The Effect of Being a Student-Athlete on Academic Performance

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The purpose of this experiment was to examine academic performance differences among student-athletes and non-athlete students at the University of Illinois at Chicago (UIC). The construct of confidence was examined to provide a mechanism for any academic performance differences that were to occur. The researcher hypothesized that student-athletes would demonstrate a significantly greater level of confidence than the non-athlete students and as a result, would have a significantly greater GPA than the non-athlete students among genders and overall. The data was obtained by having 92 UIC students, 46 of whom were student-athletes and 46 of whom were non-athletes, complete a survey. The survey consisted of questions pertaining to gender, type of student, GPA, and confidence questions scored on a Likert scale. There were significant confidence differences between student-athletes and the non-athlete students, $F(1, 92) = 5.180$; $p = .025$ as well as between male student-athletes ($M = 33.69$, $SD = 4.47$) and non-athlete male students ($M = 30.13$, $SD = 4.98$), $t(30) = -2.13$, $p = .041$. However, there were no significant differences in academic performance among student-athletes and non-athlete students at UIC. Therefore, one could suggest that confidence does not significantly influence academic performance among the UIC students surveyed.

INTRODUCTION

As described by the NCAA (2013), under their Principle of Amateurism, a student-athlete is an individual who is an amateur competing in an intercollegiate sport primarily due to their educational motivations as well as their expected physical, mental, and social benefits from participation. As stated above, a student-athlete is primarily attending a university or college for the purpose of furthering their education and ultimately obtaining a degree. However, there exists a stigma that most student-athletes are only in school to participate in their respective sports. While this may be true for some student-athletes, evidence suggests that most of them are just as good if not better students than their counterparts. Gaston-Gayles (2005) acknowledged that in 2002, the NCAA was graduating student-athletes at an all-time high of 60% while the non-student-athletes were graduating at a rate of 58%. The study was conducted in order to find factors that impact grade point average (GPA). Indicators such as ACT scores, ethnicity, and motivation were tested to explain differences in GPA among student-athletes.

In addition to the factors like ACT scores, ethnicity, and motivation, there are other indicators of a good GPA for all students. These indicators can be non-cognitive factors such as self-confidence. Self-confidence has been demonstrated as a significant factor in academic differences among students. Stankov, Morony, and Lee (2014) studied the impact of self-confidence on performance using the constructs of self-efficacy, self-concept, and anxiety. They discovered that confidence represented 46.3%, of the total variance in academic achievement among the subjects they studied. As a result, they considered the confidence level of their subjects to be the greatest indicator of academic success. Self-confidence has also been previously studied as a mechanism for good grades among high school students. Tavini and Losh (2003) examined various indicators among academic success including self-confidence. They also discovered that confidence is a key indicator of academic success among their subjects. While compared to other characteristic indicators such as motivation or expectations, confidence was still considered to be a significant factor among the subjects.

Based on previous research, it is reasonable to believe that the construct of self-confidence also influences academic performance of students at UIC. As a result, this study was conducted in order to examine academic performance differences, represented by GPA, among UIC student-athletes and students outside of the athletic department. The construct of confidence was examined as a possible explanation for any academic performance differences that existed. Based on the expectation that UIC student-athletes would be more confident than non-athlete students at the university, it was hypothesized that the student-athletes would perform significantly better academically than the non-athlete students for both genders and overall.

METHOD

Participants:

Ninety-two undergraduate UIC students completed a survey provided to them. Forty-six of the participants were student-athletes and forty-six were non-athletes. For each group of forty-six participants, thirty were female and sixteen were male. The student-athletes consisted of members from the eighteen sports teams in the UIC athletic department. The students who were not athletes consisted of volunteers from UIC courses: Psychology 485 also known as Behavioral Neuroscience II, Chemistry 233 also known as Organic Chemistry Laboratory I, and Physics 107 also known as Introductory to Physics Lecture-II. The identity of each participant was kept completely anonymous by not asking for any identifiable data on the survey. The survey distributor assigned each participant a random serial code.

Survey:

The survey was built using UIC Qualtrics, a survey builder provided by UIC, and consisted of thirteen questions pertaining to gender, type of student (athlete or non-athlete), GPA, and ten self-confidence questions scored on a Likert scale. The Likert scale questions were designed to obtain a numerical score of each individual's self-confidence level. Values of 1 to 5 were awarded to each answer based on whether or not the question was presented in a positive or negative manner. Five questions were worded and scored positively and five questions were worded and scored negatively. Three questions were used from a previous study (Beattie, Hardy, Savage, Woodman, & Callow, 2011). The rest of the questions were designed by the researcher. Total confidence scores were allowed to range from 10 to 50 with 10 being an extremely unconfident individual and 50 being an extremely confident individual. The survey and all of its questions are listed in Appendix A.

Procedure:

Prior to the survey being created, the UIC Institutional Review Board, IRB, was informed of the study and provided with the appropriate paperwork. The UIC IRB concluded that the survey did not deal with human subjects based on the fact that it did not contain any identifiable information that could allow the researcher to track back any of the participants. The UIC Department of Biological Sciences, the researcher's undergraduate department, was also informed of the study and gave consent to continue. Following this, the survey that was distributed to each individual, student-athlete or not, was identical for everyone. The survey provided in Appendix A was first distributed to student-athletes. UIC Head Coaches received an email from the primary researcher asking them to forward a message about the survey. A confirmation of this relay to their student-athletes was provided by the UIC women's volleyball and softball coaches as well as the UIC men's soccer coach. In addition to this method, the primary researcher is a member of the cross country and track teams. The message was relayed to both the men's and women's cross country and track teams through a Facebook page a week after sending the survey to the head coaches. The last method of obtaining data for student-athletes was through asking SAAC, Student-Athlete Advisory Committee, representatives to complete the survey and relay a message to their athletes. Each team has two representatives. These methods obtained the forty-six student-athlete participants.

Once the survey was distributed to the student-athletes, it was provided to the non-athlete students. This was performed by emailing former professors of the primary researcher and asking them to relay the survey to their current students. One professor confirmed they were willing to do this, Chemistry 233- Organic Chemistry Laboratory I. As a result, the primary researcher sent the same email through UIC Blackboard to two of the primary researcher's classes: Psychology 485 also known as Behavioral Neuroscience II and Physics 107 also known as Introductory to Physics Lecture-II. Therefore, the non-athlete students consisted of members from those following courses only. Forty-six total non-athlete students completed the survey with thirty being female and sixteen being male. The first thir-

ty female student-athletes and sixteen male student-athletes to complete the survey were used to match the sample size.

RESULTS

Two-tailed t-tests as well as 2x2 factorial ANOVAs were used to analyze the data. T-tests were conducted for confidence level scores as well as GPA for the following comparisons: student-athletes vs. non-athlete students, male student-athletes vs. non-athlete male students, and female student-athletes vs. non-athlete female students. For the confidence comparisons, Figure 1 displays significant differences between student-athletes ($M = 31.67$, $SD = 4.85$) and non-athlete students ($M = 29.48$, $SD = 5.36$), $t(90) = -2.06$, $p = .042$ based on data displayed in Table 1. Table 1 also displays ranges of confidence scores for each group. The range for student-athletes was 19 to 45. The range for non-athlete students was 18 to 46. Figure 2 displays significant differences between male student-athletes ($M = 33.69$, $SD = 4.47$) and non-athlete male students ($M = 30.13$, $SD = 4.98$), $t(30) = -2.13$, $p = .041$ based on data shown in Table 1. Table 1 also indicates the ranges of confidence scores for each group. The range for male student-athletes was 27 to 45. The range for non-athlete male students was 25 to 46.
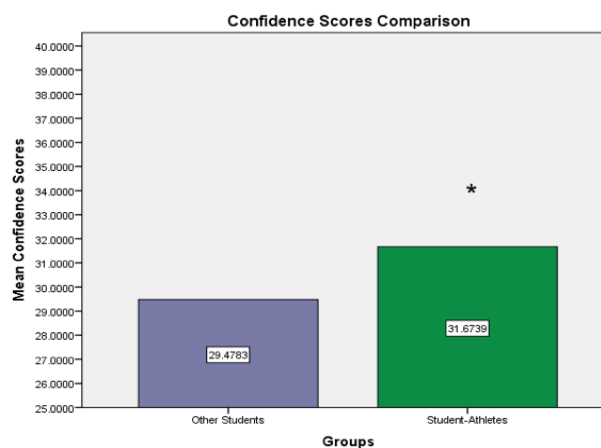

Figure 1: Mean confidence scores for groups of other students and student-athletes. Student-athletes were found to be significantly more confident than the other students $F(3, 92) = 2.887$; $p = .040$ as noted by an asterisk above the student-athletes bar.

Type of Participant	Mean	Std. D	Range
Female Student-Athletes	30.6	4.77	19-38
Male Student-Athletes	33.7	4.47	27-45
All Student-Athletes	31.7	4.67	19-45
Other Female Students	29.1	5.61	18-43
Other Male Students	30.1	4.98	25-46
All Other Students	29.5	5.39	18-46

Table A1: Left-hand column refers to each group surveyed for the study. Mean confidence scores and standard deviations for each group were calculated by adding total scores from questions 4-13, Likert scale questions. The range refers to each low and high score from each group based on an individual question range of 1-5 leading to a total possible range of 10-50 for each participant. The data was kept on a Microsoft Excel sheet. The data sheet was used to calculate mean and standard deviation scores and was later transferred to SPSS for further analysis.

Figure 2: Mean confidence scores for groups of male other students and male student-athletes. Male student-athletes ($M = 33.69$, $SD = 4.47$) were found to be significantly more confident than male other students ($M = 30.13$, $SD = 4.98$); $t(30) = -2.13$, $p = .041$. Two-tailed ANOVA provided similar results $F(1, 92) = 5.180$; $p = .025$. An asterisk notes the significant difference.

These results were further validated after a 2x2 ANOVA indicated $F(3, 92) = 2.887$; $p = .040$ for overall confidence differences between student-athletes vs. non-athlete students more specifically $F(1, 92) = 5.180$; $p = .025$. As displayed in Figure 3, t-tests concluded no significant differences for GPA among the groups. A 2x2 ANOVA also indicated no significant GPA differences among groups, $F(3, 92) = 1.33$; $p = .269$. Table 2 indicates these non-significant GPA differences among groups.
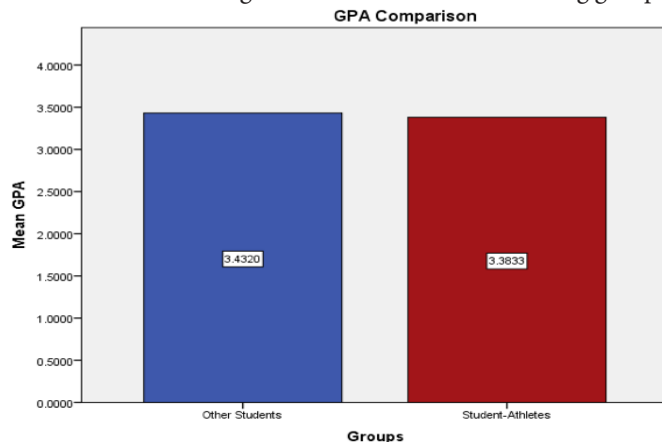

Figure 3: Mean GPA scores for groups of other students and student-athletes. No significant differences were discovered between other students (M=3.43, SD = .468) and student-athletes (M=3.38, SD= .487); t (90) = .481, p= .632. Data was not further analyzed using SPSS.

In addition to the data analyzed above, the Likert scale for self-confidence was examined more closely. Male student-athletes scored highest on question 12 ($M = 4.125$, $SD = .719$), while female student-athletes scored highest on question 10 ($M = 4.0$, $SD = .947$). Both male and female student-athletes scored lowest on question 8 ($M = 2.28$, $SD = .958$). Complete data for student-athletes is shown in Appenix A. Both male and female non-athlete students scored highest on question 9 ($M = 4.07$, $SD = .644$) and lowest on question 8 ($M = 1.80$, $SD = .820$). Complete data for non-athletes is shown in Appendix B.

Type of Participant	Mean	Std. D	Range
Female Student-Athletes	3.48	0.432	2.4-4
Male Student-Athletes	3.20	0.591	1.8-4
All Student-Athletes	3.38	0.487	1.8-4
Other Female Students	3.43	0.443	2.3-4
Other Male Students	3.43	0.516	2.7-4
All Other Students	3.43	0.468	2.3

Table 2: Left-hand column refers to each group surveyed for the study. Data was kept on a Microsoft Excel Sheet. From the data sheet, the mean, standard deviation, and range scores were calculated. At UIC, GPA is kept on a scale of 0.00-4.00. Minimum and maximum GPA scores are recorded under range. Data was transferred to SPSS for further analysis.

DISCUSSION

The purpose of this study was to examine if there are academic differences among current UIC student-athletes and UIC students who are not a part of the athletic department. The construct of confidence was explored as a possible mechanism for any discovered differences. The researcher hypothesized that student-athletes would demonstrate a significantly greater level of confidence than non-athlete students and therefore, a significantly greater GPA among both genders as well as overall. Based on the data obtained, there were significant differences in levels of self-confidence between UIC student-athletes and non-athlete UIC students, specifically male student-athletes demonstrating a greater level of confidence than non-athlete male UIC students. However, there were no significant differences between the groups analyzed pertaining to GPA. The hypothesis that UIC student-athletes would be more confident than the non-athlete students was supported by the overall results. UIC student-athletes were significantly more confident than the non-athlete students based on the Likert scale questions. As proposed by Gaston-Gayles (2005), students with a greater sense of motivation and goals tend to build confidence and perform better in their academics. Student-athletes are constantly setting goals and meeting standards in their athletic sports. This routine is carried over to the classroom. Since these student-athletes test their confidence everyday, their confidence tends to not vary as much as non-athlete students, which was depicted in the survey scores. The non-athlete students may not have an outlet to test their confidence daily and as a result, fall behind the confidence of a student-athlete.

While the overall confidence scores supported the hypothesis, the confidence scores among genders were conflicting. While the male student-athletes did have significantly greater levels of confidence than the non-athlete male students, the female student-athletes were not significantly different from non-athlete female students. This result could be explained by something noted by Tavini and Losh (2003) about the way men and women perceive themselves differently. In their article, they explained previous research has been conducted which concluded that when asked to describe one-self, men tend to use self-enhancing comments while women tend to use self-depreciating comments. It could be that regardless of these females being student-athletes that

they still perceive themselves in a non-enhancing manner. This suggested explanation would also explain why females from both groups, student-athlete and non-athlete, had lower average confidence scores than the men in those groups.

While the confidence scores supported the proposed hypothesis, the academic scores did not. The UIC student-athletes did not significantly outperform the non-athlete students in terms of GPA. One theory to explain this outcome is that the classes that the student-athletes and non-athlete students took for their studies varied from student to student. Every college class is not created equal. Some of the students surveyed could have only been taking 100-level classes while others were only taking 300-level classes. The lack of standardizing the classes surveyed allowed for a greater representation of the UIC population, but it also could have made the results too broad. In addition to this flaw, the majors of the student surveyed could also have made a significant impact on the academic results. The student-athletes surveyed for this study were not major-dependent, meaning they were not invited to participate based on their academic focus. However, the non-athlete students were invited based on certain classes they belonged to. The study was conducted this way to make sure that the student-athletes were being compared to students who were considered to be in rigorous courses at UIC. The researcher wanted to make sure that the non-athlete students consisted of higher level classes, classes expected for sophomores or above, in order to validate any significant results that would occur for the student-athletes. Based on this structuring of the participants, it could have resulted in a skewed sample size for the non-athlete students. Adding more participants from both groups could have provided a greater representation of the UIC population.

If the researcher were to conduct a continuation of this study on confidence and academics among UIC students, the study would consist of a more standardized population. The groups would consist of non-athlete students and student-athletes of the same major. This would diminish the discrepancy of class difficulties and professor bias that existed in the present study. The researcher would also attempt to balance the number of male and female participants for the study. While the goal of this study was to balance the gender ratio, it was unattained. This resulted in the females' data being more overrepresented in the overall results. A 50:50 ratio of gender should also result in a better representation of the UIC population.

Even with the limitations of this study, it has been made apparent that future student-athlete research should be conducted at UIC. In particular, future academic research involving student-athletes should be explored at UIC. While the researcher focused on confidence as an indicator of student-athlete academic success, other factors should be explored. The findings from this type of research could benefit not only student-athletes but non-athlete students at the university as well by highlighting characteristics of successful students throughout the university.

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APPENDIX A
Survey:
1.What is your gender?
    a. Male
    b. Female
2.Are you currently a student-athlete?
    a. Yes
    b. No
3. What is your cumulative GPA?
4. I do not handle high pressure situations well.
5. I consider my self-confidence to be stable; it does not vary often.
6. If I perform poorly on a test, my self-confidence is not affected.

7. I consider myself to have a greater level of self-esteem than others.
8. I am afraid of failure.
9. Negative feedback from others affects my level of self-esteem.
10. I consider mvself more of a leader than a follower.

Questions and Gender	Mean		Standard Deviation		Range	
Gender	Male	Female	Male	Female	Male	Female
Question 4	4.00	3.57	0.516	1.14	3-5	1-5
Question 5	3.81	3.47	0.981	1.01	1-5	2-5
Question 6	2.88	2.47	0.806	0.937	2-4	1-5
Question 7	3.63	3.33	0.885	0.802	2-5	2-5
Question 8	2.63	2.10	1.02	0.923	1-5	1-4
Question 9	3.31	2.67	1.25	1.12	1-5	1-5
Question 10	3.81	4.00	0.403	0.947	3-4	2-5
Question 11	2.69	2.20	1.08	0.610	1-4	1-4
Question 12	4.13	3.90	0.719	0.607	3-5	3-5
Question 13	2.88	2.77	0.806	0.817	2-4	1-4

Appendix A: Other Students Likert Scale Data Table
Mean, standard deviation, and range confidence scores for each individual question are listed above for student-athletes. Each question refers to the same numbered question on the survey listed in Appendix A. Possible scores of 1-5 were obtainable for each question. Data was stored on a Microsoft Excel Sheet.

Questions and Gender	Mean		Standard Deviation		Range	
Gender	Male	Female	Male	Female	Male	Female
Question 4	3.19	3.37	0.911	1.03	2-5	1-5
Question 5	3.31	3.20	0.946	1.16	2-5	1-5
Question 6	2.44	2.43	1.09	1.04	1-5	1-4
Question 7	3.25	2.77	1.06	0.935	2-5	1-4
Question 8	1.75	1.83	0.577	0.950	1-3	1-4
Question 9	2.88	2.70	1.15	1.09	1-5	1-5
Question 10	3.75	3.53	0.683	0.973	3-5	1-5
Question 11	2.63	2.17	1.15	0.986	2-5	1-4
Question 12	4.00	4.10	0.516	0.712	3-5	2-5
Question 13	2.94	3.03	0.998	1.10	2-5	1-5

Appendix B: Student-Athletes Likert Scale Data Table
Mean, standard deviation, and range confidence scores for each individual question are listed above for other students. Each question refers to the same numbered question on the survey listed in Appendix A. Possible scores of 1-5 were obtainable for each question. Data was stored on a Microsoft Excel Sheet.

Thomas Kohs graduated from UIC in 2014 with a Bachelor of Science in Neuroscience. Thomas was a part of the Honors College as well as the athletic department at UIC. He was a student-athlete for the Cross Country and Track Field teams. Thomas was inspired to pursue research on student-athletes' academics based on the athletic department's academic success while he attended the school. He used psychology-based techniques he acquired while studying Neuroscience to examine if self-confidence was an underlying factor in the student-athletes' academic success.