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

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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 strong and numerous, and yet it seems that skepticism has not been studied to a great extent within the body of human-information behavior research. The goals of this paper are two-fold: the first being to establish skepticism as a factor which ought to be considered in cognitive-affective models of human-information behavior, via a large-scale overview of social science research; and the second being to show that a rational form of skepticism is a healthy trait to cultivate among information-seekers.

Introduction

I am interested in the role of skepticism – defined in the Merriam-Webster dictionary as "an attitude of doubt or a disposition to incredulity either in general or toward a particular object" – in human-information behavior (HIB), i.e., in information needs, seeking, evaluation, and usage. An operational definition of skepticism will be derived from a broad range of research in the social sciences, primarily in communication, psychology, marketing, media studies, and education, and will be expressed within the parlance of the cognitive viewpoint as a knowledge structure. Skepticism is established as a significant issue in the research of other social science disciplines, and it will be argued that HIB research would benefit from examining as well the role of skepticism. The many facets of skepticism will be 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; after all, how may one seek and use information from the multitudes of sources that one has not yet come to trust as authorities? There may, however, be important and unexpected benefits of skepticism. Finally, it will be argued that rational skepticism is beneficial, and methods of cultivating skepticism are discussed.

Theoretical Foundation

Before beginning the discussion of skepticism *per se*, it would be useful to describe the perspective from which I intend to view the issue and to explain my reasons for doing so.

The Cognitive Viewpoint

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).

Building upon the work of Belkin's 1990 review of the cognitive viewpoint, Pettigrew *et al.* (2001, p. 46) define it as "an approach and set of constructs for understanding information behavior, which focuses fundamentally upon attributes of the individual." What sets the cognitive viewpoint apart from other approaches is that it seeks an understanding of human-information behavior via the processes and structures inside the human mind rather than via higher-level examination, such as that of the social approaches. Though this approach initially examined cognitive phenomena exclusively, it soon grew to encompass affective factors such as those investigated in Kuhlthau (1991). The cognitive approach, or cognitive-affective viewpoint as I will refer to it, considers both cognitive and affective aspects of information needs, seeking, evaluation, and usage.

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. An information exchange between two individuals would be understood in a social approach 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 socio-cultural context, among other contexts. Language plays a lead role in constructivist theories, which is unsurprising since discourse is central to the discourse analytic viewpoint. Where for cognitivists information is a process or state that applies primarily to the individual, for social constructivists information consists in social interaction, thus lending reason to the strong claims about language.

Multi-faceted approaches, as the name suggests, advocate theories that tie different facets together ostensibly in order to gain a more holistic understanding of human-information behavior. For instance, one possible multi-faceted approach might be to study social facets of HIB in light of cognitive facets. Another multi-faceted approach is the organizational approach as summarized in Pettigrew *et al.* (2001, p. 60): "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."

In this paper, I adopt the cognitive-affective approach to human-information behavior chiefly because of its proximity to the source of information processing and knowledge. Social and multi-faceted approaches offer interesting and valuable insights about the nature of information behavior, but underlying any production of meaning must be cognitive activity. Without social context humans would not be able to express cognitive ability, whereas without cognitive ability social context would simply not exist. This might answer the long-standing question of information science, "Why do we not study context in amoeba-information behavior?" That is, 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. I agree with social constructivists that context certainly plays a significant role in human-information behavior, specifically in the ways that we form and interpret meaning in light of social factors, but I wish to study the phenomenon of skepticism at the lowest level available.

Knowledge Structures

One of the first and most articulate proponents of the cognitive viewpoint was B.C. Brookes, who "regard[ed] knowledge as a structure of concepts linked by their relations and information as a small part of such a structure" (1980, p. 131). Though much of what we consider to be information exists as raw perceptual data, e.g., a newspaper we read, a conversation in which we are engaged, or a television program we watch, this data does not become informative until it has been processed by our 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' 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" (1980, 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 the cognitive viewpoint *per se* 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, p. 362) states that "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."

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 present in earlier theories, is that it takes into account cognitive factors along with physical factors and at times overlooked affective factors, i.e., what the user is feeling during the information seeking experience. 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 explain in cognitive-affective terms.

Belkin (1990) quotes Brookes as stating that "the interpretation of the fundamental equation is the basic research task of information science," and I will take the opportunity to oblige Mr. Brookes. In light of the growing number of HIB theories taking affective dimensions into account, I would like to revisit the fundamental equation and suggest 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. Other times, the informativity of a statement may be amplified, unjustifiably by rational means, due to affective reasons. One might even engage in the practice of information avoidance so as 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. My suspicion, which would benefit from further research or future studies, is that affective factors actually operate on ΔI in that they either prevent external information from affecting or amplify the affect of information upon a knowledge structure. I propose that this 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 S is modified by information I to the extent that the affective function A permits it, which may have any impact along a continuum of amplifying it so as to radically alter knowledge structure S, to muting it entirely such that S is completely unchanged.

Defining Skepticism

When I decided to examine the role of skepticism in human-information behavior, I expected to find at least some research on the topic. To my surprise, I found precious little attention paid to skepticism within the volumes of information behavior literature, a troubling development given the extent to which skepticism may affect how we seek and process information. In order to arrive at a definition of the topic, it was thus necessary to look beyond the body of library and information science literature to other social sciences such as psychology, communication, media studies, and education. The definition of skepticism is a considerable task, given its relative absence in our field, thus I have paid significant attention to defining skepticism and discussing dimensions thereof.

A Broadening of Perspective

Wilson (1994) argues that interdisciplinary connections enrich research in a field, and though the HIB literature has exhibited more and more interdisciplinarity – as evinced by a growing number of references in the literature to theories of social sciences – there is yet more work to be done. Our research will become increasingly more valuable and applicable as we shed more of our earlier insularity. In order to continue my research into skepticism it was in fact necessary to adopt a more interdisciplinary stance, due to the wide coverage of the topic in other social sciences.

I do not mean to indicate that library and information is the only field in which the attention to skepticism is light; as indicated by Forehand & Grier (2003, p.350), "consumer research has paid little theoretical attention to conceptualizations of skepticism... despite [its] frequent appearance in the research literature."

The fields in which I found adequate coverage of skepticism – education, consumer psychology, marketing, and media studies – might all be viewed to some degree as extensions of communication theory, or at least the aspects with which skepticism is concerned. If one thinks of these different theories generally as

theoretical distillates of how skepticism affects the communication process within the various fields, one sees an obvious parallel in that much of HIB research focuses on how information is transmitted and received: a process of communication. Therefore, HIB research also ought to 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 boundaries of library and information science are at many points the very same boundaries as those of the social sciences. This is emphasized in an 1980 essay by Brookes 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 easily seen that LIS shares boundaries with the social sciences. We would thus do well to look outward for new directions for our research, for new phenomena to investigate, and for new variables to integrate into our studies, the goal being to form a more interdisciplinary, integrative field of library and information science. We obviously share aims, subjects, methodologies, theories, and so on with other disciplines with the social sciences, and in so doing add value to our discipline by adopting a broader view.

A Definition of the Subject

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)
- 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. This notion will be later refined and fit into the context of the cognitive-affective viewpoint.

Dimensions of Skepticism

The definition as it stands, 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 (Fiscella *et al.*, 1999; Boush *et al.*, 1994; Tan, 2002). Though the research diverges at that point, the consensus seems to be that there are between two and four dimensions of skepticism. One of the troubles of studying a multidimensional construct as apparently complex as skepticism is the difficulty of examining interrelationships between the dimensions, an issue I have considered.

The Trust Relationship

The dimension for which I found the most support in the literature is that of mistrust, uncontroversially suggesting that one typically wishes to trust a source of new information (Boush, 1994; Tan, 2002; Block, 2002; Tsfati & Cappella, 2003; Tsfati, 2003b; Forehand & Grier, 2003). 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 trustor) 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 trustor has reason to believe that the trustee has somehow corrupted the trust relationship, he tends to view more skeptically information originating from the trustee. The relationship no longer satisfies the needs of one or both of the parties, and mistrust corruptively affects the information exchange between them. Mistrust is thus seen as a key dimension of skepticism.

Trust has been studied in depth *vis-à-vis* the relationship between skepticism and exposure to mass media, especially in the research of Tsfati (2003a; 2003b) and Tsfati & Cappella (2003). In Tsfati & Cappella (2003), the trust relationship is examined in depth, and it is determined that the notion of credibility is central thereto. If a source of information, whether a close friend or a mass media outlet, is judged to be incredible, i.e., if there is an indication to the trustor 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 trustor's knowledge structures as readily it might have been otherwise.

While credibility, however, may be viewed as a binary concept at a given time – e.g., if a trustor 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 (Tsfati & 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 needn't 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 – often does not yield consistent results. It is reasonable to seek and study other dimensions of skepticism, which is believed to be a multidimensional construct.

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 (Koslow, 2000; Tan, 2002; Boush *et al.*, 1994; Obermiller & Spangenburg, 2000). 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, to the reader 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, undoubtedly related to the issues of credibility and reliability as mentioned in the prior section. That does not paint a complete picture, however, since 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. Even though 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). Certainly this suggests that yet more multidimensional hypotheses ought to 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. These traits along with a few others, such as 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.

The fourth dimension of skepticism proposed in Tan (2002), information value, appears to guide individuals where otherwise failed by other dimensions, in determining whether or not a claim has been designed to misinform and in arriving at a measure of generally 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? I acknowledge that it is worth scrutinizing the interrelationships between all the proposed dimensions and dimensional factors in order to determine if 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 bear significant study, and are suggested as a significant point of human-information behavior research on skepticism.

Skeptics in the Cognitive-Affective Viewpoint

Much about the nature of skepticism has already been covered, but there is yet more to be discussed. The social science literature has provided crucial insight into how skepticism might be defined and constructed, though this needs yet to be put in the context of human-information behavior. As a milestone of sorts, it is worth noting what remains to be discussed.

Our attention ought first to turn towards defining what it means to be a skeptic within the cognitive-affective viewpoint adopted in this paper. The subtle distinction between examining the notions of skepticism and skeptic illuminates a focus of modern theories of human-information behavior: the user of an information system. Although a difficult matter, an attempt is made to define the user population of skeptics. Once skepticism is put in terms of the cognitive-affective viewpoint and the skeptic is more clearly described, I will discuss the effects of skepticism upon information behavior in other social sciences. With the effects established, I turn to a broader discussion of how skepticism might be incorporated further in theories of human-information behavior through an examination of the issue of cognitive authority, and through discussion of other theoretical frameworks for a deeper understanding of skepticism and possible scales to be used in quantitative research. Finally, I review suggestions made by social scientists to cultivate skepticism among individuals and apply their conclusions to human-information behavior, advocating the cultivation of rational skepticism among information-seekers in light of its beneficial effects.

A Cognitive-Affective Definition of Skepticism

Let us return to our working definition of skepticism which has been derived by drawing a composite based on numerous definitions within the social science literature, and incorporate the research indicating its multidimensional nature, thus "skepticism is 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 the Merriam-Webster dictionary, but we seek to understand the phenomenon of skepticism from the cognitive-affective viewpoint, so it would be fruitful to couch the definition in terms thereof.

Skepticism, then, 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 seems to indicate that there may be many root causes of skepticism, a topic which I have purposefully omitted from this paper for reasons of economy and relevance; I am confident a scholar of psychology could much more adequately study its causes. Briefly, though, one method of validation for skepticism is a subjective measure of how a claim matches up with one's experience (Smith, 1997). It would seem as though one's level of skepticism is ever modifiable and dependent on the nature and type of claim made, so the level of skepticism may affect one's 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...," hinting at a recalcitrance to change. One likes what one likes, after all, in which case the effect of skepticism upon attempts at modification of the skeptical knowledge structure would seem to be that of muting, or rejection of the attempt outright. 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 probably does affect attempts to modify same. Also, it appears to me that one's level of skepticism varies as one accumulates more and more experiences over the course of a lifetime, though this is supported merely by my intuition and anecdotal evidence.

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 which 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. It is these knowledge structures, which 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 Tsfati (2003a): "the 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).

The User Population

One of the difficulties I encountered early on in my research for this paper was a realization that there has been little, if any, work on characterizing the user population of skeptics. The more of the literature I consumed and reflected thereupon, the more I realized that the skepticism knowledge structure is likely something that exists globally; I cannot conceive of a human being with a total lack of skeptical ability, factors of severe cognitive impairment notwithstanding. In short, the literature would seem to indicate that the population of skeptics is one and the same with the population of all human beings. Therefore, the question of what a skeptic is might be answered with the following: a skeptic is a human being with normal cognitive ability. It is an assumption of this paper, and the intuition of the author, that there cannot exist a human of normal cognitive ability whose knowledge structures are unaffected by skepticism, but it should be noted that information to the contrary would be welcome and most interesting indeed.

Effects of Skepticism

There are numerous references to the phrases "healthy skepticism" and "unhealthy skepticism" both in the literature and in the vernacular, in fact, too numerous to reference. It is believed that native speakers of English will be immediately familiar with these phrases. It should be considered whether, in general, skepticism has healthy or unhealthy effects upon individuals. Library and information science researchers might do well to take skepticism into account in their own work so as to avoid inadvertently triggering skeptical attitudes, while cultivating a "healthy" skepticism from which users of information systems might benefit.

I will admit here that my determinations of benefit and detriment in the effects of skepticism are purely subjective interpretation. What makes one effect a benefit and another detrimental surely depends upon my perception, my values, and my judgment. Readers should feel free to disagree with my judgments; consider it an exercise of your own ability to be skeptical.

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). It might be tempting to think that Rohrer and Borders are saying more than they actually intended, namely that a wholesale abandonment of hope in professional medical care is beneficial. Rather, it is only suggested that it is in one's best interests not to place absolute faith in the exclusive ability of professional medical care to make things right. 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 the next section, so one is left to wonder how much is enough.

In addition to skepticism toward medical care, consumer skepticism is shown to be beneficial. Consumers wish to eat their cake and have it too, in that they have repeatedly been shown to exhibit skepticism towards advertisements whole extolling the informational value of same (Obermiller & Spangenburg, 2000). It seems straightforward to agree with Obermiller & Spangenburg (2000) that "the best control on a free advertising market [such as ours] may be a 'healthy' skepticism on the part of consumers" (p. 320), where by 'healthy,' they mean a rational sort of skepticism. A rational consumer skepticism serves to shield one from hyperbolic and misleading information sometimes manifested in claims of advertisers, crafted so primarily to take advantage of those consumers who are the least skeptical, and hence 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). *Caveat emptor*, indeed.

Educators also play a special role in shaping the skepticism of students, especially by teaching them to think analytically (Smith, 1997), and also by encouraging students to question, though not categorically reject, claims that are either unproven or unprovable (Dougherty, 2004). School librarians (in which I include media specialists) play their part as well, by empowering students to select and assess learning materials critically (Vandergrift, 1977). For instance, it is suggested by Vandergrift that one way to accomplish this is for school librarians to select a wide range of diverse materials in different formats – e.g., especially by embracing media other than books and magazines – and to encourage students to err on the side of considering too many sources of information rather than too few, and to review them 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, 1977, 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 80-100 percent of the information they found on the Internet, which for her is a harbinger of worse things to come. Indeed there is much in the way of unverified, unproven, misleading, and just plain wrong information on the Internet, and an askeptical mind is unfit to separate the wheat from the chaff, so to speak. 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.

Skepticism has also been found to have a moderating effect upon media's ability to shape public opinion by framing the debate (Tsfati, 2003b). When one adopts a more questioning stance of 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). Fortunately, the public appears to think independently enough that they do not simply adopt the opinions put forward by the media, whether directly though op-ed pieces or indirectly via the amount of coverage and choice of words they use. The ability of the media to shape public opinion is manifested in another, more insidious fashion; namely, "the news media narrows the range of discourse about a given topic and in effect artificially sets the parameters of debate on the topic" (Steuter, 2001, 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. This effect ought not to be overlooked or minimized; the media have a nearly unfettered ability to affect cultural change by shaping public opinion. For instance, if they suggest that a certain political candidate is in the lead, the portion of the public that is vacillating about which candidate behind which to throw their support may be more likely to vote for the lead candidate. This is a significant effect on our society. It should be noted that some of the literature does make a distinction between mainstream media sources and non-mainstream media sources, which are found to be significantly different (Tsfati & Cappella, 2003; Tsfati, 2003a; Tsfati, 2003b).

Detrimental Effects of Skepticism

Though there is a wealth of information on the benefits bestowed upon skeptics in the realms of consumer research, education, and media studies, there is reason to believe that skepticism toward medical care may be deeply detrimental as well. A particularly sensational conclusion reached by Fiscella *et al.* (1999), namely 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*, although it may be tempting for some to believe so. In fact, skepticism toward the value of medical care is significantly correlated with an individual's likeliness to exhibit unhealthy behavior (Fiscella *et al.*, 1999), 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 more broadly than in just the

context of 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, 2000, 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 too extreme a stance. The danger lies in the "refusal to give in to the realities reported by the media" (Tsfati, 2003b, p. 78). It is unclear when a stance has crossed from being moderate to being "extreme," further complicating the picture.

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." Quoting Ditto (2003),

> "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), warning 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 incorporate into their knowledge unintuitive claims, posed as proven scientific facts, that conflict with their experiences, possibly because of the quantity of processing it requires to perform a cognitive

180 degree turn-around. 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 our fellow scholars in the social sciences have provided. We have benefited from their vision and their labors and would do well to examine the issue from the perspectives of library and information science; it seems clear the the issue is one that clearly belongs in our bailiwick. It stands to reason that library and information scientists could gain much insight into the phenomena under study by including the role of skepticism in their research. In the following section, I provide a number of suggestions for starting points.

Cognitive Authority

Perhaps the closest I have seen in the information science literature to an account of skepticism's effects upon human-information behavior is in Wilson's (1983) work on cognitive authority; thus, perhaps we might not look too far for starting points. Much of what he writes, in fact, ties in with what I have found in the social sciences literature and subsequently situated within 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 are examined and demonstrated to frame our discussion of what we know. The perspectival metaphor, however, ultimately fails at describing knowledge; as a social event grows more distant from one, it does not necessarily shrink and become part of a larger understanding, as happens in the spatial perspective. Such social events tend to disappear entirely such 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 of his book: how does one manage the knowledge one receives from external sources? Stated otherwise, 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 would seem to play 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 an authority for one in a certain sphere to a certain degree, then that person influences one's thoughts within that sphere, and is viewed with less skepticism because of the importance of the trust relationship. A cognitive authority is thus credible, and other parties that are not among one's cognitive authorities are less so. One believes, to a degree over which one lacks direct control, claims made by authorities because one takes them to be credible sources of information. They are taken as credible because of a number of rules Wilson suggests, such as that of reputation. If a person has a certain reputation, among her peers or the general public, one seems more likely to adopt her as an authority. The notion of cognitive authority is an important one, well worth rigorous examination, for without such authorities, one opens oneself up to a flood of bad information, or closes off entirely to new information. The trouble is that even with such authorities established, one is susceptible to misinformation and manipulation.

The issue that information science researchers ought to reconsider, then, in light of the growing and evolving literature on skepticism is the extent to which issues of trust and authority, aspects central to an understanding of skepticism, impinge upon information needs, seeking, assessment, and usage. Since Wilson (1983) has already laid much of the groundwork within an information science setting, such work may be seen as a natural extension of that upon which we have already been fixing our minds.

Theoretical Frameworks and Scales

Numerous frameworks for gaining a deeper understanding of skepticism, or dimensions thereof,

have already been developed in other disciplines. One such framework is the aforementioned quantity of processing (QOP) view of motivated reasoning. For the sake of convenience, I again quote Ditto (2003),

> "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).

Translated into cognitive terms, 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 without much effort be leveraged in theories of information assessment, explaining why users choose some information over other, perhaps "better" information.

The work of Koslow (2000) introduces a number of frameworks that might be brought to bear upon the issues of information science. 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, 2000, 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. One might even engage in this behavior to the extent that one's stance is seen as universally, uncontroversially, and incontrovertibly true. How might principles of information provision apply to such individuals, whom I am inclined to believe are not extreme examples but ordinary?

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 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. An example of the type of motive that might be attributed by the framework of attribution theory is that of persuasion, which has been shown to be a factor in provoking skepticism in other social science research. How might information science organizations ensure their motives are being conveyed properly to users of their services? They would not want to unwittingly disenfranchise those whom they intend to serve, and an application of attribution theory might be use to researchers interested in such issues.

In addition to these few examples of rich theoretical frameworks, a number of quantitative scales have been developed to measure variables related to skepticism. Though many such scales exist, I provide just a few examples to demonstrate that much work has already been done and might be easily employed in tandem with the numerous qualitative strategies already used in information science research. 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 the following: "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 needn't 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 parts of a number of them into a thirty-item scales consisting of seven-point Likert-type judgments. This 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, sophistication, and a number of others. 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 thus advocated that those in positions to ethically do so ought to cultivate such a 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, and it might even be argued that librarians hold a special position for accomplishing this task, e.g., through work at information desks and especially through carefully considered and crafted information literacy programs.

Ways to accomplish the cultivation of skepticism are advanced by some researchers, ways which we might well adapt to our own purposes.

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." Ways of doing so include: exploiting the youths' fear of being connived, which urges students to ask questions such as "Why is this information being given for free?" and "Is the information one-sided?"; assigning them websites that are obviously over-the-top to evaluate, which will lead them to wonder if a website is attempting to manipulate its readers; requiring that they create informational websites with the goal of getting it posted on the school website, which will force them to embark upon a fact-finding mission, putting to use their thinking and assessment skills; and working within their own interests, encouraging them not to produce information on Mozart when they are perhaps more interested in Green Day. These strategies, it is argued, will result in a wiser student who has grown a healthy skepticism about the Internet as a source of information.

Mangleburg & Bristol (1998) make a number of recommendations to cultivate skepticism among adolescents, including the targeting of television as a medium for public policy to conduct 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 (Smith, 1997; Boush *et al.*, 1994; Dougherty, 2004). Smith (1997) makes three concrete recommendations that teachers would do well to consider: the first, to teach students the distinction between "probabilistic and universal claims" (p. 78), so they do not unwittingly categorize all scientific claims as universal and discount them upon finding counterexamples in their everyday lives; the second, to resist referring to mere evidence as proof; and the third, to 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.* (1994) advocates for educators playing an active role in producing educated consumers through lessons that aim to explain how the business of advertising works, and how their motives come into play. The goal is to produce an emerging 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 (2004) urges educators to cultivate skepticism through use of a tactic called cognitive dissonance, "the sense that your beliefs and intuition do not match what is actually true" (p. 34). One mustn't rely upon 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, 2004, p. 35).

Conclusion

Skepticism, defined as a multidimensional knowledge structure related to persuasion attempts and predicated on a trust or cognitive authority relationship, plays a significant but underexamined role within information science, and specifically within research on human-information behavior. There are reasons to believe so based on a wealth of literature in the social sciences, and given the numerous effects of a rational skepticism, there are also clear reasons to believe that incorporating the effects of skepticism into our research

will add value thereto and lead us to a deeper insight into the ways human beings need, seek, evaluate, and use information. This is perhaps the most central task to which we put our minds and focus our labor, and we wish to have a more holistic understanding of the relevant phenomena. A deeper understanding of how effects of skepticism are manifested in human-information behavior will also contribute to our participation in the wider effort to cultivate a rational skepticism within users of the services we provide, which could benefit our users in ways we cannot yet imagine.

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