

Reijo Savolainen

School of Information Sciences
University of Tampere
Finland

Expectancy-value beliefs and information needs as motivators for task-based information seeking

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Abstract

Purpose – The purpose of this article is to elaborate the picture of the motivators for information seeking by comparing the conceptualizations of task-based information need and expectancy-value theories.

Design/ methodology/ approach – The article is a conceptual analysis of major articles characterizing task-based information needs and expectancy-value theories developed in psychology since the 1950s.

Findings – The conceptualizations of task-based information need approach the motivators for information seeking in terms of the informational requirements posed by tasks at hand. However, the ways in which such needs trigger and drive information seeking have not specified in detail. Expectancy-value theories provide a more elaborate picture of motivational factors by focusing on actor's beliefs about the probability of success in information seeking and the perceived value of the outcome of this activity.

Research limitations/ implications – The findings are based on the comparison of two research approaches only.

Originality/value – So far, information scientists have largely ignored the psychological theories of motivation. The study demonstrates the potential of such approaches by discussing an established psychological theory. The findings indicate that such theories hold a good potential to elaborate the models of task-based information seeking in particular.

Keywords Expectancy-value theory, information need, information seeking, motivation.

Paper type Conceptual paper.

Introduction

The question of what ultimately motivates information seekers is probably among the most difficult research issues faced by information scientists. As Case (2007, p. 69) has aptly pointed out, researchers examining this topic easily face a “motivational puzzle” caused by the complexity of factors triggering and driving the information seeking process.

So far, information scientists have discussed the motivators for information seeking under diverse labels such as information need, anomalous state of knowledge, gap and uncertainty (for an overview, see Case, 2007, pp. 72-83). Of these terms, *information need* is the oldest and most popular so far. However, the concept of information need has not always been accepted without reservations. For example,

Wilson (1981) criticized the ambiguity of this concept and proposed that information scientists would gradually abandon it. An alternative vocabulary could include concepts such as cognitive need and affective need to denote the motivators for information seeking. Belkin and his colleagues (1982) also took a critical stance towards the construct of information need. They proposed the concept of *anomalous state of knowledge* (ASK) to describe the triggers and drivers of information retrieval in particular. Similarly, Dervin (1983) introduced an alternative construct, i.e. *gap* to denote questions asked in sense-making situations. More recently, Kuhlthau (1993) proposed the construct of *uncertainty* as a cognitive-affective factor explaining why people engage in information searching.

So far, alternative constructs such as ASK and *gap* have not been able to displace information need as major concept of information science. On the other hand, the major reviews of information need indicate that since the 1980s, information scientists have not much progressed in the conceptual studies of information need (Case, 2007, pp. 72-83; Naumer and Fisher, 2010). Nevertheless, there are a few studies devoting attention to the conceptual issues of information needs. Sundin and Johannison (2005) characterized information need from the perspective of neo-pragmatist epistemology, while Cole (2011) proposed a theory of information need for information retrieval in particular.

Against this background it is strange that information scientists have rarely sought alternative viewpoints to the triggers and drivers of information seeking by using theories of motivation developed in psychology, for example. However, there are a few examples of such endeavours. Wilson (1997) incorporated Bandura's (1986) category of *self-efficacy* in the general model of information behaviour; self-efficacy was defined as an intervening factor affecting the selection and use of information sources. In brief, self-efficacy refers to the beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments. More recently, in a study focusing on immigrants' information needs, Shoham and Kaufman Strauss (2008) drew on Alderfer's (1972) theory that identifies three groups of core needs: existence, relatedness and growth. Further, Savolainen (2008) employed the categories of the self-determination theory (Deci and Ryan, 1985) in a study examining unemployed people's motivation to seek information about jobs.

The main goal of the present study is to provide a novel perspective on the triggers and drivers of information seeking by examining the potential of an established psychological approach to motivation. To this end, the focus will be placed on *value-expectancy theories*. They were chosen for review because the leading psychologists classify the value-expectancy theories among the most prominent psychological approaches to human motivation (see, for example, Eccles and Wigfield, 2002; Weiner, 2010). In order to sharpen the picture of the potential of value-expectancy theories with regard to the triggers and drivers of information seeking in particular, a comparative approach was taken. The expectancy-value theories are discussed in comparison with the constructs of information need developed by information scientists. More specifically, the main attention will be directed to conceptualizations of information need as a motivator for *task-based information seeking*. Such motivators are briefly referred to as *task-based information needs*. The conceptualizations of such needs are particularly relevant for the present study because they provide perhaps the most elaborate picture of the motivators for information seeking developed by information scientists so far.

The comparison of conceptualizations of task-based information need and expectancy-value theories are intriguing since both approaches revolve around the

question of how human motivation may be rendered meaningful by focusing on values attached to tasks. Hence, the present study is inspired by the question of what really new could the expectancy-value theories offer to the study of the motivators for task-based information seeking, as compared to the ordinary concepts such as information need? This is a thought-provoking question since some psychologists (e.g., Hodges, 2004) claim that studies with a focus on needs tend to provide an antiquated view of motivation. This suggests that constructs other than need (and hence information need) may be worth closer consideration in information science, too.

The article is structured as follows. First, the concepts of motivation and information need are characterized in order to give background for the specification of the research questions. Then, expectancy-value theories are examined by relating them to the conceptualizations of task-based information need. The article ends with the discussion of the main findings and the conclusions of the significance of the research results.

Approaches to motivation research

The diversity of factors triggering and driving action or behaviour defies all attempts to create an overall picture of human motivation. For example, psychologists have developed several dozens of models and theories characterizing the nature of motives and needs (Murphy and Alexander, 2000; Petri and Govern, 2004). Nevertheless, *motivation* is perhaps the largest umbrella concept depicting factors triggering and driving human behaviour. According to Gollwitzer and his associates (2000, p. 198), motivation refers to what type of goals people choose and how they go about implementing them. Motivation also deals with when and how goal-directed behaviour gets started, is energized, sustained and stopped. Pritchard and Payne (2003) characterize motivation as a process where time and energy are allocated to an array of tasks. Motivation includes the direction, intensity, and persistence of this allocation process. Motivation is thus seen as a future-oriented concept in that people anticipate the amount of energy and time required to receive outcomes of action.

Since motivation is a complex topic that spans virtually all areas of psychology, no one theory is capable of explaining all that we know about motivational processes. Historically, drives, needs, and reinforcements were proposed as the primary sources of motivation. This viewpoint is reflected in evolutionary psychology suggesting that our survival as a species is the broadest, most fundamental motivation for human behaviour generally (Cole, 2011, pp. 1226-1227; see also Bernard *et al.*, 2005). According to Eccles and Wigfield (2002, p. 110), modern theories of motivation focus on the relation of beliefs, values, and goals with action. These theories also discuss the extent to which motives result from internal needs and/or external goals, rewards and incentives. Behavioural psychologists have stressed the importance of external goals in prompting action, while cognitive psychologists assume that human behaviour is directed as a result of the active processing and interpretation of information (Petri and Govern, 2004, p. 248). Importantly, cognitive psychologists examine motivation resulting from the expectation of future events, choices among alternatives, and attributions concerning outcomes. Due to this focus, the theories of cognitive motivation are particularly relevant for the present study.

The main theories of cognitive motivation include Maslow's (1954) self-actualization theory and Festinger's (1957) cognitive dissonance theory. Since the

1980s, cognitively oriented approaches to motivation such as the self-determination theory (Deci and Ryan, 1985) and self-efficacy theory (Bandura 1986; 1997) have gained popularity. In addition, attribution theories (Weiner, 2010) and expectancy-value theories have occupied a central position in the study of motivation (Eccles and Wigfield, 2002; Petri, 2010). Since the expectancy-value theories are in the focus of the present study, they are characterized in more detail below.

Expectancy-value theories

Overall, the expectancy-value theories argue that individuals' choice, persistence, and performance can be explained by their beliefs about how well they will do on the activity and the extent to which they value the activity (Wigfield and Eccles, 2000, p. 68; for an overview of the expectancy-value approaches see Petri and Govern, 2004, pp. 247-279). In fact, there is no one expectancy-theory but an extensive family of individual formulations (Steel and König, 2006, p. 893). Therefore, researchers have different opinions about whether specific approaches to motivation, for example, the *theory of reasoned action* (TRA) (Fishbein and Ajzen, 1975) and its newer version, i.e., *the theory of planned behaviour* (TPB) (Ajzen, 1991) should be counted among the expectancy-value theories (see, for example, Eccles and Wigfield, 2002; Palmgreen and Rayburn, 1982). Since TRA and TPB seem to be boundary cases, they are not reviewed here in greater detail.

The basic ideas of expectancy-value theories can be traced back to 1930s. At that time Edward Tolman and Kurt Lewin suggested that motivated behaviour results from the combination of individual needs and the value of goals available in the environment (Petri and Govern, 2004, p. 255). Lewin postulated that an object acquires a valence, and therefore motivational properties, only after there is a need within the organism. This results in a motivation sequence of: need → incentive (valence) → force (behavioural tendency). Thus, for a hungry individual food takes on a positive quality, which in turn generates forces on the person to approach that incentive (Weiner, 2010, p. 29).

Ideas of these kinds were developed further in the 1950s and 1960s by several psychologists. Atkinson (1957) characterized expectancies as individual's anticipations that their performance will be followed by either success or failure, and defined value as the relative attractiveness of succeeding or failing on a task (cf. Wigfield, 1994, p. 50). Atkinson (1957) viewed the motivation in the context of risk-taking behaviour in particular. He proposed that to achieve success is a product of the individual's perceived probability of success and the incentive value of that success. Similarly, the motivation to avoid failure was seen as a product of perceived probability of failure and the negative incentive value of failure (cf. Martin and Dowson, 2009, p. 334).

Early contributions to expectancy-value include Vroom's (1964) theory suggesting that motivation is a function of three constructs: expectancy, instrumentality, and valence. *Expectancy* was defined as a momentary belief followed by a particular outcome (Vroom, 1964; cf. Lee, 2007, p. 789). The range of expectancy can be from zero to one. Zero expectancy is a person's subjective probability that his act will not be followed by an outcome, while an expectancy of one is a person's subjective certainty that his act will be followed by an outcome. *Instrumentality* is the person's perception of the probability that performance will lead to a specific outcome (cf. Lee, 2007, p. 790). Thus, instrumentality is related to the individual's beliefs or expectations that if he or she behaves in a certain way, he or

she will get certain things (Lee, 2007, p. 790). Finally, *valence* is defined as “affective orientations toward particular outcomes” (Vroom, 1964, p. 15). More specifically, “an outcome is positively valent when the person prefers attaining it to not attaining it”, while an outcome has a valence of zero when “the person is indifferent to attaining or not attaining it, and it is negatively valent when he prefers not attaining it to attaining it” (Vroom, 1964, p. 15). Vroom hypothesized that all three of these factors influence motivation in a multiplicative fashion. Thus, if even one of these factors has value zero, for example, positive expectancy is completely lacking, the person will have not motivation for the performance of a task, even though his or her beliefs about instrumentality and valence would be high.

More recent approaches to expectancy-value theory have extended and refined Atkinson’s and Vroom’s original formulations. This is due to critique addressed towards the early theories that approached decision-making as an overly rational procedure (Steel and König, 2006, p. 890; p. 893). To avoid such bias, both the expectancy and value components are elaborated further and they are linked to a broader array of psychological, social and cultural determinants (Wigfield *et al.*, 2008, pp. 408-409). An example of the application of the modern expectancy-value theories is provided by Vansteenkiste and his associates (2005). Their study focused on the unemployed people’s job search behaviour. In this study, the model of expectancy-value developed by Feather and O’Brien (1987) was utilized. The model relates an individual’s level or strength of motivation to strive for a certain goal to the (product of) expectations to attain the desired goal and the incentive value or valence of that particular goal, e.g. finding a job (Vansteenkiste *et al.*, 2005, p. 270).

Different from Vroom’s (1964) theory, this model elaborated the concept of expectancy by differentiating efficacy-expectations and outcome expectations. Drawing on the ideas of Bandura (1997, p. 193), *efficacy-expectations* are defined as the conviction that one can successfully execute the required behaviour to produce the outcomes, while *outcome expectations* refer to a person’s estimate that a given behaviour will lead to certain outcomes (Vansteenkiste *et al.*, 2005, pp. 271-272). For example, an unemployed person could have a strong expectation that she would perform well on a job interview, thereby meeting the main requirement for successful performance, and she might also hold the expectation that succeeding at the interview would yield positive consequences, such as being engaged for the job. Thus, an unemployed person with a high expectation of finding employment may search more intensively for a job when compared with an unemployed person with a lower expectation. Finally, Vansteenkiste and his associates (2005) defined *value* by referring to the person’s needs that are considered to be determinants of motivated action through their effects on valences. Thus, the intensity of job search will be positively related to how much finding a job is valued, i.e. has positive valence.

Overall, recent expectancy-value theories suggest that the expectancy-value framework can be applied to the whole range of behaviour. It is also assumed the strength of an individual’s motivation is based on the valuing of proximal and distal outcomes associated with a behaviour or pattern of behaviours. More specifically, modern expectancy-value approaches argue for a cognitive representation of goal objects (Petri and Govern, 2004, p. 255). The cognitive representation includes an expectation that certain behaviours will lead to certain goals, and that behaviour is a function of one’s estimation of obtaining the valued goal. Thus, even a highly valued goal may not generate much behaviour if the expectancy of successfully reaching the goal is very small. Thus, according to this theory, individuals will be motivated to engage in a behaviour if they value the outcome and expect that their effort to achieve

the outcome has a reasonable chance of success (Petri and Govern, 2004, p. 273). Earlier studies have indicated that such ideas may be used in the exploration of learning, for example (Wigfield and Eccles, 2002; Wigfield *et al.*, 2009). Given the assumption that expectancy-value theories can be applied to the whole range of human behaviour, they may also be utilized in the study of the motivators for information seeking.

Information need

Traditionally, information scientists have preferred the term need, not motive or motivation in order to conceptualize the triggers and drivers of information seeking. More specifically, the term *information need* has been employed to label the factors giving rise to information seeking. Attempts to characterize the nature of this construct have been made since the 1960s, as evidenced by the review articles on this topic in the volumes of Annual Review of Information Science and Technology (see, for example, Paisley, 1968). In the early years, the most influential model of information needs was developed by Taylor (1968). He postulated four levels at which information needs are articulated in the context of reference interview in libraries. These levels of question formation shade into one another along the question spectrum. The levels are the actual, but unexpressed need for information (the visceral need); the conscious, within brain-description of the need (the conscious need); the formal statement of the need (the formalized need), and the question as presented to the information system (the compromised need).

The nature of information need was further specified by Derr (1983). Based on conceptual analysis he concluded that necessary and sufficient conditions for the need for certain information exist if it is judged that a genuine or legitimate information purpose exists, and it is judged that the information, in question, contributes to the achievement of the information purpose. Krikelas (1983, pp. 8-9) outlined a cognitive oriented approach to information need by distinguishing between immediate and deferred information needs. The former were defined as the active or dynamic state of information seeking which results from the realization of a gap between information that is applied to a problem and the solution of the problem. The deferred need is the passive or static need that lies dormant until activated by the realization of a gap.

In the early decades of the research on information need, one of the most influential studies was conducted by Wilson (1981). He criticized the construct of information need impregnated with connotation of the “basic need”, similar in its quality to fundamental need such as the need for shelter. According to Wilson (1981), most information needs could be accounted for by more general needs: physiological needs, emotional needs and cognitive needs. Importantly, in order to satisfy these needs, an individual may commit himself to seeking information.

Since the mid 1980s, a growing criticism was directed to the assumption that information needs would be described as relatively stable and entity-like factors explaining why people engage in information seeking (Dervin and Nilan, 1986). Hence, the focus was shifted to information needs experienced in diverse situations and contexts. For example, Allen (1997) proposed a “person in-situation approach” in order to examine information needs in the context of problem-solving. More recently, Westbrook (2008 p. 24) emphasized that information needs should be conceptualized in terms of situations that give rise to them. Agosto and Hughes-Hassell (2006a; 2006b) also developed a contextual model of the everyday life information needs. As discussed in more detail below, information needs have increasingly been approached

in the context of work task performance. From the perspective of the present study, the conceptualizations of task-based information need are particularly relevant because similar to expectancy-value theories they are primarily interested in task values as constituents of the motivators for information seeking.

Research questions and methodology

The above review demonstrated the variety of research approaches to motivation and suggested that the ideas of expectancy-value theories could also be used to examine the motivators for information seeking. To analyze this issue in greater detail, the present study addresses the following research questions:

- In which ways do the expectancy-value theories conceptualize factors that give rise to information seeking?
- Compared to the constructs of task-based information need, what kind of strengths and weaknesses can be identified in the expectancy-value theories in the conceptualization of the motivators for information seeking?

To answer these questions, a considerable number of studies, both conceptual and empirical were examined by means of conceptual analysis. At the initial stage of the study, an attempt was made to receive an overall picture of motivation theories developed in psychology in particular. For this purpose, Petri and Govern's (2004) extensive book *Motivation: theory, research, and applications* appeared to be particularly useful. In addition, Petri's (2010) recent article on motivation published in *Encyclopedia Britannica* (academic edition) was used. Further, major articles on motivation published in *Annual Review of Psychology* were scrutinized (for example, Eccles and Wigfield, 2002). Since the expectancy-value theories appeared to be particularly intriguing from the perspective of task-based information seeking, the main attention was directed to them. To this end, major databases such as Ebsco, ERIC and LISA were searched to identify relevant literature by employing keywords like expectancy-value, motivation, and information seeking.

In this way, about 150 individual studies on expectancy-value in diverse contexts could be identified. Most of them, however, appeared to be less interesting from the perspective of the present study since they focused on specific issues of learning among students, for example. These articles were excluded from the study. The final sample included about 40 articles and books discussing the conceptual issues of expectancy-value, as well as the application of the expectancy-value theories in the study of information and communication behaviour in particular. This sample appeared to be sufficiently large to provide a detailed picture of these theories and their application in empirical studies. Due to space restrictions alone, studies published in the 1990s and later were preferred.

In the identification of relevant research literature discussing the construct of task-based information need, databases such as LISA were used. In addition, major reviews discussing the concept of information need (Case, 2007; Naumer & Fisher, 2010) and task-based information seeking (Vakkari, 2003) were scrutinized. In these ways, about 50 relevant articles and books characterizing task-based information needs were identified.

To strengthen the focus of the study, a few limitations appeared to be necessary. Since the main emphasis is placed on the analysis of the potential of the expectancy-value theories, the review of the constructs of task-based information

need had to be concise, due to space restrictions alone. For the same reason, only the key studies of task-based information need (e.g., Byström, 1999; 2002) can be discussed in more detail. Second, since the constructs of expectancy-value and task-based information need have been developed in different research fields and they draw on different terminologies, no attempts were made to compare the individual components of expectancy-value (e.g., instrumentality) and the task-based information need (e.g., necessity to acquire information) in order to identify the degree to which they match. The comparison was made only at a general level by identifying the strengths and limitations of the above approaches with regard to the degree to which the main components and their relationships are specified within these approaches. Third, no attempts were made to integrate the expectancy-value theories into the constructs of task-based information need. Apparently, the review of the above issues would have required a separate study.

Task-based information need and expectancy-value beliefs: a comparative viewpoint

This section discusses first how information scientists have characterized information need in the context of task performance. Thereafter, attention will be devoted to how the motivators for information seeking can be approached from the perspective of the expectancy-value theories.

Task-based information need

One of the earliest examples of truly contextualist approaches to task-based information need was provided by the research project on Information Needs and Information Seeking in the Social Service Departments (INISS), directed by Tom Wilson and David Streatfield in the late 1970s. Wilson (1981) credited this project as being a major influence of the ideas expressed in his seminal paper on user studies and information needs. Even though Wilson preferred the terms *cognitive need* and *affective need* over information need, his ideas are highly relevant for the present study. According to Wilson (1981, p. 9), one's *work role*, that is, the set of activities, and responsibilities of an individual, usually in some organizational setting, is particularly important for the contextualist study of cognitive and affective needs. At the work-role level, the performance of particular tasks, and the processes of planning and decision-making, can among the principal generators of cognitive needs, while the nature of the organization, coupled with the individual's personality structure, can create affective needs such as the need for achievement.

The overall features of task-based information needs have been characterized in the model of the information seeking of professionals developed by Leckie and her associates (1996, pp. 180-186). The model suggests that the roles and related tasks undertaken by professionals in the course of daily practice prompt particular information needs, which in turn give rise to an information-seeking process. It is assumed that information needs arise out of situations pertaining to a specific task that is associated with one or more of the work roles played by the professional. However, information need is not constant and can be influenced by a number of intervening factors such as profession, specific situation within the process of task performance, and the urgency of a task at hand. Finally, the outcomes of information-seeking process may influence the information needs, particularly if the outcome of the

information-seeking process is that the need is not satisfied and further information seeking is required.

Task-based information needs have also been characterized from the perspective of problem solving that takes place in the context of task-related decision-making or problem solving. One of the early attempts to conceptualize information needs from this perspective is provided by Wersig (1971; 1973). He approached information needs by deriving them from the information requirements posed by a task at hand or a problem to be solved. Wersig (1971) claimed that information need is not a need in itself, but rather a means toward satisfying some more basic need, typically, in the situations, which concern the resolution of a problem. In “problematic situations” of these kinds, an actor’s information needs can be defined as potential, objective or subjective, depending on the nature of the information requirements and the level of knowledge of the individual. Ultimately, in Wersig’s (1973) approach, the contextual factors such as the nature of the task at hand determine the relationships between potential, objective and subjective information needs.

Byström (1999; 2002) drew on Wersig’s (1973) ideas by proposing that information need is ultimately determined by the requirements posed by work tasks. In a model of information needs, seeking and use (INSU) Byström (1999, p. 38) proposed that “an INSU process takes place within task performance processes” and that this process “begins with the recognition of need for information”. More specifically, this need is characterized with regard to its recognition by the task performer: the identification of a necessity to acquire information. In addition, information need is characterized from the viewpoint of its analysis: the task performer considers what information would be sufficient to cope with the current matter (Byström, 1999, p. 38). Further, information need is assumed to reflect the anticipated completion of the task. Since such anticipation is dependent on the judgment made by the task performer, information need is subjective by nature. Distinct from Wersig (1973), however, Byström (1999, pp. 35-40; 2002, pp. 581-582) also emphasizes the role of task complexity as a factor influencing on the ways in which an individual interprets the work task requirements with regard to information need. More specifically, task complexity is considered in terms of perceived a priori determinability of information inputs, processing, and outputs.

According to Byström and Hansen (2005, p. 1055), the work task performer formulates an information need as a starting point for information seeking activities. From the perspective of task process, a task focuses on doing a particular item of work; in other words, a task is manifested through its performance. A task is seen as a set of physical, affective, and/or cognitive actions in pursuit of a certain, but not unchangeable goal (Byström and Hansen, 2005, p. 1051). However, Byström and Hansen do not approach information need in terms of any ultimate, partly unconscious state of mind. Instead, information need is referred to as an act to determine how to handle the information requirements for the task at hand. Similar to Leckie and her associates (1996), it is assumed that the task performer’s information need - as once initiated - may be reformulated a number of times during the ongoing task performance process (Byström and Hansen, 2005, p. 1055). On the other hand, this idea is not new. Bates’s (1989, p. 410) berrypicking model of information search proposes that as users berrypick pieces of information a bit at a time and think about the information they have found by relating it to what they are trying to accomplish with the search, their conceptualization of the information need changes in part or whole (cf. Cole 2011, p. 1220).

More recent conceptualizations have further refined the picture of tasks in information seeking (e.g., Li and Belkin, 2008) and provided sophisticated analyses of the relationships between work task and search task (e.g., Li, 2009; Li and Belkin, 2010). Interestingly, these studies have no longer discussed the nature of information need in relation to work task or search task. Overall, from the first beginning (Wersig, 1973; Wilson, 1981), the major conceptualizations of task-based information need have not characterized the content of such needs; in fact, they have remained black-boxed constructs. Since the main attention is paid to the work task requirements that shape the information need during the information-seeking process, information need is approached as a derivative and thus secondary construct. Ultimately, task-based information need has become a redundant category since it is assumed that information seeking is primarily triggered and driven by the requirements posed by task performance or problem solving. Nevertheless, information need is continually referred to as a summarizing construct, that is, a shortcut describing the information requirements arising from task performance.

Expectancy-value approaches to motivators for information seeking

Thus far, the ideas of expectancy-value theories have seldom used in the study of information seeking in particular. These theories have been far more popular in the field of education and learning (see, e.g., DeBacker and Nelson, 1999; Hodges, 2004), and communication studies (see, e.g., Palmgreen and Rayburn, 1982; Cooper *et al.*, 2001). However, as discussed below, the expectancy-value theories hold a considerable potential for the conceptualization of factors giving rise to information seeking.

Feather (1967) provides an early example of how the ideas of expectancy-value can be used in the analysis of information seeking. The study was inspired by a critical view towards the theory of cognitive dissonance developed by Festinger (1957). Distinct from the assumptions of the above theory, Feather (1967) did not speculate about cognitive dissonance as a trigger of information seeking. He proposed that an individual tends to select a source of information because it may lead to (cognitive) consistence. However, another source is not selected because it may lead to inconsistency and thus threats to consistency (Feather 1967, p. 348). From the perspective of more recent theories of expectancy-value, such assumptions may appear simplistic at best because they merely draw on the dichotomy of consistence vs. inconsistency. Therefore, Feather's approach does not add much to our understanding of why people engage in information seeking.

Of the early contributions to expectancy-value, Vroom's (1964) theory has been more successful to retain its relevance for empirical research. For example, Liao and associates (2011) made use of Vroom's (1964) theory in a study focusing on the motivations for blogging. As discussed above, Vroom (1964) proposed that motivation is a multiplicative function of three constructs: expectancy, instrumentality, and valence. An empirical study conducted by Lee (2007, p. 791) demonstrated that Vroom's (1964) theory can be used successfully in order to predict the motivation for the use of public library products and services. If the customers confidently perceive that they can access library's products through virtual or physical visit of the library, if the products such as book and chat reference services are the products that they were looking for, and if they think the library products have valence to satisfy their information needs, they will be motivated to use the library products frequently. However, if they perceive that there will be difficulties with

access to products because they have not had any experience with online searching, for example, their motivation to use library products will be very low.

It is obvious that Vroom's categories could also be used to study the motivators for information seeking by replacing the "library products" with a set of information sources. Similar to Lee's (2007) study, the focus could be placed on the individual's beliefs concerning expectancy, instrumentality and valence with regard to such sources. However, the validity of studies of these kinds may be limited because Vroom's (1964) theory incorporates assumptions about information seekers who make optimal choices among courses of action. Steel and König (2006, p. 899) remind that Vroom approaches decision-making as a process that is akin to rational gambling that determines choices among courses of action. For each option, two considerations are made: 1) what is the probability that this outcome will be achieved, and 2) how much is the expected outcome valued? Multiplying these components, expectancy and value, the action that is then appraised as largest is the one most likely to be pursued. However, from the perspective of bounded rationality (Simon, 1955), it can be rational to make adequate although not optimal decisions based on limited input and processing of information; people tend to *satisfice* rather than *maximize*. Therefore, Vroom's (1964) theory may be most useful in cases where the task at hand is well-defined and the number of potentially relevant information sources among from which to choose is fairly low.

Despite the rationalistic bias, Vroom's (1964) theory provides relevant categories that are lacking in the conceptualizations of task-based information need. First, the component of *expectancy* has no counterpart in these conceptualizations; they do not posit questions about the individual's beliefs about the probability that his or her attempts to access an information source will be followed by a positive or negative outcome. Second, the component of *instrumentality* provides a novel viewpoint to the discussion about the motivators for information seeking. As noted above, instrumentality is related to the individual's beliefs that if he or she behaves in a certain way, for example, contacts a knowledgeable colleague, she will meet her information need. The conceptualizations of task-based information need do not devote attention to such issues; at best, they speculate about the nature of the informational requirements posed by tasks with varying degrees of complexity, for example (Byström, 2002). Finally, the conceptualizations of the task-based information need omit the issues related to the *valence*, that is, the affective orientations toward particular outcomes. As the conceptualizations of task-based information need centre on the informational (cognitive) requirements of tasks at hand, the ways in which such perceptions are anchored in affective evaluations of the (positive or negative) outcome of information seeking is not thematized.

Perhaps the most sophisticated version of the modern expectancy-value approaches is the model developed by Eccles and Wigfield (2002, pp. 118-121; see also Wigfield, 1994; Wigfield and Eccles 2000; 2008, p. 409; Wigfield *et al.*, 2009). They have elaborated an expectancy-value model of achievement, based on a series of empirical studies on the social-psychological influences on choice and persistence among children and adolescents. The expectancies for success are defined as individuals' beliefs about how well they will do on upcoming learning tasks, either in the immediate or longer term future and ability beliefs as beliefs about how good one is in task performance. Since it is evident that such factors triggering the performance of learning tasks are also relevant for cognitive behaviour more generally, the scope of the above model can be extended to include the motivators for task-based information seeking. Following the ideas of Marchionini (1995, pp. 8-9), learning and

information seeking are conceived as closely related processes since they share the same goal: to change one's state of knowledge. According to Marchionini (1995, p. 8), information seeking can be approached as a type of learning, even though the processes are not identical. Learning demands retention while in the case of information seeking, the information may be used for a task at hand. Despite this difference, the expectancy-value model of achievement discussed below is considered sufficiently applicable to the conceptualization of the motivators for information seeking, too.

To examine this issue, the original model (Eccles and Wigfield, 2002, p. 119) was modified for the needs of the present study by replacing the processes of learning with the processes of task-based information seeking. The original model was simplified by deleting components dealing with specific issues related to learning, for example, "socializer's beliefs and behaviours", and "child's perceptions of gender roles". Further, the component of *expectations of success* was specified by differentiating between efficacy-expectations and outcome expectations, similar to the study conducted by Vansteenkiste and his colleagues (2005). The modified version of the model is presented in Figure 1.

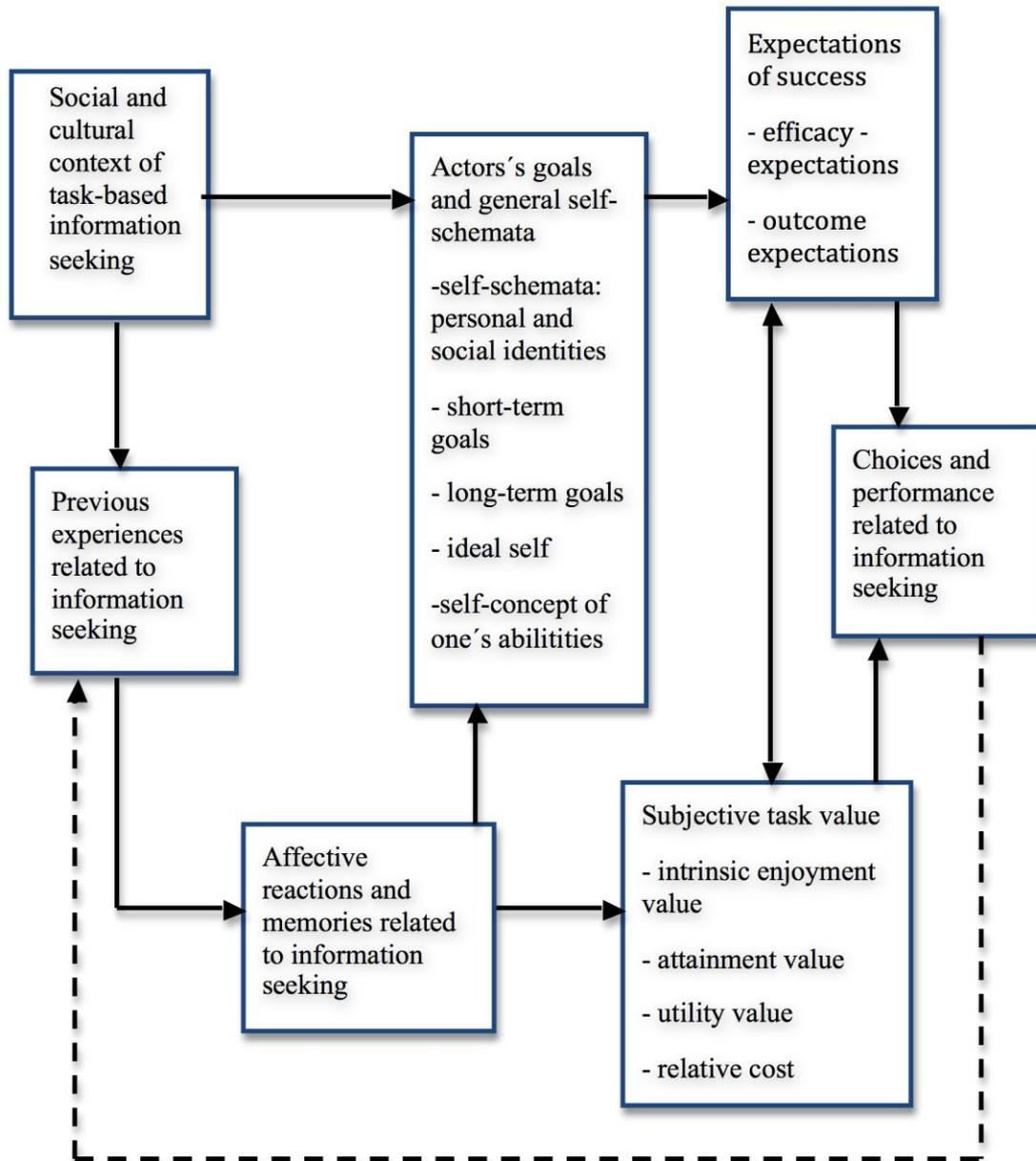


Figure 1. Expectancy-value model of the motivators for task-based information seeking (adopted from Eccles and Wigfield, 2002, p. 119).

Figure 1 suggests that the choices and performance related to task-based information seeking are influenced by a complex set of individual and contextual factors. First, such choices and performance are indirectly affected by the factors constitutive of the social and cultural context of information seeking, for example, the work roles of an organization or the importance of such tasks. Second, the choices and performance are indirectly affected by an individual's previous experiences about task-based information seeking. Often, these experiences manifest themselves as positive or negative affective reactions and memories related to information seeking, for example, accessing colleagues as potential sources of information. Third, an individual's goals and general self-schemata may affect the choices and performance related to information seeking. Self-schemata refer to the individual's personal and

social identities as an employee or her competence in various domains. Ability beliefs are conceived as broad beliefs about competence in a given domain, in contrast to one's expectancies for success on a specific upcoming work task. In addition, short-term and long-term goals in work task performance may influence the expectations of success in information seeking and through it, the actual choices of information sources. Finally, the model has cyclic features in that the choices and performance related to information seeking can affect the ways in which the individual interprets his previous experiences of information seeking.

From the perspective of motivators for information seeking, the most intriguing components of the above model can be found by looking at the factors constitutive of expectancy-value beliefs, that is, *expectations of success* and *subjective task value*. This is because these factors are assumed to influence directly to how an individual starts seeking for information and continues this activity. As discussed above, *efficacy-expectations* indicate the conviction that one can successfully execute the required behaviour to produce the outcomes, while *outcome expectations* refer to a person's estimate that a given behaviour will lead to certain outcomes. Expectations of success are also affected by the subjective task value. As demonstrated by Figure 1 above, Eccles and Wigfield (2002, pp. 119-120) identified four main factors constitutive of this motivational component: 1) intrinsic enjoyment value (or intrinsic interest value), 2) attainment value, 3) utility value, and 4) relative cost.

Intrinsic value is the enjoyment the individual gets from performing the activity or the subjective interest he or she has in the object of information seeking, for example, an information source. It may be perceived as highly exciting because of its newness or boring due to its familiarity, for example. *Attainment value* is defined as the personal importance of doing well the information-seeking task. In addition, attainment value is linked to the relevance of engaging in a task for confirming or disconfirming salient aspects of one's self-schemata, because tasks provide the opportunity to demonstrate aspects of one's actual or ideal self-schemata, such as competence in seeking information from the databases. Thus, tasks will have higher attainment value to the extent that they allow the individual to confirm salient aspects of these self-schemata. *Utility value* is determined by how well an information-seeking task relates to current and future goals, such as performing a work task at hand. Such a task can have positive value to a person because it facilitates important future goals, even if he or she is not interested in the task for its own sake. However, utility value also relates directly to an individual's internalized short- and long-term goals. Finally, Eccles and Wigfield (2002, pp. 119-120) identified *relative cost* as a critical component of value. Cost is conceptualized in terms of the negative aspects of engaging in the information-seeking task, such as fear of failure, as well as the amount of effort needed to succeed and the lost opportunities that result from accessing an information source rather than another.

Compared to the conceptualizations of task-based information need, the above model provides a number of novel aspects. First, different from such conceptualizations emphasizing the informational requirements posed by the task at hand, the expectancy-value model devotes the main attention to the individual's beliefs concerning the subjective task-value composed of intrinsic enjoyment value, attainment value, and utility value. In addition, the relative cost of action is considered. The conceptualizations of task-based information need are primarily interested in the utility value, that is, the potential usefulness of an information source in relation to the requirements posed by a task (e.g., Byström, 2002; Wersig, 1973).

However, in these conceptualizations, no attention is paid to other motivational components constitutive of task value identified by Eccles and Wigfield (2002).

This comparison reveals even more clearly the unspecified nature of the conceptualizations of task-based information need as motivators for information seeking. This is because the perception of the existence of informational requirements may not *per se* be sufficient to trigger information seeking from a source. In addition, the conceptualizations of task-based information need fail to thematize the question about what do people expect from the sources potentially relevant for task performance? In terms of the expectancy-value theories, neither efficacy-expectations nor outcome expectations are thematized. Therefore, the conceptualizations of task-based information need remain silent about whether an individual would start seeking information for task performance because she believes that she can successfully identify and access an information source, or whether she believes that a particular source of information will be able to meet her information need.

As a whole, the model developed by Eccles and Wigfield (2002, p. 119) provides a sophisticated framework for a contextualist examination of the motivators for task-based information seeking. As the model suggest, the motivating factors should be studied as a part of the process of task performance because the motivation is dependent on achievement-related experiences of previous processes of information seeking. Finally, distinct from the conceptualizations of task-based information need, the expectancy-value introduces an affective component, that is, affective memories. This suggests that the motivators for information seeking are also influenced by emotional factors.

Discussion

Comparative examination of the conceptualizations of task-based information need and expectancy-value theories indicate that the former provides a fairly unspecified picture of the factors that may give rise to information seeking. Ultimately, the conceptualizations of task-based information need have largely remained as black-boxed categories that are derivative of the task at hand or problem to be solved. However, the construct of task-based information need is useful in that it functions as a summary category of informational requirements posed by tasks at hand. In comparison, recent variants of the expectancy-value theories provide more sophisticated tools to examine the triggers and drivers of information seeking. Interestingly, both the conceptualizations of task-based information need and expectancy-value theories devote attention to cognitive and task-related components of the motivators for information seeking. However, in both approaches, the affective components have not conceptualized in sufficient detail.

The main characteristics of the task-based information need and expectancy-value beliefs are summarized in Table 1.

Qualities of the motivator for information seeking	Task-based information need	Expectancy-value beliefs
Main motivational components	<p>Recognition of information need: necessity to acquire information.</p> <p>Analysis of information need: judgment about what information would be sufficient to cope with the current matter (Byström, 1999)</p>	<p>Expectancy, instrumentality and valence (Vroom, 1964)</p> <p>Intrinsic enjoyment or interest value; attainment value; utility value, and relative cost (Eccles and Wigfield, 2002)</p> <p>Efficacy-expectation and outcome expectation (Vansteenkiste <i>et al.</i>, (2005)</p>
Strengths	A summary category succinctly indicating the informational requirements of a task at hand	<p>Well-specified set of factors that can be used in the study of the motivators for task-based information seeking (Eccles and Wigfield, 2002)</p> <p>A lot of empirical evidence supporting the validity of the modern expectancy-value theories in related fields such as learning</p>
Weaknesses/ limitations	<p>A black-boxed category: the content of task-based information need is not characterized in greater detail</p> <p>Difficult to operationalize in empirical research, due to the elusive nature of the construct</p>	<p>Overly rationalistic assumptions of the early theories (Atkinson, 1957; Vroom, 1964)</p> <p>A relatively high number of motivational components resulting in a complex setting in empirical research (Eccles and Wigfield, 2002)</p>

Table 1. The comparison of the constructs of task-based information need and expectancy-value beliefs

Table 1 suggests that compared to the conceptualizations of task-based information need, the recent versions of expectancy-value theories (Eccles and Wigfield, 2002; Vansteenkiste *et al.*, 2005) provide a potentially useful research approach to the study of the motivators for information seeking. Even though the current number of expectancy-value studies focusing on information seeking is low, there is a lot of empirically validated studies in related fields such as learning and education (Wigfield *et al.*, 2008). On the other hand, the expectancy-value theories are not without limitations. Early theories (Atkinson, 1957; Vroom 1964) suffered from overly rationalistic assumptions of the actors as decision-makers. Consequently, such versions of the expectancy theory may be most applicable to situations where people

do rational decision-making by accessing a limited number of information sources providing facts about a well-defined issue. More recent theories and models (e.g., Eccles & Wigfield, 2002) are constituted by a number of individual components. Naturally, the attempt to use such models in the whole may result in complex settings in empirical research since the number of variables and their relationships is quite high.

Nevertheless, the modern variants of the expectancy-value theories (for example, Eccles and Wigfield, 2002) seem to hold the greatest potential for the empirical study of the motivators for information seeking. The most significant factors include efficacy-expectation, outcome expectation, intrinsic enjoyment or interest value, attainment value, utility value, and relative cost. It is evident that a detailed examination of the relationships between these components can provide a sophisticated picture of the factors that trigger and drive information seeking in work task contexts in particular. Interestingly, as indicated by the model developed by Eccles and Wigfield (2002, p. 119), one of the most promising possibilities to strengthen the expectancy-value theories may be found in the integration of the elements of expectancy-value and self-efficacy. Other researchers, for example, Pratsala and Redford (2010, p. 285) and Tollefson (2000) have also emphasized the importance of the attempts to integrate the constructs of self-expectancy and self-efficacy because it is obvious that self-efficacy is at the heart of motivation for behaviour of various kinds.

Eccles and Wigfield (2002, p. 122) remind that similar to the self-efficacy theory, modern expectancy-value theories can be criticized for emphasizing the rational cognitive processes leading to motivation and behaviour. Often, the logical, rational decision-making processes of determining expectancies and valences are not used because people prefer simpler, but more fallible and optimistic, decision-making strategies. This issue is significant because task values are linked to more stable self-schemata and identity constructs; thus, one's choices are not necessarily the result of conscious rational decision-making processes. By including affective memories and identity-related constructs as part of the theoretical system, as suggested by Eccles and Wigfield (2002; cf. Wigfield *et al.*, 2008), less rational processes can be included to explain motivated behavioural choices.

Conclusion

Modern expectancy-value theories hold a good potential to elaborate the picture of the motivators for information seeking. There is a need to test the applicability of these theories in empirical research in order to further specify their strengths and weaknesses. Since the present study focused on one theory of motivation, there is a need to broaden the comparative viewpoint by discussing the potential of alternative psychological approaches elucidating the nature of the motivators for information seeking. These approaches include attribution theories (Weiner, 2010), self-determination theory (Deci and Ryan, 1985; Ryan and Deci, 2000) and the construct of self-efficacy (Bandura, 1997). Studies such as these may identify more broadly the strengths and weaknesses of the ordinary concepts used in information science. These concepts include, for example, uncertainty (Kuhlthau, 1993; Anderson, 2010) and anomalous state of knowledge (Belkin *et al.*, 1982). The building of bridges between the established psychological theories and information science is important because it may significantly contribute to the renewal of the concepts and models of information seeking studies.

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