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THE LEARNING ASSISTANCE REVIEW

Journal of the National College Learning Center Association



ISSN 1087-0059 | Volume 16 | Number 1 | Spring 2011

About *The Learning Assistance Review*

The Learning Assistance Review is an official publication of the National College Learning Center Association (NCLCA). NCLCA serves faculty, staff, and graduate students in the field of learning assistance at two- and four-year colleges, vocational and technical schools, and universities. All material published by *The Learning Assistance Review* is copyrighted by NCLCA and can be used only upon expressed written permission.

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Letter from the Editor

There is no doubt that 2011 came in with wallop this year: there were record snow falls, unprecedented rain and tornadoes just 7 days later, and then, dead birds fell from the sky. How can our journal compete with that! Well, we can compete very well, thank you. We have many exciting submissions that will help learning center professionals battle the “academic cataclysmic events” that unexpectedly break down the door!

As expected, our article last issue, “Scaffolding and Tutoring Mathematics,” stirred up a whirlwind of interest; as a result, we have a follow-up reply in our “Joining the Conversation: Idea Exchange” segment entitled, “Scaffolding: Tutor Training Activity,” by Debra Fetner. This article builds on the previous submission by presenting some “hands-on” tutor training activities that will support the theory of scaffolding.

We also have another submission for the “Joining the Conversation” segment, in which a follow-up empirical study was conducted continuing the research publication from *TLAR 13* (2) entitled, “Use of curricular and extracurricular assessments to predict performance on the United States Medical Licensing Examination (USMLE) Step 1: A multi-year study.” This new submission explores ways that could help medical students metaphorically “batten down their hatches,” so they can weather through those stormy periods. Sabry Gohara, Joseph I. Shapiro, Adam N. Jacob, Sadik A. Khuder, Robyn A. Gandy, Patricia J. Metting, Jeffrey Gold, and James Kleshinski, evaluates if pre-admission or course performances (or a combination of both) could accurately predict performance of medical students on the United States Medical Licensing Examination (USMLE) Steps 1 and 2 in “Predictors of Success on the United States Medical License Examinations.”

Our next two articles look at ways to help students successfully navigate through the “student-walloping” labyrinth that is college. Tabitha Grier-Reed, John Ehlert, & Shari Dade conducted an empirical study, “Profiling the African American Student Network,” which focuses on how an innovative network helps African American students by assessing the retention and graduation rates of participating students. Similarly, Marcia L. Laskey and Carole J. Hetzel investigate the factors that influence the retention and GPA of students in a college program designed for at-risk students in “Investigating Factors relating to Retention of At-risk College Students.”

Our new NCLCA Board Member for Professional Development, Jennifer Phippen, reviewed *Getting to Yes: Negotiating Agreement Without Giving In*, a classic handbook to help professionals in the tricky and, at times, turbulent seas of negotiating with students, staff, and faculty.

On another note, I wish to take a brief moment to thank Jeannine Rajan, who was my managing editor for two years; she is no longer working in that capacity. I wish to thank Della Croci, Director of Student Affairs at the University of Toledo Health Science Campus, who has graciously accepted the task of "Lay-Out Designer," preparing TLAR issues throughout the rest of my tenure, which will end with the Fall 2012 issue. I appreciate all of Jeannine's help for these past two years and am grateful for Della stepping in to make sure our journal gets published.

It is my sincere hope that everyone is spared any more monumental, unprecedented events in the outside world and that those "counter parts" in our daily operations are quickly reduced to nothing bigger than quick squalls or sporadic flurries.

A handwritten signature in black ink that reads "Christine Reichert". The signature is written in a cursive, flowing style.

Christine Reichert
Editor

JOINING THE CONVERSATION: IDEA EXCHANGE

Scaffolding: Tutor Training Activity

Editor Note:

This submission builds on the following previously published TLAR article: Valkenburg, J. (2010). Scaffolding and tutoring mathematics. *The Learning Assistance Review*. 15(2), 33-41.

DEBRA MCLELLAN FETNER
COLLEGE OF CHARLESTON

Jim Valkenburg's article "Scaffolding and Tutoring Mathematics" that appeared in the Fall 2010 issue of *TLAR* addressed the characteristics of appropriate communication between a tutor and tutee as they approach their work together in study sessions. One strategy he examines is the use of scaffolding, a concept popularized by Jerome Bruner to describe a type of academic assistance utilized by a more competent tutor with his less knowledgeable or experienced tutee. Valkenburg states that learning assistance provided by a tutor "serves a good purpose" (2010, p. 33) when the work will "engage the student, bring a better understanding of the materials, and lead to the student's ability to independently do the work" (p.33). As a supervisor of college tutors and a study strategies coach, I was reminded of the chances tutors and I are afforded each time we meet with student clients who seek academic assistance on their paths to growth and success. Are we supporting or merely helping our clients recover? Empowering or enabling? Teaching independence or tossing a life jacket? No matter how we term our actions, we may be shortcutting the learning process for the sake of time and ease, and we know that "easy" does not always translate into long term understanding of the course material. The passive student in the "sit and get" lecture needs active involvement during study time.

Of particular interest to me is Valkenburg's reference to techniques studied by Wilhelm, Baker & Dube (2002) that a teacher (tutor) employs to move the student (client) through a series of increasingly independent processes. The techniques attempt to accomplish three goals of tutoring, which I stress to my tutors: teaching content (knowledge and skills), building good intellectual habits (study strategies), and encouraging motivational and affective processes (metacognition, self-efficacy, persistence, locus of control, self-regulation). How do we get tutors consciously to employ methods that structure their sessions so as to optimize the learning experience for the tutee?

The tutoring cycle

Interviews and observations of experienced tutors yield plenty of information about characteristics of productive sessions. Some items to consider that tend to shape many sessions are following (Lepper, Drake, & O'Donnell-Johnson, 1997):

- A. How does the session begin? Does the tutor assess where the client stands by presenting some material to work with, or does the tutor ask the client where he would like to start? Does the tutor choose the problems, or does the client offer problems he's having difficulty with?
- B. As the session progresses, does the tutor begin to select problems or material that is challenging but not impossible for the client?
- C. Posing questions that lead the client to solutions or understanding can help him or her learn to maneuver independently while allowing the tutor time to adjust to the needs of the client. "What do you think could happen if you . . ." "What do you need to know before you . . . ?" "What could be the next step?" This part of the tutoring session might involve not only some direct instruction to clear up misconceptions that could lead the learner down a lengthy, unproductive path but also an artfuladroitness in guiding the client's progress.

Training tutors to scaffold instead of to save

Both academic support and academic rescue represent helping behaviors, and we know our tutors are helpful people. Implied in the partnership is that one participant is academically superior to the other. While there's the possibility that a hierarchy of power can suppress the client, the tutor's expertise can foster collaboration if used properly. As part of tutor training, the supervisor can use a practice activity that allows tutors to experience both sides of the desk. Tutors in different disciplines pair together to teach each other a skill--something they may have forgotten or never had the opportunity to learn during their academic careers. Tutors come to the training session prepared to teach a mini-lesson about something they are good at or know well. The choice could be a chemistry concept or a time segment in an historical era or a dance step.

Following are four distinct steps in the practice set:

1. You observe while I demonstrate.
2. I'll work and you help.
3. You work and I'll help.
4. You demonstrate and I'll observe.

After the pairs have had appropriate time to work through the steps, the tutor trainer leads the group in a discussion about the strategies "tutors" used in steps 2 and 3 as their "clients" were taking on more ownership of the task. The tutor trainer then records their responses for all to review.

In many tutoring sessions, tutors often skip from step 1 to step 4, omitting the opportunity to edge clients into the problem solving scheme. During steps 2 and 3, effective scaffolding requires an organized, hierarchical structure for the subject domain along with specific study strategies experts employ as they move to a higher level of proficiency (Bransford, Brown, & Cocking, 1999). Tutors who have had significant coursework in their majors can coach clients by using a variety of strategies, such as the inquiry cycle (question and monitor), incomplete statements, models and graphics, reciprocal teaching, redirecting questions, and what-if scenarios. They can express and demonstrate to their clients the methods they themselves put into practice in their major field of study to learn difficult material.

Effectively tutoring clients involves a skillfully conscious exchange. Tutors are expected to work with a variety of individuals and be sensitively and thoughtfully responsive to the actions and knowledge of each. Knowing when and how long to wait as the client processes information and how much help to provide are decisions that must be made in a short tutoring session. As tutors progress through the academic year and get to know their own capabilities as well as their clients', my objective is for them to develop into reflective practitioners who are eager to return the next year to tell their stories to the new training class.

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JOINING THE CONVERSATION: Predictors of Success on the United States Medical Licensing Examinations (USMLE)

Editor Note:

This empirical study builds on the following previously published TLAR article: Gandy, R.A., Herial, N.A., Khuder, S.A., & Metting, P.J. (2008). Use of curricular and extracurricular assessments to predict performance on the United States Medical Licensing Examination (USMLE) Step 1: A multi-year study. *Learning Assistance Review (TLAR)*, 13(2), 27-35.

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Abstract

The purpose of this study was to evaluate whether models based on pre-admission testing, including performance on the Medical College Admission Test (MCAT), performance on required courses in the medical school curriculum, or a combination of both could accurately predict performance of medical students on the United States Medical Licensing Examination (USMLE) Steps 1 and 2. Models were produced using stepwise linear regression and feed forward neural networks. Notable accuracy in predicting Step 1 and Step 2 scores were achieved from models integrating pre-admission variables with medical school coursework grades. Of interest, the coursework grades contributed far greater to these models than the pre-admission variables except the MCAT.

Key Words: medical school admissions, neural network, regression analysis, USMLE, medical education.

It is critical for medical schools to graduate students who successfully obtain licensure to practice, and in most states, licensure requires the passing of all three steps of the United States Medical Licensing Examination (USMLE). USMLE Step 1 has traditionally focused on pre-clinical studies. Most medical schools require students to successfully pass the USMLE Step 1 before starting their clinical clerkships. USMLE Step 2 is typically taken in the fourth year of medical school. Passing the USMLE Step 2 is often mandatory for graduation. Because of its clinical content, the USMLE Step 2 provides a measure of the students' clinical competence and their ability to participate safely in patient care under supervision. Identifying students at risk for failing the USMLE, therefore, becomes, to a certain extent, a matter of patient safety. As such, the performance of medical students on the USMLE is not only important for the individual student but, in aggregate, is an important metric for medical schools to track.

Peterson and Tucker reported that performance during gross anatomy was a good predictor of performance on the USMLE Step 1 (Peterson & Tucker, 2005). Others have also investigated the relationship between pre-admission variables and coursework performance and its correlation with students' performance on the medical licensing exams (Roth, Riley, Brandt, & Seibel, 1997; Julian, 2005; DeChamplain, Sample, Dillon, & Boulet, 2006; Donnon, Paolucci, & Violato, 2007). Two previous publications from The University of Toledo College of Medicine, in particular, examined relationships between student performance and USMLE scores (Gandy, Herial, Khuder, & Metting, 2008; Kleshinski, Khuder, Shapiro, & Gold, 2009). One of these studies evaluated the ability of three metrics, two of them being curricular and the third being extracurricular, in predicting student performance on the USMLE Step 1 exam (Gandy et al., 2008). The curricular metrics evaluated in this previous study included the final scores each student received for two of the College of Medicine's preclinical courses, namely Human Structure and Development and Organ Systems. The extracurricular metric was each student's score on the Comprehensive Basic Science Examination (CBSE). The study concluded that the two preclinical courses were good predictors of student performance on USMLE, and their value as identifiers of students at risk was promising. The second previous study used many pre-admission variables to predict USMLE Step 1 and Step 2 performance (Kleshinski et al., 2009). Dependent variables included gender, race, age, selectivity of the undergraduate institution attended, undergraduate major, total GPA, science GPA, post-baccalaureate degrees earned, Medical College Admissions Test (MCAT) scores, parents' occupation, and scores on USMLE Step 1 and Step 2 (Clinical Knowledge). This study found that statistically significant predictors for step 1 and step 2 included age of the applicant, race, college selectivity, science grade point average, and the biologic science section of the MCAT. It was also noted in this report that a feed forward neural network could improve on a linear model in terms of predicting USMLE scores based on pre-admission variables. Neural networks are mathematical models that combine information in a nonlinear way and are particularly good at identifying patterns within large datasets.

These two prior studies formed the framework for the current study. In order to improve on the ability to predict USMLE performance, relationships were examined further on a larger set of students, exploring the relation between the students' performance in the College of Medicine's five pre-

clinical basic science curricular blocks (year 1 and 2) and seven required clinical rotations and their performance on the USMLE Step 2. (Parent occupation was not examined in this study as no significant relationship was found in the prior study.) One aim was to try to identify which students were likely to have poor performance on the USMLE.

Methods

Institutional Review Board (IRB) approval was obtained to review data from students of entering years 1998 through 2005 at The University of Toledo College of Medicine. Based on previous work, the dependent pre-admission variables of gender, race, age, selectivity of the undergraduate institution attended, undergraduate major, total grade point average (TGPA), science grade point average (SGPA), highest degree earned, MCAT scores, and scores on USMLE Step 1 and Step 2 (Clinical Knowledge) were chosen.

The curricular measures evaluated in this study include the final grade achieved in the five pre-clinical basic science curricular blocks of Cell and Molecular Biology, Human Structure and Development, and Neuroscience/Behavioral Science in the first year curriculum, and Immunity and Infection and Organ Systems in the second year curriculum. The final grades of the student in the six required third year clinical clerkships of Family Medicine, Internal Medicine, Pediatrics, Obstetrics/Gynecology, Surgery, and Psychiatry along with the fourth year Neurology clerkship (required for graduation) were also considered. All of the clinical departments used three criteria to determine final grades. These were the National Board of Medical Examiners (NBME) "shelf exam" (which contributed 40% of the grade), the Student Clinical Competency Evaluation (40% of the grade) was provided by residents and attending physicians who had adequate exposure to the student during the rotation period, and an additional group of measures collectively called the Departmental Educational Program (e.g., case and procedure progress logs, objective standardized clinical examinations [OSCE], oral examinations, clinical vignettes, assigned readings, ethics consultation essays, quizzes before and after didactic lectures, computer assisted learning assignments, and attendance) which constituted 20% of the final grade. The final grades were determined as "Honors," "High Pass," "Pass," and "Fail." On average, about 15% of the class receives "Honors" and about 35% receives "High Pass" with the vast majority of the remaining receiving "Pass" in each of the clinical clerkships.

The outcome variables for this study were the scores on USMLE Step 1 and Step 2 (Clinical Knowledge). Only those students with complete records available in the spring of 2008, including Step 1 and Step 2 scores, were used in this analysis (816 total records). Differences in Step 1 or Step 2 scores by demographic variable were compared using a t-test or ANOVA. Multiple regression models were used to identify predictors of Step 1 and Step 2 scores. A stepwise selection procedure was used to identify the best score predictors. All analyses were carried out using Matlab™. In addition, examination was done to see if there was improvement on the linear model with a feed forward neural network. This was done either with the entire student cohort chosen for the training of the neural network or using a portion chosen by random to form the training set with the residual of students used for the testing set. For students who took the USMLE more

than once, only the first-time USMLE scores were used. For the neural network models, the architectural design was varied (e.g. number of hidden neurons ranged from 1-10), number of layers of hidden neurons (between 1-3 layers), training algorithms (Levenberg-Marquardt [LM], gradient descent [GD] and Bayesian regularization [BR] methods) as well as the following transfer functions: two logistic and one linear transfer functions (Kleshinski et al., 2009; Hagan & Manaj, 1994; Foresee & Hagan, 1997). The quality of predictions on the testing set of data was compared by the fraction of total variance which was fit by the model. The neural network training was performed on the entirety of the dataset, replicating this process 10 times with each number of neurons, each training algorithm, and the different transfer functions. The best fit obtained with these 10 replicants for the different number of neurons is reported. The accuracy of predictions from these models were then compared to those obtained using stepwise regression models. P values are reported with $p < 0.001$ substituted for zero.

Results

The records from a total of 816 students were included. Of these, 64% were male and 79% were white, 1.8% African-American, 2.3% Hispanic, 9.3% Indian-Pakistani, and 7.4% Asian. Sixty-four percent were 22 years old or younger upon matriculation, and 16.6% were from the most selective undergraduate institutions using Peterson's Four-Year Colleges 2008 as the reference (Oram, 2007). For undergraduate major, 71.3% were from wet science majors (including biology, zoology, chemistry, and pre-medicine), 10.8% psychology majors, 7.2% from dry science majors (including engineering, math, computer science, and physics), 6.9% liberal arts majors, and 3.8% business majors.

The stepwise regression model based on demographics and preadmission variables could predict approximately 17.4% and 13.0% of the variation in USMLE Step 1 and Step 2 scores, respectively. Using a feed forward neural network, some improvements on this performance could be made. First, there were fairly similar results from the neural network models regardless of whether the Levenberg-Marquardt (LM), gradient descent (GD), or Bayesian regularization (BR) methods were used; similarly, both the logsig and tansig transfer functions yielded virtually identical results (data not shown). With all of the different training algorithms applied on the pre-admission variables, a maximum R² of about 21% could be achieved with the best results somewhere between 5-9 neurons for predicting USMLE Step 1 scores. As far as predicting USMLE Step 2 scores, again the different algorithms gave similar results with maximal predictions occurring between 5-9 neurons. Because previous experiences indicated superior generalization with the Bayesian regularization method, focus was placed on this approach for subsequent predictions. Increasing the number of hidden layers from one to three did not improve on the results obtained with the single hidden layer model.

Using a stepwise regression model, USMLE scores could be much better predicted if the grades that students obtained in the courses taken before the USMLE were added. Specifically, adding the pre-clinical course grades to the demographics and pre-admission variables improved the R² achieved with USMLE Step 1 to 57.3% (Table 1), and adding all required clinical

courses and USMLE Step 1 scores improved the R² achieved with USMLE Step 2 results to 64.7% (Table 2). For Tables 1 and 2, variables with a p value less than 0.05 were not included in the model. Using a neural network approach, only a trivial improvement in predictive capability was obtained for both USMLE Step 1 and Step 2 predictions. Specifically, the prediction of USMLE Step 1 scores could be increased using a neural network based on pre-admission variables and pre-clinical course work to an R² of about 59%, whereas a neural network based on these data plus USMLE Step 1 scores plus all coursework prior to USMLE Step 2, including clinical rotations, allowed for the prediction of about 68% of the variance in USMLE Step 2 scores. The large improvement in predictive ability with the addition of coursework grades led next to examining whether coursework grades alone could predict USMLE Step 1 and Step 2 scores. Interestingly, using stepwise regression performed on the preclinical course grades alone, 53.1% of the variance in USMLE scores could be predicted. Only the Immunity and Infection curricular block scores dropped out of the model with stepwise regression. It is noted that this is only 4.5% less accurate than that seen with the model including the preadmission variables. Applying the neural network model to this group of variables, the R² achieved could only be increased to 54.8%. These same pre-clinical course grades could also predict 40.5% of the variance in USMLE Step 2 scores with the stepwise regression model and 41.8% of the variance in USMLE scores with a neural network model.

Table 1: Stepwise Linear Regression Predicting USMLE Step 1 Score

Variable	Coefficient	Std.Err.	p-Value
Sex	-1.59	1.04	0.128
Age	-0.25	0.16	0.127
Race	-0.16	0.29	0.563
Undergraduate College Selectivity	-0.13	0.46	0.785
Undergraduate Major	-0.53	0.51	0.303
Highest Degree Earned	0.34	0.76	0.655
TGPA	-1.71	1.71	0.317
SGPA	-0.66	1.46	0.650
Verbal Reasoning	0.63	0.32	0.048
Physical Science	1.21	0.33	<0.001
Writing Sample	-0.21	0.25	0.389
Biologic Science	2.31	0.41	<0.001
Cell & Molecular Biology Block	-4.54	0.96	<0.001
Human Structure & Development Block	-4.75	0.98	<0.001
Neuroscience/Behavioral Science Block	-2.89	0.88	0.001
Immunity & Infection Block	-1.40	1.00	0.160
Organ Systems Block	-11.48	0.93	<0.001

Note: Overall R² = 57.3245%

Table 2:

Stepwise Linear Regression Predicting USMLE Step 2 Score

Variable	Coefficient	Std.Err.	p-Value
Sex	0.94	1.01	0.351
Age	-0.41	0.17	0.016
Race	-0.07	0.28	0.806
Undergraduate College Selectivity	-0.69	0.49	0.153
Undergraduate Major	1.11	0.49	0.025
Highest Degree Earned	2.70	0.79	0.001
TGPA	3.98	1.72	0.021
SGPA	-0.73	2.38	0.759
Verbal Reasoning	0.49	0.31	0.116
Physical Science	0.13	0.31	0.668
Writing Sample	-0.17	0.24	0.471
Biologic Science	-0.05	0.38	0.890
Cell & Molecular Biology Block	0.16	0.94	0.865
Human Structure & Development Block	2.29	0.93	0.014
Neuroscience/Behavioral Science Block	-1.85	0.86	0.032
Immunity & Infection Block	1.57	0.99	0.113
Organ Systems Block	-2.48	1.00	0.013
Family Medicine	-4.50	0.73	<0.001
Internal Medicine	-2.57	0.71	<0.001
Neurology	-3.04	0.75	<0.001
Obstetrics & Gynecology	-4.52	0.67	<0.001
Pediatrics	-2.31	0.73	0.002
Psychiatry	-1.10	0.69	0.112
Surgery	0.01	0.70	0.984
USMLE Step 1 Score	0.36	0.03	<0.001

Note: Overall $R^2 = 64.735\%$

To further test this concept, students were sorted based on the results in the biological science portion of the MCAT, the single best pre-admission predictor of USMLE Step 1 performance and the lowest 10th percentile. When USMLE Step 1 and Step 2 scores were reviewed in this subset, the averages were 204 and 215, respectively. Next, it was examined how well USMLE Step 1 and Step 2 scores in this subset could be predicted with linear and neural network models. Similarly to the case for the overall dataset, 58.5% and 43.1% of the variance could be predicted in USMLE Step 1 and Step 2 scores, respectively, with the stepwise regression model. Significant improvements on these predictions by using a neural network approach on this subset could not be made.

Discussion

A three-step process comprising standardized tests is used to grant license to practice medicine in the United States. The first step (USMLE Step 1) tests basic pre-clinical science, while the second (USMLE Step 2) addresses clinical application of medical knowledge, specifically the competency to participate in patient care under supervision in postgraduate training programs. Passing the third step (USMLE Step 3) allows for the unsupervised practice of medicine.

In a previous report from our institution, Gandy and colleagues identified the strong correlation of some coursework to USMLE Step 1 scores (Gandy et al., 2008). In this current report, it was noted that performance of students in medical school was a far better predictor of USMLE results than pre-admission variables except the MCAT. In fact, addition of the pre-admission variables added very little to the predictive capacity of the multiple logistic regression model compared with a model containing only coursework performance. It was also noted that while the neural network was still better than the linear model with preadmission variables (as reported in earlier work), once course performance was included, most of the advantages of the neural network approach over the linear approach which had been previously noted appeared to be lost. One explanation for this may be the overriding effect of the coursework on the neural network model or possibly the architectural design and transfer functions that were used. This current study has considerable implications. First, perhaps mandated visits to the UT Health Science Campus learning center, The Academic Enrichment Center (AEC), should be implemented earlier during the medical school curriculum for students who are struggling. Having board review courses starting in the first rather than second year, small group supplemental instruction, and required completion of board-like practice tests could also be of benefit. Findings from this study will be presented to the Senior Leadership Team of the College of Medicine as well as to members of the College of Medicine Executive Curriculum Committee to discuss other potential academic interventions.

Additionally, a number of medical schools around the country have Master degrees or other post-baccalaureate programs geared toward students whose ultimate goal is to gain entry into medical school. Performance in these programs may assist schools in better selecting those students likely to be successful because the curriculum in these programs often contains some of the same courses that the medical students are taking. Another possibility would be to consider examining entry criteria to medical school and instituting a pyramidal process within the pre-clinical years to identify those who will perform successfully. While this would give additional students an opportunity to matriculate into medical school, it would obviously have tremendous financial implications to those students who did not progress through completion. Suffice it to say that movement towards this pyramidal system would constitute a paradigm shift for U.S. medical schools (Barzansky & Etsel, 2009).

Future Study:

Although this study did not specifically address the impact of the institution's learning assistance center, The Academic Enrichment Center (AEC), during the time of the study, the center now has the ability to collect specific data on its ability to provide academic support specifically to the College of Medicine. According to an internal AEC report (2010), between June 2008 to October 2010, the AEC provided assistance to 654 distinct medical students, resulting in 4,960 tutoring sessions, totaling 10,130 hours of support. Consequently, the College of Medicine support resulted in 61.4% of the total academic assistance provided for the entire University of Toledo Health Science Campus. Specifically, within that overall percentage, 43.4% was service to students in the first two years (in preparation for USMLE Step 1) and 17.7% for students in the second two years (in preparation for USMLE Step 2). Furthermore, between 2008 and 2010, the center provided approximately 160 hours of help in study skills, 90 hours of drop-in tutoring for content questions, 1,170 hours of group tutoring, 1,240 hours of individual tutoring, and 5,390 hours of Supplemental Instruction in addition to 2,300 hours of USMLE Step 1 review, and 230 hours of USMLE Step 2 review. A future study could look at that impact of the learning center providing opportunity for supplemental instruction, study techniques, and content assistance that impacts coursework grades.

The National Board of Medical Examiners (NBME) provides a content outline for material presented on the USMLE Step 1 and Step 2 examinations (Federation of State Medical Boards and National Board of Medical Examiners, 2010). This content outline assists medical schools as they evaluate and refine their respective curriculums. Though the approach may vary among medical schools with regard to pedagogy, the five preclinical blocks and clinical clerkships examined in this study likely represent the same overall content provided at medical schools across the country in preparation for the USMLE examinations. Therefore, our results could be applicable to all medical schools given the above assumptions.

Conclusion

In summary, it was found that notable accuracy in predicting USMLE Step 1 and Step 2 scores could be achieved from models integrating pre-admission variables with coursework grades from medical students. Of interest, the coursework grades contributed far more to these models than the pre-admission variables except the MCAT.

Acknowledgements

The authors would like to thank Ms. Diane Pfaff, Educational Coordinator, Registrar's Office and Mr. John Cavins, Director of Academic Computing, for assistance in retrieving data on course grades and USMLE scores used in this study.

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Profiling the African American Student Network

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Abstract

The African American Student Network (AFAM) originated at a large Predominantly White Institution (PWI) in the Midwest. Including a sample of 163 network participants, the current paper profiles the academic performance of students in the network over its first 4 years. Findings indicate that although participants were similar to the average African American undergraduate on campus in terms of academic precollege characteristics and 1st term GPA, when compared to African American undergraduates on campus who did not participate in the network, AFAM participants trended toward higher 1-year retention rates, 4-year retention rates, and 4-year retention and graduation rates.

Achieving equity in education is a “wicked” problem. Wicked problems are not only complex but also dynamic, interdependent, and context-bound (Rittel & Webber, 1973). At the turn of the century only 40% of eligible Black students went to college, with only 46% of the 40% graduating within 6 years (Astin & Oseguera, 2005). Available data from one Predominantly White Institution (PWI) indicated that the 4-year graduation rate for even the highest ability students was approximately 25% higher for Whites than for Blacks (Grier-Reed, Madyun, & Buckley, 2008). All students face social and developmental challenges in pursuing a college education (Cole & Arriola, 2007). However, Black students face distinctive challenges. Not only must they develop a stance toward other Black students, Black culture, and social organizations (Smith & Moore, 2000), but they must also establish some level of comfort in their interactions with White students and faculty (Mack et al., 1997). This may leave the administrators, faculty, and staff of PWIs searching to find factors that allow Black students not only to survive on campus but also to thrive in a setting that may be uncharted territory. If educators can understand the relationship between such factors and academic success, they may be better equipped to address

the issue of equity in education and be better able to explain why some minority students attain a sense of membership within predominantly White academic communities while others do not (Kraft, 1991). This article studied 163 participants over four years to explore whether the African American Student Network (AFAM) might improve retention and graduation rates.

Background

According to research by Fleming (1984), Black students who attend predominantly Black colleges have less difficulty attaining a sense of membership within their academic community and, consequently, experience less stress than their peers who attend predominantly White colleges. For those Black students who choose to attend PWIs, over half at 4-year colleges fail to graduate within 6 years (Berkner, He, & Cataldi, 2002). For almost 20 years, researchers have been reporting on the importance of social support for the retention of Black students, including the importance of how institutions provide resources that help students overcome barriers (Francis, Kelly, & Bell, 1993). In a landmark study, Allen (1992) drew attention to the differential outcomes for Black students at Historically Black Colleges and Universities (HBCUs) and those at PWIs, where he concluded that college outcomes for Black students are influenced by both the immediate social contexts and by interpersonal relationships that serve as important mediating factors in adjusting to institutional contexts. More recently, these findings have been echoed by Lang (2001/2002) who suggests that while liaisons between students and institutions are especially crucial for the retention of Black students at PWIs, institutions continue to ignore the social and psychological needs of Black students, relying instead on the general perception that Black student attrition is due to academic and financial problems.

Black students' completion rates at HBCUs are higher than that of any other racial/ethnic group (Lang, 2001/2002). Lang suggests that this may be due in part to "more familiar cultural settings; schoolmates [who are] more likely to share similar values and backgrounds; problems [that are] examined and addressed from an African-American perspective; and increased opportunities for leadership roles and access to positive African American role models" (p. 222). In contrast, a number of studies have documented the hostile campus climates Black students face at PWIs and the importance of counter spaces or spaces in which people of color are affirmed and validated rather than negated or marginalized (Davis et al., 2004; Jones, 2004; Solorzano, Ceja, & Yosso, 2000; Swim et al., 2003). The African American Student Network (commonly called AFAM) is one such counter space; it was developed Fall 2005 at a large PWI in the Midwestern United States. A recent study (Grier-Reed et. al., 2008) using qualitative methods revealed some of the ways the group seemed to be acting as a counter space on campus: Whereas some students experienced a sense of marginalization or hostility in other spaces on campus, when they were in AFAM, students' experiences included safety, connectedness, resilience, validation, empowerment, intellectual stimulation, and a home base on campus.

The AFAM was developed as a response to the pressing challenge of increasing persistence-to-graduation for Black students at PWIs. As national data make clear, Black students at PWIs are at a disproportionately high risk for dropping out. Many students begin college unprepared for the challenges, but psychosocial and academic stressors can be elevated for Black students (Negga, Applewhite, & Livingston, 2007). Social support acts as a buffer against high stress levels (Chiang, Hunter, & Yeh, 2004; Edwards, Hershberger, Russel & Markert, 2001). In particular, for minority students who experience barriers as a result of the cultures of PWIs, institutional subcultures can be a critical factor in their ability to find membership on their campuses (Kuh & Love, 2000). Consequently, spaces such as AFAM can be a remedy or safe haven for Black students to cope with the elevated stressors they experience. The idea of group sanctuaries for coping with race-related stressors is not new, and Blacks who seek social support tend to have the best outcomes (Jones, 2004; Utsey, Ponterotto, Reynolds, & Cancelli, 2000; Watt-Jones, 2002).

College can be a time of freedom and exploration, but for those students who feel that they are not wanted, be it in the subtle glance of the eye that asks "What are you doing here?"; the avoidance of eye contact that indicates "invisibility"; or the sudden quietness that occurs when the topic of race comes up with classmates or faculty members of the majority race, the effects of racial microaggressions can be devastating (Feagin, Hernan, & Imani, 1996). D.W. Sue and colleagues (2007) describe racial microaggressions as the everyday, commonplace experiences of racism, including the subtle snubs and invalidations people of color encounter on a regular basis. Grier-Reed (2010) has argued that by providing a safe space in which Black students can find support and encouragement for reflecting on and making sense of their experiences, AFAM is a sanctuary for exploring and coping with racial microaggressions.

Currently in its 6th year, AFAM was originally developed to help address the problems Black students face. The basic idea was to provide students with a safe space to exercise their voices, critically reflect on their experiences, and find support for improving their lives and the lives of others. A weekly network meeting over the lunch hour, AFAM provides students with food as well as opportunities to find community, resources, support, and encouragement from other Black students, faculty, and staff on campus. Much like HBCUs, in this network, the cultural setting is familiar; schoolmates are likely to share similar backgrounds and values; problems are viewed from an African American perspective; and students have ready access to positive Black role models and leadership opportunities.

AFAM seems to bring important sociocultural attributes of the HBCU to the large PWI, where the worldview, students, and setting in AFAM are culturally familiar and students find positive role models and leadership opportunities. Given that PWIs have not been as effective as HBCUs in retaining and conferring degrees upon Black college students (Rodgers & Summers, 2008), one logical question to ask is whether participation in AFAM is connected to increased retention and graduation rates for Black students. This is the focus of the current research.

To profile the African American Student Network over its first 4 years, the current study explored participation rates, college entry data, and graduation/retention outcomes. Specific research questions were the following:

- What is the distribution of AFAM student participation in the network from 2005-2009?
- How do AFAM students compare with non-AFAM Black undergraduates in terms of ACT score, high school rank (HSR), and 1st grade point average (GPA)?
- How do AFAM students compare with non-AFAM Black undergraduates on campus in terms of 1-year retention rates, 4-year retention rates, and 4-year retention/graduation rates?

Method

Participants

AFAM was developed at a large public, predominately White, Midwestern University in the United States. This university had 16 colleges and schools (e.g., Education, Management, Liberal Arts) and was located within a large metropolitan area. The university served approximately 51,659 students, of which 33,236 were undergraduate and 18,423 were at the graduate level. Of the self-identified student population, 45% were women and 41% were men. The racial and ethnic makeup was 73% White, 9% Asian/Pacific Islander, 5% International, 5% African American/Black, 2% Hispanic, and 1% American Indian/Alaskan Native.

Approximately 200 students participated in the network from 2005-2009. Of those 200, 163 agreed to participate in the current research. Students participating in AFAM came from all over the university including a college designed to prepare under-prepared students to succeed. Fields of study included liberal arts, education, business, technology, biology, and natural sciences. The age of students included in this dataset ranged from 19-30, with a mean age of 22.53 and a standard deviation of 1.67. Women (n=102) comprised 63% of the sample, and men (n=61) comprised 37%. Most students (88%) were Black; however, other race/ethnicities included American Indian (2%), Asian/Pacific Islander (2%), Chicano/Latino (2%), and White (4%). The other 2% included International students and students who did not specify race/ethnicity.

Procedures

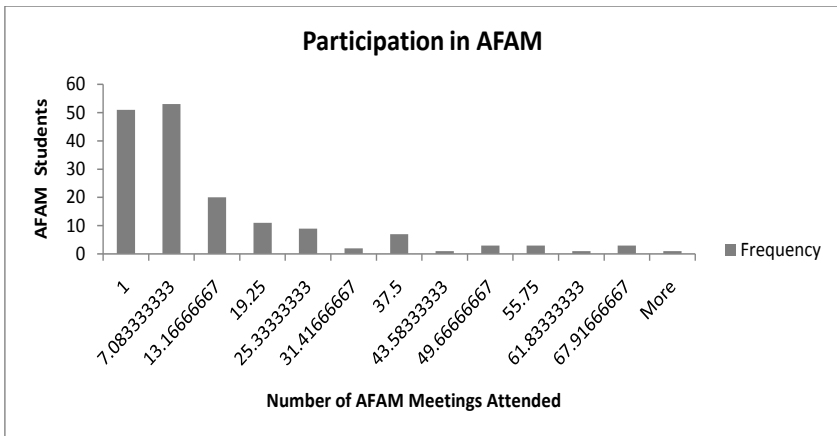
This research was conducted with the approval of the Institutional Review Board of the participating institution. We provided AFAM students with informed consent, and only those students who consented to the research were included. Comparative data were based on general institutional reports. Data for 2 comparison groups were included: 1) Non-AFAM African American undergraduates on campus; and 2) The general population of undergraduates at the university. We used descriptive statistics to illuminate trends.

Results

Participation in AFAM

Students who participated in AFAM were not asked to commit to a certain number of weekly meetings and were free to come and go as they pleased. For the 163 students included in this study, the average number of visits to AFAM was 11, and the standard deviation was 15, demonstrating a great deal of variation, where the range of meetings attended was 73. The mode, or most frequently occurring participation rate, was 1 weekly meeting, and the median attendance rate was 4 weekly meetings (See Figure 1 for a distribution of weekly meetings attended). When comparing ACT scores, high school rank (HSR), and 1st term grade point average (GPA) across students who came only once and those who came more than once, there were no clear patterns.

Figure 1: Distribution of Weekly Meetings Attended by AFAM Participants



College Entry Data

Of the 163 students included in the sample, 11 were transfer students and 152 entered the university as new freshman. To facilitate meaningful comparisons, transfer students were excluded from comparative analyses of pre-college and academic performance data. Instead, across AFAM and Non-AFAM groups, academic performance statistics were based on students who entered the university as new freshman.

To get a sense of the academic profile of students participating in AFAM, the study compared these students to a matching group of African American students at the university who did not participate in AFAM (n=1,188). In addition, the study compared AFAM students to the general population of undergraduates at the institution (n=26, 717). The average ACT score, HSR, and 1st term GPA were calculated across the 3 groups. The academic profile of AFAM students closely resembled that of the matching group.

However, both groups on average had a lower ACT score, HSR, and GPA than the general undergraduate population (See Table 1).

Table 1

Means and Standard Deviations for ACT, High School Rank and 1st Term GPA for AFAM and Other Students at the university

<u>Student Group</u>	<u>ACT Mean (SD)</u>	<u>HSR Mean (SD)</u>	<u>GPA Mean (SD)</u>
AFAM Students	19.41 (3.79)	69.66 (18.61)	2.73 (0.74)
Matched Group	19.95 (4.26)	72.55 (19.44)	2.80 (0.83)
General Population	25.47 (4.08)	82.53 (14.12)	3.12 (0.69)

Retention and Graduation

Trends emerged for retention and graduation rates: AFAM students seemed to be retained and graduated at higher percentages than their Black student counterparts who did not participate in AFAM. For example, the 1-year retention rate for AFAM students was 87%, and the 1-year retention rate for the matching group was 80%. Across 4 years, this trend was even greater, where AFAM students' 4-year retention rate was 53%, and the matching group's retention rate was 33%. Moreover, with respect to 4-year retention plus graduation, AFAM students were retained and graduated at 68%, but Black students not participating in AFAM were retained and graduated at 52%. In sum, when compared with Black students who did not participate in the network, higher percentages of AFAM students were retained and graduated.

Discussion

Preliminary data are promising for illuminating the potential of AFAM to improve retention and graduation rates for African American undergraduates at a PWI. Although there was a wide range of participation for AFAM weekly meetings with a mode participation of 1, results suggest improved graduation and retention outcomes. This is particularly striking given that the students who participated in AFAM seemed no more academically prepared than other African American students on campus.

With respect to college entry data, students who participated in AFAM may have been somewhat less prepared than their counterparts given the statistics for HSR and 1st term GPA. However, what is most striking between the African American students who participated in AFAM and those who did not are the similarities. Across ACT, HSR, and GPA, the differences between the two groups were minimal.

It seems that, at least academically, the students who were attracted to and participated in AFAM were much like the average African American student on campus, but their retention and graduation rates surpassed that of their counterparts. The percentage of AFAM students who were retained at

the university exceeded those of African American students not participating in the network by 7 points over 1 year and 20 points over 4 years. Moreover, 68% of AFAM students were retained and/or graduated within four years compared to only 52 % of their African American counterparts.

Limitations

Even though the trends found in these preliminary data are promising, it is important to note the limitations of this study. For example, this study can best be described as quasi-experimental, in which students self-selected either into the treatment group (the AFAM network) or the comparison groups. Moreover, AFAM students self-selected into the research study; therefore, selection bias is a threat to internal and external validity. Because there was no random selection, self-selection bias is a threat to the external validity or generalizability of the results. In addition, because there was no random assignment, self-selection bias is threat to the internal validity of the study. For example, there may have been pre-existing differences between the treatment and comparison groups that contributed to retention and graduation but were not controlled for in this study.

With respect to attrition, although we were able to include a majority of the 206 students who participated in AFAM from 2005-2009, for approximately 20% we were unable to obtain informed consent. Using a passive consent process, we mailed informed consent letters indicating that students would be included in our research unless they opted out by contacting the first author via telephone, email, or returning a self-addressed stamped postcard included with the letter. Approximately 5 students opted out, but for a much larger group (approximately 35 students) our consent letters were returned unopened because students could no longer be found at the addresses we had on file; interestingly, most in this group were transfer students.

Finally, the 163 students we did include in our study were not part of a single cohort—all starting in fall 2005, for example. Instead, the date of entry for students was variable, with some predating AFAM.

Recommendations for Further Study

Future research including larger cohort datasets is needed to explore whether the trends found in the current study are viable. In addition, future research that sheds light on the active ingredients of AFAM is recommended; that is, research that sheds light on the question of how it is that AFAM students no more prepared academically than their counterparts trend toward higher rates of postsecondary success, particularly given the high range and variability of student participation in the weekly meetings. The current study suggests that the trend is not linear (better academic performance simply based on higher participation rates in the network). Research that applies a broader perspective, including social network analysis, may be fruitful in future explorations.

Conclusion

AFAM shows promise as one way to improve retention and graduation for Black students at a PWI, but future research is needed to determine whether

the trends found in this preliminary profile are viable. This line of research is especially important given that Blacks are still underrepresented in higher education and still graduate at lower rates than Whites and Asian Americans over a 5-year period (Thompson, Gorin, Obeidat, & Chen, 2006). Finding ways to support the graduation and retention of Black students who do matriculate into college is essential, where access to higher education is not just about letting students in but supporting them through to postsecondary success.

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Investigating Factors Related to Retention of At-risk College Students

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Abstract

The purpose of this study was to investigate the factors that influence the retention and GPA of students in a college program designed for at-risk students. The study was conducted at a mid-sized private university in the Midwest. The sample consisted of 115 at-risk students enrolled in a Conditional Acceptance Program (CAP). Three years of CAP student data were collected. The study included variables of personality as measured by the NEO-FFI Inventory, high school and college GPA, ACT scores, the number of visits to the tutoring service, high school profile, and the demographic characteristics of student gender and ethnicity. The results indicated that tutoring and personality factors of at-risk students have a positive influence on their retention and college GPA. These findings inform institutions of higher education of the factors that contribute to the success of at-risk students, preparing them to serve this population.

Introduction

Students from varying backgrounds with different academic abilities are being admitted into institutions of higher learning (Laskey, 2004). This results in an influx of diverse students who may not have the skills or the persistence to be successful at the college level. Bryd and MacDonald (2005) report that approximately one-third of all entering college students in the United States need remediation. According to McCabe, “41 percent of entering community college students, and 29 percent of all entering college students are under prepared in at least one of the basic skills (reading, writing, mathematics” (as cited in Fike and Fike, 2007, p. 2). Moreover, it has been estimated that over two million U.S. college students take developmental courses at their colleges or universities (Saxon, Sullivan, Boylan, & Forrest, 2005).

Students who enter college under prepared are often considered at-risk students. At-risk students may have difficulties other than lack of basic

skills. For example, at-risk students may lack the motivation to pursue a college degree. They may also lack soft skills needed to be successful (i.e., attending class, maintaining concentration, using effective study strategies and using social skills necessary to ask questions); they also lack the personality traits needed to enhance scholarly pursuits (Chris, Daigle, & Windy, 2007). Pascarella and Terenzini (1983) connected these student factors to the student's level of commitment to attending and graduating college.

The current study was conducted at a midsized, private, four-year university located in the Midwest. Admission requirements at the university are an ACT composite score of 20 and a high school GPA of 2.0. Students who do not meet the standard admission requirements can apply for admission through a one-year Conditional Acceptance Program (CAP). The CAP program was designed to give those students who have the potential for success the opportunity to be admitted under special circumstances. The requirements for the CAP program are an ACT composite score of at least a 16, a score at or above the cut off in reading and English on the university's placement test, a writing sample that indicates basic writing proficiency, and an interview in which the student demonstrates a potential for success. In the first semester of the CAP program, students are required to meet with a tutor once a week, attend weekly meetings with a small peer group, and take developmental courses, including both College Reading and College Study Strategies. A pre-college math and developmental English course may be required for those who need skill-building in these areas.

CAP students also take a Freshman Year Experience course designed for CAP students, as well as a 100- level freshman psychology course. In the second semester, CAP students are allowed to take up to 12 credits of regular college courses. At the end of the first year, students who have maintained a GPA of 2.0 or above are admitted to the university under regular admission. Those who have not maintained a 2.0 GPA are academically dismissed from the university. The students have the opportunity to appeal the dismissal decision. If they are not readmitted, they can reapply after successful coursework at a two-year technical or community college.

Given the research findings (Chamorrow-Premuzic, Furnham, & Ackerman, 2006; Phillips, Abraham, & Bond, 2003) on the relationship between personality factors and academic achievement, CAP students are also given the Five Factor Inventory (NEO-FFI) (Costa & McCrae, 1992). The NEO-FFI is a self-report inventory measuring the following five personality factors:

1. Neuroticism, the tendency to experience psychological distress
2. Extraversion, the tendency towards sociability, activity, and positive emotions of joy and pleasure
3. Openness, the openness to new experiences
4. Agreeableness, the tendency to be trusting, sympathetic, and cooperative;
5. Conscientiousness, the tendency to be scrupulous, well organized, and diligent.

Literature Review

Identifying profiles of successful versus non-successful at-risk students enables institutions of higher education to expand services—academic, personal, and social—that could bolster weak profiles, thus enhancing student successes and retention in college. Researchers have investigated both traditional academic skills of students (e.g., analytical, didactic, critical thinking abilities), as well as non-cognitive components such as personality and motivation (Scepansky & Bjornsen, 2003). The NEO-FFI five-factor personality model has been used to determine the non-cognitive attributes related to student success (Costa & McCrae, 1992). Certain NEO-FFI factors have demonstrated repeated correlation to academic achievement and success. In fact, the use of such non-cognitive attributes has been somewhat more predictive in determining success among students than academic measures alone (Chamorrow-Premuzic, Furnham, & Ackerman, 2006). Similarly, such measures have explained more of the variance in success of students with dissimilar profiles than academic measures and comparisons alone (Phillips, Abraham, & Bond, 2003).

The effect of the five factor variables in relationship to academic success has had varying research results (Ridgell & Lounsbury, 2004). However, the factor of conscientiousness has been consistently and clearly established as a positive correlate to academic success (Chamorrow-Premuzic et al., 2006; Kelly & Johnson, 2005; Lounsbury et al., 2003; Phillips et al., 2003; Scepansky & Bjornsen, 2003). In a meta-analysis study conducted by Trapmann, Hell, Hirn, & Schuler (2007), conscientiousness emerged as a valid and reliable predictor of academic success, with extraversion, openness to experience, and agreeableness as indicators of success in certain subject matters related to certain occupations (Trapmann et al., 2007). Conscientiousness seems a logical correlate to achievement because of its composite qualities involving organization, care in work, efficiency, and dependability. In addition to personality characteristics, Dollinger, Matyja, & Huber (2008) noted the importance of academic skill profiles (such as verbal ability measured by standardized aptitude tests and past academic performance) in evaluating student successes, specifically performance on exams.

Research has also shown that academic support services are critical for the success of students who may be unprepared for college level work (Tinto, 1999). Rheinheimer and Mann (2000) noted that “. . . academic support services can help underprepared or at-risk students not only catch up to but, in some cases, surpass their better prepared counterparts” (p. 10).

One of the support services offered to assist students in building their skills is developmental courses (courses designed to help students learn reading and study strategies). For example, developmental math and reading courses are designed to build academic skills by reviewing basic concepts that students need to comprehend higher order concepts.

Another important component of support programs is tutoring. Tutoring has been found to play an important role in at-risk students' academic success (i.e., grades), course completion, and graduation (Hodges, 2001). For tutoring to be successful, students must attend tutoring on a regular

basis. Hodges found that tutoring was not effective when students' rate of attendance was low or students started late in the semester. Rheinheimer and Mann (2000) found that gender has an effect on tutoring outcomes, as does ethnicity. In their study, Asian Americans received the highest grades as a result of tutoring, followed by Caucasian students, with African American students having the lowest grades in their classes despite tutoring. According to Amenkian & Kogan (2004), ". . . all types of students regardless of their entry credentials benefit from the use of academic support services" (p. 523). For example, in their study of engineering students, Amenkian & Kogan found that use of academic support services had a positive effect on students' academic achievement. They also found that there were differences based on gender, ethnicity, and GPA. One finding was that participants with lower GPAs and White male students were less likely to utilize tutorial services than other students.

The seminal retention theory and research of Tinto (1987) cautions against identifying individual student factors, such as personality, that can set students apart from one another and create a "successful – unsuccessful" cadre of student populations. In so doing, students may bear the brunt of the problem for their lack of success, rather than holding the institution equally responsible. Tinto writes of creating an institutional climate of caring and belonging, which has a universal mission of educating, supporting, and retaining its students. It is our belief that the process of investigating students' demographic, academic, and nonacademic factors such as personality does not preclude the development of a learning community, but rather it also fits within it in providing support and feedback to students in an integrated and comprehensive way.

A productive learning environment involves establishing and communicating student expectations and providing meaningful feedback to students (Tinto, 1987). By identifying students who may have insufficient skill levels or personality factors not readily conducive to self-motivated work (i.e., low conscientiousness), institutions can develop and direct a learning environment for all students. As Boylan (2009) aptly noted, "Postsecondary institutions must serve the students they have, not those they wish they had" (p. 20).

Purpose of the Study

The purpose of this study was to identify the factors influencing the success of college at-risk students. For this study academic success was defined as a college GPA of at least 2.0 and retention at the university for one year or more. The factors studied were students' personality profiles as measured by the NEO-FFI Inventory, high school GPA, and ACT scores. The demographic characteristics of gender; ethnicity; type of high school (private/public); location of high school attended (rural/urban/suburban); and finally the utilization of tutoring services at the college were also studied.

Research Questions

1. How do personality factors of neuroticism, extraversion, openness, agreeableness, and conscientiousness affect college GPA and retention of at-risk college students?

2. Do high school GPA and/ or ACT scores predict college success?
3. Do high school type (public/private) and/or location (rural/urban/suburban) affect retention and college GPA of at-risk students?
4. Do academic support/ tutoring positively affect college GPA and retention of at-risk students?

Methods

Data were collected over three consecutive years from students participating in the CAP program. For the purpose of this study, data were extracted from student records. Data included demographic information (gender, ethnicity), the number of times the student participated in a tutoring session, ACT scores, and high school and college GPAs. Data were coded and entered into an Excel® spreadsheet and then analyzed using SPSS PC® version 17.0.2. Descriptive statistics of frequencies, percents, means and standard deviations were computed. T-tests and chi-square statistics were calculated to compare groups. Bivariate correlations and regression analysis were performed to examine relationships between variables.

Instruments

NEO-FFI

The NEO-FFI is a shortened version of the NEO PI-RI, consisting of 60 self-report items measuring the five personality domains of neuroticism, extraversion, openness, agreeableness, and conscientiousness (Costa & McCrae, 1992). The NEO-FFI uses a five point Likert-type scale from 1 (strongly disagree) to 5 (strongly agree) regarding responses such as "I am not a worrier," to "I rarely feel lonely or blue." Respondents are asked to indicate the extent they exhibit behaviors that are associated with the five personality factors. Higher scores indicate a greater propensity for the domain.

The NEO-PI has demonstrated convergent and discriminant validity (McCrae & John, 1992). The NEO-PI-R also reports acceptable reliability in terms of internal consistency and test-retest reliability (Dollinger & Orf, 1991). Cronbach alphas (a measure of internal consistency) for the five personality domains ranges from .56 to .83. Test-retest reliability for the five scales ranges from 0.66 to 0.92 (Costa & McCrae, 1992).

Domains of the NEO-FFI	Cronbach α
Agreeableness	.562
Openness	.628
Neuroticism	.832
Conscientiousness	.815
Extraversion	.745

Results

Demographics

The sample consisted of 115 traditional age (17-19 year old) undergraduate students admitted to the university in the CAP program designed for at-risk students. The majority (63.3%, $n=73$) of the sample was female. In this study there was no significant difference in retention based on gender. Seventy-three percent of the females were retained as compared to 66.7 % of the males ($X^2 = .517$, $df = 1$, $p = .472$). The largest group in the sample was Black (42.6%, $n=49$); thirty-nine percent ($n=45$) was White; the remainder were Asian, Hispanic, and Biracial, which is representative of the university's population. For the purpose of analysis, two groups were formed, Black and Other. There was no significant difference in retention of the CAP students based on ethnicity. Sixty-nine percent of both ethnic groups (Black and Non-Black) were retained ($X^2 = .001$, $df = 1$, $p = .971$). Students enrolled in the CAP program had attended private schools (14.2%, $n=16$), suburban schools (38.9%, $n=44$) and urban schools (46.9%, $n=53$). There was no significant difference in retention rate based on type of school ($X^2 = .312$, $df = 2$, $p = .856$).

Personality

As a group, the personality characteristic scoring the highest was conscientiousness, followed by agreeableness, extraversion, openness, and finally neuroticism (see Table 1).

Table 1: Descriptive Statistics of Personality Characteristics of CAP students

Personality Traits	Mean	SD
Neuroticism	15.65	5.37
Openness	27.69	4.86
Extraversion	32.99	4.55
Agreeableness	36.01	4.75
Conscientious	37.47	5.77

The domains of the NEO-FFI were significantly correlated to each other (see Table 2). Correlations were calculated to examine the relationships between the personality traits. There were significant positive correlations between agreeableness, conscientiousness, openness, and extraversion. As the students scored higher on agreeableness, conscientiousness, openness, and extraversion increased. Neuroticism was inversely correlated with agreeableness, openness, and conscientiousness. That is, students who scored higher on neuroticism scored lower on agreeableness, openness, and conscientiousness (see Table 2).

Table 2: Correlation Matrix of Personality Traits

	Extraversion	Openness	Agreeableness	Conscientiousness
Neuroticism	-0.17	-0.27**	-0.22*	-0.24*
Extraversion		0.37**	0.28**	0.01
Openness			0.25**	0.02
Agreeableness				0.34**

** p<.01 * p<.05

Neuroticism

There was positive correlation between neuroticism and high school GPA ($r = .199, p = .036$); students admitted with a higher high school GPA scored higher on neuroticism. Females scored significantly higher in neuroticism ($M = 16.7, SD = 5.51, n = 69$) than males ($M = 13.9, SD = 4.71, n = 42$) [$t(109) = 2.67, p = .009$].

Conscientiousness

There was a positive correlation between conscientiousness and the number of visits to the tutoring center ($r = .496, p = .043$). Conscientiousness was significantly correlated with college GPA ($r = .236, p = .016$). The more conscientious the student, the more likely he or she was to utilize tutoring services and to achieve a higher GPA.

Agreeableness

The higher the agreeableness score, the more likely students were to utilize tutoring services ($r = .215, p = .026$).

Extraversion

White participants were more extraverted ($M = 34.7, SD = 31.8, n = 46$) than non-Whites ($M = 31.8, SD = 4.48, n = 65$) [$t = 3.49, (109) p = .001$]. This result is slightly different result from the Black/ Non-Black group designations used above.

Tutoring

There was an inverse relationship between the students' ACT scores and the utilization of tutoring services ($r = -.197, p = .044$). Of the 115 students participating in the CAP program, 76 (66%) were retained. These students utilized the required tutoring services significantly more often ($M = 16.1, SD = 6.39, n = 76$) than those not retained ($M = 9.35, SD = 5.96, n = 35$) [$t = 5.27 (109) p < .0005$]. The higher the students' high school GPA, the more likely they were to utilize tutoring services ($r = .198, p = .040$).

A stepwise linear regression was performed to identify the factors contributing to the students' GPA. The first variable to enter the equation was tutoring ($B = .357$), which explained 12.8% of the variance, followed by conscientiousness, which explained an additional 5% ($B = .224$). The measures of neuroticism, extroversion, agreeableness, and openness did not enter the equation ($F = 10.54, p < .0005$).

GPA/ACT

There was no significant difference in high school GPA ($t=.059$, (110) $p=.953$) or the ACT score ($t=.345$, (110) $p=.731$) of retained students. Gender and ethnicity were not contributing factors to retention or college GPA. However, females admitted to the CAP program had higher high school GPAs ($M=2.59$, $SD= .50$, $n=42$) than males ($M=2.33$, $SD=.44$, $n=42$) [$t =2.82$, $d(110)$, $p=.008$]. There was no difference in ACT scores based on gender ($t = .364$, (110) $p=.006$).

Discussion

The findings of this study contribute to the body of research providing information about the influence of personality characteristics on retention and GPA in an at-risk population. A discussion of the study results follows:

1. How do personality factors affect GPA and retention of at-risk college students?

When considering the variables that enhance the academic pursuits of at-risk students in higher education, the influences of personality factors were extremely interesting. Certain personality factors are helpful in predicting the success or non success of at-risk students' GPAs and retention (Dollinger et al., 2008). In this study, the attribute of extraversion was inversely related to both retention and college GPA. Students scoring higher in extraversion were less likely to be retained. Students who were high in extraversion tended to be very social and, often times, were more concerned with socializing than focusing on academics; although these patterns were not statistically significant, they were noteworthy as a pattern.

There was a positive correlation between the personality traits of both conscientiousness and agreeableness with the utilization of tutoring services. Students who scored high in conscientiousness and agreeableness were more likely to seek tutoring than students who were low in these personality factors. Students who were high in conscientiousness and agreeableness positively accepted direction from adults and utilized tutorial services more frequently. For that reason, at-risk students who are conscientious and agreeable tend to be retained and achieve higher college GPAs. Conversely, at-risk students who were low in conscientiousness needed more support and encouragement to utilize these services. Cultivating conscientiousness through time management techniques and study strategies might help students ask for and seek the help they need to succeed academically.

Neuroticism had a positive relationship to college GPA. Students scoring higher in neuroticism might do better in school because they are worried about overall success. Females tending to be higher in neuroticism had better retention and higher GPAs than males.

2. Does high school GPA/ACT predict college success?

Students' high school GPA was not a good predictor of college success for the students in the CAP program. The data collected in this study may differ from other studies because most studies investigating the effect of GPA/ACT on college success and retention do not survey at-risk students but, instead,

use the GPA/ACT of psychology students who are not at-risk. Additionally, high school GPA may not be a good predictor of success for both at-risk and non at-risk students because of differences between schools, teacher expectations, and student performance.

Similarly in this study, ACT scores were not a predictor of college achievement or retention. Achievement on the ACTs can differ due to students' test taking ability, reading skills, and prior preparation for the test. Students who tend to read at a slower pace will often not do as well as students who read more quickly. Some students feel the pressure of a timed test and experience anxiety, which also can lead to lower scores on the ACT (Musch& Broder, 1999). The work that students achieve in the classroom may be more indicative of their skills rather than a one-time measurement of ability. Students' ACT scores serve as an indicator of academic ability, but without other data including classroom performance, ACT scores cannot be considered the prime predictor of success.

3. Is there an association between demographic characteristics (gender/ethnicity), high school profile (urban/suburban, public/private) and retention of at-risk students?

Study data did not support the contention that gender, ethnicity, and high school profile affect the retention or college GPA of at-risk students entering higher education. Although only 39% of the CAP students in the study were white, ethnicity did not make a difference in the achievement of the at-risk students. This challenges the bias that students with ethnic backgrounds do not often do as well as their White counterparts. In this study, urban and public school students achieved at the same level as those from non-public schools. One reason for this result could be that because of their skill level, even at-risk students in competitive high schools may be unable to take full advantage of academically rigorous programs and courses, making their academic preparation somewhat similar to at-risk students in less competitive schools.

4. Does academic support /tutoring positively affect retention of at-risk students?

Tutoring has a positive effect on at-risk students' retention and GPA. CAP students who were retained utilized tutoring services significantly more than students who were not retained. When students came to tutoring on a regular basis—at least once a week—they received higher grades, which, in turn, led to achievement in their classes and, invariably, to their retention. Students receiving tutoring have the advantage of being able to have the content of their classes clarified by tutors because information needed is presented to them in a different context. When students are tutored on a one-to-one basis, they can ask questions when they don't understand the material or the assignment. Although students can meet with their instructors to ask questions, they often feel more comfortable asking a tutor since the tutor has no influence on their grades. Studies with various student populations have revealed that tutoring can have a positive impact on the retention of students (Hodges, 2001; Higgins, 2004). Developing relationships with peers, tutors, and faculty often improves student retention (Potts & Schultz, 2008). Not only can tutoring assist at-risk students with academic help, but it can also lead to a relationship between tutor and student. Heisserer and

Parette (2002) noted the importance of this relationship between students and college advisors. The larger point is that creating a connection between students and university personnel—whether they be student mentors, faculty members, support personnel, or academic tutors—communicates to students a sense of caring and belonging, which, in turn, can enhance student self-efficacy, confidence, and an overall ability to do well in school (Tinto, 1999). In relationship to retention, when students feel they can be successful in their academic pursuits, they are more likely to stay in school. It therefore behooves institutions of higher education to provide tutoring services for their at-risk students.

Limitations

The findings of this study should be generalized with caution. The sample consisted of students in a private university in an urban setting; sample size was small. Moreover, two thirds of students in the CAP program were retained. Although this is good news overall, it made for a small percentage and a small sample size of non-retained students. Additionally, the NEO-FFI personality inventory is a self-report survey which can produce distorted answers and inaccuracies due to participant bias. Students may have responded the way they thought they should or how they thought the surveyor wanted them to respond. Finally, students sometimes have low intrapersonal awareness; that is, they may think they are conscientious and open to new experiences, but, in actuality, they are not.

Recommendations

The implications of this study are that the future of higher education will include more at-risk students, suggesting that there needs to be programs in place to serve these students. Since tutoring was such an important component of success for the students in this study, it is imperative that colleges and universities provide places/centers where students can obtain help with their content areas, reading and writing skills, time management strategies, and organizational skills. Developmental courses will also have to be part of the curriculum so that at-risk students can build their academic skills to a higher level of critical and analytical thinking. If colleges and universities do not address the needs of at-risk students, the chances for retaining these types of students will be minimal. Additionally, universities must have adequate information to make good admission decisions. In place of traditional assessment measures such as high school ACT and GPA, schools of higher education need to include writing samples, in-house assessment tools, interviews, and portfolio data in the student evaluation process.

Suggestions for future research

It is vital that research related to the success of at-risk students continues. It is clear that additional research should expand the information found in this study. Research on faculty and peer relationships should be studied because it appears that tutoring serves more than an academic function; it also plays an important part of building relationships that lead to improved retention.

Conclusion

Data from this study revealed that tutoring services affect retention of at-risk students in a college conditional acceptance program. It is the responsibility of institutions of higher education to continue to provide and expand support services, especially given the trend of underprepared college freshman, and to create a climate in which degree completion can become a reality for a wider array of students.

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BOOK REVIEW: Getting To Yes: Negotiating Agreement Without Giving In

Fisher, R. & Ury, W. (1991). *Getting to yes: Negotiating agreement without giving in*. New York: Penguin Books.

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In the field of learning assistance, conflicts will arise whether with co-workers, students, or other mentors in learning. As a growing field, it is to our benefit to engage in conflict in ways that strengthen fellowship instead of creating division. Although *Getting to Yes: Negotiating Agreement without Giving in* (1991) by R. Fisher & W. Ury was printed 20 years ago, it is still pertinent today and remains an excellent tool for learning center professionals in handling various negotiations. Fisher and Ury provide a template for those who are faced with a conflict on how to prepare for and, subsequently, conduct negotiations in order to make wise decisions. Instead of looking for ways to undermine one's adversary, the authors give suggestions for generating and expanding solutions. As a result, learning professionals are provided tools for not only objectively looking within during a conflict but also an opportunity to truly understand each other's point of view. With tightening budgets and expanding needs, disputes are more likely to increase. *Getting to Yes* illustrates a way to benefit from conflict to generate a wise decision.

Fisher and Ury (1991) redefine how to engage in a negotiation. Previously, the goal of negotiation was to gain as much as one could in the result. However, when focusing only on the result, the relationship could be damaged, or the result could be less than desirable. One key component of *Getting to Yes* is the importance of focusing negotiations on how to receive a positive result for both parties while protecting the relationship. The authors submit a recurring theme of engaging in "principled negotiations," in which each side desires to produce the best agreement possible, to be more efficient, and to not damage—and maybe even improve—a relationship. The two parties negotiate based on the interests and objective criteria instead of positions and personality. Fisher and Ury identify the following four elements of negotiation that make principled negotiation possible: separating people from the problem, focusing on interests and not positions, inventing options beneficial to both parties, and utilizing criteria that is objective (not personal). These principles worked for me recently, when a student came to my office to discuss a disagreement with a professor. The student believed

the professor was to blame for a poor grade and wanted to confront the professor. Instead of concentrating on the position in the relationship, we were able to use Fisher and Ury's principle of focusing on interests. What was the student's desired outcome in this situation and how did the student obtain that outcome? As we focused on the specific interest of receiving a better grade, the student realized the underlying interest was to understand the material. The end result was the student became more productive. The student spoke with the professor about how to study for the next test in order to comprehend the material. As a result, a situation that could have been confrontational and counterproductive was, instead, productive and resulted in the possibility for the student to obtain real progress in learning.

The central feature of the book is teaching one how to prepare for a negotiation. The first step in principled negotiation is to separate the issues from the person. Negotiation is not about personalities but about the interests of each person. The authors outline the importance of determining how each person can gain in the situation without damaging the relationship. In order to remove the person from the discussion, one needs to focus on three elements – perceptions, emotions and communication. Each individual comes to the negotiation with particular perceptions of the other. If each focuses on these perceptions, whether real or imagined, the negotiation will not be principled, and the results will be poor. The authors highlight how one can engage in multiple ways of thinking in order to separate the issues and the person. First, one can put oneself in the place of the other individual. By paraphrasing the other's points of view, one can place oneself in the other's frame of reference. By truly understanding the other's position, both individuals can focus on the issues and not the other person. Next, one cannot place one's fears in the other's argument. When two individuals are discussing their points of view and one is speaking, the other may not be listening but formulating an answer. By not listening, one may be assuming what the other really means and placing one's fears within the other's argument. In principled negotiation, it is crucial to make sure one is listening in order to avoid assumptions. The authors present another way to focus on the issues and not the other person by discussing each other's perceptions. By being direct about how one believes the other will be, it is possible for the other to fight against those perceptions in order to get to a true agreement. While this explanation seems simplistic, without attention to the details of the preparation, a negotiation can be focused on position and not interests.

Another key concept in *Getting to Yes* is, first, to preserve and protect the relationship during the negotiation and, second, to assure the result of the discussion is the best possible end for both parties. Again, I found these concepts immediately useful when preparing for last year's budget, which could have forced particular changes in tutoring. As things initially stood, it appeared there was no alternative than to downsize the program. However, by using these methods in negotiating with the tutors, I learned they would rather reduce their hours, so everyone could stay employed. By presenting vital information and discussing a resolution, negotiations realized real progress for both sides. *Getting to Yes*, essentially, revolutionized how negotiation progressed and allowed the possibility for creating an alternative method of discussion.

A drawback of this book is its age. Typically a book written almost 20 years ago loses some relevancy. Though this book is older, it is still utilized in multiple graduate programs, including master's programs in counseling and leadership. The book gives an easy outline of ways to engage in conflict practically. While other more recently written books may give more recent examples of conflict with technology or the greater complexities of life, this book's generalized principles can be utilized in a broad range of conflicts. Another possible drawback could be the simplicity of the method. Although the author does repeat the process in later sections of the book, that repetition actually solidifies negotiation methods in the reader's mind. As a result, when faced with a real life "conflict," the reader has a better chance of remembering essential negotiation techniques without having to stop everything and find the book.

In *Getting to Yes*, the authors force the reader to look at conflict through a different lens and then provide techniques for preparing and engaging in a negotiation. *Getting to Yes* is a tool for individuals to conduct a negotiation not from positions but from interests, not from being right or wrong but from being in a relationship with the other. By examining the interests of both parties, the authors provide tools for both sides in a negotiation to expand possible solutions that are based on wise decisions that would not have been grasped otherwise. I recommend this book because it is essential in helping learning professionals navigate through the quagmire of administrative negotiations.

Pertinent Publishing Parameters

The Learning Assistance Review (*TLAR*), the national peer reviewed official publication of the National College Learning Center Association (NCLCA), publishes scholarly articles and reviews that address issues of interest to learning center professionals (including administrators, teaching staff, faculty, and tutors) who are interested in improving the learning skills of postsecondary students. Primary consideration will be given to articles about program design and evaluation, classroom-based research, the application of theory and research to practice, innovative teaching and tutoring strategies, student assessment, and other topics that bridge gaps within our diverse profession.

Categories for Submission

Articles

- ◆ Topics: *TLAR* will accept manuscripts that address our purpose: to publish scholarly articles and reviews that address issues on program design and evaluation, classroom-based research, the application of theory and research to practice, innovative teaching and tutoring strategies, student assessment, etc.
- ◆ Types: *TLAR* will accept manuscripts for the following four of the article types outlined in the American Psychological Association Manual: empirical study and articles on review, theory, and methodology. Follow 6th edition APA manual (sections 1.01-1.04) for specific requirements and structure for each type; regardless, all manuscripts need a clear focus that draws a correlation between the study, review, theory, or methodology and learning assistance practices.

Joining the Conversation

- ◆ Idea Exchange: Discussion directly related to articles published in *TLAR*. Submissions are limited to fewer than 4 paragraphs and are to be constructive idea exchanges. In addition to the name, title, college, and contact information from the submitter, Idea Exchange submissions are to include the details of the referenced article (Title, author, and volume/number, and academic semester/year). A submission form may be found online on the *TLAR* website.
- ◆ Further Research: Article submissions that have a stated direct link to prior published *TLAR* articles. These articles will be considered following the manuscript submission guidelines.

Book Review

Book review requests should be accompanied with two copies of the book to facilitate the reviewing process. Potential book reviewers are urged to contact the editorial team for details.

Manuscript Guidelines

Manuscripts and reference style must be in accordance with the Publication Manual of the American Psychological Association (6th ed.). Submissions that do not comply with APA style will be returned to the author(s). Manuscripts must be original work and not duplicate previously published works or articles under consideration for publication elsewhere. The body of the manuscript may range in length from 10 to 20 pages, including all references, tables, and figures. Longer articles will be considered if the content warrants it. The authors are responsible for the accuracy of all citations and references and obtaining copyright permissions as needed. The only acknowledgments that will be published will be those required by external funding sources.

Submission Guidelines

Submission packets must include:

- ◆ A cover page
- ◆ The original manuscript
- ◆ A masked manuscript for review
- ◆ One hard copy of these materials must be mailed to the address listed below.
- ◆ An electronic copy must be submitted to the e-mail address listed below.
- ◆ The title page must include the title of the manuscript (not to exceed 12 words); the name(s) and institutional affiliation(s) of all authors.
- ◆ The lead author should also provide work and home addresses, telephone numbers, fax, and e-mail information.
- ◆ All correspondence will be with the lead author, who is responsible for all communication with any additional author(s).
- ◆ The second page should be an abstract of the manuscript, maximum 100 words.
- ◆ To start the reviewing process, the lead author will be required to sign certificate of authorship and transfer of copyright agreement. If the manuscript is accepted for publication, all author(s) must sign an authorization agreement.
- ◆ Figures and tables must be black and white and according to APA style.

**Please send your comments and/or article submissions to:
TheLearningAssistanceReview@utoledo.edu with a hard copy to
Christine Reichert, M.A., Editor, The Learning Assistance Review
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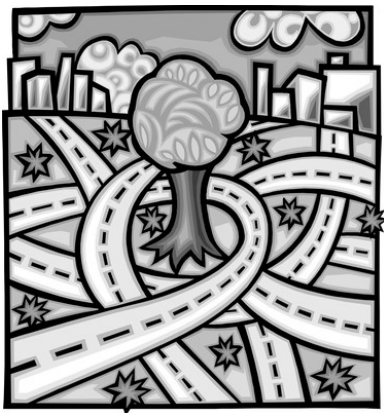
Review Process

Author(s) will receive an e-mail notification of the manuscript receipt. The review process may include a peer-review component, in which up to three members of the *TLAR* editorial board will review the manuscript. Authors may expect the review process to take about three months. Authors may receive one of the following reviewing outcomes:

- (a) accept with minor revisions,
- (b) revise and resubmit with only editor(s) review,
- (c) revise and resubmit for second full editorial board review, and
- (d) reject.

As part of the reviewing correspondence, authors will be electronically sent the reviewers' rankings and general comments on one document and all the reviewers' contextual markings on one manuscript. Manuscript author(s) must agree to be responsible for making required revisions and resubmitting the revised manuscript electronically by set deadlines. Manuscript author(s) must abide by editorial revision decisions.

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Learning Centers: At the Crossroads of Student Success

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NCLCA Membership Information

What is NCLCA?

The National College Learning Center Association (NCLCA) is an organization of professionals dedicated to promoting excellence among learning center personnel. The organization began in 1985 as the Midwest College Learning Center Association (MCLCA) and “went national” in 1999, changing the name to the National College Learning Center Association (NCLCA) to better represent its nationwide and Canadian membership. NCLCA welcomes any individual interested in assisting college and university students along the road to academic success.

NCLCA defines a learning center as a place where students can be taught to become more efficient and effective learners. Learning Center services may include tutoring, mentoring, Supplemental Instruction, academic and skill-building labs, computer-aided instruction, success seminars and programs, advising, and more.

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NCLCA seeks to involve as many learning center professionals as possible in achieving its objectives and meeting our mutual needs. Therefore, the NCLCA Executive Board invites you to become a member of the Association.

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- A. A subscription to NCLCA’s journal, *The Learning Assistance Review*
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- D. Voting privileges
- E. Opportunities to serve on the Executive Board
- F. Special Publications such as the Resource Directory and the Learning Center Bibliography
- G. Opportunities to apply for professional development grants
- H. Access to Members Only portion of the website
- I. Announcements of other workshops, in-services, events, and NCLCA activities

Membership Application

On-line membership application or renewal available with PayPal payment option at: <http://www.nclca.org/membership.htm>. Contact Membership Secretary to request an invoice if needed.

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