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Fruitful Research:

A Biblical Perspective on the Affective Dimension of Research

1. Introduction

Librarians, professors and students know that students-as-researchers experience apprehensions and frustrations that become barriers to successful research. The affective dimension of research – how researchers feel about their abilities to carry out research – contributes significantly to success in research. Most professional librarians are aware of literature related to this dimension of research and library use. Many professors are not aware of this literature and perhaps do not ordinarily think about the affective dimension while writing syllabi or devising research assignments and projects. Reminding ourselves, as librarians and professors, of this important dimension of students' experience of research will prepare us better to assist students to overcome their apprehensions and thereby to succeed in their research. And given that professors usually assign research and librarians often give students practical assistance during the process, we occupy two key positions for helping students deal fruitfully with this dimension.

Librarians and professors in Christian university and college settings can bring additional theological perspectives to bear on the conversation about the research process and particularly the affective dimension of students' research. Paul speaks of transformation through the renewal of our minds (Ro. 12:2). The student in a Christian college or university who comes to understand the research process within a scriptural framework may experience such transformation. The professor and the librarian are situated perfectly to collaborate in assisting student researchers so that they experience the affective dimension of research positively and thereby become more successful as researchers. In what follows, we view the affective dimension of the student's research experience through a specific scriptural lens tied to Paul's teaching about the fruit of the spirit.

2. Approach to the Affective Dimension of Research

One could approach the affective domain of searching in several ways. Psychologists and psychotherapists have examined in detail the physiological dimensions of stress, fear and anxiety, with some focusing on the role of the brain and its chemistry in individuals' experience of stress when they re-encounter circumstances associated with earlier stressful experiences (Cozolino, 2002). Educators and librarians have popularized Vygotsky's concept of a zone of proximal development (1978), a zone in which enough stress exists to create dissonance and a need to learn but not so much stress that the individual experiences panic. Technology has its discontents, and one might explore the stress and anxiety that some experience in high-tech library and database searching, quite appropriately, within the writings of those who have questioned our apparent unwavering service to the technologies that we ourselves developed (Ellul, 1964; Postman, 1992). Some sociologists have identified an affective turn, noting the growing societal awareness of the role of affect in behavior and learning (Clough & Halley, 2007). While we obviously could situate our present explorations more fully within the work of psychologists, sociologists, educators and critics of technology, we have intentionally set this project in two other contexts: the research within librarianship focused on the affective dimension of research, and biblical teaching on dispositions.

First, librarians have dealt comprehensively with the research process and how it is taught or not taught, and with the affective dimension, including the fear, frustration and anxiety experienced by student researchers. A review of the research about research appears next. Following that review, we consider the biblical teaching on the fruit of the Spirit, exploring possible links between those virtues or affective qualities produced by the Spirit

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ABSTRACT

Librarians and professors in Christian colleges and universities can work collaboratively to help reduce the stress and anxiety that student researchers experience as they carry out their undergraduate or graduate research. This collaboration focuses on understanding the affective dimension of the research process and relating the research process to St. Paul's list of nine fruit of the Spirit (Galatians 5:22). The student researcher who can view the research process within the frame of these nine dispositions will have additional resources with which to integrate God's presence in the research process, thereby reducing research anxiety.

KEYWORDS

Research process, anxiety, collaboration, Christian college or university, affective dimension, Fruit of the Spirit, Galatians 5:22, librarians, professors

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and how researchers understand and execute their research. In choosing to explore the fruit of the Spirit rather than other biblical passages, we have clearly made a selection. Other Scriptural images and teachings might have served as well, for example, the love of God and neighbor which Jesus held up as the basis of all the law and the prophets (Matthew 22:37-40). The parable of the talents (Matthew 25:14-30; Luke 19:11-27), the moral call on those who would follow God to seek truth and eschew lies (eg: Proverbs 12:17, 14:5; Jeremiah 9:3), or Paul's summons to focus on those things which are true and honorable (Philippians 4:8-9) strike us as parallel and worthy candidates.

Some might approach our task under Amos' call for justice to flow down like a river and righteousness like a stream (Amos 5:24). In an apparent quotation from one of the early church's hymns, the Apostle Paul spoke of Christ's role in holding the whole creation together (Colossians 1:15-18). One approaching our task might argue, in light of Paul's words, that all knowledge makes sense because God – not Dewey, AACR2, or the Library of Congress – brings order to the world. Some Christian writers have applied Paul's image of taking every thought captive to Christ (2 Corinthians 10:5) to the academy and the work that Christians do within it (Hermann, 1985; King, 2011). Many Christians might consider wise a Christian Reformed approach within which one views the academic specialties as disciplined ways to examine the various aspects of God's world (Dooyeweerd, 1953). In sum, anyone beginning our task faces a plethora of intriguing choices. However, in recognition of the Biblical teaching that only God has no limits, we have made a selection. Following the major section in which we review research on the affective dimension carried out largely within library science, we will explore the fruit of the Spirit in detail. As we do, we will keep in mind that whatever approach one takes to this task, one need guard against any sort of scattered grabbing of whatever biblical passage or allegedly biblical principle suits one's purposes.

The Affective Dimension of Research

Students begin the process of academic research when they begin a university or college-level program. Academic research differs from the research done to complete a report or gather evidence for use in a class debate that may have characterized students' research in secondary school. Academic research requires or invites students to enter what some have called the conversation (Adler, 1990) taking place in the academy within the various disciplines, and it requires that they work in scholarly ways conforming to the prescriptions and protocols of those disciplines. The professional literature of librarianship identifies information-seeking, a part of the research process, as sense-making (Dervin, 1983). In Dervin's model, the researcher seeks information to fill a gap in his or her own understanding. In academic research, that gap is produced by a research question, often one suggested or assigned by the student's professor.

To answer this research question by carrying out scholarly research, students must use the kinds of complex thinking skills identified in Bloom's Taxonomy (Bloom, 1956). The student of traditional college age has a brain which, according to Piaget (1971), is functioning in a formal operational mode and is capable of logical and abstract thought. Although some have objected to the tidiness of Piaget's 4th stage (Kuhn, 2008), Kuhn and Pease (2006) recognize that a student at this stage is capable of meta-cognition. However, they also note that application of this competence to various tasks and situations is inconsistent throughout adolescence.

Granting that students of traditional undergraduate age have the biological, neurological, and cognitive resources necessary to meet academic research expectations, the research required to complete course assignments frequently remains a potential source of anxiety for college researchers. Students may feel inadequate and ill-equipped to meet course requirements. They may feel pressured by the higher expectations of an elevated academic level. They may bring

feelings of failure or negative memories from prior experiences of research. Students may perceive the library itself, including its organization, size, and staff, as barriers to the research process. Prior negative experience or inexperience with technology may add to their anxiety. In addition, the sheer volume of information may provoke anxiety as well.

Librarians have come to understand academic research as a process in which students move recursively through defined cognitive, physical, and affective states until they complete the product of their research (Kuhlthau, 1988). Based on her dissertation work with high school students (Kuhlthau, 1983), which she later replicated with college students (Kuhlthau, 1988), Kuhlthau documented the cognitive, physical, and affective stages of the research process. The model she created – and called the Information Search Process Model (ISP) – leans heavily on constructivist theory and the works of psychologist George Kelly (Kelly, 1955, 1963) philosopher and educator John Dewey (Dewey, 1935), psychologist Jerome Bruner (Bruner, 1973), and psychologist Lev Vygotsky (1978). Kuhlthau identified six stages in the research process: initiation, topic selection, pre-focus exploration, focus formulation, information collection, and presentation. She documented the accompanying emotions of each stage noting that students *initiate* their project with a sense of uncertainty, after *choosing a topic* they begin to feel optimistic, but as they move into the process of *pre-focus exploration* they struggle with doubt and confusion until they are able to create a *clear focus* easing anxiety and increasing personal engagement motivating the *information collection*, culminating in the experience of relief or disappointment at the project's completion and the *presentation stage*. Kuhlthau stressed that the stages were not linear but iterative, with the affective stages as predictable as the cognitive stages. She also noted that the uncertainty the researcher felt was integral to the process of learning and the personal construction of meaning. As a practitioner, Kuhlthau recognized the pedagogical necessity of supporting the student in the learning process. Vygotsky had conceptualized a “zone

of proximal development,” a space in which the attentive teacher, identifying the level at which a student is functioning, could create learning structures or activities enabling the student to rise to the next level (Vygotsky, 1978). Kuhlthau modeled her “zones of intervention” – spaces within the ISP where intervention would prove most helpful to the researcher – on Vygotsky's work, and she identified five supportive roles for librarians noting them as organizer, locator, identifier, advisor, and counselor (Kuhlthau, 1996, 2004). Kracker's (2002) study of undergraduate students showed that a 30-minute explanation of Kuhlthau's model of the Information Search Process, emphasizing the predictable affective elements of the process, reduced novice student researcher anxiety.

Mellon, a contemporary of Kuhlthau who worked with college-age students enrolled in freshman composition courses, documented that 75% to 85% of those students had some degree of anxiety when doing library research for the first time (1986). Mellon's understanding of library anxiety emerged from 6,000 freshman composition students' research logs gathered and coded over two years. Mellon likened the students' anxiety to that of test anxiety and noted four recurring themes in student descriptions of their library anxiety: feeling overwhelmed by the size of the library, feeling lost or not knowing where to find things, feeling inadequate with regard to library systems in comparison to their peers, feeling embarrassed about their perceived inadequacy and therefore not seeking help. Mellon suggested that until this research anxiety was reduced, learning would be compromised. The emotions of students approaching research situations made it difficult for them to focus on the research task because they were attending to managing the anxiety. Based on her qualitative research, Mellon redesigned the 50-minute instruction sessions at her institution to include information on library anxiety and reassurance to students that such anxiety was normal. This change resulted in increased collaboration between librarians and composition faculty to ensure that students received adequate time with each professional

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focused on the process of research and writing. Vidmar (1998) studied the effect of ten- to twenty-minute pre-sessions with composition students by a librarian focusing on the library and what students wanted to know about the research process before actually coming to the library for a fifty-minute library instruction session. By comparing pre-test and post-test scores, Vidmar demonstrated that students receiving the pre-sessions were more likely to feel that the library was a welcoming environment and that finding resources would be easier than for those students not exposed to the pre-sessions. The pre-sessions served to allay some anxiety and to prepare students better for the instruction session. Likewise, Van Scoyoc (2003) found that library instruction conducted by a librarian reduced library anxiety more significantly among first-year college students than did similar instruction delivered via an online tutorial. The human connection and acknowledgement of the affective elements of the research process are important in the reduction of library anxiety.

Building on Mellon's work, Bostick developed a quantitative assessment tool to study library anxiety further. The Library Anxiety Scale (Bostick, 1992) measures five elements: barriers with staff (students' feelings about staff approachability and helpfulness), affective barriers (students' feelings about their library competency), comfort with the library environment (students' feelings of safety and hospitality in the library), knowledge of the library (students' feelings about knowing where things are in the library), and mechanical barriers (students' feelings about being able to operate computers, copiers, and printers). The assessment tool is a self-report, Likert scale questionnaire of 43 questions that takes 10 -15 minutes, that others have considered valid for studying library anxiety (Onwuegbuzie, Jiao, & Bostick, 2004).

Onwuegbuzie and Jiao have been the most active researchers in the area of library anxiety. Since beginning in 1997, they have conducted over eighty studies dealing with library anxiety and demonstrating its negative effects on student research performance. Library anxiety influences students' ability to begin the research process,

to avoid being distracted by anxiety, to attend to what is important, to synthesize information by relating new information to what is already known, and to persist in getting the research task completed. In *Library Anxiety: Theory, Research, and Application* (2004), written with Sharon Bostick, they explore a number of variables or antecedents which contribute to library anxiety or mediate the phenomenon, including GPA (prior academic predictor), learning style, self-perception, perfectionism, procrastination, age, hope, study habits, and self-esteem (Jiao & Onwuegbuzie, 1997, 1998, 1999a, 1999b, 1999c; Onwuegbuzie & Jiao, 1998a, 1998b). Based on their research, they formulated five models to graph these variables and their relationship to library anxiety, including the Anxiety-Expectation Mediation Model of Library Anxiety and the Dispositional-Situational-Environmental Model of Library Anxiety (Jiao & Onwuegbuzie, 2002). Most noteworthy in their work to date is their conclusion that a student's positive self-perception remains the best predictor of decreased library anxiety and positive research outcomes (Onwuegbuzie, Jiao, & Bostick, 2004). They refer to such positive self-perception as self-efficacy, Bandura's term (1977; 1986) for a belief that one can successfully complete an academic task, gaining whatever skills necessary. Along the same line, Kwon, Onwuegbuzie, & Alexander (2007), found that students who were able to engage critical thinking skills (defined as truth-seeking, open mindedness, analyticity, systematicity, and inquisitiveness) were able to mitigate or reduce their library anxiety.

Computer anxiety, as a phenomenon, has been studied apart from library anxiety and was identified by Jiao and Onwuegbuzie as one of the antecedents of library anxiety (1997). Shoham and Mizrachi (2001) investigated student attitudes toward computers. Their study of Israeli undergraduate students indicated that student attitudes toward computer technology, if negative, added to library anxiety. In that same year, Jerabek, Meyer, and Kordinak (2001) found computer anxiety to be correlated positively with library anxiety for the female students involved in their study but not for the male students in their study. A replication of the Shoham and Mizrachi study with African-American graduate

students (Jiao & Onwuegbuzie, 2004) produced similar findings: negative computer attitudes contributed to library anxiety. In a more recent study of undergraduates at the University of Amsterdam, researchers (Beckers, Schmidt, & Wicherts, 2008) found that computer anxiety exists even among young educated computer users and therefore is not a phenomenon that will disappear even as students who have grown up using computers enter colleges and universities.

Library researchers working on usability testing in the online environment likewise confirmed that emotion plays a critical role in the search process and effectiveness of the searcher. In their study involving novice searchers in an online database, Nahl and Tenopir (1996) found that students asked twice as many affective questions as cognitive questions. The affective questions served to acquire reassurance and motivation in order to continue the cognitive process of decision-making in the search process. Likewise, Tenopir, Wang, Zhang, Simmons and Pollard (2008) concluded from a similar usability testing situation, in which students verbalized their searching experience, that negative feelings hindered or stopped the process, while positive feelings yielded better searches. Positive feelings kept options open, allowed more connections to be made, and thus resulted in more productive research results. In a 2004 study, Nahl measured affective variables such as: task motivation, uncertainty, time pressure, self-efficacy, optimism, and pessimism, that occurred in weekly student search sessions. She was able to graph the relationships between these factors and introduced a concept she termed *affective load*. She defined affective load as a person's ability to balance the perceived affective effort – the stress of time constraints, frustrations, irritations, intimidations – while involved in a cognitive operation – such as searching. If the affective load is too high the student searcher requires coping skills, defined by Nahl as optimism and self-efficacy. Nahl concluded that these coping skills were learned and helped to mediate the extent of the affective load. Echoing Nahl, Kim (2008) found that both the type of search task and the emotional control of the researcher have an impact on search behavior and success in online searching. Kim found that the lower

the emotional control of the researcher and the more specific the search task the less effective the searcher.

The last ten years have seen an increase in the literature about the role of the affective domain within the broader field of information behavior in the areas of information science, computer science, artificial intelligence, neuroscience, sociology, and psychology (noted, for example, by Nahl & Bilal, 2007). Nahl has posited that “all information needs, including seeking, reception, and use are processed through the emotions” (Nahl and Bilal, 2007, p. 4). Some biological brain research seems to confirm this conclusion. Neuropsychologists (Ashby, Isen, & Turken, 1999) have observed that positive feelings positively influence cognitive tasks. They have hypothesized that the corresponding dopamine release results not only in positive feelings but creates changes in the ability to learn and solve problems. Besides creating positive feelings dopamine also chemically inclines the brain to learn.

Studies about the process of doing research, the process of doing research within a physical place, the process of using the library and its tools, and the process of using online resources confirm the importance of the affective domain in the experience and success of the student researcher. As this review of literature makes clear, the affective inclination of the researcher not only affects the outcome of the research process but in some senses directs that process. Knowing the importance of the affective domain to student research outcomes, professors and librarians can work together to allay student fears by creating opportunities for students to become comfortable with the library, the research process, and the librarians as the cited studies suggest. Librarians and professors in Christian environments can offer something additional – a scriptural context – for the process as well.

Scriptural Framework for Research

We find these words in Galatians 5:22: “... the fruit of the spirit is love, joy, peace, patience, kindness, generosity, faithfulness, gentleness and self-control” (*New Revised Standard Version*). In

a list otherwise the same, *The New International Version* uses *goodness* instead of *generosity*. Leaving translation differences for others to sort out, we will explore how this fruit – how these personal, visible signs of the Spirit's work – might support students engaged in learning and doing research.

Before treating these nine words, we offer three disclaimers. First, in our writing, we intentionally guard against turning this list of qualities into a moral injunction about doing research. We want invitation, not exhortation, to characterize both this article and the research experiences of our students. With that in mind, we want to offer a winsome and inviting framework to student researchers. Neither our readers nor our students would miss the irony if exhortation came to dominate this article and we unwittingly added one more source of stress to our students' experiences of research. Second, just as we selected the fruit of the spirit from among many biblical candidates for application to the research process, we also selected from among many potential implications and applications for each of the virtues appearing on Paul's list. While admitting to having made our own selections, we were not cavalier in our choices, which we believe to be consistent with the whole counsel of Scripture. If anything, we hope that our selections will prompt our readers to continue thinking and to identify their own additions to our suggestions. Third, we recognize that some of the implications we have suggested could arguably be listed under a different item from Paul's nine-item list. With those caveats in place, we examine each of the elements that the Apostle lists as fruit of the Spirit.

Love – Love appears first in the Galatians 5:22 list and refers to agapé love, a kind of selfless love motivated by service and care for a community. This love characterizes research done in service to a specific discipline of knowledge, to the academy as a whole, or even to the whole world. Research as service creates new knowledge or a new application of existing knowledge for use in the academy, the professions, and the public and non-profit sectors. An agapé understanding of research – and motivation for research – can be taught to both undergraduate and graduate students. Such motivation may aid student researchers in combating research anxiety by

activating their critical thinking skills as they reflect on the ultimate meaning of their research in bringing honor to God.

Joy – We think it completely appropriate, whether as student, professor or librarian, to take joy in the thought that all things hold together in Christ (Col. 1:17). With that in mind, all academic researchers can be open to the learning gained through research and can experience the joy of discovering God's world. We can reassure our students that nothing they learn need separate them from God because all things hold together in Christ. Students can prepare for what God will show them, both in their research and in their struggle to synthesize what they are learning. Professors and librarians are able to meet students in this process with pedagogical interventions modeled on the work of educators such as Vygotsky and information researchers such as Kuhlthau.

Peace – As our readers know and as the research we have reviewed shows, students conducting research need voices to calm troubled waters. In the face of researchers' turmoil, we can invite our students to trust both in God and in the research process itself. We can offer support to students by helping them understand that discovering, acquiring, synthesizing, relating, and applying knowledge from their research will, as Kuhlthau's research indicates, have identifiable peaks and valleys. Students may gain a measure of peace about these peaks and valleys when professors and librarians point out (as did Kracker, 2002) their relative predictability. They can also trust in their own process of growth as they plan their work and rest schedules in view of their affective load, and open themselves to the ideas that God is placing in their hearts and minds.

Patience – Without doubt, professors, librarians and students can all identify settings that call for patience; no one needs an exhortation to remind them of the biblical injunctions to be patient. Observation of searchers in action has shown that many people abandon a given search within minutes if that search does not produce quick results. (Anderson, 2004, October; Nielsen, 2003; Pirolli, 2007). God's patience with us may serve as an example for

ourselves and our students to have the patience both to learn how to use the many search tools available and to search patiently so that we and they gain a thorough understanding of a given research topic. Students might complement their diligence in tracking down the references in the long tail (Anderson, 2004) with another form of patience: allowing their professors and librarians to give them assistance and even asking for assistance with searching. Viewed this way, patience is a kind of obedience practiced in faith.

Kindness – Professors and librarians recognize an obvious distinction here between those we deal with face to face in the research process and those whom we encounter in the world of ideas. Kindness implies that we deal respectfully with all ideas we encounter, even those ideas that seem so obviously wrong-headed or whose authors have chosen ways of expressing themselves that do not meet our own standards. As the Biblical writers call us all to kindness, professors and librarians can encourage students to be kind to one another in their research process, and encourage one another with helpful citations, uplifting words, and constructive discourse. Kindness also implies that both professors and librarians make themselves approachable and available for assistance. Both can use a number of instructional methods to present and instruct about the research assignment and the processes to be undertaken. Both can be conscious of the affective elements of the research process and use that knowledge intentionally to support student researchers.

Generosity or goodness – In the context of research, these dispositions direct professors and librarians to invite students to practice truthfulness/righteousness in their process of research. One means to realize this practice is to track down primary sources rather than rely on whatever a quick web search turns up. Reading primary sources will allow students to know for themselves what prior researchers have discovered or discerned. Commentaries and other reference materials may help one understand Scripture but reading them is not the same as reading Scripture for oneself. The parallel may be true in academic research where secondary sources often offer important

insights on a topic but ultimately are not a sufficient substitute for primary authors' words. In addition, students who seek out primary sources can then represent accurately and responsibly those to whom they refer, whether they approve or disapprove of their claims. Likewise, students can be encouraged to work hard to find all relevant sources and to refine searches appropriately so they discover the most pertinent material to represent adequately their current understanding of a topic.

Faithfulness – God's faithfulness to the creation reassures us that He will fulfill his promises, a reassurance that gives stability to a Christian's worldview. In light of God's faithfulness, we as professors and librarians can encourage students to be faithful in their process of research and be faithful in giving credit to the work of others. Giving credit implies taking great care in note-taking, attending to details, and properly attributing ideas to those who have come before us. It also implies honoring the reference conventions of respective academic fields, even when the protocols for various styles may seem burdensome to follow. Faithfulness may also imply authentic engagement of a researcher's own beliefs, faith, and discipline of study, knowing that God has plans to prosper each one (Jer. 29:11).

Gentleness – Physical and spiritual gentleness are both qualities that student researchers have an opportunity to practice. Professors and librarians may enjoin gentleness with physical resources ... the books, journals, and computers that students will use as well as the people and ideas they will encounter. Discerning between ideas that require refutation and those that require compassionate rebuttal flows out of a combination of gentleness and critical thinking.

Self-control – Paul presents his list not as nine exhortations but rather as nine fruit – results – of the Spirit's presence and work in the Christian's life. Knowing this, professors and librarians can encourage students in the self-discipline and self-control necessary to carry out research and the projects that showcase that research. Both professor and librarian have experience and knowledge related to time management, structured work sessions, organizational tools,

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and writing aids. Sharing with students these practices, that begin as an act of the will but as in all of the fruit will be brought to realization by the Holy Spirit, could be an effective way to allay student anxiety and support the affective load of the research process.

Conclusion

The student researcher's feelings about research – what we call the affective dimension of research – grow from specific experiences, have identifiable patterns, and produce a variety of outcomes. Although often under-appreciated, this dimension of academic research has great importance because it bears on the student-researcher's failure or success on a given assignment. Librarians and professors are uniquely positioned to work collaboratively to help reduce students' research anxiety.

In the Christian university or college setting they can do so with the framework of scripture and particularly the fruit of the Spirit St. Paul lists in Galatians 5:22. †

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In light of God's faithfulness, we as professors and librarians can encourage students to be faithful in their process of research and be faithful in giving credit to the work of others.

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