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The influence of prior knowledge structures on website attitudes and behavioral intentions

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ABSTRACT

The Persuasion Knowledge Model identifies three knowledge structures (i.e., topic knowledge, persuasion knowledge and agent knowledge) that an individual has prior to exposure to a persuasive attempt. This study extends these knowledge structures by distinguishing between objective and subjective topic knowledge conceptualizations. Specifically, this study examines empirically how an individual's different knowledge structures, held prior to exposure to a web-based intervention, influence subsequent website attitudes and behavioral intentions. The UK's National Health Service (NHS) Live Well website relevant to weight control is used as the web-based intervention in this study. Results suggest that agent (i.e., NHS) knowledge is the most important predictor of website attitudes, while both agent and persuasion knowledge are associated with behavioral intentions to take weight control actions. The results also reveal that the distinction between objective and subjective weight control knowledge is essential given their differential effects on agent and persuasion knowledge. Goal frames, as indicated by the choice between the "healthy eating" and "lose weight" Live Well intervention web pages, are found to moderate the identified Knowledge-Attitude-Behavior links. Theoretical contributions, implications for practice and public policy and future research directions are discussed.

1. Introduction

The use of the Internet as a health information source has become increasingly common (Myrick 2017), especially for health conditions such as obesity (Faith, Thorburn and Sinky 2016). Particularly in the UK, the National Health Service (NHS) website is one of the most popular sources of online health information among the British public with 583 million visits in 2015 (NHS Traffic Report 2015). Losing weight and healthy eating are two of the most popular reasons for visiting the NHS website (NHS Weight Loss Traffic Report March 2016; NHS Annual Report 2012), as the UK is among the top seven countries with the highest obesity rates worldwide (OECD Health Statistics 2013) and it has the highest obesity percentage rate in Europe (NHS England, 2014). The NHS website offers a variety of weight loss information, tools and plans and advice on healthy eating.

Despite existing research studies, evidence on the efficacy of web-based weight loss interventions is inconclusive in regards to their impact on the obesity epidemic (Arem & Irwin, 2011). Arem and Irwin's (2011: 236) review of "randomized controlled trials that examine internet-delivered weight loss and maintenance programs" indicates that outcomes such interventions vary from *no weight loss* to *loss of several kilograms*. However, a clear conclusion on the effectiveness of web-based weight loss interventions is difficult to draw, given that the methodologies and research designs employed by the different trials varied across the studies reviewed. Therefore, further research is needed in this area to better understand the effects of web-based weight loss interventions. Additionally, Lowe, Fraser, and Souza-Monteiro (2015), who examined digital health technologies and food consumption, have recently called for further research to assess the interaction between technology and weight loss behavior. Responding to these calls for research, this paper uses the UK's NHS Live Well website to investigate the impact of an individual's knowledge structures, prior to exposure to a web-based intervention, on British

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consumers' website attitudes and behavioral intentions to control their weight. The term "*weight control*" will be used from here onwards to refer not only to actions to lose weight, but also actions to maintain a healthy weight through healthy eating. This definitional approach is justified by the fact that the NHS website is targeted at the general public rather than specific segments of the population that require a specific health action.

Many studies have investigated a range of factors related to weight loss initiatives and resulting behaviors (e.g., public commitment, Nyer & Dellande, 2010; obesity stigma and social consequences, Puhl & Heuer, 2010; motivation and health literacy, Bolton, Bhattacharjee, & Reed, 2015; labeling of low-fat products, Wansink & Chandon, 2006; labeling of nutrition content, Andrews, Burton, and Kees 2011; caloric intake, Khare and Inman 2009). However, limited research has investigated how knowledge structures held by individuals prior to exposure to a web-based health intervention affect subsequent website attitudes and behavioral intentions. Specifically within a computer mediated environment, a limited number of studies (e.g., Lee & Koo, 2012; Chan, Song and Yao 2015; Schneider, Weinmann, Roth, Knop and Vorderer, 2016; Ran, Yamamoto and Xu, 2016) distinguish between Brucks' (1985) concepts of objective topic knowledge (i.e., information stored in memory) and subjective topic knowledge (i.e., perception of how much an individual thinks he/she knows). Friestad and Wright's (1994) concept of persuasion knowledge (i.e., beliefs about the marketing tactics and effects of web-based interventions) has also received scant attention (e.g., Vashish and Royne 2016; Ham & Nelson, 2016), while Friestad and Wright's (1994) concept of agent knowledge (i.e. beliefs about the party communicating the information on the web-based intervention) is absent from this literature. No prior study within and outside the literature on the computer mediated environment has examined all knowledge types (i.e., objective topic knowledge, subjective topic knowledge, persuasion knowledge, and agent knowledge) together in terms of their impacts on behavior. However, when it comes to understanding how individuals may respond to persuasion attempts such as after encountering a web-based intervention (i.e., the attempt at persuasion), all these prior knowledge structures of a target audience need to be taken into account.

Therefore, this study fills this gap in research by recognizing that when individuals encounter persuasion attempts, such as a web-based health intervention designed to motivate health behavior change, they may use multiple prior knowledge structures (existing prior to the intervention) to cope with the attempt at persuasion. This could ultimately influence their behavior after the intervention. The Persuasion Knowledge Model (PKM) by Friestad and Wright (1994) identifies topic knowledge, persuasion knowledge and agent knowledge as prior knowledge structures of a target audience, which influence the target audience's responses to information, based on the perceived aim of the communicated information. We propose a conceptual framework extending Friestad and Wright's PKM knowledge structures of the target with Brucks' (1985) objective and subjective knowledge, as prior topic knowledge constructs. Such an extension of the PKM's knowledge structures of the target is a noteworthy and relevant contribution because Eisend's (2015) recent study on persuasion knowledge and third-person effects reports that persuasion knowledge is a type of subjective knowledge about persuasion attempts and as such could be relevant to Brucks' (1985) subjective topic knowledge. The subjective nature of persuasion knowledge is also noted in Ham and Nelson (2016), who argue that persuasion knowledge could also be objective and subjective in nature. However, in the present study we focus on the subjective nature of the persuasion knowledge construct as per the PKM. Additionally, we put forward a conceptual model hypothesizing that all knowledge structures identified prior to exposure to a web-based intervention can in turn influence website attitudes and behavioral intentions, as per the Knowledge-Attitude-Behavior model (KAB; Schrader & Lawless, 2004). It must be noted that, in the present study, we use behavioral intentions as a proxy measure of behavior.

The rest of the paper is organized as follows. First, a review of the relevant literature is provided, along with our conceptual model and related hypotheses. Second, the methodology is outlined, followed by the results and their discussion. Subsequently, the implications for research and practice are discussed. Finally, the limitations of the present study and directions for future research are proposed.

2. Literature review

As previously noted, prior studies examining knowledge and its effects on consumer behavior have either used Friestad and Wright's (1994) conceptualizations of topic, agent and persuasion knowledge or Brucks' (1985) objective and subjective knowledge. No study so far has attempted to integrate these knowledge conceptualizations and investigate their simultaneous effects on behavior, within or outside a computer mediated environment. This paper addresses this academic research gap by examining how an individual's knowledge structures, held prior to exposure to a web-based weight control intervention, may impact subsequent website attitudes and intentions to control weight. This investigation also answers calls for further research on the effectiveness of Internet weight control interventions, given the detrimental effects of the obesity epidemic. Our conceptual framework proposed is depicted in Fig. 1 and identifies four knowledge structures that exist prior to exposure to a web-based weight control intervention, namely objective weight control knowledge, subjective weight control knowledge, agent knowledge, and persuasion knowledge. After exposure to the intervention these prior knowledge structures are expected to influence website attitudes and weight control behavioral intentions. Below we first review the literature on the PKM, extended by the objective versus subjective knowledge distinction, which is reviewed subsequently. We outline our hypotheses and discuss the moderating role of goal frames on knowledge-attitudes-behavior links, as this may have implications for the design of web-based weight control interventions.

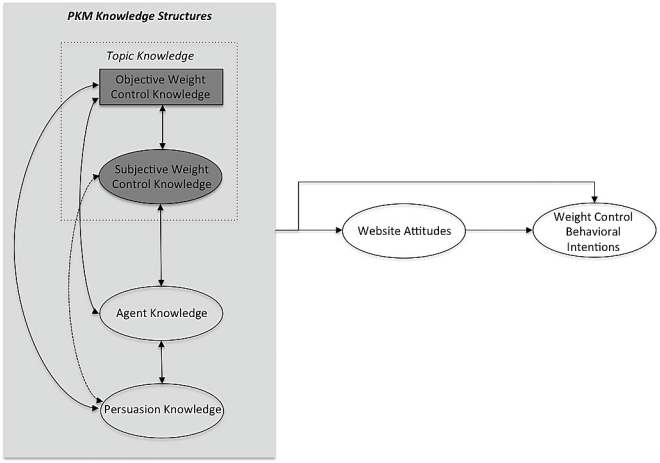

Fig. 1. Conceptual framework.