

# Self-Beliefs and Course-Related Research: Proposing an Expansion of the Imposed Query Model for Undergraduate Students

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Because of the increasing importance placed on information literacy in the undergraduate curriculum, it is not difficult to find literature related to the assessment of information literacy skills, most of which reports on students' actual skill level. Little literature, however, is devoted to the psychosocial factors that relate to the application of information literacy skills in undergraduate coursework.<sup>1</sup> During the past fifty years, several conceptual models have been developed to explain and examine information-seeking behavior in general.<sup>2</sup> However, Melissa Gross argued that these conceptual models only explained self-generated information-seeking behavior, rather than information-seeking behavior due to a query imposed by an external force.<sup>3</sup> In order to address this gap, Gross developed the *imposed query model*, which begins with the imposer developing the query to be communicated to the agent (IQ1) and ends with the imposer evaluating the agent's response to the query (IQ6). The intermediate stages (IQ2-IQ5) involve the agent processing the query and using an information intermediary, such as a librarian or a friend, to help make sense of the query or to navigate the information-seeking process. This idea of an imposed query is especially relevant for undergraduate students, who are often required to gather information for assignments given and evaluated by teaching faculty.

The purpose of this paper is to demonstrate the potential relevance of academic self-beliefs, particularly self-efficacy, to Gross's imposed query model as it relates to undergraduate students at the second (IQ2, transferred) and third (IQ3, interpreted) stages, in which the imposer communicates the query to the agent and the agent interprets the imposer's query. Gross writes that at the IQ2 (transferred) and IQ3 (interpreted) stages, the query might be "affected by feelings or beliefs that the agent has about the imposer,"<sup>4</sup> which could affect the transmission and interpretation of the query, and that "understanding the various factors that influence when and if this happens could be an aid to all of the players"<sup>5</sup> in the model, including students, faculty, and librarians. Based on what is known about self-efficacy and related academic self-beliefs, I argue that it is at these stages students will decide if they believe they have the skills required to be successful, how much effort they will put into the research process, and if they will seek help from an expert information intermediary, such as a professor or librarian. All of these decisions will have an impact on how the final product, the completed assignment, is evaluated by the instructor. Furthermore, I propose an expanded model of the IQ2 (transferred) and IQ3 (interpreted) stages that is based on the limited amount of empirical research, which can be tested by future re-

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search seeking to understand how undergraduate students navigate the research process. While Gross and others<sup>6</sup> have applied self-beliefs to understanding the differences between self-generated and imposed-query information-seeking behaviors, they have not applied self-beliefs specifically the IQ2 (transferred) and IQ3 (interpreted) stages of the imposed query model. Attention to the role self-beliefs play in the undergraduate research process is warranted given the inclusion of dispositions and their importance to the threshold concepts in the recently adopted *Framework for Information Literacy for Higher Education*, thus helping librarians to create targeted and sustainable interventions to implement in practice.

### Academic Self-Beliefs

Academic self-confidence is a broad, relatively stable self-belief that can be used to understand how a student perceives his or her abilities with respect to academic demands. In terms of higher education, academic self-confidence is defined as “the extent to which [students] have a ‘strong belief, firm trust, or sure expectation’...in their ability to respond to the demands of studying at the university.”<sup>7</sup> There are several academic self-beliefs that contribute to overall academic self-confidence, including self-esteem, self-concept, and self-efficacy. While self-beliefs vary among individuals, the process of forming these self-beliefs is both individual and social. Academic self-confidence and related self-beliefs have the potential to affect a student’s motivation to complete an academic task, the effort a student gives to an academic task, and the overall achievement level a student reaches in fulfilling an academic task.<sup>8</sup> This paper will focus on the role of self-efficacy in the application of information literacy skills, specifically as it relates to the IQ2 (transferred) and IQ3 (interpreted) stages of the imposed query model. For a comprehensive review of academic self-efficacy literature, see the work of Frank Pajares and Dale H. Schunk.<sup>9</sup>

### Self-Efficacy

Albert Bandura believes people make decisions about

action through experience and the consequences of past behavior. Previous actions and their outcomes inform one’s self-efficacy, a factor one uses in determining whether or not to take action regarding a task. Self-efficacy is “the conviction that one can successfully execute the behavior required to produce the outcomes” desired.<sup>10</sup> If a person’s self-efficacy is such that she believes she does not have the skills to produce the desired outcome, then she might decide to only give minimal effort toward the task or not even try at all. Self-efficacy could affect a task as simple as deciding what to make for dinner, but it also plays a role in academic motivation and performance. While self-efficacy does relate to academic performance and motivation, it is important to understand that self-efficacy is not a measure of actual skill level. Furthermore, self-efficacy, including its academic manifestation, is a situation-specific belief and is not necessarily stable over time, meaning that a student’s feelings of self-efficacy could vary among disciplines.

The role of self-efficacy has been studied in relation to students’ perceived ability, actual academic subject performance, and background characteristics. Findings suggest that self-efficacy has implications for self-confidence and achievement. Namok Choi explored which self-beliefs, both general and academic, “would account for more variance in academic achievement (measured by course grades).”<sup>11</sup> Academic self-efficacy is defined as the “degree of confidence of performing typical academic behaviors of college students.”<sup>12</sup> Specific self-efficacy is similar to academic self-efficacy, but applies to confidence in one’s ability to be successful in a specific course or discipline. Choi found that only specific self-efficacy is a statistically significant predictor of grades.

Mimi Bong, like Choi, found that specific self-efficacy is relevant for certain groups of students.<sup>13</sup> Bong investigated the relationship between students’ background characteristics (i.e. gender, race, and achievement) and academic self-efficacy among high-school students using questions from SAT preparation handbooks covering six distinct subject areas. Bong found that males reported more consistent lev-

els of self-efficacy across the six subject areas; however, self-efficacy for female students was specific to the subject areas. Hispanic students reported higher levels of self-efficacy for Spanish than the other English-based subject areas compared to non-Hispanic students. While self-efficacy is not a stable self-belief in general, some groups of students demonstrated more consistent levels of self-efficacy across subject areas than others, which could have implications for course-related research. For example, female students who are enrolled in a science course might feel less capable of successfully completing the assignments for that course, including research assignments, even though their actual skill level might not warrant lower levels of self-efficacy. While some students might feel comfortable conducting research in one discipline, they might feel less comfortable in a different discipline depending on specific self-efficacy.

Unlike Bong, Stacie Craft DeFreitas found no “significant ethnic difference in levels of self-efficacy” between European-American and African-American first-year college students at a selective university.<sup>14</sup> Interestingly, African-American students with negative outcome expectations, a concept related to yet different from self-efficacy, had higher GPAs. Previous research is inconsistent determining the role of self-efficacy in African-American academic achievement.<sup>15</sup> DeFreitas believes that other academic self-beliefs might be better for understanding African-American academic achievement. Based on DeFreitas findings, it is difficult to predict if and how academic and specific self-efficacy relate to ethnicity or race at the IQ2 (transferred) and IQ3 (interpreted) stages, and how this belief might affect the overall research process for non-white students.

Self-efficacy research has suggested that the way in which a task is communicated to an agent can affect the agent’s self-efficacy and overall outcome, which is particularly relevant to the IQ2 (transferred) and IQ3 (interpreted) stages. Caroline J. Wesson and Nicola M. Derrer-Rendall explored how self-beliefs, namely optimism and confidence, affect the achievement of goals set by another person, which is similar to an im-

posed query context. While optimism tends to be a relatively stable belief, the authors’ definition of this term, “the belief in the ability to succeed,” indicates that it is related to self-efficacy.<sup>16</sup> Like self-efficacy, optimism determines the motivation to execute a particular task and the ability to successfully complete that task. Wesson and Derrer-Rendall found that when students were told that their goal, to complete as many anagrams as possible within three minutes, was categorized by others as being difficult to achieve, optimism was related to performance. This was not the case when the students were told that others found the task to be easy or if they were not given any information at all. Wesson and Derrer-Rendall believe that the optimistic students who were confident in their ability to successfully complete the difficult task were more motivated and exerted more effort to achieve. The way in which an instructor communicates a research assignment to students (IQ2, transferred) and how the student interprets the goals and intentions of the instructor (IQ3, interpreted) could affect the students’ levels of self-efficacy, which will effect motivation and outcome achievement.

### *Information Literacy Self-Efficacy*

Several studies investigating undergraduate students and information literacy self-efficacy have been published, although those they compose a relatively small portion of the information literacy literature. Most of these studies examine particular subgroups of students, rather focusing more generally on information literacy self-efficacy and undergraduate students. Furthermore, the existing literature is inconsistent in how it explores information literacy self-efficacy and undergraduate students. For instance, one study surveys a subgroup of students about their academic motivation and information literacy self-efficacy, while another study explores the information search process as it relates to information literacy self-efficacy. While multiple perspectives are useful, the findings of these studies are difficult to weave together to form an understanding of information literacy self-efficacy and the overall research process. Most of these stud-

ies assume that information literacy self-efficacy is an actual and relevant self-belief. Indeed, S. Serap Kurbanoğlu, Buket Akkoyunlu, and Aysun Umay created and tested an information literacy self-efficacy scale.<sup>17</sup> In general, the findings of the studies suggest that students with higher levels of information literacy self-efficacy have a better understanding of the research process and how to select information resources. These positive attributes likely lead to students to exert more effort and select appropriate information intermediaries and resources.

Although Anne M. Fields frames her investigation of self-efficacy and information literacy using Carol Kuhlthau's Information Search Process model, she uses an imposed query scenario to understand how first-year college students think about locating information for a research paper about an unfamiliar topic.<sup>18</sup> Fields reports that the students demonstrated "relatively strong perceived self-efficacy," although they were likely to use tools that required the minimum amount of effort, namely the internet.<sup>19</sup>

Micaela Waldman surveyed students enrolled in an introductory psychology course to "examine some factors that correlate with students' usage of the library's electronic resources," including self-efficacy.<sup>20</sup> Waldman found that students with higher levels of self-efficacy were more likely to use the library's resources, to visit the physical library, to be motivated to learn about the library's electronic resources and find them easier to use.

Wen-Hua Ren explored how "performance and behavior will affect self-efficacy" within the context of searching electronic information.<sup>21</sup> Library instruction, which included a library search assignment, was given to undergraduate students enrolled in a basic English composition course. Before and after the instruction and assignment, students were asked to rate statements related to information-seeking self-efficacy, as well as attitudes toward library instruction and the research process. Unlike in Waldman's study, the students in this study actually performed searches, which were assessed by both the student and the library instructor. Although attitudes regarding the re-

search process were high before and after the instruction session and assignment, information-seeking self-efficacy did significantly increase.

Using self-efficacy as a conceptual frame, Drusilla C.B. Zehner investigated the intersection of perceived and actual information literacy skills and wanted to know if students' background characteristics, such as race, gender, or socioeconomic status, impact students' perceptions of their information literacy skills, as well as their performance on an information literacy assessment.<sup>22</sup> While Zehner found that, in general, students' background characteristics were not related to information literacy self-efficacy, a "significant majority" of students reported that they would be interested in receiving information literacy instruction after receiving their scores on the skills assessment.<sup>23</sup> This indicates that these students might have been surprised by lower-than-expected scores and believed that they might need to further develop this skill set.

Yingqi Tang and Hung Wei Tseng used a survey to investigate the relationship between self-efficacy and information literacy skills of distance learning students in order to improve library instruction targeting this particular user group. The authors found that "high self-efficacy students demonstrated superior knowledge on how to use appropriate resources to accomplish their learning needs;" however, many students were not able to "select and use resources wisely."<sup>24</sup> Contrary to the findings of other studies,<sup>25</sup> Tang and Tseng found that low-efficacy students reported that they were interested in attending library instruction webinars. In terms of the IQ2 (transferred) and IQ3 (interpreted) stages, students with higher information literacy self-efficacy seem to have a better understanding of the overall research process and the resources available to them in completing their research assignments.

Mitchell Ross, Helen Perkins, and Kelli Bodey surveyed undergraduate business students at an Australian public university to investigate the relationship between student employment, intrinsic academic motivation, and information literacy self-efficacy.<sup>26</sup> These authors found "no difference in information literacy

self-efficacy between students who were working and those who were not.”<sup>27</sup> However, intrinsic motivation was related to information literacy self-efficacy for both working and non-working students, although working students reported lower levels of intrinsic motivation. The findings of this study suggest that working students, who are often considered an at-risk population, might feel as confident in their ability to complete a research assignment than their non-working peers if they exhibit higher levels of intrinsic academic motivation.

### *Confounding Phenomena*

There are two potentially confounding phenomena that should be taken into account when discussing the role of self-efficacy in the imposed query model, particularly at the IQ2 (transferred) and IQ3 (interpreted) stages: the Dunning-Kruger effect and library anxiety. These phenomena could affect a student’s level of self-efficacy, which would affect how a student navigates the remaining stages of the imposed query model, including the use of an information intermediary and the effort given to finding appropriate information to successfully complete the assignment.

### *Dunning-Kruger Effect*

Based on the findings of four studies, Justin Kruger and David Dunning argue that people who are incompetent in a particular domain do not recognize their incompetence, because they lack metacognition, metamemory, metacomprehension, and self-monitoring skills. Since incompetent individuals lack the “the ability to produce correct judgment,” they also lack the knowledge to “recognize correct judgment” and often inflate assessments of their skills or competence.<sup>28</sup> In the four studies that Kruger and Dunning conducted, the lowest performing participants overestimated their own abilities and also believed that they were above-average. On the other hand, the highest performing participants underestimated their abilities. Kruger and Dunning also found that incompetent individuals were less likely to recognize competence, or expertise, in others. Traditionally aged

students who are currently enrolled in college are digital natives, meaning that they have used the internet throughout their entire lives to retrieve information and solve problems. Because of this, they could potentially believe that information literacy skills are not skills that need to be developed and refined over time. Since prior experience might suggest that they have been successful in seeking information, they might be overly confident in their abilities to conduct college-level research and might not recognize skill gaps when they exist. Furthermore, ignorance of their incompetence might affect which information intermediaries they use, if any, throughout the research process.

Melissa Gross, Don Latham, and Bonnie Armstrong have examined the role of the Dunning-Kruger effect in the relationship between actual and perceived information literacy skills and presented implications for practice based on this relationship.<sup>29</sup> Gross and Latham used semi-structured interviews and the administration of James Madison University’s Information Literacy Test (ILT) to explore the relationship between first-year students’ perceived and actual information literacy skills, as well as the differences in this relationship between imposed and self-generated queries. All but one of the students were proficient. Only one of the proficient students was considered to have advanced proficiency. Most students reported that their information-seeking skills were self-taught and that they do not “do or know anything special that their peers might not know.”<sup>30</sup> A few students believed that “young people are better information seekers than older adults,” meaning that these students likely do not recognize expertise in other more experienced information seekers.<sup>31</sup> This belief has implications for selecting which information intermediary to use. Despite the students’ overall confidence, most of the participants did overestimate their information skills and were not sure which information literacy skills they needed to acquire or further develop. One student responded, “I honestly don’t know how much greater information literacy needs to be, even on a higher research level.”<sup>32</sup> High levels of information literacy self-efficacy based on an overestimation of skills will affect

if and how students select an information intermediary at the IQ4 (negotiated) stage how much effort will be put into the research process, which information resources will be used, and the grade a student receives for the final research product.

### *Library Anxiety*

Library anxiety is another phenomenon that could affect self-efficacy and the choices a student makes at the IQ2 (transferred) and IQ3 (interpreted) stages. Anthony J. Onwuegbuzie and Qun G. Jiao provide a comprehensive definition, stating that library anxiety is “extreme apprehension, fear, panic, self-defeating thoughts, uneasiness, tension, stress, and physiological arousal that occurs during one more of the following three stages of the library-task cycle: library preparation, library use, and library reflection.”<sup>33</sup> Library anxiety is not related to students’ generalized or academic anxiety. If students have had negative experiences with previous library research, or no library research experience at all, they might feel as if they are not able to succeed. Library anxiety could prevent students from using library resources, including librarians, in the IQ4 (negotiated) and IQ5 (processed) stages, especially given the accessibility of information on the Internet.

Onwuegbuzie and Jiao tested “a model of library anxiety for predicting research performance among graduate students” from a variety of disciplines who were enrolled in an introductory research methodology course in which they were required to write an in-depth research proposal.<sup>34</sup> The authors applied the Anxiety-Expectation Mediation (AEM) model and used a variety of scales to measure different types of self-perceptions and anxieties and then analyzed the results with structural equation modeling. The authors found that library anxiety and academic self-perception, which the authors note is a manifestation of self-efficacy, influenced the graduate students’ success in writing a research proposal. Furthermore, academic self-perception is a predictor of library anxiety, although library anxiety is not a predictor of academic self-perception. While the authors do not mention the

imposed query model, they do believe that their findings have implications for the research stage in which the student receives and begins to interpret the assignment, which correlates with the IQ2 (transferred) and IQ3 (interpreted) stages. The authors write “high levels of library anxiety limit the extent to which new information can be preprocessed efficiently.”<sup>35</sup>

Nahyun Kwon examined the relationship between library anxiety and critical thinking skills in undergraduate students enrolled in a course about research skills. Kwon administered the California Critical Thinking Disposition Inventory (CCTDI) and the Library Anxiety Scale (LAS), as well as asking the students to write a brief reflective essay about “a critical incident from their past library experience.”<sup>36</sup> Kwon’s analysis showed that while most students exhibited library anxiety, the students with weak dispositions for critical thinking had higher levels of library anxiety. Using the qualitative data, Kwon found that library anxiety affected students’ ability to think critically, due to feeling lost and frustrated, which is related to Onwuegbuzie and Jiao’s argument that heightened library anxiety limits the ability to process information. However, students with strong critical thinking dispositions were able to overcome their library anxiety. One student, who had a low critical-thinking disposition, reported, “after three exhausting days of worrying and pretending my search was going well, I gave up...The resulting work was poor,” which suggests that library anxiety is related to self-efficacy.<sup>37</sup> In other words, a weak disposition for critical thinking and high library anxiety could affect how much effort students put into the research process and the quality of the final product.

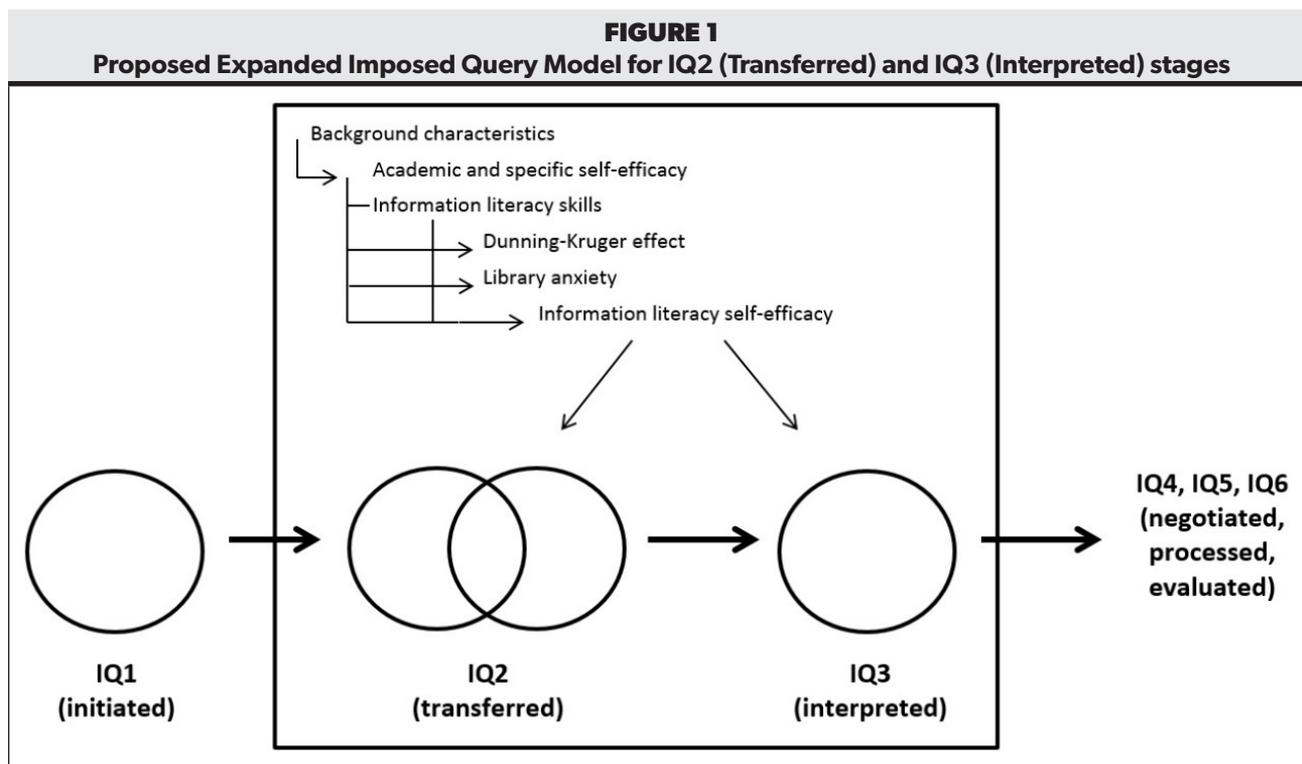
Gross and Latham looked at the intersection of library anxiety, the Dunning-Kruger effect, and information literacy skills of incoming first-year students.<sup>38</sup> Fifty-one students from the top and bottom quartiles of an incoming first-year class at a state university completed the Information Literacy Test (ILT), the Library Anxiety Scale (LAS), and two short, author-developed surveys. Of the fifty-one students, 45% scored in the non-proficient range on the ILT, which is quite

different from their subsequent 2009 study, in which only one student scored in the non-proficient range. However, like their 2009 study, students reported inflated estimates of their information literacy skills, meaning that the Dunning-Kruger effect holds for this sample. Interestingly, “no correlation was found between performance on the ILT and the experience of library anxiety as measured by the LAS.”<sup>39</sup> This means that the Dunning-Kruger effect might have a more powerful effect than library anxiety with respect to the IQ2 (transferred) and IQ3 (interpreted) stages. This is not entirely surprising given the proliferation of information freely available and searchable on the Internet.

### Proposed Expanded Model of IQ2 and IQ3 Stages

Figure 1 presents a proposed expanded model of the IQ2 (transferred) and IQ3 (interpreted) stages based on the literature reviewed in this paper. This proposed model assumes that the imposed query model is appropriate for understanding how undergraduate students approach course-related research. In

this proposed conceptual model, a number of factors contribute to information literacy self-efficacy, which acts as a mediator between these factors and students’ research behavior. Although the empirical evidence is mixed, the proposed expansion begins with a student’s background characteristics, which could include gender, race, age, socioeconomic status, and other demographic factors. These background characteristics influence the student’s levels of academic and specific self-efficacy. A student’s academic and specific self-efficacy combine with the student’s information literacy skills, which determine whether or not the Dunning-Kruger effect and library anxiety are present. In addition to being mediated by the Dunning-Kruger effect and library anxiety, I propose that students’ academic and specific self-efficacy, as well as their information literacy skills can directly affect their level of information literacy self-efficacy. Students’ information literacy self-efficacy mediates all of these background characteristics, self-beliefs, and actual skills to influence how a student chooses to act at the IQ2 (transferred) and IQ3 (interpreted) stages.



## Conclusion

Although the relationship between self-efficacy and information literacy has been investigated, we still know very little about it. Furthermore, we know virtually nothing about the role self-efficacy and other academic self-beliefs play when undergraduate students conduct course-related research. Since studies have determined that self-efficacy is related to academic achievement, at least for some students, self-efficacy likely plays some role in the course-related research process of undergraduate students. Attention to the role self-beliefs play in the undergraduate research process is warranted given the inclusion of dispositions and their importance to the threshold concepts in the recently adopted *Framework for Information Literacy for Higher Education*. The expansion of Gross's imposed query model presented in this literature review should be viewed as a call to action for researchers. The author hopes that this proposed expanded model will help to spur research regarding academic self-beliefs, the application of information literacy skills, and undergraduate students' course-related research.

## Notes

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