Paper: The Role of Information in Health Behaviour

Abstract: Researchers use models and theories to interpret data and understand which stories to tell. Health researchers increasingly investigate health-related information practices without using information theory, shaping research narratives around health information. This scoping study assesses the extent and nature of inclusion of information practices within current health behaviour theory.
Résumé:

1. Introduction

Researchers use models and theories to interpret data and to understand what resulting stories to tell. Health researchers are increasingly investigating health-relevant information practices, ranging from the effectiveness of public health information campaigns (Noar, 2006; Snyder et al., 2004) to the impact of patient Internet use (Castleton et al. 2011; Lejbkowicz et al. 2010; Lee and Hornik 2009). While much of this work draws on health behaviour theory, little incorporates theory from the field of information science, potentially minimizing the complexity of information practices in favour of assumptions.

This raises the question: *how is information conceived within health behaviour theory?* Is the conceptualization of information rich and nuanced enough that health researchers have no need to borrow information theory? Or, on the contrary, is health research in need of insight from information science in order to better understand the way information practices function to influence health behaviour?

2. Methods

In order to assess the extent to which information practices are explicitly and implicitly present in current discourse about major models of health behaviour, I undertook a scoping study (Arksey and O'Malley 2005) of major texts dealing with health behaviour theory, mapping the explicit discussion of "information" within current health behaviour texts, and examining dominant models[1] of health behaviour for embedded information practices.

2.1 Sources

Given that multi-disciplinary field of health behaviour literature has advanced to the point that it has a canon, including multiple textbooks, teaching texts may be examined as representation of dominant thought regarding models and theory. I identified major contemporary textbooks on health behaviour via a combination of bibliometric searching (Worldcat, triangulated by Amazon) and canvassing experts in the field for key texts.

2.2 Assessment and Mapping

In order to assess the explicit discussion of information within the texts, I scanned the indexes for "information" and related terms and read the relevant book sections to understand the context and purpose of the references.

In order to identify "core" models within the health behaviour canon, I scanned the indexes, tables of contents, and relevant chapters of each text. Via this method, I identified models common to most health behaviour teaching texts. I then read the sections in each text describing these models, and created a matrix of the ways information practices were apparent in and/or related to the constructs within each of these models.

3. Results

The search garnered eight key textbooks that focused on health behaviour (Abraham, Norman, and Conner 2000; DiClemente, Salazar, and Crosby 2011; Edberg 2007; Glanz, Rimer, and Viswanath 2008; Hayden 2008; Martin, Haskard-Zolnierek, and DiMatteo 2010; Shumaker 2009; Simons-Morton, McLeroy, and Wendel 2011).

3.1 "Information" within Health Behaviour Texts

While quality of back-of-book indexing varies, the purpose is to provide access to key concepts within the text. In these eight books, there were forty-nine information-related entries. The majority of these were unique, indicating a lack of common language around information-related concepts. Most terms referred to socially-constructed information practices, such as information seeking and exchange. Two books had zero information-related index entries.

3.2 Information within Health Behaviour Models and Theories

Eight models or theories were discussed in at least half of the textbooks. Two of these (the *Theory of Reasoned Action* and *Theory of Planned Behaviour*) were typically presented together; thus they are combined in this analysis. One additional model (*Information-Motivation-Behavioural skills*) was discussed in just three but added to this analysis due to its uniquely explicit dealing with information. All other models and theories were excluded due to presence in less than half of the textbooks. As summarized in Table 1, all of the models under consideration contain information-related constructs, processes, factors, and/or stages.

Two of these models rely on the theory that people pass through set "stages" of intentional behaviour change: the *Transtheoretical model* (TTM), pioneered by Prochaska for use with addictions recovery processes, and Weinstein's harm-avoidance *Precaution-Adoption Process Model* (PAPM) (Weinstein 1988; Weinstein and Sandman 1992). Both of these models require information communication, encountering/accessing, and sense-making, in order to spur action, and may also involve practices such as monitoring and blunting. The PAPM places an emphasis on the distinction between unaware and unengaged, suggesting that information provision, receipt, and processing are highly relevant.

In contrast to the stages of change models, value-expectancy type models aim to explain or predict behaviour based on an individual's knowledge, attitudes and beliefs. These include Hochbaum's (1958) *Health Belief Model* (HBM), Ajzen and Fishbein's (1980) *Theory of Reasoned Action* (TRA) and later *Theory of Planned Behaviour* (TPB) (Ajzen 1991), and the *Information-Motivation-Behavioural Skills* (IMB) model (J. D. Fisher and Fisher 1992). Some value-expectancy theories (TRA, TPB) contain very little in the way of constructs of explicit information practice. However, in the HBM, information about the severity of a threat, whether intentionally sought or merely encountered, are thought to increase the odds of action, and the general idea of the IMB model is that behaviours are skill-dependent, influenced by a person's levels of relevant knowledge and motivation.

Table 1:

Model/Theory	*Model/Theory Type*	*Information Practices*
Transtheoretical Model	Stages of change	Communicating, encountering, sensemaking, blunting, monitoring, tailoring
Precaution-Adoption Process Model	Stages of change	Accessing, communicating, tailoring, receiving, processing, assessing
Theory of Reasoned Action/ Theory of Planned Behaviour	Value-expectancy	Communicating social norms, using internal/intrinsic information
Health Belief Model	Value-expectancy	Using internal/intrinsic information, communicating, receiving, assessing
Information-Motivation-Behavioural Skills Model	Value-expectancy	Receiving information, processing, memory, and recall; ability to appropriately use information in context
Diffusion of Innovations	Social process/ Communication	Communicating (mass and interpersonal), receiving, processing and assessing
Social Cognitive Theory	Social/environmental	Information acquisition, internal/intrinsic information communication of social norms
Ecological Model(s)	Ecological/Multi-level	Unspecified communication among systems levels

Health Behaviour Theories and the Information Practices they Contain

Diffusion of Innovation (DOI) theory (Rogers 1995), has been applied over the years to many health "innovations" or changes. Information is central to DOI, as communication about an innovation is the basis for it spreading and knowledge about the innovation is prerequisite for deciding to implement it.

Social Cognitive Theory (SCT, formerly *Social Learning Theory*), was established by Bandura (1986, 2004) to understand determinants of behaviour. Similar to several other models and

theories, knowledge (of health risks/benefits) is a precondition for behaviour change, although other determinants, including self-efficacy, are also requisite for action.

"*Ecological models*" is an umbrella for various models (e.g., Bronfenbrenner 1979, 2004; Green and Kreuter 1999) that use similar multi-level approaches. Due to the lack of specificity when we lump ecological models together, information practices can only be assumed to be evident in the interactions between and among the systems levels.

4. Discussion

Information practices are evident within all of the core models and theories used to explain health behaviour. The information elements to stages of change models are so clear that a chapter in *Theories of Information Behavior* focuses on the TTM as essentially a theory of health information interventions (Wathen and Harris 2005). Likewise, in value-expectancy models information is key to shaping values and risk perceptions. Other models vary, from DOI's complete focus on information dissemination to ecological models' mere assumption that communication takes place.

Inclusion of information practices, however, does not necessarily mean clear conceptualization, and there are matters of concern regarding the understanding of information within health behaviour models. "Information" and "knowledge" are frequently treated as interchangeable concepts, despite the multiple information practices and processes at work in creating knowledge (and developing an identity of being a "knower"). Additionally, knowledge is frequently decontextualized, perpetuating the idea that it just exists, and acts the same within an individual or social group regardless of acquisition method.

Rooted in behavioural models with surface-level inclusion of information/knowledge, health information interventions often aim to cue action by providing information on the severity of threat and/or the benefit of making changes. Incorporating information practice theory into health behaviour models would strengthen the precision of such interventions.

When considering a typical "information push" public health campaign to a target audience in the general public (e.g., anti-drugs or pro-exercise), useful information practice theory includes (but is not limited to) the principle of least effort (Zipf 1949), sensemaking (Dervin 1992), what happens when people encounter information (Erdelez 1997), and what people do to attempt to overcome information-seeking barriers in health (McKenzie 2002).

5. Conclusion

Information interventions, guided by health behaviour models and theories, are a mainstay of public health practice. However, a lack of critical examination of the multitude of information practices active and latent within health behaviour models may lead health researchers to miss aspects of the causes and effects of health behaviours. By tailoring and extending information practice theory to specifically address and compliment information-related constructs and stages in

health behaviour, information scientists may aid public health researchers and planners in understanding a fuller story when it comes to information practices and health.

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[1] The appropriate dividing line between a model and a theory is a matter of debate in both health behaviour and information science. For the purposes of this abstract, proper titles of models/theories shall be used as published, and therefore "model" and "theory" shall be used relatively interchangeably when describing models and theories individually or as a group.