



Along the way to developing a theory of the program: A re-examination of the conceptual framework as an organizing strategy



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ABSTRACT

Purpose: Conceptual frameworks (CF) have historically been used to develop program theory. We re-examine the literature about the role of CF in this context, specifically how they can be used to create descriptive and prescriptive theories, as building blocks for a program theory. Using a case example of colorectal cancer screening intervention development, we describe the process of developing our initial CF, the methods used to explore the constructs in the framework and revise the framework for intervention development.

Methods: We present seven steps that guided the development of our CF: (1) assemble the “right” research team, (2) incorporate existing literature into the emerging CF, (3) construct the conceptual framework, (4) diagram the framework, (5) operationalize the framework: develop the research design and measures, (6) conduct the research, and (7) revise the framework.

Results: A revised conceptual framework depicted more complicated inter-relationships of the different predisposing, enabling, reinforcing, and system-based factors. The updated framework led us to generate program theory and serves as the basis for designing future intervention studies and outcome evaluations.

Conclusions: A CF can build a foundation for program theory. We provide a set of concrete steps and lessons learned to assist practitioners in developing a CF.

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1. Introduction

Program theory results from the contributions of two types of theory: descriptive theory and prescriptive theory. Chen (1990) suggests that descriptive theory is used to describe and explain a phenomenon, while prescriptive theory is used to propose what ought to be done. Formative research for design and evaluation of health services and community-based interventions is utilized to build descriptive theory and aims to explain facts and relationships without predetermining causal relationships. The goal of building program theory through a descriptive process is to link behavior change or other types of systems theory, process and

outcomes in an investigation of a program's causal mechanisms. The goal is to develop a “theory of the program” that will use prescriptive theory to test the success of the program at changing those outcomes.

Very often the descriptive theory underpinning a program is not made explicit or transparent; without a mechanism to articulate the theory, it is difficult to guide the focus of formative research (Wholey, 1987). While Chen and colleagues articulated program theory-building stages, insufficient attention has been paid to tools that can facilitate the process of moving from descriptive to prescriptive theory. As early as 1991, Earp and Ennett lamented the paucity of literature describing the process of developing these frameworks to depict the links between theory and practice. In 1994, Goodman and Wandersman proposed a formative evaluation approach for building a program model for community coalitions and community-based initiatives (FORECAST). This is a well-known

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process for prescriptive theory building. However, more than 20 years later, there remains little guidance for developing tools to aid the researcher in the earlier (descriptive) stages of formulating a theory of the program. We suggest that a conceptual framework (CF) is most effective in achieving that purpose (Jackson, 1997; National Cancer Institute, 2005). This tool will provide structure to the research questions, enabling the research to focus not just on the eventual impact of the program but also on its mechanisms.

1.1. What is a conceptual framework?

A conceptual framework provides a foundation for a theory-driven approach to program development. Earp and Ennett advocated for “a diagram of proposed causal linkages among a set of concepts believed to be related to a particular public health problem,” providing a visual, graphic representation of how the study constructs are related (Earp & Ennett, 1991). By incorporating literature that articulates existing knowledge and experience, frameworks serve as vehicles to more concisely conceptualize research questions that address gaps in the literature (Weinert, 2008). In exploratory studies, CFs can articulate general constructs without hypothesizing about specific content or the dynamics between the components of the framework (descriptive theory). A CF can also incorporate different theoretical approaches, including systems, social network, social marketing, and individual behavior change theory. Finally, a conceptual framework that underpins program planning and evaluation is explicitly linked to potential intervention components and to the evaluation instruments (prescriptive theory) such as the FORECAST process (Goodman & Wandersman, 1994; Helitzer, Peterson, Thompson, & Fludder, 2006; Shadish, Cook, & Leviton, 1991).

The literature provides numerous examples of CFs that have been used to guide the developmental stages for studies of chronic illness (Dickson, Dervensky, & Gupta, 2002), prevention efforts (Solberg, 2007), and practice improvement (Anandarajah, 2008; Siegel, Naishadham, & Jemal, 2013). These authors describe how their conceptual frameworks related general or complex behavioral processes into a visual representation, allowed the research team to share common language, and guided the investigation with regard to study design, data collection and interpretation, and outcome evaluation. A conceptual framework does not dictate a specific study design or set of measures – i.e., qualitative or quantitative – but suggests the factors for investigation and stimulates thinking about their inter-relationships. Typically, research conducted on the basis of the initial CF leads investigators to identify missing pieces of the architecture, and results in a revision of the original CF and a visual depiction of prescriptive theory of the problem.

There has been much attention recently to the benefits of using logic models to depict program theory. Wandersman and colleagues (Katz et al., 2013; Wandersman, 2009) advocate for a “model of the program”, a diagram of the perceived causes and effects of a health or social problem (Goodman & Wandersman, 1994). We have previously discussed the process of building logic models and their utility in testing program theory (Helitzer et al., 2010). While both are important tools, conceptual frameworks differ from logic models because they articulate the elements of descriptive theory, and as a result, are used much earlier in the process of program theory building.

Below, we discuss the development and utility of a conceptual framework to explore barriers and facilitators of screening for colorectal cancer in populations that are composed primarily of Southwestern Hispanics and American Indians in New Mexico. National data suggest that these populations have lower rates of colorectal screening, even among populations that have access to

screening services. We describe the steps used to develop the initial CF (descriptive theory), and then a revised CF that resulted from our formative research, which ultimately led to a prescriptive theory about the dynamic relationship between individual factors and systems factors that influence colorectal cancer screening in primary care.

2. The example: colorectal cancer screening in Hispanics and American Indians

Colorectal cancer (CRC) is the fourth most frequently diagnosed cancer in New Mexico and the second leading cause of cancer death (Siegel et al., 2013). Over the past three decades, incidence and mortality rates have significantly declined nationally and among New Mexican non-Hispanic whites (Hoffman, Stone, & Viera, 2008; Hoffman et al., 2014; U.S. Centers for Disease Control and Prevention, 2011). However, incidence rates have remained stable or increased among New Mexican Hispanics and American Indians and mortality rates have not declined among American Indians (Hoffman et al., 2014). Modeling studies suggest that increased uptake of CRC screening largely contributed to declining incidence and mortality rates (Edwards et al., 2010). While the overall percentage of New Mexicans with up-to-date screening (57.5%, based on the most recent date of colonoscopy, flexible sigmoidoscopy, and/or fecal blood testing) is less than the national average of 65.1% (U.S. Centers for Disease Control and Prevention, 2013), the percentage is significantly higher among non-Hispanic whites (58%) than for Hispanics (46%) or American Indians (33%) (Hoffman et al., 2008). In order to develop an intervention to reduce these New Mexican disparities in CRC incidence and mortality, we decided to first investigate the factors influencing CRC screening utilization among these two vulnerable populations.

We conducted an exploratory study in collaboration with Research in Outpatient Settings Network (RIOS Net), a practice-based research network of 250+ primary care providers who serve largely minority underserved populations in New Mexico. RIOS Net providers work mainly in community health centers which are often designated as federally qualified health centers (FQHC), Indian Health Service practices, and University of New Mexico academic practices. The study involved RIOS Net clinics serving Hispanic and American Indian patients from rural and urban settings across the state of New Mexico. The goal of our research was to identify the contributing factors to this CRC screening health disparity in our state by examining the barriers and facilitators of CRC screening among these vulnerable populations of patients. We anticipated that this research would help us revise or reconstruct the framework, guide the development of prescriptive theory and offer a different perspective to the CRC screening literature.

3. Methods and results

3.1. Process of developing the conceptual framework

Step 1: Assemble the “right” research team. Given the diversity of factors that could contribute to CRC screening disparities, we assembled a multidisciplinary team to provide a wide diversity of relevant expertise to the framework development process. Over several months of weekly meetings, the team created a common language across medical, epidemiological, anthropological, sociological, psychometric, evaluation, and public health disciplines. Table 1 shows the different domains/disciplines, relevant expertise and methodological contributions of team members.

Step 2: Identify how results of existing literature can be incorporated into the emerging CF. Every team member agreed to identify and synthesize literature from their respective specialties

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