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The role of skepticism in human-information behavior : a cognitive-affective analysis

Michael J. Giarlo
Rutgers, the State University of New Jersey
School of Communication,
Information and Library Studies

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Abstract

Even a cursory review of social science literature reveals a wealth of research into the role that skepticism plays in the forms of information behavior studied within communication, consumer psychology, education, journalism and media studies, and public policy, to name only a handful of disciplines. In much of this research, the effects of skepticism are found to be far-reaching, yet skepticism has not been studied to a great extent within the body of human-information behavior research. Defining skepticism is a considerable task given its relative absence in information science literature; therefore, this paper gives significant attention to defining skepticism and discussing its dimensions. This paper establishes skepticism as a factor to be considered in cognitive-affective models of human-information behavior via a large-scale overview of social science research, and shows that a rational form of skepticism is a healthy trait to cultivate among information-seekers, emphasizing

the important role that librarians play in this process.

The Role of Skepticism in Human-Information Behavior: Cognitive-Affective Analysis

Skepticism—defined in Merriam-Webster's dictionary as "an attitude of doubt or a disposition to incredulity either in general or toward a particular object"—has an important role in human-information behavior (HIB), i.e., in information needs, seeking, evaluation, and usage. An operational definition of skepticism is derived here from a broad range of research in the social sciences, primarily in communication, psychology, marketing, media studies, and education, and is expressed within the parlance of the cognitive viewpoint as a knowledge structure. Skepticism is an established research subject in other social science disciplines and, it is argued in this paper, HIB research would benefit from the inclusion of skepticism in its research. The many facets of skepticism are explored and then applied to HIB with suggestions as to how the issue might be approached in future research. A skeptical attitude may initially be seen as a drawback to information behavior, but there may be important and unexpected benefits of skepticism. Rational skepticism is shown here to be beneficial, and methods of

cultivating skepticism are discussed, focusing on the role librarians play in the process.

Theoretical Foundation

There exist numerous viewpoints from which one might examine issues of human-information behavior. These may roughly be divided into three categories: cognitive approaches, social approaches, and multi-faceted approaches (Pettigrew et al., 2001).

The Cognitive Viewpoint

Building upon the work of Belkin's review (1990) of the cognitive viewpoint, Pettigrew et al. (2001) define the cognitive viewpoint as "an approach and set of constructs for understanding information behavior, which focuses fundamentally upon attributes of the individual" (p. 46). What sets the cognitive viewpoint apart from other approaches is that it seeks an understanding of human-information behavior via the fundamental processes and structures inside the human mind, whereas other approaches, such as the social approach, use the cognitive approach merely as a jumping-off point to explore such concepts. Though this approach initially examined cognitive phenomena exclusively, it soon grew to encompass affective factors, i.e., what the user is feeling during the information seeking experience (Kuhlthau, 1991). The cognitive approach, or cognitive-affective viewpoint as it is referred to in this paper, considers both cognitive and affective aspects of information needs, seeking, evaluation, and usage; in this approach, human-information behavior is understood as a function both of mental processes and of psychological or emotional factors.

The Social Viewpoint

Social constructivist approaches such as the Foucauldian discourse analytic viewpoint are essentially concerned with the production of meaning through social

interaction, studying information by way of discourse and the meanings constructed therein. When viewed as a social approach, an information exchange between two individuals would be understood as a function of the interaction between the individuals among other contextual and situational factors. The cognitive-affective viewpoint is rejected as inadequate on the basis that it does not take into account, for example, socio-cultural contexts, among others. Language plays a lead role in social constructivist theories, which is unsurprising as discourse is central to the discourse analytic viewpoint. While cognitivists believe information is a process or state within the mind of an individual, social constructivists see information as a process of social interaction.

The Multi-Faceted Viewpoint

Multi-faceted approaches, as the name suggests, advocate theories that tie different facets together ostensibly to gain a more holistic understanding of human-information behavior. For instance, one multi-faceted approach might be to study social aspects of HIB with regard to cognitive functions. Another example of the multi-faceted approach is the organizational approach as summarized in Pettigrew et al. (2001): "The model suggested that a set of antecedent factors—which included sets of variables such as demographics, experience, and beliefs—provided the motivating force for a person to take information-seeking actions" (p. 60).

This paper adopts the cognitive-affective approach to human-information behavior chiefly because of its proximity to the source of information processing and knowledge. While social and multi-faceted approaches offer interesting and valuable insights about the nature of information behavior, cognitive processes underlie the human ability to interact with information at its most basic level. Without social context, humans would not be able to express cognitive ability;

without cognitive ability social context would simply not exist. The production of social context is dependent upon cognitive ability and does not exist independently of cognition. The non-cognitive approaches exist one or more layers of abstraction away from what cognitivists consider to be the root of information processing and knowledge: the cognitive structures and processes of human beings. Social constructivists correctly assert that context plays a significant role in HIB, specifically in the ways that we form and interpret meaning in light of social factors; this paper focuses on the phenomenon of skepticism at its root.

Knowledge Structures

One of the first and most articulate proponents of the cognitive viewpoint was B. C. Brookes (1980), who regarded knowledge as “a structure of concepts linked by their relations and information as a small part of such a structure” (p. 131). Though much of what society considers information exists as raw perceptual data—e.g., newspaper articles, conversations between people, or television programs—this data does not become informative until it has been processed by knowledge structures. Thus the principal function of knowledge structures is to transform perceptual data into information.

Brookes expressed this relationship between knowledge and information, which may arguably be viewed as a cornerstone of the cognitive viewpoint, as “the fundamental equation” of information science:

$$K[S] + \Delta I = K[S + \Delta S]$$

In Brookes’ (1980) own words, the fundamental equation “states in its very general way that the knowledge structure $K[S]$ is changed to the new modified structure $K[S + \Delta S]$ by the information ΔI , the ΔS indicating the effect of the modification” (p. 131). Though the equation

is vague and simplistic, it was designed so intentionally, such that it may be leveraged and adapted to explain different aspects of human-information behavior within the cognitive viewpoint. I will introduce one such adaptation to the fundamental equation showing how affective factors might be included.

Affective Dimensions

There are reasons for believing that the cognitive viewpoint alone is not sufficient to explain how human beings process information. As the field of human-information behavior has evolved and grown over the years, several proponents of the cognitive viewpoint integrated affective factors into their theories (cf. Belkin, 1990; Kuhlthau, 1991). Insofar as the cognitive viewpoint is supposed to illuminate a complete model of knowledge and information processing, one is hard-pressed to imagine how this might be accomplished without factoring affective impacts upon the carefully balanced parts of the fundamental equation. Kuhlthau (1991) states, “While purely cognitive conceptions of information need are adequate for some research purposes, consideration of the affective dimension of users’ problems is necessary for a model to address a wider, holistic view of information use” (p. 362).

Kuhlthau (1991) describes a model of information seeking, or information search process (ISP), from the user’s perspective. The ISP model endeavors to view information seeking as a process via the interaction between user and system, with a focus on the meaning found and constructed by the user. A crucial feature of the ISP, which is not as prevalent in earlier theories, is that it takes into account cognitive factors along with physical factors, while at times overlooking affective factors. Kuhlthau supports her theory with data from five studies based on the ISP to arrive at the six stages observed in the interaction process — initiation, selection, exploration,

formulation, collection, and presentation — each of which is explained in cognitive-affective terms.

Brookes (1975) states: “The interpretation of the fundamental equation is the basic research task of information science” (p. 117). In light of the growing number of HIB theories taking affective dimensions into account, the fundamental equation warrants revisiting; this paper suggests how it might be modified to include affective dimensions.

The equation advances the thesis that a knowledge structure is modified by new information to form a new structure. It is difficult to question this thesis from a strictly cognitive viewpoint. However, the assimilation of new information to update what one already knows does not always work in such a straightforward manner. Sometimes one is unwilling to accept information and discounts it entirely. In other cases, the extent to which a statement is informative may be amplified, perhaps irrationally, due to affective reasons. One might even engage in the practice of information avoidance to ensure there is no chance of any knowledge structure modification. It would then seem that there is an affective modifier operating on the ΔS operand in the equation, as ΔS represents the extent of change to the knowledge structure $K[S]$ caused by ΔI , or information. It is probable, though more research is needed, that affective factors actually operate on ΔI in that they either prevent external information from affecting or amplify the effect of information upon a knowledge structure. This process could be represented by the following equation:

$$K[S] + A[\Delta I] = K[S + \Delta S]$$

The equation, now with the added expression $A[\Delta I]$, may be read as follows: the knowledge structure $K[S]$ is modified by information ΔI according to the affective function A , whose impact may range from

amplifying the information ΔI so as to radically alter the knowledge structure $K[S]$, to muting it entirely such that $K[S]$ is completely unchanged.

Defining Skepticism

There is too little attention paid to skepticism within the volumes of HIB literature, given the extent to which skepticism may affect how people seek and process information. Because of the dearth of research concerning skepticism, it is necessary to look for guidance beyond the body of library and information science literature to other social sciences such as psychology, communication, media studies, and education.

A Broadening of Perspective

Wilson (1994) argues that interdisciplinary connections enrich research in a field, and though the HIB literature has become more interdisciplinary—as evinced by a growing number of references in the literature to theories of social sciences—there is yet more work to be done. Forehand & Grier (2003) observed, “Consumer research has paid little theoretical attention to conceptualizations of skepticism...despite frequent appearance in the research literature” (p. 350).

The fields in which skepticism is addressed—education, consumer psychology, marketing, and media studies—may be viewed to some degree as extensions of communication theory, or having a great deal of overlap therewith. There is an obvious parallel in that much of HIB research focuses on how information is transmitted and received: a process of communication. Therefore, HIB research should be concerned with how the phenomenon of skepticism impacts communication processes and knowledge structures within the cognitive viewpoint.

Furthermore, it becomes clear that the theoretical domain of library and information science overlaps to a great extent those of other social sciences — an idea that is emphasized in an essay by Brookes (1980) on the philosophical aspects of information science in which he indicates that information science faculties throughout the nation are comprised of professors from other faculties who teach only one aspect of information science. This discovery led Brookes to wonder who teaches information science in a more holistic manner. “The usual answer is that information science is a peculiar mix of linguistics, communication, computer science, statistics, research methods, together with some techniques from library science such as indexing and classification” (p. 128). With a keen eye towards the history of library and information science, it is apparent that this discipline shares theoretical fundamentals with other social sciences. Information science researchers would benefit by looking outward for new research directions, for new phenomena to investigate, and for new variables to integrate into studies, the goal being to form a more interdisciplinary, integrative field of library and information science. Information scientists obviously share aims, subjects, methodologies, theories, and so on with other disciplines with the social sciences, and in so doing add value to the discipline by adopting a broader view.

A Definition of Skepticism

The social sciences have much to say on the subject of skepticism. Definitions vary wildly, a list of which is presented immediately below as a representation of the variation. Skepticism is described as:

- The “subjective feeling of alienation and mistrust” (Tsfati, 2003a, p. 160);
- A “response that varies depending on the context and content of the communication” (Tan, 2002, p. 46);

- “Merely questioning a claim” (Koslow, 2000, p. 248);
- “Doubts regarding the ability of medical care to alter health” (Fiscella et al., 1999, p. 410);
- “A trait leading to doubt” (Forehand & Grier, 2003, p. 349);
- “Tendency toward disbelief in ... claims” (Obermiller & Spangenburg, 2000, p. 312); and
- An application of trust in a context (Tsfati & Cappella, 2003, p. 506).

A number of common themes emerge from the variety of definitions offered. Taken together and distilled, the consensus seems to be that skepticism is *a subjective feeling, evoked by disbelief or mistrust that results in doubt, questioning, or rejection of a claim, which may collectively be called resistance to persuasion.*

Dimensions of Skepticism

This definition, however, is not sufficient to explain the full range of behaviors found to correlate with skepticism. Skepticism does not appear to function as a construct of a single, monolithic dimension, and when studied as such it tends to yield inconsistent, confounded results. Put simply, there appear to be many facets or components of skepticism that interact with one another to produce skeptical and askeptical behaviors. There is a strong indication, emerging from research in several disciplines, that skepticism is a multi-dimensional construct (Boush et al., 1994; Fiscella et al., 1999; Tan, 2002). Though the research diverges at that point, the consensus seems to be that there are between two and four dimensions of skepticism.

The Trust Relationship

Mistrust is the dimension of skepticism that appears most often in the literature, suggesting that one typically wishes to trust a source of new information (Block, 2002;

Boush, 1994; Forehand & Grier, 2003; Tan, 2002; Tsfatı & Cappella, 2003; Tsfatı, 2003b;). If that trust is compromised, claims by the source are more likely to be viewed skeptically, questioned, perhaps even rejected outright. The notion of trust is envisioned widely as a relationship between two individuals, one who is placing trust (the truster) in another and the other in whom trust has been placed (the trustee or source). This is not to suggest that the relationship of trust cannot be mutual, rather that they are different instances of the same sort of relationship; should A stop trusting B, it does not logically follow that A also loses B's trust as well. If the truster has reason to believe that the trustee has somehow corrupted the trust relationship, he tends to view information originating from the trustee more skeptically. The relationship no longer satisfies the needs of one or both parties, and mistrust corruptively affects the information exchange between them. Mistrust, therefore, is a key dimension of skepticism.

The trust concept has been studied in depth in terms of the relationship between skepticism and exposure to mass media. For example, Tsfatı & Cappella (2003) have determined that the notion of credibility is central to a relationship. If a source of information, whether a close friend or a mass media outlet, is judged not to be credible, i.e., if there is an indication to the truster that claims made by the source are rooted somewhere other than in the truth, the trust relationship is damaged and information from the source is not assimilated into the truster's knowledge structures as readily as it might have been otherwise.

While credibility may be viewed as a binary concept at a given time—e.g., if a truster is evaluating a particular claim by a particular source, there is a judgment of whether a claim is credible or not—examining the concept over time reveals yet another aspect of the trust relationship, that of reliability (Tsfatı & Cappella, 2003). Though

trust may be fragile, it is not necessarily a precarious relationship, one untrue claim away from falling apart; one falsehood or misguided bit of advice need not destroy what may have otherwise been a useful, productive relationship. We seem to understand that those in whom we place trust are not beyond mistakes or bad judgment from time to time, and there is thus some leeway. However, if a source habitually makes claims that are judged to be incredible—and this surely varies in every trust relationship that exists, for some are more tolerant of bad information than others—its overall reliability comes into question.

Disbelief and Persuasion

Examination of skepticism as a unidimensional construct—e.g., as reducible solely to a function of the trust relationship—does not often yield consistent results. It is necessary, then, to seek out and study other dimensions of skepticism.

The notion of disbelief, in addition to that of trust, is widely hypothesized as a notable dimension of skepticism, especially in the literature of consumer and advertising research (Boush et al., 1994; Koslow, 2000; Obermiller & Spangenburg, 2000; Tan, 2002). One is thus likely to question, scrutinize, or reject the claims of sources they do not believe, especially if one detects an attempt at persuasion. The suggestion may seem commonsensical, if not downright obvious, but it does bear investigation.

Whether a claim is judged to be believable or not is partially dependent upon an individual's perception of a source. However, further investigation is warranted, as this perception is dynamically modifiable; it changes over time as the source makes more and more claims. One's judgment of the source thus depends upon the source's record to date, a subjective measure of how "good" the source is, and also upon each

successive claim as it is judged. The fact that a source's prior claims may have been believable in the past does not necessarily indemnify future claims from being subjected to skeptical examination. One may simply judge the particular claim as "too good to be true" (Tan, 2002, p. 47), which suggests that skepticism has not only sources as a target but also individual claims. Another trigger of disbelief may be persuasion; individuals seem to be keenly aware of attempts to persuade them, which though beneficial in some cases may be less so in others, particularly in cases where one feels that one is being manipulated by the media in terms of political information or by advertising claims (Koslow, 245).

Other Dimensions

The recent research of Tan (2002) into consumer skepticism towards advertisements indicates that the construct of skepticism may have as many as four dimensions, consisting of the two previously discussed dimensions, mistrust and disbelief, in addition to two others: desirability and informational value. The separate dimensions were examined independently of one another and shown to be distinct via tests of variation in the types of advertising claims made (subjective vs. objective, products vs. services) and in the extremity of the claim (low, medium, and high). This suggests that yet more multidimensional hypotheses could be advanced and studied.

A third dimension proposed for the construct of skepticism is desirability, derived in part from a number of quantitative scales of skepticism already extant at the outset of Tan's (2002) research. Whether one judges a claim to be dull, boring, or professional appears to affect how skeptically one will view a claim, reinforcing that there are affective factors of skepticism in addition to the cognitive factors. Such traits, including the level of sophistication of a claim, are collectively referred to as the notion of

desirability, i.e., how desirable it would be for one to accept such a claim.

Tan (2002) also proposes the dimension of information value, which guides individuals in determining whether or not a claim has been designed to misinform and in arriving at a measure of how informative a claim is. If a claim is judged to be an attempt to misinform, the individual is more likely to view it with skepticism. This dimension involves judgment calls on the coherence of a claim, how easily it is understood or interpreted, and how much actual information, rather than propaganda or fluff, has been included in the claim.

Interrelationships Among Dimensions

How might one react if an otherwise trusted, credible, and reliable source attempts an aggressive claim at persuasion? That is, how do dimensions such as mistrust and disbelief interact? It is worth scrutinizing the interrelationships between the proposed dimensions and dimensional factors in order to determine whether they have independent effects upon the more general construct of skepticism or upon one another. It could be the case that some dimensions rely upon the others, e.g., that mistrust is the most significant component of skepticism, and disbelief is important enough to have an impact on the trust relationship, but does not directly impact the skepticism construct. The interrelationships warrant significant study, and are suggested as an important point of human-information behavior research on skepticism.

Skeptics in the Cognitive-Affective Viewpoint

What does it mean to be a skeptic within the cognitive-affective viewpoint adopted in this paper? The subtle distinction between the notions of "skepticism" and "skeptic" illuminates a focus of modern HIB theories: the user of an information system. This paper attempts to define the user population

of skeptics. Skepticism is put in terms of the cognitive-affective viewpoint and the skeptic is more clearly described. The effects of skepticism on information behavior in other social sciences is then discussed, along with the possible ways skepticism could be incorporated into HIB theories. Finally, suggestions made by social scientists to cultivate skepticism among individuals and apply their conclusions to human-information behavior are reviewed, and the cultivation of rational skepticism among information-seekers in light of its beneficial effects is advocated.

A Cognitive-Affective Definition of Skepticism

The definition of skepticism used in this paper has been drawn from a composite of definitions within the social science literature, and has incorporated the research indicating its multidimensional nature. Thus, skepticism has been defined here as *a subjective feeling, evoked by disbelief, mistrust, undesirability, or a perceived attempt to misinform, resulting in resistance to persuasion*. This is a fine conceptual definition, not unlike that in Merriam-Webster. However, in order to understand the phenomenon of skepticism from the cognitive-affective viewpoint, it is useful to re-examine the definition in this new context.

Skepticism, in the cognitive-affective viewpoint, is envisioned as a multidimensional, persuasion-related knowledge structure that functions, along with other affective factors, as a knowledge structure modifier. One might notice the notion of recursivity built into this conceptualization and wonder if skepticism, as an affective modifier of knowledge structures, may be reflexively affected as a knowledge structure itself. That is, may skepticism play a role in the assimilation of information that attempts to modify an individual's very level of skepticism?

The literature indicates that there may be many root causes of skepticism. There is not space to examine this topic fully here, except to mention that one method of validation for skepticism is the comparison of a claim with one's personal experience (Smith, 1997). One's level of skepticism is always modifiable and is dependent on the nature and type of claim made, so an individual's level of skepticism affects attempts to modify his or her level of skepticism. Alternative explanations of skepticism are offered, such as that proposed by Koslow (2000), in which it is suggested that one might be skeptical merely because one "sometimes *like[s]* being skeptical," (p. 246) hinting at a recalcitrance to change. The effect of skepticism on attempts to modify the skeptical knowledge structure seems to be an outright muting or rejection of the attempt. These two brief scenarios indicate that the notion of recursivity in the cognitive-affective definition of skepticism seems to be well-placed; one's level of skepticism does affect attempts to modify one's very level of skepticism. In addition, one's level of skepticism tends to vary as one accumulates more and more experiences over the course of a lifetime.

Though much of the research in the social sciences is not grounded in the cognitive-affective viewpoint of information science, there is support for adopting this viewpoint even if the information science literature did not exist. Forehand & Grier (2003) make mention of a persuasion knowledge model that functions in the individual as a way of interpreting persuasion attempts and storing strategies for identifying and dealing with them in the future. Consumer research also provides the following insight that supports the hypothesis that skepticism is a cognitive entity with affective dimensions, namely that "children develop increasingly sophisticated and complex knowledge structures as they grow older...these knowledge structures...contain beliefs about [persuasive] tactics and effects" (Boush et al., 1994, p. 166). The field of media

studies also contains research that supports the cognitive viewpoint, especially in the work of Tsfatı (2003a): “[T]he prevailing explanation of the cognitive mechanism behind agenda setting is currently framed in terms of the ‘activation’ of cognitive constructs in memory (sometimes called ‘nodes’) in response to media messages” (p. 159).

Effects of Skepticism

Beneficial Effects of Skepticism

In the realm of medical research, skepticism is found to have certain beneficial effects upon one’s health, though it ought to be noted that some forms of medical skepticism might have dire consequences. Whether the effects are judged to be beneficial or detrimental, it appears that skepticism, to state it provocatively, may very well be a matter of life or death. The extent to which one has skepticism about the relationship between one’s health and one’s reliance upon professional medical assistance appears to correlate strongly with quality of life. According to Rohrer & Borders (2004), “those who place their hopes solely in their physicians will fare less well than their more skeptical brethren” (p. 1235). While Rohrer and Borders suggest it is in one’s best interest not to place absolute faith in the ability of medical professionals, they do not advocate a wholesale abandonment of hope in professional medical care. For instance, it seems beneficial to believe that one usually overcomes illness without medical care (Rohrer, 2004). On the other hand, some skepticism related to medical care is shown to be detrimental in other research, so one is left to wonder how much is enough.

In addition to skepticism toward medical care, consumer skepticism is shown to be beneficial. It has been repeatedly demonstrated that consumers exhibit skepticism towards advertisements while extolling their informational value

(Obermiller & Spangenburg, 2000). It seems straightforward to agree with Obermiller & Spangenburg that “the best control on a free advertising market may be a ‘healthy’ skepticism on the part of consumers” (p. 320). A rational consumer skepticism serves to shield one from hyperbolic and misleading information sometimes manifested in claims of advertisers, crafted primarily to take advantage of those consumers who are the least skeptical, and hence are the most susceptible to persuasion. This conclusion is echoed in the research of Koslow (2000), which indicates that “skepticism is the main protection consumers have in detecting fraud” (p. 245).

Skepticism has also been found to have a moderating effect upon media’s ability to shape public opinion by framing debate (Tsfati, 2003b). When one adopts a more questioning stance toward claims made by mainstream media, one is less likely to accept their pronouncements on public opinion and is thus more likely to think independently. Additionally, there is reason to believe that media skepticism may lead one to become more politically aware and even to participate more actively in the political process (Tsfati, 2003a). The ability of the mass media to significantly influence public opinion was found to be well established in the literature (Steuter, 2001; Tsfati, 2003a; Tsfati, 2003b). The ability of the media to shape public opinion is manifested in another, more insidious fashion. Stuetter (2001) says that “the news media narrows the range of discourse about a given topic and in effect artificially sets the parameters of debate on the topic” (p. 7). Rather than telling their audience what to believe about a topic, then, the media succeeds in dictating the issues that the public considers, limiting the scope of issues of the day to the biases and influences of the powers to which they are beholden, e.g., the big business conglomerates that own them, the government entities that regulate (and, in part, provide) their content, and the

commercial sponsors that pay their salaries. Fortunately, the public appears to think independently enough that they do not simply adopt the opinions put forward by the media, whether directly through op-ed pieces or indirectly via the amount of coverage and choice of words they use.

Educators play a special role in shaping the skepticism of students, especially by teaching them to think analytically (Smith, 1997), and by encouraging students to question, though not categorically reject, claims that are either unproven or unprovable (Dougherty, 2004). School librarians (in which media specialists are included) play their part as well, by empowering students to select and assess learning materials critically (Vandergrift, 1977). For instance, Vandergrift suggests that school librarians can foster healthy skepticism by selecting a wide range of diverse materials in different formats (especially by embracing media other than books and magazines); encouraging students to err on the side of too many sources of information rather than too few; and urging students to review information carefully rather than be content with a quick perusal. "A student who understands this will not be content to rely on a single source for information and will approach another's ideas with an active and healthy skepticism" (Vandergrift, p. 41). Block (2002) is concerned about the general attitude among students that the Internet is a source of good information; she cites a statistic that 22 percent of the subjects surveyed in one study believed 80 to 100 percent of the information they found on the Internet, which Block interprets as a harbinger of worse things to come. Indeed, there is much in the way of unverified, misleading, and just plain wrong information on the Internet. In addition to these self-evident benefits, the findings of Boush et al. (1994) indicate that skepticism among teenagers demonstrates an independence and confidence in their ability to differentiate honest claims from misleading attempts to persuade.

Detrimental Effects of Skepticism

Although there is a wealth of information on the benefits of skepticism, its detrimental effects must also be examined. A particularly sensational conclusion reached by Fiscella et al. (1999) — that skepticism toward the overall efficacy of medical care "may be a risk factor for early death" (p. 409) — underscores the need to examine the extent to which skepticism impacts medical care. Upon closer examination of the findings, the authors do not intend to state that a skeptical frame of mind causes death per se. In fact, skepticism toward the value of medical care is significantly correlated with an individual's likeliness to exhibit unhealthy behavior (Fiscella et al.), which mediates quality of life and rate of mortality. A less provocative conclusion is reached by Ditto et al. (2003), who found that those who received unfavorable medical results took longer to accept the results and were more likely to question their accuracy, resulting in episodes of what the authors refer to as spontaneous skepticism. This sort of reluctance seems to be an obvious psychological coping mechanism, serving to soften the blow of accepting troublesome information. The danger lies in the temptation to discount information that one is not prepared to assimilate into one's knowledge structures; the effect of skepticism as an affective modifier serves to mute the information, which could result in one's refusal to accept a sobering reality, a conclusion which applies to a broader context than just medical care.

Mirroring the research in medical skepticism, Koslow (2000) points out that consumer skepticism may be rooted in a deeper cynicism and wholesale resistance to advertising claims, becoming something of a defense mechanism. While such a defense mechanism will surely protect one from harmful advertising claims, it has detrimental effects as well. "If it is common that consumers are frequently skeptical of honest claims [in addition to dishonest

claims], then it may be that at least some of the protective benefit of skepticism is reduced or even outweighed” (Koslow, p. 246). For instance, a consumer may disempower herself from being able to take advantage of genuinely beneficial advertising claims, thus closing herself off from all information in the marketplace (Obermiller & Spangenburg, 2000).

While media skepticism is seen as beneficial in general, empowering individuals to think independently of the influence of those who control the mainstream media, there is a danger of approaching the media from an extreme point of view. The danger lies in the “refusal to give in to the realities reported by the media” (Tsfati, 2003b, p. 78). Further complicating the picture, it is unclear when a stance has crossed from being moderate to being “extreme.”

From certain psychological perspectives, such as the Quantity of Processing (QOP) view advanced by Ditto et al. (2003), adopting more skeptical attitudes may very well involve the risk of tumbling down the slippery slope into what Smith (1997) terms “uncritical skepticism.” According to Ditto, et al:

“The QOP view asserts that the tendency to more readily embrace information that is consistent with a preferred judgment conclusion than information that is inconsistent with a preferred judgment conclusion stems from the simple fact that the former is less likely than the latter to initiate effortful cognitive analysis” (p. 1121).

A potential demonstration of the conclusion reached by the QOP may be found in Smith (1997), who warns that certain pedagogical methods—such as explaining why there are exceptions to claims, why claims do not always mesh with our experiences and intuitions, and why proof and evidence are crucially different concepts—might

unwittingly teach students to uncritically and uniformly reject scientific claims and methods. Students struggle to accept unintuitive claims posed as proven scientific facts that conflict with their experiences. The exercise is akin to an attempt to will one’s beliefs to change, which is often a mere exercise in futility.

The Role of Skepticism in HIB

It seems folly to suggest that skepticism plays no role in how human beings seek and use information, especially in light of the wealth of research in the social sciences. It stands to reason that library and information scientists could gain much insight into user information needs and behavior by considering the role of skepticism in their research. The following section provides a number of suggestions for starting points.

Cognitive Authority

In the information science literature, perhaps the closest to an account of skepticism’s effects upon human-information behavior is in Wilson’s (1983) work on cognitive authority. Much of his writing ties in both with what I have found in the social sciences literature and the viewpoint expressed by the cognitive-affective model.

Wilson (1983) grounds his work in social epistemology, the study of social dimensions of information and of knowledge. Perspectival metaphors of vision and space, such as “I see” taking on the meaning of “I understand,” are examined and demonstrated to frame our discussion of what we know. The perspectival metaphor, however, ultimately fails to describe knowledge; as a person grows more distant from a social event, that event does not necessarily shrink and become part of a larger understanding, as happens in the spatial perspective. Social events tend to disappear entirely so that we

become completely disconnected from them. In order to keep informed of distant social events, second-hand accounts are thus required, leading Wilson to consider the crucial issue: how is the knowledge one receives from external sources managed? Stated another way, how and to what extent do we allow others to modify our knowledge structures? Are all sources created equally? Is a source's judgments about A as good as his judgments about B? Do his judgments vary in degree? In whom do we place our trust to give us these external streams of information? These are questions of cognitive authority, according to Wilson, and skepticism plays a distinct part in matters of cognitive authority.

A cognitive authority is defined as a person—though perhaps this could be extended to other types of sources such as the media (Tsfati, 2003b)—whom one trusts to a certain degree for a certain sphere or spheres of information. Wilson defines an authority as a unidirectional relationship, much like the trust relationship discussed in a previous section, established between two parties. In fact, since they share many characteristic properties, these relationships may be one and the same. Wilson's notion of authority is tied to other notions such as influence, credibility, and reputation. If a person is considered to be an authority in a certain sphere, then that person influences one's thoughts within that sphere, and is viewed with less skepticism because of the trust relationship. A cognitive authority is thus credible, and other parties that are not among one's cognitive authorities are less so. Wilson suggests that whether or not authorities are considered to be credible is based on a number of factors, such as reputation. If an individual or a group has a positive reputation among their peers or the general public they are more likely to be adopted as an authority. Without such authorities, one opens oneself up to a flood of bad information, or closes off entirely to new information. Even with such established authorities, one is susceptible to misinformation and manipulation.

In light of the growing and evolving literature on skepticism, information science researchers might reconsider the extent to which issues of trust and authority impinge upon information needs, seeking behavior, assessment, and usage. Wilson (1983) has already laid much of the groundwork for the study of skepticism within an information science setting, making such work a natural extension for information science researchers.

Theoretical Frameworks Adaptable to the Information Science Context

Many frameworks for gaining a deeper understanding of skepticism, or dimensions thereof, have already been developed in other disciplines. As mentioned earlier, one such framework is the quantity of processing (QOP) view of motivated reasoning. Translated into parlance of cognitivism, the QOP view suggests that it is easier for a knowledge structure to be modified to accept information that is consistent with, subsequent to, or logically entailed by the contents of existing knowledge structures. Utilizing the explanatory terminology for cognitive strategies developed by Todd (1999), such a modification might be a simple appendage or an insertion. Information that causes a knowledge structure to be modified in a more radical form—e.g., involving a deletion, a number of deletions, or a complex operation of deletions, appendages, and insertions—is less likely to be integrated into the knowledge structure. The QOP view could be leveraged in theories of information assessment to explain why users choose some information over other, perhaps "better," information.

Koslow (2000) introduces a number of frameworks that might be useful to information science researchers. Related to the QOP view is the reactance theory framework as related to defense motivation. "Processing under defense motivation uses

heuristics selectively so as to protect vested interests, attitudinal commitments, or other preferences like freedom of consumer choice" (Koslow, p. 249). If one is, for instance, committed to a certain political persuasion, one is more likely to discount information to the contrary and, moreover, to actively seek information that serves to reinforce existing beliefs or knowledge structures. How might principles of information provision apply to such individuals: who, I would argue, are representative of most people?

Attribution theory, as described in Forehand & Grier (2003), also lends itself to a deeper understanding of how skepticism works, specifically in terms of explaining why certain situations provoke skepticism in some people but not in others. The theory examines the way in which one attributes motive to those making claims, and seeks to understand the processes by which this occurs. Persuasion is an example of motive in attribution theory which has been shown to be a factor in provoking skepticism in other social science research. Information science organizations might look to attribution theory for help in ensuring that their service motives are being properly conveyed to their users. They do not wish, it is assumed, to disenfranchise those whom they intend to serve, and the application of attribution theory might be of use to researchers interested in such issues.

In addition to these examples of rich theoretical frameworks, a number of quantitative scales have been developed to measure variables related to skepticism. Fiscella et al. (1999, p. 411) use a ten-item Likert-based scale to measure skepticism toward medical care, consisting of statements to which subjects indicated level of agreement, such as: "I can overcome most illness without help from a medically trained professional," "I understand my health better than most doctors do," and "Luck plays a big part in determining how soon I will recover from an illness." One

need not stretch the imagination too far to come up with information-seeking analogs.

Tan (2002) reviews a considerable host of scales intended to elicit levels of consumer skepticism, combining them into a thirty-item scale consisting of seven-point Likert-type judgments. Tan's scale concerns itself with a number of issues related to consumer skepticism such as believability, informativity, originality, genuineness, coherence, ease of comprehension, perceived deceptivity, level of dishonesty, and sophistication. As with the smaller scale proposed by Fiscella et al. (1999), it should not be too difficult to translate scales of medical and consumer skepticism into information-seeking terms that we might leverage to determine the extent to which skepticism plays a role in human-information behavior.

Cultivating Skepticism

One of the common themes emerging from the social sciences literature, particularly within the disciplines of education and public policy, is that approaching new information with a rational skepticism is, with few exceptions, beneficial. It is advocated that those in positions of authority must ethically cultivate skepticism within their respective user populations. Given the numerous beneficial effects of skepticism discussed in a previous section, it is an issue worth considering for librarians and information scientists. It might even be argued that librarians hold a special position for accomplishing this task through their work at information desks, and especially via carefully considered and crafted information literacy programs.

Block (2002) suggests that librarians and teachers must work together to combat the attitude among students that the Internet is gospel by teaching them critical thinking and evaluative skills in a manner that plays to their "inherent motivations." This may be accomplished by exploiting the students'

fear of being connived: urging students to ask questions such as “Why is this information being given for free?” and “Is the information one-sided?”; assigning them Web sites that are obviously over-the-top to evaluate, which will lead them to wonder if a Web site is attempting to manipulate its readers; requiring that they create an informational Web site with the goal of having it posted on the school Web site, forcing them to embark upon a fact-finding mission that will cultivate their thinking and assessment skills; and working within their own interests. These strategies, Black argues, will result in a wiser student who has a healthy skepticism toward the Internet as a source of information.

Mangleburg & Bristol (1998) make a number of recommendations for cultivating skepticism among adolescents, including the usage of television as a medium for consumer education, and altering the types of claims made by advertisers. The ways in which adolescents interact with agents of socialization, such as parents, peers, and the media, are shown to have an effect on how skeptically adolescents view advertising in particular. The type of communication used with adolescents is also shown to correlate with level of ad skepticism, with so-called “concept-oriented” communication positively effecting skepticism and “socio-oriented” communication decreasing the amount of skepticism. Socio-oriented communication is defined as that which revolves around notions of unquestioning submission to authority figures and normative conversation, whereas concept-oriented communication engenders a more open-ended conversation where values are placed upon thinking independently, being critical, and considering alternatives.

Educators might be able to directly affect the level of skepticism among their students (Boush et al., 1994; Dougherty, 2004; Smith, 1997). Smith makes three concrete recommendations that teachers should consider: first, teach students the distinction

between “probabilistic and universal claims” (p. 78) so that they do not unwittingly categorize all scientific claims as objective, universally applicable facts and thus discount them upon finding counterexamples in their everyday lives; second, resist referring to mere evidence as proof; and third, take care in how one communicates and justifies claims that seem counterintuitive which, in the QOP view of motivation reasoning, may cause students to immediately reject such claims as being too difficult to incorporate into their knowledge structures. Boush et al. advocate for educators to play an active role in producing educated consumers through lessons that aim to explain how the business of advertising works, and how marketing motives come into play. The goal is to produce a population of consumers who have the intellectual tools to weigh the benefits of advertisements with their potential detriments. With an eye specifically toward the debunking of the paranormal, Dougherty urges educators to cultivate skepticism through use of cognitive dissonance, or “the sense that your beliefs and intuition do not match what is actually true” (p. 34). One should not rely on a more traditional mix of curricula to accomplish the goal of cultivating skepticism, not even those at institutions perceived as the most free-thinking and progressive. There is reason to believe that the critical thinking skills taught in existing college-level courses do not successfully cultivate skepticism (Dougherty, p. 35).

Conclusion

Skepticism, defined here as a multidimensional knowledge structure related to persuasion attempts and predicated on a trust or cognitive authority relationship, plays a significant but under-examined role within information science, specifically within research on human-information behavior. Incorporating the effects of skepticism into information science research will lead to deeper insights

into the ways human beings need, seek, evaluate, and use information. A deeper understanding of how the effects of skepticism are manifested in human-information behavior will also contribute to the wider effort to cultivate a rational skepticism within users of information services, which could benefit users in ways we cannot yet imagine.

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Author's Bio

Michael is a digital library developer at the Harvey S. Firestone Memorial Library at Princeton University, developing a digital repository and creating web-authoring tools for digital collection-building. He earned his Master of Library and Information Science degree in 2006 from the School of Communication, Information and Library Studies at Rutgers, The State University of New Jersey. Previously, he was a systems administrator and project manager for the Rutgers University Libraries and the University of Washington Libraries. Among his main interests are digital preservation and archiving, information systems integration, web services, resource identification, and information behavior.