Relationship between cognitive biases and some information behavior concepts

Sara Behimehr and Hamid R. Jamali

Human cogitation has limited abilities and cannot properly attend to and process all the information that is available (Kruglanski and Ajzen, 1983). Therefore, we have developed mental shortcuts, known as heuristics that are rules of thumbs or simplifying strategies for decision making. These heuristics are one of the main reasons for cognitive biases. A cognitive bias is "an unconscious inclination toward a particular outcome or belief that can affect how humans search for and process information" (Schmutte and Duncan, 2014, p. 69). Cognitive biases are difficult to overcome (Heuer, 2007) and there are many (175+) of them (Benson, 2016).

Cognitive biases have been studied relatively well in some fields such as information systems (for reviews see Fleischmann, Amirpur, Benlian and Hess, 2014; and Mohanani, Salman, Turhan, Rodriguez and Ralph, 2017), accounting and auditing (e.g. Griffith, Hammersley and Kadous, 2013), business and behavioral finance (e.g. Kariofyllas, Philippas and Siriopoulos, 2017), and psychology s (e.g. Miloff, Savva and Carlbring, 2015). However, there have been only a few studies on cognitive biases in information seeking, mainly in the field of health information. For instance, a study found that clinicians experience anchoring effect, order effect, exposure effect and reinforcement effect while searching and these biases might influence their decisions (Lau and Coiera, 2007a, 2007b). Other studies on students (Lau and Coiera, 2009) and ordinary people (Keselman, Browne and Kaufman, 2008; Schweiger, Oeberst and Cress, 2014) showed that anchoring, order biases and confirmation bias might influence health information seeking. However, there is generally a gap in our knowledge of the role of cognitive biases in information seeking. We need to know about their role in order to be able to design debiasing techniques and design better information systems because we know that tools and systems also influence cognitive biases (White, 2013).

To explore the role of cognitive biases in information seeking behavior of students during their research project, we conducted 25 semi-structured face to face interviews with graduate students. Big6TM Skills for Information Literacy (Lowe and Eisenberg, 2005) was adopted as a framework to guide the interviews. Classic grounded theory was used to analyze the data. Twenty-eight cognitive biases were identified in information behavior of students during their project. Based on this study, this poster aims to illustrate how thirteen different cognitive biases might be related to eight concepts and principles of information behavior and how their interaction might influence the information behavior of users. The aim is to stimulate discussion about the relation between biases and those concepts. The principles and concepts and the related cognitive biases to each concept are presented in the table below:

Concept or principle	Related cognitive biases

Principle of least effort	Ambiguity aversion, Availability bias
Information avoidance	Confirmation bias, Stereotyping, Conservation bias, Selective perception
Library anxiety	Ambiguity aversion, Stereotyping, status quo bias
Information filtering	Attentional bias
Relevance judgement	Confirmation bias, Attentional bias, Conservatism bias, Bandwagon effect, Negativity bias
Willingness to return	Availability bias, Selective perception
Value sensitive design	Reactance
Information overload	Information bias, Bandwagon effect

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