

“BETTER THAN AVERAGE”: INFORMATION LITERACY SKILL LEVELS, SELF-ESTIMATES OF PERFORMANCE, AND LIBRARY ANXIETY

MELISSA GROSS AND DON LATHAM

How can instruction librarians develop information literacy instruction that will have a real impact on students who already think their information literacy skills are “better than average” even though they are not? Research has shown that in many skill domains, a miscalibration between self-assessments of skill and actual skill is greater for low-skilled individuals than it is for others (Kruger & Dunning, 1999). In terms of information literacy instruction, this may describe a mind set in which students who need skills are unaware of it and therefore are unlikely either to seek assistance from others or to take advantage of opportunities to build skills.

This research project was designed to investigate whether there is reason to believe that this phenomenon applies to the domain of information literacy, by replicating the approach taken in earlier competency studies and looking for similar behavior patterns among incoming university freshmen. This study also took a first look at whether or not the implications of competency theory, specifically the idea that those with low skills experience a sense of confidence about their ability, results in a correlation between low scores on a test of information literacy and low scores on the library anxiety scale.

THINKING ABOUT COMPETENCY

Library studies have generally shown that it is not unusual for people to experience a sense of uncertainty or even anxiety at the start of a research project when interacting with the academic library (Collins, Mellon, & Young, 1987; Kuhlthau, 1993). However, studies of competency performed by Kruger and Dunning (1999) indicate that a sense of uncertainty is more likely to be experienced by highly competent individuals than by those who lack skills.

In Kruger and Dunning’s studies, the incompetent were found to believe their skill levels to be above average, to proceed in their endeavors with confidence, and to maintain this sense of confidence even in the face of failure. Findings among many previous studies have demonstrated an inability to self assess skill levels among low-skilled individuals in several domains. Skill areas that have been studied include self-assessments by debate teams, hunter’s knowledge of firearms, medical resident’s interviewing skills, lab technician’s understanding of medical terminology, and low-skilled readers ability to understand text (Dunning, Johnson, Ehrlinger, & Kruger, 2003). The study reported here is the first to bring competency theory to the domain of information literacy.

If studies of information literacy reveal these same characteristics among students, it would imply that students with low-level skills may be at a disadvantage in terms of being able to recognize their skill deficit. Such an inability to self assess would make it unlikely that these students would seek skill remediation or take advantage of skill building opportunities even if required to attend information literacy classes.

CHARACTERISTICS OF STUDENTS WITH LOW-LEVEL AND HIGH-LEVEL SKILLS

Students who demonstrate low-level skills also demonstrate certain characteristics that may be an aid in identifying these students and ultimately helping them. Low-skill individuals tend to significantly over estimate their performance, feel they perform at a higher level than their peers, and see themselves as “above average” in ability. These individuals are not able to gain insight from analyzing the performance of their peers and are unable to recognize competence in others (Kruger & Dunning, 1999).

In contrast, students who are top performers and are good judges of their own performance tend to underestimate their ability in relation to peers, and are able to correct their self-views when given

Gross (Associate Professor, College of Information) and
Latham (Associate Professor, College of Information)
Florida State University [Tallahassee, FL]

the opportunity to see their peers' work (Kruger & Dunning, 1999). To determine the extent to which these characteristics might apply in the domain of information literacy, participants in the research were asked to estimate their performance and then estimate their performance as compared to peers before and after taking the ILT.

COMPETENCY AND LIBRARY ANXIETY

The potential intersect between competency theory and the theory of library anxiety is another concern of this study. Library anxiety theory, derived from professional observation, describes the potentially debilitating discomfort some students feel in the academic library (Collins, Mellon, & Young, 1987). Students who suffer from library anxiety have disclosed that they are afraid that they do not have the library skills that they assume their classmates have, and are hesitant to ask for help, as this would expose their lack of skill. In terms of competency theory, library anxiety presents a scenario that better describes the mindset of the highly skilled, than that of low-skilled students. According to competency theory, students with a high level of information literacy skills should be more likely to question their ability to perform and therefore experience anxiety when confronted with a library task.

Research testing the theory of library anxiety supports this hypothesis in that it has documented an association between high performing students (in terms of academic achievement and a high level of self-motivation) and the experience of library anxiety (Jiao, Onwuegbuzie, & Lichtenstein, 1996; Onwuegbuzie & Jiao, 2004). However, none of these studies correlate students' information literacy skills directly with an experience of library anxiety (Gross, 2005). The study reported here uses a standardized test of information literacy to determine whether there is a potential relationship between information literacy skill level and the experience of library anxiety for students.

METHODOLOGY

Subjects were recruited from incoming college freshmen who represented the top 25 percent and bottom 25 percent of students admitted based on high school GPA and SAT/ACT scores. Information literacy skills were measured using the Information Literacy Test (ILT) developed at James Madison University (Cameron, Wise, & Lottridge, in press). Library anxiety was measured using the Library Anxiety Scale (LAS) developed by Bostick to provide a quantitative test of Mellon's (1986) theory of library anxiety (Bostick, 1993). In addition, two short surveys developed by the co-investigators collected demographic data and data on students' self-estimates of performance on the ILT both before and after taking the test.

A total of 51 students participated in the study. Of these, 37 (73%) were female and 14 (27%) were male. Almost all of the participants were 18 years old (49 or 96%). Two (4%) were 19 years old. In terms of race/ethnicity, 37 (72%) of participants were White, six (12%) Hispanic, five (10%) Black, one (2%) Asian, one (2%) Multi-race/multi-ethnic, and one (2%) did not identify a category. The mean high school GPA of these students was 3.639 and their mean ACT (or adjusted SAT) score was 24.98.

In terms of the quartile they represented, 33 (65%) of participants were top quartile students. These students had a mean high school GPA of 3.967 and a mean ACT (or adjusted SAT) score of 26.94. There were 18 students (35%) who represented the bottom quartile. These students had a mean high school GPA of 3.039 and a mean ACT (or adjusted SAT) score of 21.39.

Participants were randomly assigned, stratified by quartile, to one of two Blackboard websites that contained a video greeting, instructions from the researchers, and all of the data collection instruments. In order to counterbalance the potential for order effects, one group took the ILT before they took the LAS. This order was reversed for the other group.

In order to ensure that students would give the tests their full attention, several motivational strategies were used. Students were paid for participation in the form of gift cards for the campus bookstore and also told that those who scored in the top 15% would be eligible for a lottery to win one of four additional gift cards. Additionally, the video introduction the participants viewed encouraged full participation. To assess the effectiveness of these strategies, once all of the ILT tests were scored, a response time effort analysis was performed by the Center for Assessment and Research at JMU and the data was found to be consistent with elapsed times that indicate engagement with the test.

All data was analyzed using SPSS. T-tests were used to compare actual scores with estimated scores, Pearson's correlation was used, and a bivariate analysis of ILT scores and student scores on the LAS was performed. For all tests, alpha was set at .05.

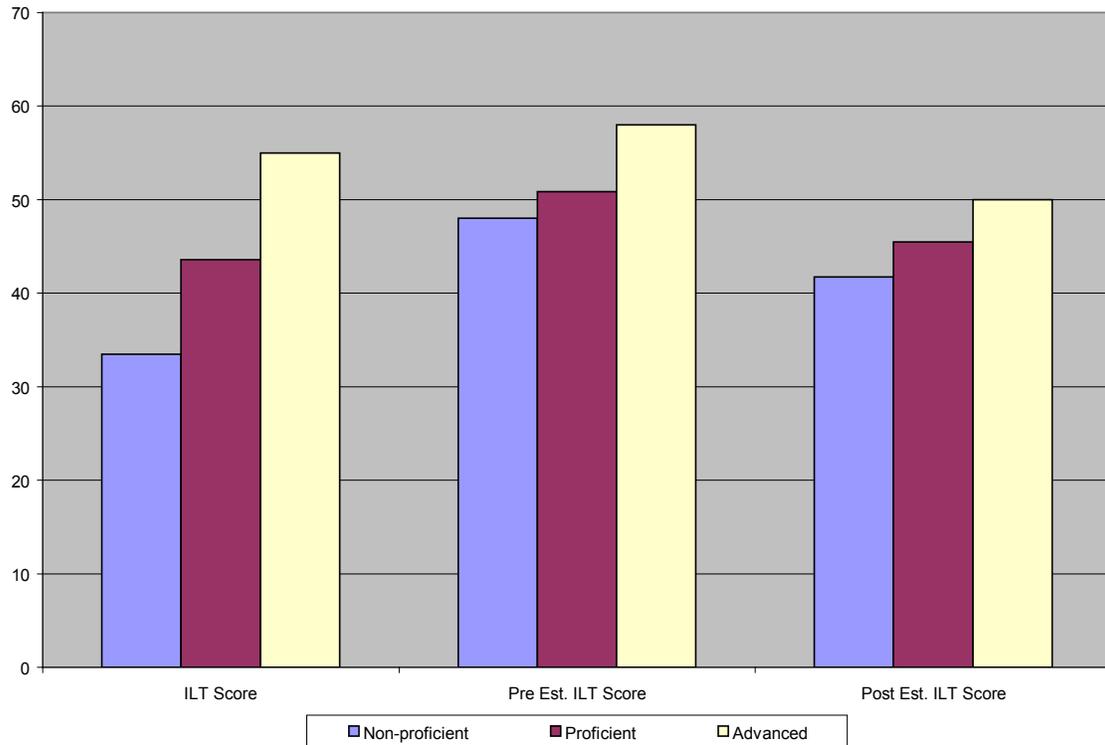
FINDINGS AND DISCUSSION

The recruitment strategy used in this study looked for high and low performers among incoming students in hopes that they would represent high-and low-level information literacy skills as well. This did not turn out to be the case. In terms of their overall academic skills, in this sample of students, a successful record of academic achievement was *somewhat* of a predictor of IL skill level as 27% of students in the top quartile scored in the non-proficient range on the ILT and 78% of students in the bottom quartile scored in the non-proficient range. However, it is important to note that only one student (a top quartile student) scored in the advanced range and 70% of the students who scored in the proficient range had scores that could be characterized as "low proficient."

SKILL LEVEL AND SELF-ESTIMATES OF SKILL

Data analysis revealed that students who scored as non-proficient on the ILT demonstrated inflated self-estimates of performance both in terms of their own achievement as well as in their estimates of how well they would do as compared to peers (i.e., other students participating in the project). In this study, 23 (45.1%) of participants had raw scores in the non-proficient range (below 39). There were 27 students (52.9%) who scored in the proficient range (a raw score of 39 to 54) and only one student (2%) scored in the advanced range (raw score > 54). Figures 1 and 2 on the next page graphically demonstrate the disparity between actual performance and estimated performance for all three of these groups.

Figure 1: Mean Scores and Estimated Scores

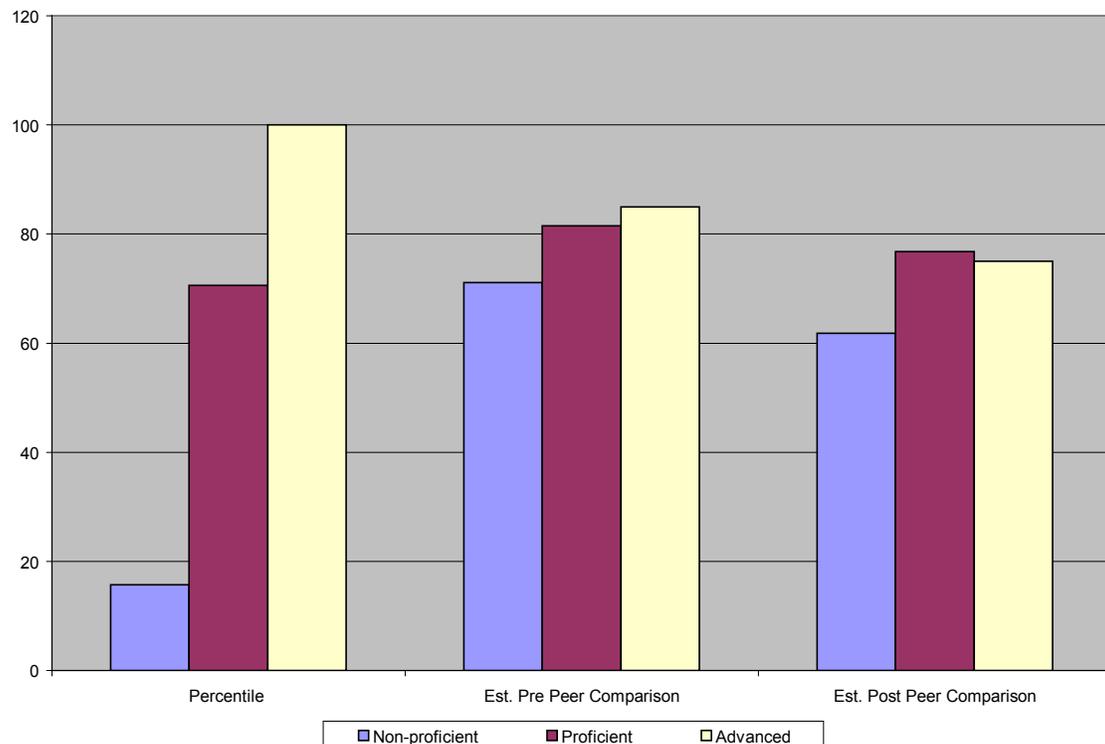


INFORMATION LITERACY SKILLS AND INFORMATION ANXIETY

Data analysis did not demonstrate a correlation between information literacy skill and library anxiety ($r = -.18, p = .21$). However, it must be noted that this sample did not provide a full range of scores on either the LAS or the ILT. Replication, with a broader range of scores and a larger sample size, might produce different results.

In terms of the five subscale scores that make up the LAS (barriers related to staff, affect, comfort with the library, knowledge of the library, and mechanical issues), only one produced a statistically significant result. A negative correlation between information literacy and anxiety related to “knowledge of the library” ($r = -.37, p = .01$) indicates that as information literacy scores rise, anxiety related to lack of knowledge about the library falls. This finding, especially given the small sample size, supports the idea that raising skills lowers library anxiety.

Figure 2: Mean Percentile versus Comparison to Peers



CONCLUSIONS AND IMPLICATIONS FOR PRACTICE

One important point the literature on competence makes is that it is possible to overcome incompetence, and the best way to do this is to gain skills in the area of deficiency. In order for anyone to assess their own or someone else's skill in an area, they must have the knowledge base and skills to compare their performance to that of others and to enable them to recognize right and wrong answers on tests of ability.

One extension of this study that the researchers hope to achieve is the design and development of interventions that will appeal to and help low-skilled individuals to confront and overcome their skill deficiency. There are several implications of this research stream to date that information professionals may want to keep in mind. One point is to remember that students can be high achievers and still be below proficiency in terms of their information literacy skills. Given this, and the likelihood that students who need these skills will not seek them out, information professional can take advantage of class time to identify and reach students at all skill levels. Ways to do this may be to educate users about competency theory as a means to examine their own and the skills sets of others, and to utilize collaborative groups and peer feedback in lesson plans. Perhaps the best way to identify skill levels, however, is through skill assessment and the use of diagnostic tools. It is also important to involve users in the design of information literacy programs in order to develop interventions that appeal to them. Lastly, the growth of distance learning may bring with it a new set of challenges in terms of making sure that all students attain information literacy skills as part of their higher education experience. Skill deficits among distance learners may be harder to diagnose and may require specialized interventions.

REFERENCES

- Bostick, S. L. (1993). The development and validation of the Library Anxiety Scale. In M. E. Murfin & J. B. Whitlatch (Eds.), *Research in reference effectiveness* (pp. 1-7). Chicago: American Library Association.
- Cameron, L., Wise, S. L., & Lottridge, S. M. (in press). The development and validation of the Information Literacy Test. *College and Research Libraries*.
- Collins, B. L., Mellon, C. A., & Young, S. B. (1987). The needs and feelings of beginning researchers. In C. A. Mellon (Ed.), *Bibliographic instruction: The second generation* (pp. 73-84). Littleton, Colorado: Libraries Unlimited, Inc.
- Dunning, D., Johnson, K., Ehrlinger, J., & Kruger, J. (2003). Why people fail to recognize their own incompetence. *Current Directions in Psychological Science: A Journal of the American Psychological Society*, 12, 83-87.
- Gross, M. (2005). The impact of low-level skills on information seeking behavior: Implications of competency theory for research and practice. *Reference and User Services Quarterly*, 45, 54-62.
- Jiao, Q. G., Onwuegbuzie, A., & Lichtenstein, A. A. (1996). Library anxiety: Characteristics of 'at risk' college students. *Library & Information Science Research*, 18, 151-163.
- Kuhlthau, C. C. (1993). *Seeking meaning: A process approach to library and information services*. Norwood, NJ: Ablex Publishing.
- Kruger, J., & Dunning, D. (1999). Unskilled and unaware of it: How difficulties in recognizing one's own incompetence lead to inflated self-assessments. *Journal of Personality and Social Psychology*, 77, 1121-1134.
- Mellon, C. A. (1986). Library anxiety: A grounded theory and its development. *College & Research Libraries*, 47, 160-165.
- Onwuegbuzie, A. J., & Jiao, Q. G. (2004). Information search performance and research achievement: An empirical test of the anxiety-expectation mediation model of library anxiety. *Journal of the American Society for Information Science and Technology*, 55, 41-54.