Ecological content validation of the Information Assessment Method for parents (IAM-parent): A mixed methods study

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A R T I C L E   I N F O

A B S T R A C T

This mixed methods study content validated the Information Assessment Method for parents (IAM-parent) that allows users to systematically rate and comment on online parenting information. Quantitative data and results: 22,407 IAM ratings were collected; of the initial 32 items, descriptive statistics showed that 10 had low relevance. Qualitative data and results: IAM-based comments were collected, and 20 IAM users were interviewed (maximum variation sample); the qualitative data analysis assessed the representativeness of IAM items, and identified items with problematic wording. Researchers, the program director, and Web editors integrated quantitative and qualitative results, which led to a shorter and clearer IAM-parent.

1. Background

In contemporary societies, multiple community-based programs have been developed to support parents in the development of their child. Evaluators and planners are interested in assessing these programs and collecting parents' (program users') feedback (Bute et al., 2014; Cerezo, Dasi, & Ruiz, 2013; Goldberg, Bumgarner, & Jacobs, 2016; Oats et al., 2014; Wynter, Hammarberg, Sartore, Cann, & Fisher, 2015). A vast amount of online parenting information on child development and well-being is published daily, and the evaluation of the utilisation of online resources has become popular (Burkhardt, Schröter, Magura, Means, & Coryn, 2015; Materia et al., 2016; Williams and O'Donnell, 2014). Typically, resource utilisation is assessed using the number of website visits and the visitors' demographics (e.g., data from Google Analytics). However, few studies assess the usefulness of information (Holzel et al., 2015), and prior to our work, no study assessed the use of online information and subsequent potential positive and negative consequences.

The parenting information website 'Naître et grandir' (N & G) is funded by the philanthropic organization 'Lucie and André Chagnon Foundation', and provides free and trustworthy information, in French, for parents of 0-to-8-year old children. Over one million people visit this website each month and/or receive a personalized weekly newsletter. In Quebec, 59% of parents know about the website and 36% know about the newsletter (SOM, 2015). Before our study, parents' perceived value of N & G information was unknown. The objective of this study was to evaluate the ecological content validity of the Information Assessment Method for parents (IAM-parent), which is used to assess how N & G information is valuable from the parents' perspective.

The Information Assessment Method (IAM) is a systematic and comprehensive method to evaluate the *value of information* from the user's perspective (Budzinski et al., 2012; Grad et al., 2011; Grad, Pluye, Repchinsky et al., 2014; Pluye, Grad, Granikov et al., 2010; Pluye et al., 2012). It is based on Saracevic and Kantor's definition of the perceived value of information and the ACA-LO (Acquisition Cognition Application − Levels of Outcome) theoretical model (Grad, Pluye, Shulha et al., 2014; Pluye, Grad, Johnson-Lafleur et al., 2013; Pluye, Grad, Repchinsky et al., 2013).The ACA-LO model holds that the value of information is defined through four levels of outcomes associated with information-seeking and reception: situational relevance, cognitive impact, intention to use, and expected benefits of information for health and well-being (Figure 1) (Pluye, Grad, Repchinsky et al., 2013).

A questionnaire based on the ACA-LO model, like the IAM, offers opportunities to program planners and evaluators (information

The ACA-LO Theoretical Model

The ACA cycle   is associated to   4 Levels of Outcomes

Human information interaction process depicted by the ACA cycle

Outcomes captured in the Information Assessment Method (IAM) questionnaire

Acquisition → Cognition

↗ Application ↘

In a social context (e.g., continuing education)

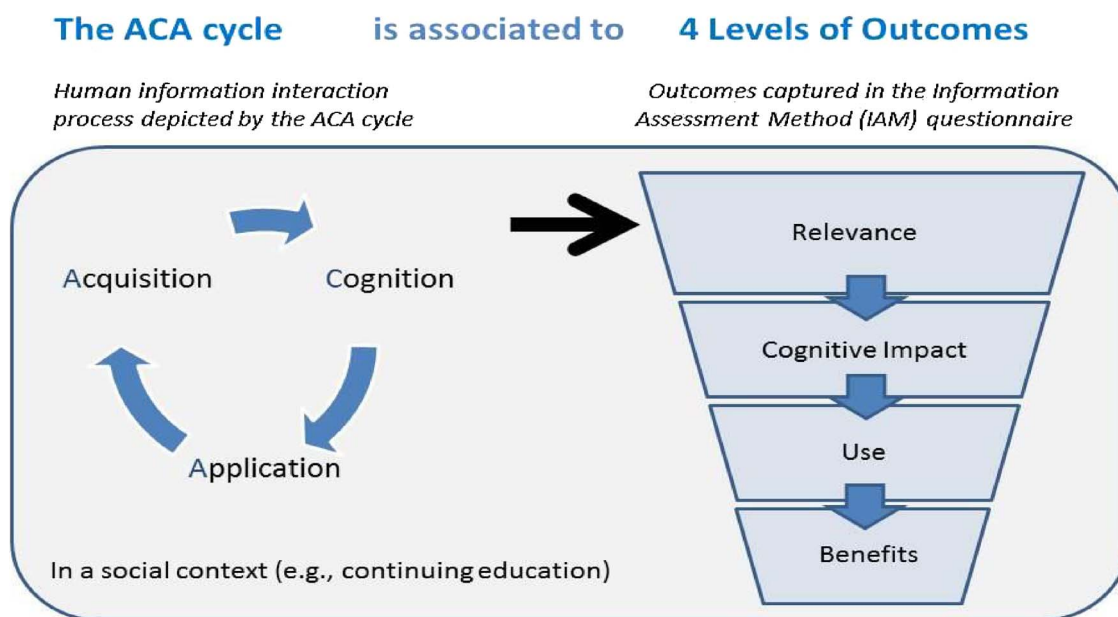Relevance → Cognitive Impact → Use → Benefits

Fig. 1. The ACA-LO theoretical model.

providers) to systematically assess how the information content they produce is valuable from an information user perspective. The IAM questionnaire has been linked to apps and blogs, newsletters and webpages targeting different audiences (such as lay consumers, nurses, pharmacists, physicians and parents) on a variety of topics (such as nutrition, parenting information, medical research synopses and treatment recommendations) in different contexts (e.g., continuing education). This allows the systematic tracking of the assessment of discrete information objects; thus, the examination of outcomes of information. The ACA-LO model can be illustrated as follows. In an iterative information seeking sequence (ACA), people search electronic knowledge resources for information to fulfill specific objectives (acquisition); they integrate relevant information with their previous knowledge (cognition); and they can apply it (application). In the corresponding levels of outcomes (LO), some retrieved information objects achieve one or more than one of the people objectives (Level 1). This achievement documents the relevance of information objects in a specific situation from a user viewpoint (situational relevance). Only a fraction of relevant information objects have positive cognitive impacts on people (Level 2). Of these, only certain information objects are used for a given person (Level 3). Finally, information that is used may be associated with individual perceived health and well-being outcomes (Level 4). We identify four levels because situational relevance (Level 1) is necessary for positive cognitive impact (Level 2) that is necessary for using the information (Level 3), which in turn is necessary for expecting health and well-being benefits (Level 4). By completing the IAM questionnaire, information users document the four levels of outcomes of information they retrieve or receive; then, the information providers can collect and analyze IAM ratings to help Web Editors optimise the content of their websites, email alerts and apps (see examples on www.mcgill.ca/iam).

The IAM can help assess electronic knowledge resources where information is pulled, e.g., websites that require active searching for information (information seeking), resources that push information, e.g., deliver information via email alerts (information delivery), and pull-push resources that do both (information seeking and delivery). The IAM allows information users to systematically report outcomes for each piece of information they acquire (e.g., one educational email), either through active searching or passive reception(Galvao, Ricarte,

Grad, & Pluye, 2013; Grad et al., 2006; Pluye, Grad, Johnson-Lafleur et al., 2010; Pluye et al., 2009; Pluye, Grad et al., 2014; Pluye et al., 2005) . For example, in the context of their professional development, 13,444 family physician members of the College of Family Physicians of Canada used the IAM-clinician to stimulate reflective learning and earn continuing education credits (between January 19, 2010 and December 31, 2014). This process allowed them to rate e-Therapeutics Highlights (treatment recommendations), earn continuing education credits, and provide constructive feedback comments that were subsequently used by the information provider (the Canadian Pharmacists Association) to improve their e-Therapeutics (Pluye, Grad et al., 2014).

Recently, an IAM for online health information consumers (IAM4all) was developed (Pluye, Granikov et al., 2014). In line with typical validation procedures for psychometric assessments (Haynes, Richard, & Kubany, 1995), the IAM4all development followed three steps that involved researchers, laypersons, and a panel of experts, respectively (Pluye, Granikov et al., 2014). Since 2014, researchers from McGill University and N & G have worked in partnership *to adapt, implement, and validate* an IAM for assessing and improving parenting information of the N & G website and newsletter.

2. Adaptation

The IAM4all version was adapted for online parenting information and an initial 2014 version of the IAM-parent (IAM-parent-v2014) was developed. The initial IAM-parent questions and responses items (hereafter items) were developed using a literature review, discussions with N & G planners, Web editors and experts of the McGill Information Technology Primary Care Research Group (ITPCRG). For example, the item about 'health improvement' was replaced by an item about 'child's health and well-being improvement'. The IAM-parent-v2014 contained 32 items distributed on four levels of outcomes of information (four constructs): (i) the "situational relevance of information" construct included 12 items; (ii) the "cognitive impact of information" construct contained five items for the positive impact sub-construct and three items for the negative impact sub-construct, (iii) the "intention to use information" construct contained five items; and (iv) the "expectations of information-related health/well-being outcomes" construct included