand. This approach is considered a last resort to avoid relying too heavily on theory-driven approaches in a problem-driven context. When there is tension between generalizability and utility of theories, preference should be given to utility, especially given the applied nature of a problem-driven context (Head and Noar, 2013).

Core Processes 5: Identify and address the need for new research with community members and other interested parties

All previously described Core Processes should be completed before moving on to new research, which is the fifth Core Process. The time span for completion can range from a couple of sessions to a full-blown multi year project. It is essential to address all Core Processes in a streamlined manner, rather than skipping any of them. A practical reason for this is that conducting new research requires resources (in terms of time, expertise, and budget). Before launching into new research, all available evidence and insights should be thoroughly examined to identify any gaps or inconsistencies that need to be addressed to make the research more valuable. For example, during the previous Core Processes, condom failure might be identified as a critical factor. New research can then focus on this issue and reveal that condom failure extends beyond the physical dimension. For adolescents who engage in unprotected sex and later face pregnancy or sexually transmitted infections, condom failure may serve as an excuse repertoire (Sznitman et al., 2009).

Newly initiated research can be conducted with community members and other interested parties. This aligns with the foundational perspective of Intervention Mapping to adopt an ecological approach: all levels (e.g., individual, interpersonal, community, organisational) might be of importance as are the interactions between (agents at) those levels. For instance, after going through other Core Processes (e.g., conducting a systematic review (Bwirire et al., 2022) and an analysis of health inequalities over time (Bwirire et al., 2023b)), we identified the need for new research that was addressed by means of an asset-based approach. This asset-based approach was used to design optimal health services and identify resource constraints for basic healthcare delivery to vulnerable communities in eastern Congo (Bwirire et al., 2023a). The goal of this approach is to highlight the community's strengths, the external resources they rely on, and potential areas for improvement that could be transformed into assets.

Core Processes 6: Complete the list of possible answers and assess them by combining information gathered across Core Processes

Completing the first five Core Processes results in a provisional list of answers to the question(s) posed at the beginning. To refine this into a final list, these answers must be evaluated for their relevance and changeability by integrating the information gathered throughout the Core Processes. Assessing relevance can involve factors such as the strength of the relationship between determinants and the behaviour of interest (in Step 2 of Intervention Mapping), the extent to which agents at various levels contribute to the health problem (in Step 1), or the suitability of behaviour change methods to target specific determinants (in Step 3). Judgements about changeability, the extent to which the proposed changes can realistically be achieved through an intervention, should be supported by available evidence (Ashford et al., 2010). When such evidence is scarce, these judgments have to rely on theoretical or conceptual foundations.

Transitioning from a provisional list to a final one requires making decisions about what to focus on and what to de-emphasize. The key reason behind this is that resources are finite. These decisions impact the quantity and quality of intervention content that can be developed and delivered. Several tools exist to aid decision-making concerning certain aspects of intervention planning. Confidence Interval-Based Estimation of Relevance (CIBER), for example, visualises confidence intervals for the mean scores of determinants and correlations with behaviour for all determinants simultaneously (Crutzen et al., 2017). This visualisation facilitates comparison to make selections in Step 2 concerning determinants to focus on in an intervention. Uncertainty is inherent to complex real-life problems and there are also tools available to incorporate uncertainty into decision-making (e.g., Mkhitarian et al., 2022).

In summary, Core Processes are a helpful and systematic way to address questions and a valuable planning framework, such as Intervention Mapping, poses the *right* questions. Answering these questions is not helped by black-and-white thinking. There is room to advance by developing further tools to incorporate the many shades of grey into decision-making concerning various aspects of intervention planning.

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