BY CAROL TENOPIR

The Emotions of Searching

ONLINE DATABASE instruction and documentation usually focus on two main elements: 1) how to develop search strategies, and 2) which keys to press to make the system respond. These important cognitive and sensorimotor skills are fundamental to success in searching. What may be neglected in system design, written documentation, and bibliographic instruction, however, are the *affective*, or emotional, elements of searching.The affective domain usually includes dynamic emotional features that will more directly determine the quality of the search process. These include perseverance, preferences for certain types of search modifications, paying attention to detail, and more.

The affective domain represents the entire motivational and emotional spectrum for searchers. It may have more impact than we realize on how people search and whether or not they are satisfied with their results. By recognizing and studying the affective elements of searching, we can begin to incorporate them into instruction and system design.

Emotional responses

Those of you who work with novice users of library systems have probably witnessed their varying emotional responses when searching. They may be intimidated by facing a new online system, frustrated when the system does not respond the way they think it should, elated when they get unexpected results, relieved when they have enough information to answer their question, disappointed if they do not find what they need, or, conversely, pleased when they find what they need.

This emotional, or affective, domain can take many forms. It may be subtle, such as underlying motivational energy provided by searchers' basic intent in seeking information online or their intended use of the search results.

This underlying energy may influence many parts of the search session, such as how long the searcher sticks to the task or how he or she reacts to displayed results. The intent of finding just enough information to write a short paper, or a goal of searching for information about a friend's health problem casts a different light on a search session than the intent of doing comprehensive research or a work-related goal.

Research focusing on the affective domain

Recently, more attention is being paid by researchers and practitioners to all parts of the search process, including the affective parts. Diane Nahl at the University of Hawaii is working on several studies on the affective side of how novice end users interact with CD-ROM, online public access catalogs (OPACs), and online systems by looking at high school students, university undergraduates, graduate students, and faculty. Together, we examined how humanities and social science faculty and graduate students interact with a full-text online magazine database.

Several different techniques may be used to measure affective responses. By asking each of the searchers to think aloud as they searched, we were able to record spontaneous reactions to the entire search process as it unfolded. Searchers were not asked to interpret their feelings but to simply vocalize them. It was then up to the researcher to categorize and interpret the searchers' expressions.

Other ways to capture affective reactions include postsearch interviews to ask what the searcher was thinking and feeling at key parts of the search, or questionnaires asking them to respond to the overall session.

Transcripts from the recorded verbal reports, together with printouts of downloaded searches, can be used in several ways to study emotional reactions: One way is to measure and categorize questions asked by the searchers. In our case we documented questions that arose in searchers' minds during the search process but would not have been spoken aloud in a normal searching environment. We also recorded questions that searchers directed to a search monitor who was present for each search.

The presence of these questions in people's minds may very well influence the choices made for modifications and, ultimately, their satisfaction with the search process.

Types of questions

In our study, we recorded more than 1300 questions asked by seven faculty and graduate student novice searchers in 39 individual search sessions. Almost half (46 percent) of the questions asked were affectively oriented. The affective questions included requests for confirmation of a planned action, progress checking, surprise at unexpected results, and social interaction with the monitor.

Contrary to what most people might expect, only a quarter of all questions asked (26 percent) were related to cognitive information needs. Of those queries that were relevant, some dealt with how the system works, some with search strategy, and others with understanding the content of the full-text articles or scope of the topic.

Another quarter of the users' questions (26 percent) dealt with sensorimotor information needs, i.e., how to correctly format input and how to locate and identify information displayed on the screen.

Affective questions

A more detailed analysis of the affective questions shows that seeking confirmation was the most frequently asked (34 percent) category of questions. The novice searchers needed continuous motivation to proceed with the search, like a hesitant baby who is just learning to walk.

Confirmation queries were culled in various forms, including approval of a plan of action, reassurance that they were "doing it right," and support for a



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decision. A typical question may seek confirmation at the end, such as "I'll get everything, right?" or repeat what the searcher is fairly confident is correct: "So now I want to combine both of them?"

An interesting characteristic of questions in this category is that the answer is contained in the question. When a monitor or helper is present, he or she will always answer this type of question affirmatively.

This contrasts with the sensorimotor "formatting input" question category, where the needed information is not contained in the question and must be provided by a monitor or by documentation. (For example, "So what do I press?" vs. "Do I have to leave a space?")

Sensorimotor formatting questions reflect what searchers do not know, while affective seeking-confirmation questions reflect what searchers already know. No new information is given to the searchers; they are just reassured by the "yes" answer from the monitor.

Hawaii's Nahl explains the importance of this type of question.

> From a system-centered point of view it might appear that seeking-confirmation questions are superfluous, since no new cognitive information is provided. However, from a user-centered viewpoint it is assumed that confirmation questions are essential to help searchers persevere instead of quitting prematurely. Searchers need continuous motivation to prevent them from quitting. Confirmation-seeking is simply a method for providing searchers with this continuous motivation. It is thus affectively essential, even if cognitively superfluous.

In a library environment, the librarian or workstation monitor provides reassurance by answering these questions. Most system documentation or online interfaces and help screens fail to address this fundamental need for confirmation.

Personal chat

The second most common type of affective question recorded was personal chat (eight percent), directed to the monitor. In a natural setting, personal chat would be directed to a librarian or searchers at nearby workstations. According to Nahl, they demonstrate novices' need "to humanize a stressful search environment by transforming it into a normal and reassuring social environment."

Personal chat questions are as different and idiosyncratic as the variety of searchers, but they often comment on the task at hand. For example, "Can you imagine a bookless library?" "Do most people try to keep up with reading all of [full text]?" "Is this tape recorder voice-activated?" etc.

Showing surprise

Showing surprise was the next most common type of affective question (four percent). These questions allow a searcher to express surprise or disbelief at unexpected search results. For novices this may be a part of the learning process and allows them to reconcile their expectations with the reality of what really happened.

Anyone who has observed a bank of CD-ROM workstations has overheard searchers expressing surprise to themselves. Sometimes this surprise is expressed only through body language. We recorded these questions, among others: "Thirty-one. Wow . . . . Why would that [subject] have so many [hits]?" "Only one review about dance? That's surprising. What did I do wrong?" "Whoops! How did I get out of scroll?"

Progress check

We also found affective questions (two percent) about the progress check, which allow searchers to recall previous steps; take stock, consolidate, regroup, reorient, and assess the state of the search; or get ready to make another decision in the search. Searchers may be as much marking time as asking a question that needs an answer. For example, "So that's set 6, item 5. Now, what am I doing?" "How long was this article, do you remember? I guess that's the end of it." "So, we've been through 20 some odd?"

Progress checks help searchers to redefine the search goal at certain points in the process or to pause and reflect on what they are doing.

The importance of emotions

It is natural to dismiss affective questions and concentrate only on the cognitive and sensorimotor ones, because we think of searching as primarily a cognitive exercise, made possible by sensorimotor activities.

However, research is showing that these questions are not extraneous to search success. Showing emotions and asking affective questions is one way novices try to cope with search stress. Social interaction might even help novices search more efficiently, with the social affective questions proving to be as important to overall satisfaction as cognitive and sensorimotor ones.

"Affectively oriented questions primarily dealt with users' needs for continuing motivation to carry out their intentions in the moment-by-moment cognitive decision-making that constitutes a search," said Nahl. "If this motivation wanes, users terminate searches. The monitor's responses provided the reassurance that searchers were interpreting the situation correctly and performing the right move."

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For further reading

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