Factors Associated With Student Persistence in an Online Program of Study:
A Review of the Literature

Carolyn Hart
Southwest Baptist University

Abstract

This integrated literature review examined factors associated with the ability of students to persist in an online course. Lack of persistence in online education and its' consequence of attrition, is an identified problem within the United States and internationally. Terminology has wavered between persistence and success, where each has been interchangeably used to characterize a student that completes a course and continues to program completion. Separate searchers were conducted in Academic Search Premier, CINAHL Plus, the Directory of Open Access Journals (DOAJ) Education Full Text, Ovid, and the Journal of Online Learning and Teaching (JOLT). Search terms included persistence, distance education, and online learning. Inclusion criteria included published after 1999, article from a peer-reviewed journal, and article addresses student factors leading to persistence. Exclusion criteria included article not related to factors of persistence, no original data, and article not written in English or not related to online courses. Factors associated with student persistence in an online program include satisfaction with online learning, a sense of belonging to the learning community, motivation, peer, and family support, time management skills, and increased communication with the instructor. Persistence carries the nuance of complexity beyond mere success. Factors unrelated to knowledge have the ability to provide support, thus allowing the student to overcome hardships in completing a course. If persistence factors are not present in sufficient quantity, the student may be at risk of withdrawing from an online course.

Online courses have proliferated over the last eight years (Christensen, Horn, Caldera, & Soares, 2011). In 2003, an estimated 10% of students took at least one online course, a statistic that grew to 30% in 2009 (Christensen et al, 2011). Results of a nationwide survey reveal that almost four million students were enrolled in an online course in the fall of 2007 (Allen & Seaman, 2008). Online courses have increased at a 12.9% rate whereas traditional higher education courses increased at only a 1.2% rate. Moreover, 33% of baccalaureate awarding institutions view online courses as critical to their strategic plan (Allen & Seaman, 2008).

Despite the popularity of online education, attrition remains a problem faced by many colleges (Bowden 2008; Kreideweis, 2005). Oftentimes, the decision to drop a course is unrelated to knowledge and is more a reflection of a lack of persistence. Although multiple studies have been published regarding the best teaching methods for the online education environment (Billings, 2000; Cantrell, O'Leary, & Ward, 2008; Moore & Hart, 2004), little is

known about how to identify the student who is at risk of dropping from an online course (Kerr, Rynearson, & Kerr, 2006; Liu, Gomez, & Yen, 2009). The lack of persistence has been identified as an important factor leading to attrition among online nursing students worldwide (Angelino, Williams, & Natvig, 2007). This integrative review of the literature was undertaken to examine factors that contribute to student's ability to remain "persistent" in online educational programs. Findings from this review are highly relevant for nurse educators who want to address the problem of student attrition in distance learning programs.

Review

Aims

The purpose of this paper is to synthesize information describing the factors leading to student persistence. As persistence is a phenomenon resulting in student success or completion of an online course, factors identified as contributing to success are also included.

Search Methods

Separate searches were conducted in Academic Search Premier, CINAHL Plus, the Directory of Open Access Journals (DOAJ), Education Full Text, and Ovid. Search terms with the Boolean operators included persistence AND distance education OR persistence AND online learning. Table 1 presents a history of the search, listing steps conducted and the number of articles included or excluded.

The entries were scanned for appropriateness (i.e. online learning for adults and success or persistence) to indicate a potential match to the topic. Inclusion criteria in this literature review were: (a) published after 1999, (b) appears in a peer-reviewed journal, and (c) addresses student factors leading to persistence. Exclusion criteria included: (a) not related to student factors of persistence, (b) do not contain original data, (c) not written in English, and (d) not related to online courses.

As part of an ancestral review, bibliographies of retained articles were examined for additional related literature. Online journals that published retained articles were also examined for pertinent papers. Articles identified with these additional search strategies were then subject to the same exclusion and inclusion criteria.
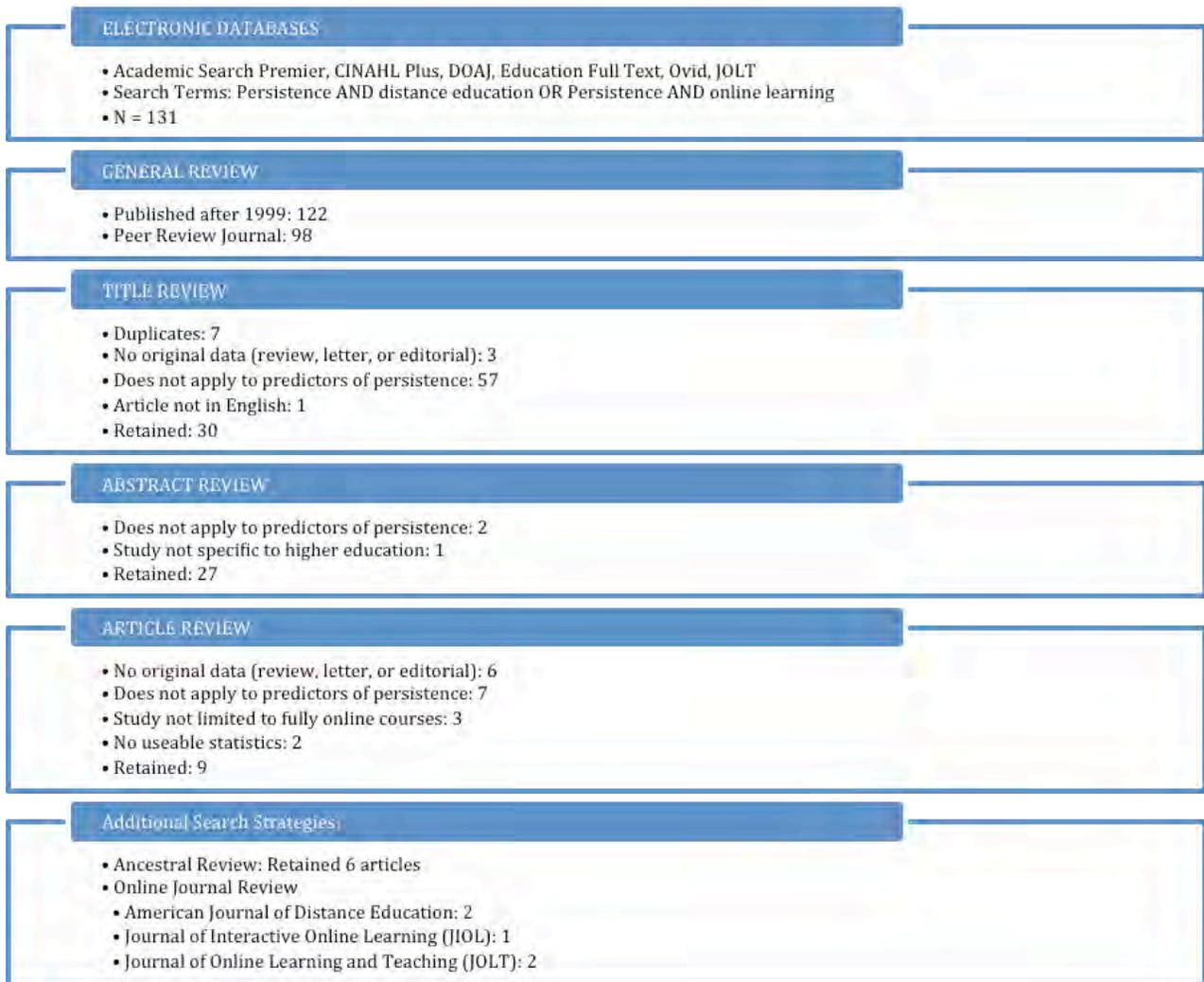
ELECTRONIC DATABASES

• Academic Search Premier, CINAHL Plus, DOAJ, Education Full Text, Ovid, JOLT
• Search Terms: Persistence AND distance education OR Persistence AND online learning
• N = 131

GENERAL REVIEW

• Published after 1999: 122
• Peer Review Journal: 98

TITLE REVIEW

• Duplicates: 7
• No original data (review, letter, or editorial): 3
• Does not apply to predictors of persistence: 57
• Article not in English: 1
• Retained: 30

ABSTRACT REVIEW

• Does not apply to predictors of persistence: 2
• Study not specific to higher education: 1
• Retained: 27

ARTICLE REVIEW

• No original data (review, letter, or editorial): 6
• Does not apply to predictors of persistence: 7
• Study not limited to fully online courses: 3
• No useable statistics: 2
• Retained: 9

Additional Search Strategies

• Ancestral Review: Retained 6 articles
• Online Journal Review
  • American Journal of Distance Education: 2
  • Journal of Interactive Online Learning (JIOL): 1
  • Journal of Online Learning and Teaching (JOLT): 2

Figure 1: *Search Strategy and Results*

Search Outcome

Following the search methods presented above, 131 articles were identified for review. Articles were first scanned for appropriateness by year and publication in a peer-reviewed journal, leaving 98 articles. Titles and abstracts were reviewed for inclusion and exclusion factors further decreasing the count to 27. Articles were then examined for appropriateness to this review, resulting in a final count of nine articles. The two additional search strategies, ancestral and online journal review, yielded an additional 11 articles.

Quality Appraisal

Persistence, as a term, is more prevalent in literature pertaining to the traditional classroom rather than online learning. These articles, while substantive in nature, were excluded, as fundamental differences exist in the stressors encountered in the different settings (Thiele, 2001). Within the literature for online learning, research articles exploring the variables associated with persistence are not as prevalent as those into teaching practices and course

delivery. All articles included in this study are from peer-reviewed journals to ensure the quality of reported information. Table 2 presents each article, title, and research question or purpose.

Table 1

Summary of articles retained for review

Author, Year	Title
	Research Question or Purpose
Aragon & Johnson, 2008	Factors influencing completion and noncompletion of community college online courses
	1. Is there a significant difference in demographic characteristics, enrollment (hours enrolled) characteristics, academic readiness, and self-directed learning readiness between students who complete and do not complete online courses? 2. What are the self-reported reasons for student non-completion of online courses?
Bocchi, Eastman, & Swift, 2004	Retaining the online learner: Profile of students in an online MBA program and implications for teaching them
	1. The purpose of this study was to establish an accurate profile of the student most likely to enroll and successfully complete an online MBA program
Bunn, 2004	Student persistence in a LIS distance education program
	1. What factors enable students to persist despite barriers in library and information science (LIS)?
Dupin-Bryant, 2004	Pre-entry variables related to retention in online distance education
	1. Are there pre-entry variables that distinguish individuals who complete university online distance education courses from those who do not?
Harrell & Bower, 2011	Student characteristics that predict persistence
	1. Which student characteristics (learning style, locus of control, computer experience and access, previous online experience, demographics) can be used to best predict the persistence of community college students in online courses? (p. 179)

Holder, 2007	An investigation of hope, academics, environment, and motivation as predictors of persistence in higher education online programs
	1. To what extent do measures of students' hope, as well as academics, motivation, and environment, predict persistence in online learning? (p. 249)
Ivankova & Stick, 2007	Students' persistence in a distributed doctoral program in educational leadership in higher education: A mixed methods study
	1. Identify factors contributing to students' persistence in the ELHE program by obtaining quantitative results from a survey of 278 current and former students and then following up with four purposefully selected individuals to explore those results in more depth through a qualitative case study analysis. (p. 95)
Kemp, 2002	Persistence of adult learners in distance education
	1. The purpose of this study was to investigate the relation between persistence, life events, external commitments, and resiliency in undergraduate distance education. (p. 65)
Levy, 2007	Comparing dropouts and persistence in e-learning courses
	1. The aim of this study was to look at the two main constructs proposed by literature (academic locus of control and students' satisfaction) and their impact on students' dropout from e-learning courses. (p. 190)
Liu, Gomez, & Yen, 2009	Community college online course retention and final grade: Predictability of social presence
	1. Can social presence predict online course retention in a community college? 2. Can social presence predict online course final grade in a community college? (p. 167)
Morris, Finnegan, & Wu, 2005	Tracking student behavior, persistence, and achievement in online courses
	1. What is the relationship of student participation to student persistence and achievement online? 2. What are the differences and similarities between completers and withdrawers in various measures of student behavior online?
Morris, Wu, & Finnegan, 2005	Predicting retention in online general education courses
	1. How accurately can a student's persistence be predicted in online learning courses? 2. Which predictors are the most important with respect to predictive accuracy of a student's group membership (completion and withdrawal)? 3. Can a prediction/classification rule be developed that may be used with a "new" analysis unit (e.g., students)?

Müller, 2008	Persistence of women in online degree-completion programs
	1. Why do women persist in online courses? 2. Why do they fail to persist or stop out? 3. How do factors affect women learners' persistence? (p. 3)
Muse, 2003	The Web-based community college student: An examination of factors that lead to success and risk
	1. In terms of computer confidence, enrollment encouragement, need for support, preparation, computer skills, tenacity, study habits, Web skills, motivation, study environment, background confidence, and external locus of control, which of these factors will be used to compute a student's ability to successfully complete a Web-based course? 2. Using a survey, does a weighted combination of the critical factors indicate which students are at risk for failing to successfully complete the Web-based class? 3. Do age, gender, GPA, number of hours currently worked, years since last college course, number of previous distance learning courses taken, educational level, and number of credits in the current semester significantly affect successful completion of Web-based classes? 4. What reasons are reported most often for student dropout in Web-based classes? (p. 245)
Nash, 2005	Course completion rates among distance learners: Identifying possible methods to improve retention
	The purpose of this study was to determine why students dropped or failed a distance learning course and to identify methods that might improve success and decrease retention.
Ojokheta, 2010	A path-analytic study of some correlates predicting persistence and student's success in distance education in Nigeria
	1. What predictors enhance persistence and student success? 2. To what extent to the predictors, taken collectively, enhance distance learners' effective learning?
Park & Choi, 2009	Factors influencing adult learners' decision to drop out or persist in online learning
	1. Do the dropouts and persistent learners of online courses show differences in their individual characteristics, external factors, and internal factors? 2. What factors are significant to predict learners' decision to drop out of online courses? (p. 209-210)

Parker, 2005	Identifying predictors of academic persistence in distance education
	1. Locus of control, as measured by Rotter's Locus of Control scale, is a significant predictor of academic persistence 2. Locus of control scores increase, move toward internality, over the course of a semester for students enrolled in web-based instruction
Stanford-Bowers, 2008	Persistence in online classes: A study of perceptions among community college stakeholders
	1. Which factors regarding persistence are most important among faculty, administrators, and students? 2. Where do perceptions of persistence among the three groups of stakeholders converge?
Sullivan, 2001	Gender differences and the online classroom: Make and female college students evaluate their experiences
	1. Is there anything about the online classroom that has made it easier for you to learn, achieve your academic goals, or participate in class discussions? 2. Is there anything that made it harder?

Data Abstraction and Synthesis

Once selected for inclusion, articles were reviewed and variables of interest identified. Attention was paid to determine if the variable was a positive or negative correlator. As a final step, all identified variables were assessed for commonalities in variables related to persistence. The result of this review was the identification and synthesis of factors related to student persistence in an online course supported by multiple authors in research studies. Table 3 provides sample population and instrument information.

Table 2

Sample population and instrument

Author	Sample	Instrument
Aragon & Johnson, 2008	305 students in a rural Midwestern United States community college participated in this study; of these students, 189 were course completers and 116 were noncompleters. Students were identified as completers if they completed one online course.	The Bartlett-Kotrlik Inventory of Self-Learning (BISL) was used to assess self-directed learning variables (Bartlett & Kotrlik, 1999).
Bocchi, Eastman, & Swift, 2004	64 online MBA students were recruited from five participating schools within the Georgia WebMBA system. This includes surveys from a limited number	A study specific survey was used to assess student characteristics, reasons for joining the program,

	of students who later withdrew from the program.	expectations, experience with online learning, and views on team-based learning.
Bunn, 2004	This study included distance students in the master of library and information studies at Victoria University of Wellington, New Zealand. Focus groups contained 6, 7, and 5 participants, respectively. Group 1: former distance students; Group 2: distance students in 2nd or 3rd year; Group 3: first year distance students	Not applicable as this is a qualitative study.
Dupin-Bryant, 2004	For this study, 1000 students from various academic programs enrolled in an online course at Utah State University were invited to participate with 464 useable surveys returned.	The study specific questionnaire was subject to review by an expert panel and previous pilot testing.
Harrell & Bower, 2011	225 online students from five Florida community colleges were enrolled in this study.	The Barsch Learning Style Inventory (1966) contains eight items for each of the four learning styles. The Abbreviated Measure of Internal-External Locus of Control is an 11-item forced-choice scale based on Rotter's (1996) Locus of Control Scale and adapted by Valecha & Ostrom (1974). A study specific 10-item Likert scale was used to determine computer experience and access.
Holder, 2007	209 online undergraduate and graduate students in degree-completion programs in a Midwest university, with 209 classified as persisters and 50 as nonpersisters.	Study specific and based on previously validated instruments; 60 items designed to measure hope, academics, motivation, and environment through 12 subscales.
Ivankova & Stick, 2007	270 current and former Doctoral students in the Educational Leadership in Higher Education program at the University of Nebraska-Lincoln, including students who withdrew. Follow-up with 4 purposefully selected individuals further	A study specific survey was developed and purported to measure the five internal and external entities affecting student persistence as well as nine variables of interest (online

	explored survey results. Groups: (1) students who completed 30 or fewer credits (n=78) (2) completed more than 30 hours (n=78) (3) former students who graduated (n=26) and (4) former students who withdrew or were terminated from the program (n=25)	learning environment, program, virtual community, faculty, student support services, academic advisor, family and significant other, employment, and self-motivation).
Kemp, 2002	121 First-time undergraduate distance students at Athabasca University, Canada.	Resiliency Attitudes Scale and the Life Events Inventory were used to collect data along with a study specific questionnaire.
Levy, 2007	108 students who completed a course and 25 students who did not complete a course from 18 undergraduate and graduate e-learning courses at a major state university in the southeastern United States.	The author developed two instruments for the purposes of this study. The first was comprised of a 12-item instrument based on Trice's (1985) Academic Locus of Control Instrument. The second consisted of a 7-item survey adapted from Bures et al.'s (2000) instrument measuring student satisfaction.
Liu, Gomez, & Yen, 2009	A convenience sample of 108 students enrolled in one or more online courses at a suburban community college in Maryland	The Social Presence and Privacy Questionnaire (SPPQ) developed by Tu (2000) were used to measure social readiness. This consists of 30 items with 3 sub-scales each for a total of 90 questions.
Morris, Finnegan, & Wu, 2005	Data was collected over three semesters at the University System of Georgia for three online courses: English (4 sections), U.S. History (7 sections), and Introduction to Geology (2 sections). The total population of 423 students included 137 withdrawers, 72 non-successful completers, and 214 successful completers.	Participation was evaluated through engagement (number of content pages viewed, number of discussion posts read, and number of follow-up posts) and four duration variables (seconds spent viewing content pages, seconds spent reading discussions, seconds spent creating original posts, and seconds spent creating follow-up

		posts).
Morris, Wu, & Finnegan, 2005	This study included 211 students enrolled in online general education undergraduate courses developed by the University System of Georgia in the humanities, sciences, and social sciences.	Rotter's (1996) Internal-external locus of control scale containing 29 items was used to assess students' perceptions of motivation.
Müller, 2008	A purposive sample of 20 female online students from undergraduate (n=9) and graduate degree (n=11) completion programs at a college in the northeastern United States	Not applicable as this is a qualitative study.
Muse, 2003	276 students completing a Web-based class at Montgomery College, Maryland with 22 students randomly selected for follow-up interview.	Study specific based on previous work by Osborne (unpublished dissertation) and Kronheim, Pugh, & Spear (2001).
Nash, 2005	478 students from Coastline Community College enrolled in a distance learning course.	Study specific questionnaire underwent a small pilot study to refine questions and confirm areas of student interest and concern.
Ojokheta, 2010	1245 students from 200 - 400 level courses in two distance teaching institutions located in Nigeria	Study specific surveys designed to measure variables of interest and previously tested for content/concurrent validity and reliability
Park & Choi, 2009	147 students who either completed or dropped out of one of three online courses offered by a large Midwestern university.	Study-specific instrument to measure family and organizational support; Satisfaction and relevance based on Keller's (1987) Instructional Materials Motivation Survey.
Parker, 2005	95 online and face-to-face students and four faculty instructors from a community college in Arizona participated in this study.	Rotter's (1996) locus of control scale
Stanford-Bowers, 2008	Thirty-nine volunteers from 10 community colleges in Alabama were recruited to participate in a faculty, administrator, or student capacity.	Open-ended question in which participants listed factors perceived to support persistence.

	Eligibility was determined by completion of an online questionnaire by the potential candidate.	
Sullivan, 2001	195 students from the Connecticut Distance Learning Consortium who were able to successfully complete an online course.	The study's two research questions listed were included with course evaluations completed by students.

Results

Although students generally report being satisfied with the online environment and learning outcomes are similar to those of the traditional classroom, challenges exist which can result in an inability to complete a course and, in turn, an inability to complete the program (Ivankova & Stick, 2007; Levy, 2007; Müller, 2008; Park & Choi, 2009). Various studies have been conducted to determine what factors are positively related to student success (Bunn, 2004; Harrell & Bower, 2011; Kemp, 2002; Levy, 2007). Other studies have assessed which factors interfere with success, and how students' attitudes are related to course and program completion (Holder, 2007; Müller, 2008; Park & Choi, 2009).

A difficulty in the literature is the lack of consistent terminology in addressing persistence, attrition, and success as outlined in Table 4. Persistence has been variously defined as the antonym of attrition or as a constellation of factors that lead to completion of a course (Park & Choi, 2009). The use of the term persistence related to post-secondary education first emerged in the 1980's, when persistence was merely the opposite of attrition or departure from a traditional college (Greer, 1980). Berger and Braxton (1998) used 'intent to return' as a measure of persistence in first-year students in face-to-face courses. In online education, persistence has evolved as a more complex set of factors that is unrelated to knowledge and results in student success (Park & Choi, 2009). In this review, persistence will be treated as a multi-faceted phenomenon that leads to completion of an on-line program of study. Although several studies have examined the relationship between persistence and on-campus student success, little consensus exists for which factors are significant and lead to persistence in the online student (Levy, 2007; Müller, 2008).
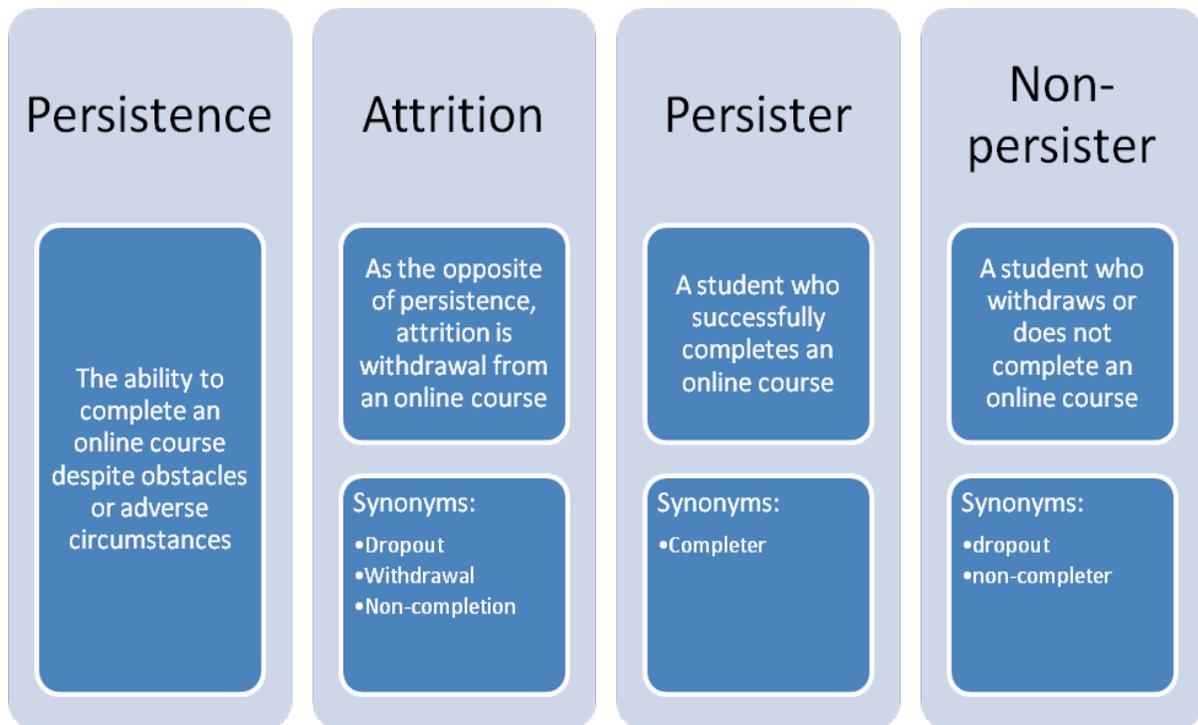
Persistence	Attrition	Persister	Non-persister
The ability to complete an online course despite obstacles or adverse circumstances	As the opposite of persistence, attrition is withdrawal from an online course	A student who successfully completes an online course	A student who withdraws or does not complete an online course
	Synonyms: •Dropout •Withdrawal •Non-completion	Synonyms: •Completer	Synonyms: •dropout •non-completer

Figure 2: *Definitions*

Persistence as a Phenomenon

Researchers have identified variables that are both facilitators and barriers to persistence in online student success (Bunn, 2004; Ivankova & Stick, 2007; Levy, 2007; Park & Choi, 2009). Facilitators are those factors that positively correlate to persistence as shown in Table 5. Factors that negatively correlate to persistence have been identified and, when present, make it difficult for the student to persist (See Table 6). Finally, factors may either positively or negatively affect persistence, depending on the circumstance. For example, the presence of family support can increase persistence whereas the lack of family support can decrease student persistence.

Facilitators of Persistence

College status and graduating term. As proposed by Levy (2009), college status and graduating term are related factors. College status refers to student placement within a program (freshman, sophomore, junior, senior) and graduating term indicates when the student expects to graduate (last term, this term, next term, in two terms, more than two terms). Students who are at a higher status and closer to graduation (within the next term) are more likely to persist in their program of study (Levy, 2009). Dupin-Bryant (2004), in reporting similar findings, postulates that prior educational experience may augment confidence through increased familiarity with the online environment.

Flexibility, asynchronous format, time management. Müller (2008) reports that women engaged in an online program of study find the flexibility and convenience of the schedule to be a positive aspect in their learning. Although several participants favored residential experiences in education, all note being able to complete work when convenient as imperative to managing family and work demands (Müller, 2008). Ivankova and Stick (2007)

and Nash (2005) support this finding, citing this flexibility as one means of obtaining an education that might not otherwise be possible. Sullivan's 2001 study finds that this flexibility was equally important to both male and female students.

Bunn (2004) notes that a heavy workload is not necessarily problematic as long as students have a realistic expectation of what will be involved. Furthermore, the author notes that students who actively plan to accommodate workload tend to be persistent. Holder (2007) notes that students with good study habits, the ability to stay on task with assignments and readings, and are able to successfully manage time are more apt to persist compared to non-persisters. Stanford-Bowers (2008) agrees with this, stating that administrators, faculty, and students acknowledge the importance of time management in persistence. Aragon and Johnson (2008) also find support for this and note a moderate difference in the ability of students who are enrolled in more online courses to persist when compared to noncompleters.

Goal commitment. Ivankova and Stick (2007) cite goal attachment and commitment to graduation as a quality found in all levels of online students except those who withdraw from a course. While graduates are the most motivated in terms of goal attachment, matriculated and beginning students are also positively motivated. Students who ultimately withdrew from the course are the least motivated to complete their degree (Ivankova & Stick, 2007). Müller (2008) finds that persistent students viewed their education as important to goal attainment and valued the career or financial outcomes of their education.

Grade point average. Harrell and Bower (2011) and Morris, Finnegan, and Wu (2005) report grade point average (GPA) as significantly predictive of student persistence. The authors postulate that students with a higher GPA are better able to maneuver within the online environment and more savvy in successful academic behaviors than students who withdraw. Furthermore, Harrell and Bower note that this finding is consistent with previous evidence that lower GPA is associated with a higher rate of withdrawal. Muse (2003) reports similar evidence with the combination of GPA, age, and years since previous college course as accurately discriminating between those students who will and will not complete an online course. Conversely, Aragon and Johnson (2008) found GPA to have a low positive correlation with successful completion of an online course.

Table 3

Facilitators of Persistence

Facilitators	Author, Year	Synthesis of Studies
College status, graduating term, comfort with online course work	Bunn, 2004 Dupin-Bryant, 2004 Levy, 2007	The closer to graduation, the more persistent the student. This may be related to becoming more technologically savvy and comfortable with online instruction.
Flexibility, asynchronous format. Time management	Bunn, 2004 Holder, 2007 Ivankova & Stick, 2007 Müller, 2008 Nash, 2005 Stanford-Bowers, 2008 Sullivan, 2001	The flexibility of an online course is very attractive to students attempting to balance work and family demands. The asynchronous format allows control over one's schedule and course work can be accomplished with less disruption to work and family schedules. Persistent students tend to have better study habits and complete work in a timely manner.
Goal Commitment	Ivankova & Stick, 2007	Desire to attain goals (degree completion) is a powerful motivator in the online student. This intrinsic motivation of pursuing a dream is often coupled with personal challenge, an appreciation of learning, and personal responsibility.
GPA	Aragon & Johnson, 2008 Harrell & Bower, 2011 Morris, Wu, & Finnegan, 2005 Muse, 2003	Students with a higher GPA are often able to better maneuver through the electronic environment and adopt successful behaviors that allow them to excel in the online course. It may be that success in one class positively motivates the student to work harder in the next class.
Quality of interactions and feedback	Ivankova & Stick, 2007 Bocchi, Eastman, & Swift, 2004Ojokheta, 2010	Feedback that is constructive and adds meaningful input into learning is viewed as valuable by the students and will contribute to persistence. Ambiguity in content or communication can be difficult for the online student to process, thus increasing the importance of quality interactions with faculty and other students.
Satisfaction and relevance	Ivankova & Stick, 2007 Levy, 2007 Müller, 2008 Park & Choi, 2009	Satisfaction as a facilitator of persistence is a consistent finding when included as a variable. Persistent students voice satisfaction with the quality of the program, interactions with students and peers, the relevancy of the course to individual needs, and with the learning environment itself.

Self-efficacy, personal growth, self-motivation	Bunn, 2004 Holder, 2007 Ivankova & Stick, 2007 Kemp, 2002 Müller, 2008 Park & Choi, 2009 Parker, 2005	Although goal attainment is a powerful motivator for online students, on a daily basis personal resolve and determination contribute significantly to persistence. Students who have high personal expectations and self-efficacy as well as those who enjoy the challenge of online learning will also tend to be more persistent. Students with an internal locus of control are more apt to persist. These characteristics may lead the student to engage more in the classroom, ask searching questions, and constructively work through problems. A sense of personal and professional growth can increase motivation to complete the course and promote persistence.
Social connectedness or presence	Ivankova & Stick, 2007 Kemp, 2002 Liu, Gomez, & Yen, 2009 Müller, 2008	Increased comfort with the virtual social interactions of an online environment may increase persistence. When these social connections are transient (i.e. vary by course), they may not create a significant source of support, but can be used to create an encouraging environment. The persistent student is able to form connections within each course, increasing the positive nature of the experience. The persistent student also demonstrates increased presence within the online environment. An active and encouraging faculty presence is also viewed as contributing to persistence.
Support	Bunn, 2004 Holder, 2007 Ivankova & Stick, 2007 Kemp, 2002 Müller, 2008 Park & Choi, 2009	The role of family, friends, co-workers, and fellow class members in student persistence is well documented. Understanding from family and co-workers in behaviors needed to manage academic workload contributes to persistence. Other class members can also provide support and encouragement to continue with studies despite hardship. This virtual community provides a sense of camaraderie and can assist students in troubleshooting problems. Faculty may also increase perceptions of support through feedback and social presence.

Quality Of Interactions And Feedback

      Ivankova and Stick (2007) finds positive and encouraging feedback to be important to the persistence of students. Qualitative findings indicate that in addition to promptness, the quality of feedback and the willingness of faculty to meet student needs are viewed as important to student

persistence. Quality feedback is also seen to be protective in the absence of support from an advisor (Ivankova & Stick, 2007).

Ojokheta (2011) also finds feedback pattern to have a direct effect on student ability to successfully complete an online course. In this study, Ojokheta postulates that feedback provided by faculty will have an impact on student perceptions of course content. This linkage of learning environment, motivation, feedback, and perceptions directly leads to positive student outcomes (Ojokheta, 2011). Bocchi, Eastman, and Swift (2004) provide evidence that this feedback should be consistent and individualized.

Satisfaction And Relevance

Ivankova and Stick (2007) postulate that the further a student progresses in an online program, the higher their satisfaction, reporting satisfaction levels of 92.3% in graduated participants, 71.8% in matriculated students, and 57.7% in beginning students. Conversely, the withdrawn/inactive group reports a 20% satisfaction rate. Levy (2009) also finds satisfaction to be a significant predictor of student persistence. Within the literature review, Levy notes an association between satisfaction and learning, suggesting that institutions should place major emphasis on student satisfaction as a means of promoting persistence. Müller (2008) finds that when students are not satisfied with faculty or learning they are more apt to be less successful than their persistent counterparts. Park and Choi (2009) support this finding with persistent students rating relevance and satisfaction significantly higher than those who drop from an online course.

Self-Efficacy And Personal Growth

Holder (2007) finds self-efficacy to be one of three criteria that will differentiate the persistent student from one who will not complete an online course. Self-efficacy for learning and performance appears to correlate with higher confidence of the student to successfully complete a course as well as a higher expectation to do well (Holder, 2007). Bunn (2003) supports this premise, suggesting that personal resolve and determination to succeed strongly contributes to persistence. Parker (2001) views an internal locus of control and self-motivation as significant factors in student persistence.

Kemp (2002) observes an association between resiliency skills and persistence, also commenting that resiliency directly relates to self-efficacy and motivation. Noting previous work by Pajares and Miller (1994), Kemp states that this higher level of self-efficacy will positively affect the effort expended on studies and increase resiliency in the face of obstacles to persistence. Likewise, Müller (2008) reports that increasing proficiency in academics and computer skills contribute to a sense of personal growth, thereby increasing a sense of accomplishment and enabling persistence.

Ivankova and Stick (2007) hypothesize that persistent students are generally highly motivated to complete their program of study while students who are less motivated will likely withdraw. This finding is replicated in Park and Choi's 2009 study. Ivankova and Stick view self-motivation, along with personal challenge and responsibility, as the intrinsic motivation to complete a program. Thus, self-motivation becomes one of the factors used to discriminate between persistent and non-persistent students (Ivankova & Stick, 2007).

Social Connectedness Or Presence

Studies assessing social connectedness find persistent students believe social relationships can be established in the online environment. Ivankova and Stick (2007) report persistent students being comfortable with the discussion format of an online course and find non-persistent students being the least satisfied with their comfort level in this environment. Liu, Gomez, and Yen (2009) report a strong positive relationship between social presence and retention. Findings from Kemp's 2002 study on resiliency indicate that students who are more adept in forming positive social relationships in the online environment will likely be persistent. Müller (2008) provides evidence to support this stance, citing students with stronger social connections to peers will derive support and encouragement to persist. This sense of a virtual community contributes significantly to a model used to discriminate between persistent and non-persistence learners (Ivankova & Stick, 2007).

Support

Emotional support can be derived from family, friends, or peers (Holder, 2007). Holder (2007) reports a feeling of camaraderie within the classroom will significantly contribute to persistence. Ivankova and Stick (2007) as well as Park and Choi (2009) report persistent students perceive family and friends to be supportive of their educational endeavors with non-persistent student reporting less support. Kemp (2002) notes that persistent students tend to score higher in having supportive partners and in maintaining healthy relationships. Müller (2008) also cites support from classmates and faculty as imperative to student persistence, noting that feedback and social connections with peers and faculty contribute to the ability to complete a course despite hardships.

Technical support consists of practical assistance with computer and technology. Bunn (2004) notes that as students have varying levels of computer skills, tutorials outside of the regular course may be helpful. Bunn also notes that the perception of being unsupported is more of an issue than the actual technical difficulty. While Ivankova and Stick (2007) did not find technical support to be predictive of persistence, the authors do report that non-persistent students were the least satisfied with support services. Conversely, Ojokheta (2011) did find technical support to influence persistence.

Barriers to Persistence

Auditory learning style. Harrell and Bower (2011) find auditory learning style to be a significant predictor of non-persistence in the online student, stating this is congruent with previous research (Ho & Tabata, 2001; Mathes, 2003). The authors postulate that a decreased ability to process verbal information contributes to this finding. Moreover, Harrell and Bower anticipate that a disconnect between learning style and the nature of the online environment could lead to frustration and eventual withdrawal.

Basic computer skills. Harrell and Bower (2011) report that while basic computer skills will enhance persistence in the online student, an increased level of computer skill is associated with a subsequent increase in withdrawal rates. The authors propose three possible reasons for this finding. Students may simply overestimate their computer ability or underestimated the level of skills required in an online course. The data is collected via self-report and thus reflects the perception of ability rather than a direct measurement of computer skill. Students with higher computer skills may also be distracted by the Internet and have less focus on course content. It is

possible that these students are engaged in Internet activities as opposed to completion of coursework. Harrell and Bower also note the possibility that this finding is a statistical anomaly related to the small sample size. Further research is recommended to determine the effect of computer skill on persistence. Although Dupin-Bryant (2004) finds that increased computer skills are not related to student retention, the author does not report a negative correlation.

College status and graduating term. In contrast to facilitating factors, Levy (2009) postulates that students who are at a lower college status and further from graduation are more likely to drop out from a program of study. This finding has been replicated by Dupin-Bryant (2004). Students who do not complete a course are more likely to be graduating in more than two terms (Levy, 2009). Levy draws the conclusion that students with less experience in online learning are more apt to withdraw than the student who is nearing completion of a program of study. In an anecdotal note, Levy observes that students, when faced with less than an optimal grade, may electively withdraw from a course and retake the course a later time. Presumably, this strategy would be employed by those students not yet ready to graduate.

Difficulty in accessing resources. Bunn (2004) reports difficulty in accessing resources, primarily the electronic library, as problematic for students. Once having a negative experience with the electronic library, students are often disinclined to problem-solve and typically make alternate arrangements. Dissatisfaction with resources also extends to difficulties in obtaining course materials (Bunn, 2004). Furthermore, Bunn finds that lack of a single point of contact was viewed as contributing to dissatisfaction with support.

Isolation and Decreased Engagement. Bunn (2004) cites two types of isolation: (a) isolation from faculty and (b) isolation from fellow students. This barrier is somewhat mitigated is by alternate means of interaction, such as those possible in an electronic environment or via audio-conferencing (Bunn, 2004). Ivankova and Stick (2007) find that non-persistent students were less satisfied with the online environment, citing a lower comfort level compared to persistent learners. Bunn also notes that strong peer connections may limit the extent or impact of isolation as a barrier.

Morris et al. (2005) report statistically significant differences in the amount of time spent in engagement activities between students who withdraw from a course and successful completers. Engagement activities are defined as time spent reading and responding to posts as well as viewing discussions and content pages. Participation is held to be a discriminating factor between withdrawers and completers.

Lack of computer accessibility. Following employment of the Delphi technique for consensus reaching, Stanford-Bowers (2008) finds that administrators, faculty, and students view computer access and accessibility as necessary for persistence in an online course. This finding is a practical concern, as the nature of an online course logically demands the ability to access and interact with course content via the computer. It is interesting to note that computer accessibility emerged as a round one concern only for administrators. It was only in the final round of consensus-reaching that accessibility was retained as a concern across all groups (administration, faculty, and students) although students did not rate its' importance as high as the other two stakeholders (Stanford-Bowers, 2008).

Non-academic issues. Balancing work and family demands is a recurring theme in the literature (Aragon & Johnson, 2008; Bunn, 2004; Ivankova & Stick, 2007). Coping measures include decreasing leisure activities or socialization with friends (Bunn, 2004). Ivankova and Stick (2007) also note that the asynchronous format of an online course allows students to maintain family and work schedules. This flexibility to pursue further education in an asynchronous format is a strong advantage to online learning (Ivankova & Stick, 2007). Aragon and Johnson (2008) find personal time constraints to be a common theme among those students who were unable to successfully complete an online course.

Poor communication. Students strongly view incomplete or ineffective communication as a barrier to persistence (Aragon & Johnson, 2008; Bunn, 2004). Lack of, or late, communication regarding changes, slow feedback, difficulty in contacting faculty and staff, and limited communication with faculty are specific issues reported by Bunn (2004) as contributing to this sense of a barrier. Aragon and Johnson (2008) also report negative student perceptions of the level of instructor responsiveness as contributing to a decision to withdraw from an online course.

Table 4

Barriers to Persistence

Barriers	Author, Year	Synthesis of Studies
Auditory learning style	Harrell & Bower, 2011	As preference for an auditory learning style increases, so too does withdrawal from an online course. This is believed to be a consequence of the inherently written format of online learning. Difficulty in processing verbal information by the auditory learner can lead to frustration and attrition.
Basic computer skills	Harrell & Bower 2011	Advanced computer skills negatively related to persistence. The authors postulate that the student with advanced skills may be distracted by the internet and spend less time with actual course work. It must be noted that this was a small sample and could be an anomaly.
College status and graduating term	Dupin-Bryant, 2004 Levy, 2009	The less experience a student has with education, the more likely they are to withdraw.
Difficulty in accessing resources	Bunn, 2004	Hindered by an unclear understanding of who to contact, students experiencing difficulty in accessing online resources may become frustrated with the course and decide to drop. Access to an online library and technical support was considered problematic (either inadequate access or vague points of contact) by online students who ultimately withdrew from the course.

Isolation and decreased engagement	Bunn. 2004 Morris, Finnegan, & Wu, 2005 Ivankova & Stick, 2007	Students who withdraw from an online course spend less time engaged in learning activities than their successful counterparts.
Lack of computer accessibility	Stanford-Bowers, 2008	This is a logical extension of attending class in an online environment. Failure to have reliable access to a computer is a barrier to persistence.
Non-academic issues	Aragon & Johnson, 2008 Bunn, 2004 Ivankova & Stick, 2007 Park & Choi, 2009	Non-academic issues include a wide array of factors and events such as work and family responsibilities, job changes or loss, bereavement, illness, and financial difficulties. Pressures from these issues may fuel the decision to withdraw from an online course, but can be mitigated by the presence of strong support and social connections within the course.
Poor communication	Aragon & Johnson, 2008 Bunn, 2004	Communication problems may stem from late, inadequate, or lack of notification of changes to the program, slow or contradictory feedback from faculty, and an inability to contact staff or support services.

Discussion

Persistence is a complex phenomenon that results in student completion of an online course. Almost unanimous agreement exists in the literature that communication with the instructor, motivation, and peer and family support can be used to overcome barriers to persistence and lead the student to success in an online course (Levy, 2007; Müller, 2008; Park & Choi, 2009). Recent literature builds upon an expanded definition of persistence as a phenomenon that is a key component of student success in online educational courses (Billings, Connors, & Skiba, 2005; Bonnel, 2008). Based on this review, it is hypothesized that those factors that lead to success actually increase persistence in the student, thereby leading to success. The limitations of this review include nonstandard use of the term persistence as well as the lack of research into the constellation of factors that contribute to persistence in the online student.

Persistence is a complex variable that has been associated with student success in online courses where success is defined as completion of the course (Bunn, 2004). Oftentimes unrelated to knowledge, persistence is the sum of those factors that enhance a student's ability to complete an online course successfully (Park & Choi, 2009). Lack of persistence results in failure to complete the course or in failure to continue with a program of study (Müller, 2008). Early identification of the student who may not succeed in an online course can allow application of evidence-based interventions by the educator to strengthen student persistence.

Conclusion

Numerous interventions have been proposed to help increase online student persistence and decrease attrition rates (Billings, Connors, & Skiba, 2005; Bonnel, 2008; Park & Choi, 2009). Despite this growing body of knowledge in course delivery and faculty interventions, attrition remains a significant problem. Persistence as a phenomena characterizes the constellation of behaviors, attitudes, skills needed by the student to successfully complete an online course. Factors that will enhance persistence or create barriers to completion of a program need to be understood in order to improve application of evidence based interventions.

Research is needed to develop and evaluate evidence-based interventions that can strengthen the phenomenon of persistence for the online student. Development of the means by which students at risk of attrition may be identified would also be of value to educators.

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