First Thoughts: Perceived Self-Efficacy and Interactive Video Retrieval

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Abstract
Surveys were collected to analyze perceived self-efficacy within interactive video retrieval, overall and according to certain factors potentially significant to users’ confidence prior to a search session. A total of 214 surveys with quantifiable responses were collected and analyzed. The combined mean of participants’ perceived self-efficacy for being able to successfully fulfill certain video needs was 3.24 (out of 5). Independent samples t-tests produced significantly higher levels of perceived self-efficacy among participants more familiar with a sample information topic (t=-3.51, p<0.01) and among those completing the survey using YouTube as the system context versus the CSPAN Digital Video Library (t=3.78 and p<0.01). Findings give researchers better understanding of users’ confidence and beliefs prior to an interactive video retrieval process, which can demonstrate implications for use and acceptance of interactive video systems.

Keywords: interactive video retrieval; self-efficacy; human computer interaction; video digital libraries


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1 Introduction and Review
Self-efficacy is the feeling about one’s ability to perform and complete certain tasks, while perceived self-efficacy extends the concept to include self rated levels of abilities, or confidence, which in turn is influential to actions and resulting emotions (Kurbanoglu, 2003). Interactive information retrieval (IIR) examines users’ interactions, judgments, and performances while “in the loop” with user interfaces to retrieval systems being used to fulfill information needs. Both areas have naturally been investigated together in order to examine how users perceive their abilities and/or levels of confidence for completing information tasks whether using basic technologies (Delcourt, 1993; Hill, Smith, & Mann, 1987; Karsten & Roth, 1998; Nahl, 1996) or as part of IIR processes throughout certain contexts, such as health, education, business, and others (Nahl, 1996; Ren, 1999; Mansourian & Ford, 2007).

Interactive video retrieval is the IIR process for seeking, finding, selecting, and using video for satisfying video needs. Video information inevitably provides additional and/or potentially more complex or multidimensional considerations – for both users and interface developers – due to its structural makeup. More specifically, users in the interactive video retrieval process will consider and contemplate visual, audio, and semantic (e.g. story / textual) information as part of a search session for video, which can be influential to use and design of user interfaces (Albertson, 2013). As a result, and considering users’ overall experience with video searching versus everyday Web (text-based) searching, it is warranted to individually assess users’ perceptions and confidence preceding an interactive video retrieval session due to such potential influences, whether positively or negatively, on perceived self-efficacy. Further, the present study measured overall levels of perceived self-efficacy for finding certain “pieces” of video, i.e. fulfilling different video information needs, along with variations according to topic familiarity and system experience.

2 Research Questions
The nature of perceived self-efficacy in the IIR process in conjunction with the unique characteristics of video and the potential influences thereof provide motivation for an initial examination of the following research questions:

RQ1. What are the overall levels of users’ self-efficacy, in terms of their perceived abilities for fulfilling certain video information needs, prior to an interactive video retrieval process?

RQ2. Does perceived self-efficacy in an interactive video retrieval process vary according to users’ familiarity with the topic comprising a video information need?

RQ3. Does perceived self-efficacy in an interactive video retrieval process vary according to users’ current use (or regularity of use) of a video retrieval system?
3 Methodology
Data were collected, for the most part, using paper surveys, administered both locally and through the mail; however, a set of surveys was sent and received via direct email as well. No particular group of participants was targeted for inclusion; the goal was to assemble an evenly distributed group of participants. The present study did not conduct any subsequent IIR experiments, but assessed survey participants’ initial perceptions of self-efficacy using a survey that presented a video information need situation. Participants then rated confidence in their abilities to find the video using a particular (i.e. specified) video retrieval system.

Two versions of the survey were created. The different versions were distinguished by the system (i.e. system context) used in each. One survey was designed to assess users’ self-efficacy of finding particular video while using YouTube; the other posed the same topic, video information needs, and (scaled) questions using the CSPAN Digital Video Library (not YouTube) as the system context. A screen grab of the homepage – with visible search features – was presented in each survey, respectively. All individual participants completed one (and only one) version of the survey; no participants were given both versions, resulting in two groups of participants.

Participants were first asked about their current usage level of the specified video system on a scale of 1 (never used before) to 5 (daily use). Other than the different system contexts across the two surveys, both versions were the same thereafter. Further, both surveys posed:

1) The same general information topic, “how the Chief Justice of the Supreme Court ruled on ‘Obama Care’” where participants rated their familiarity on a scale of 1 (absolutely no familiarity) to 5 (expert on topic).
2) And, the same two specific video information need statements including: a) “an unedited video of the Chief Justice of the Supreme Court discussing his ruling on Obama Care during a college campus interview,” and b) “many video clips of political analysts critiquing the Chief Justice’s ruling on Obama Care” where participants rated their perceived self-efficacy for fulfilling these using the system provided in their survey (i.e. either YouTube or CSPAN Digital Video Library).

It was anticipated that the survey design and data collection approach would enable various comparisons among different factors potentially significant to self-efficacy (Bandura, 1986). Currently, a total of 214 surveys have been collected (across both versions), including 109 completed YouTube surveys and 105 CSPAN Digital Video Library surveys. While data collection is still ongoing, for illustration purposes, a basic break down of the current full sample includes:

![Figure 1: Participants by age group.](image1)

![Figure 2: Participants by gender.](image2)

Quantitative analyses were performed on the scaled responses from participants. The analyses performed in the present study included descriptive statistics for the primary dependent variable of the survey, self-efficacy, and mean comparisons of self-efficacy between the groups with different system-contexts and levels of topic familiarity.
4 Findings

The initial 214 collected surveys provide a baseline for perceived self-efficacy in an interactive video retrieval context, which begins to demonstrate significant relationships among the examined variables. Current results provide further validation for the present study and additional motivation for more analyses to follow. A summary of the current results include:

RQ1. The combined mean of users’ perceived self-efficacy for successfully finding video that fulfills both video information needs was 3.24 (out of 5), with a range of 4 (1-5) and a standard deviation (SD) of 1.08.

RQ2. The overall mean familiarity of the general information topic, shown above, was 2.32, including a range of 3 (1-4) and SD of 0.91. No participants identified themselves as a 5 “expert of the topic”; therefore, the rated levels of self-efficacy of the participants identifying at the low levels of familiarity, 123 of the 214 participants, was compared to that of the participants at the higher end (3-4) of the scale, 91 participants. An independent samples t-test showed significantly higher levels of perceived self-efficacy among the participants who were more familiar (t=-3.51, p<0.01) with the information topic, at a mean of 3.53 (SD=.966), compared to the overall mean of 3.02 (SD=1.12) for those less familiar with the general topic.

RQ3. The overall level of use or experience with YouTube was M=3.55, with a range of 4 (1-5) and SD of 1.26, compared to that of the CSPAN Digital Video Library at a mean of 1.13, a range of 3 (1-4), and SD of .482. Variations among the perceived self-efficacy of both groups – i.e. YouTube versus CSPAN survey participants – were tested with an independent samples t-test, which produced a significant difference (t = 3.78 and p < 0.01). YouTube participants demonstrated higher levels of perceived self-efficacy (M=3.5; SD=1.05) than those completing the CSPAN survey (M=2.96; SD=1.05).

The current data analysis is demonstrating that system use (or experience) and familiarity with an information topic are factors contributing to perceived self-efficacy of users within interactive video retrieval. Findings give preliminary insight that can better understand users’ confidence and preconceptions, which, in turn, can potentially influence use and acceptance of interactive video retrieval technologies. Future work will examine additional factors contributing to the current findings and present further sets of comparisons.

5 References


