Correlation between Participation in High School Activities and College Academic Success

Sophie Georgel-Walz, Chelsea Coder, Emily Deming, Devin Galdieri, and Dr. Constance Toffle

West Virginia University

Abstract

College academic performance is essential for placement in higher paying jobs and more competitive graduate and professional programs. For years, high school extracurricular activities have been accredited for preparing students for a rigorous academic lifestyle in college. There are several different types of high school clubs that have been studied for their possible relations with college-aged students' success. In order to recommend future clubs to high-school students, it must first be determined whether all clubs are equally beneficial. This study compared the academic performance of Introduction to Psychology (Psychology 101) students and their participation in sports clubs, athletic clubs, both, or neither. While few significant correlations were found, many interesting trends were noticed and may be vital for continued research. Based on the data collected, sports clubs in particular are correlated with lower test grades and showed lower mean scores in all categories than the other types of clubs.

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High schools in the United States offer a wide variety of extracurricular activities. These activities include fundraising for things like cancer research and environmental conservation, community service like Key club, Red Cross, or general volunteering. Other clubs involve career interests such as journalism, business, model UN, student council, Young Republicans or Young Democrats, and health club. Interest groups are also common like anime, chess, robotics, yearbook/scrapbook, art, and thespians. Academic clubs include science clubs, mathletes, honors society, quiz bowl, band/orchestra, and debate club. Many students participate in a variety of activities outside of school hours. Student involvement in more social or educationally based clubs has been linked to higher academics and lower risk taking activities, however, participation in sports clubs have similar academic outcomes but a higher chance of risk-taking activities (Eccles & Barber, 1999).This indicates a correlation between better academic success and type of activity.

Participation in high school extracurricular activities has been compared to high school academic progress in the past. Students who actively participated in clubs had significantly higher grade point averages (GPA), fewer unexcused absences, and higher educational expectations (O'Brien, 1995). Additionally, athletic club participants in particular have been linked to better grades and self-concept (attributions one gives to their own personality related to traits, academic performance, identity, etc.) than people who do not partake in clubs of any sort (Fejgin, 1994). Club activities have been associated with social and academic success in adolescents. The longer a person has been involved in a certain activity combined with their participation in multiple club organizations may be significantly related to a transition to higher levels of psychological competency, as seen in Figure 1 (Fredricks & Eccles, 2010). People do

not start off knowing the correct response to a situation, but as their psychological competency increases, they begin to make better decisions with less thought (Falender et al. 2004). This may increase the rate at which students make decisions to attend class and study.

College academics can be measured based on multiple variables. Student's GPA represents their long term educational progress. Some classes also include sources for recording student participation and attendance. Another variable that contributes to a student's overall academic portfolio is test scores within individual courses. Around a third of students receive test scores that do not match their GPA. For example, when taking the ACT and comparing it to overall high school GPA, it was found that students who had a higher test score but lower GPA were more likely to drop out of a Bachelor's Degree program (Sanchez & Mattern, 2018). Practicing participation in class also leads to better grades. Students that have higher participation in organized activities, such as clubs, demonstrate better behaviors and academic success when compared to students who participate less in such clubs (Aumetre & Poulin, 2018).

Several factors affect a student's academic record, and some start even before college has begun. Students who participate in club activity during high school have higher completion rates for earning either a degree or a GED. These club participants have demonstrated significantly higher aspirations for the future and improved grades compared to their peers (White, Scott, & Munson, 2018). Without these factors, students would not even be eligible for college enrollment. Overall, there seems to be a strong correlation between participation in clubs and school success.

Academic progress is important for future career goals. The effects of a low GPA can be detrimental to opportunities for post bachelor studies such as medical school (Wilkinson et al.

2008). Attaining a position in an internship is reliant on a good GPA. Without an internship, the likelihood of attaining a job after college for majors like business is significantly lower (Knouse, Tanner, & Harris, 2011). Graduate schools also focus on factors such as GPA, attendance, and admissions test scores. For students attempting an MBA, undergraduate GPA and attendance have shown the greatest weight in determining future performance in grad school. While the best factor for determination of fit is an interview, students must first reach the minimum GPA and test scores, such as the GMAT, to even be considered for interview placement (Paolillo, 1982).

The average high school student spends the majority of their time outside of the classroom (Jordan & Nettles, 1999). The time in class is supposed to be geared for college preparation throughout middle school and high school, however, many students have reported a discrepancy between the goal of preparation and the actual implementation of these practices in the classroom (Wimberly & Noeth, 2005). Therefore, high school counselors are hired to determine the all around best methods and activities for improving current grades in their schools and the chances of their students to continue in post-high school academics. They even combine their efforts with outside stakeholders to improve elements that lead to positive impacts on the student body (Dahir & Stone, 2003). As a result, it is wise for counselors to recommend high school activities to build stronger college applications. When students apply for college, these activities can demonstrate a balance of education and time management skills (Britton & Tesser, 1991).

Sports programs specifically have been correlated with an increase in self-initiative, which is essential for college (Larson, Hansen, & Moneta, 2006). Self-initiative can in-turn lead to greater self-efficacy (a person's idea of how well they can accomplish certain goals). Without these, students are less likely to attend class or regulate their own participation in activities

related to course work (Chemers, Hu, & Garcia, 2001). In addition, better time-management skills have previously been correlated with better college GPA and positively influence college academic achievement (Britton & Tesser, 1991).

Students' future goals, current extracurricular activities, and eventual academic achievement were analyzed in a longitudinal study on adolescents around the age of 15. These students were studied into early adulthood. Following regression analyses, it was found that expectations and future attainments were mediated, at least in part, by their current (high school) extracurricular activity participation (Beal & Crockett, 2010). A previous 2006 study completed by Fredricks and Eccles followed students throughout their first year of college. They found that students who participated in pro-social clubs and activities received better grades and higher attendance scores over the duration of the year. Specifically when studied in female athletes, high school sports correlated with higher academic potential in college (Troutman & Dufur, 2007).

In contrast, while sports club participation was related to better academic performance it was also correlated with a higher rate of alcohol abuse (Fredrick & Eccles, 2006). Club participants also often miss instructional time due to events. Sports clubs are more likely to have events during school hours and do not offer academic stimulation in its place like an academic club would. Particularly good athletes are also more likely to be recruited regardless of grades. In Kentucky, 7th and 8th graders are already being pulled into high school varsity teams and missing additional hours of instruction earlier in life (Goldman, 1991). On the other hand, a significant correlation was also discovered between group officers, such as president, found between offices being held in groups and higher GPA, as well as higher GPA for students who participated in higher numbers of activities (Garland, 2010). In general evidence suggests that taking part in

certain high school clubs correlate with better academic results. However, a direct comparison of sports and academic club participation has not been made; furthermore, the evidence for the importance of specific club involvement and academic success is mixed.

The focus of this study is to determine if a population of West Virginia University psychology 101 students' academics and their previous high school extracurricular activity is related to their college academic factors such as test grades, attendance, and participation on in-class assignments. Students who participated in more academic high school activities are hypothesized to have higher grades and participation in class than those who only took part in sports or nothing at all. Students who participated in at least one extracurricular activity of any kind are hypothesized to have better grades.

Method

The data for this study were collected from 142 students in West Virginia University's introduction to psychology class. Students were asked to answer 9 multiple choice questions, presented to them on slides, via the iClicker system. The iClicker system is a remote response system that was already in use in the classroom. This allowed students to click-in responses A through E, which were recorded to the computer system. The questions consisted of 4 to 5 categorical answers each (Gray, Vitak, Easton, & Ellison, 2013).

Students were asked to report whether they had participated in high school academic clubs, sports clubs, both, neither or other. This data was compared to college academics in the form of three test scores to average their current grade, required in-class clicker participation between the three tests to determine attendance, and their self-reported GPA. They were also asked to report their expected grade in Psych 101. These variables were used to determine a

correlation between college academic performance and high school extracurricular activities. In addition, demographics were taken to determine differences that might be related to external factors. These included the year classification based on credits, gender identity, ethnicity, high school GPA (out of 4.0), course load taken, and continued participation in college activities such as clubs and athletics. These factors were intended to sort out, or give possible explanations for, outliers present before statistical analysis.

These statistics were analyzed using IBM's statistical analysis software program, SPSS. The recorded clicker responses were coded as numbers one through five for easier analysis of the qualitative data. The academic performances were determined based on average exam scores for the top three exams. The quantitative data comprised of the average test score percentage, the sum of clicker attendance percentage, the sum percentage of in-class activities completed, their current grade percentage of all activities combined, and the average percentage of correctness on activities. The results were represented using graphs and t-tests were used to determine significance.

A one-way analysis of variance (ANOVA) was run to compare average percentages of test scores, attendance, participation completion, and correct responses on the activities across the different types of club. Students who were absent or did not participate in the survey were removed before data analysis so their results would not skew the data.The descriptive version of the Tukey-Kramer post-hoc test determined which sub-groups had significant correlations. Significance was determined based on a p-value of less than 0.05. The individual means (as percentages) were observed to determine any interesting results that may not have been significant and the group size was recorded.

Results

Utilizing the determined alpha level, the mean scores were recorded in Table 1. There were a total of 142 participants that responded to the in class iClicker survey. The majority of the means were not significantly different. However, the results of the ANOVA, seen in Table 2, suggested that there was a significant correlation between the different groups and test scores ($F(4, 137) = 2.69$, $p = .034$).

Only one significant result was found between the five separate club types. As seen in Table 1, there was a significant difference between participation in sports clubs and sports plus academic clubs with the dependent variable of test scores. By running a Tukey-Kramer HSD post-hoc test, it was determined that the mean test score for students who participated in high school sports clubs ($M = 75$) was significantly different from those who participated in both sports and academics ($M = 80$), with a p-value of 0.033 ($F(4, 137) = 2.69$).

The other variables that were compared were attendance ($F(4, 137) = 1.11$, $p = .352$), participation completion ($F(4, 137) = .729$, $p = .574$), and participation correctness ($F(4, 137) = .698$, $p = .595$). There were no apparent correlations between these variables and club types.

Discussion

Based on the results of this study, the hypothesis that club participation in general would lead to higher academic success was not supported. However, there was a significantly higher test grade for students who participated in sports and academic clubs rather than just sports clubs, but not for any other group comparisons (see Table 1). This means the hypothesis that people who participated in academic clubs instead of just sports clubs would have higher grades was supported. Test scores of students who participated in only academic clubs, however were not

significantly different than those who participated in only sports clubs ($F(4,137) = 2.964$, $p = .317$).

While most results were not significant, there were grade trends present. The Tukey-Kramer HSD revealed some interesting trends including participants in academic clubs performing marginally comparable ($F(4, 137) = 1.835$, $p = 0.71$) to the "other" group on exams. Both groups had around the same sample size (Academic $n = 12$, Other $n = 11$) and the same mean test score ($M = 81$). On average, however, the majority of the results did not show significant correlations or differences, as seen in Table 2.

The lack of statistically significant differences may have been affected by the large amount of variance in sample size for each group. For example, the mean test average for those who participated in high school academic clubs ($n = 12$, $M = 81$) was higher than the mean grade for people who participated in both ($n = 67$, $M = 80$), yet it was not considered significantly different from the sports club ($n = 45$, $M = 75$). Differences in sample size across groups may have played a role in the failure to find statistically significant differences in groups that displayed somewhat different means. This data set might be more complete if the groups could be equal in size. The possible trend of higher means for academic club participation versus sports clubs is apparent, but the sample size limits the power of the analysis. Additionally, sports club participation correlated with lower grade averages in general, as seen in Table 1. In addition to sample size, some other limitations were present in this study.

These other limitations included a reporting bias among the survey questions and an issue with choosing a convenient sample. The sample came from psychology 101 sections which were chosen based on convenient access. This sample group may not be the best selection to get even,

generalizable results. The questions were written in survey form and were only answered by students who were present in class during the survey and willing to participate. This excluded students who have shaky attendance records from having answers recorded. Since attendance and participation were variables in the study, the results could not be fully accurate for students who were not present. Additionally it cannot be inferred what the "other" group in the survey included due to self-report bias.

Further study with a well rounded subject pool would be beneficial to determine whether the lower grade trend is significant for sports clubs participants specifically. These could include listing individual sports and academic clubs to get the most accurate idea of which clubs participation specifically correlate with higher academic performance. A study with more specific parameters for clubs could be beneficial to determine which club participation correlate with similar benefits as academic clubs. If the survey could be administered online and students were compensated for their time, it may encourage more even responses from a broader range of college students. This method could also reach out to students from other schools to get the sample size closer to 10000 as used for other, similar studies (Jordan and Nettles, 1999). The "other" group should also be excluded from the study, and more specific club types should be listed in its place. This will help with interpretation of results in the future.

Even without many results, it can still be speculated why the trends and significant differences were present. The study completed by McNeal in 1995 examined drop-out rates in relation to high school club participation. They found that participating in high school athletic clubs correlated with a higher rate of dropouts than any other type of activity. Similarly, a study conducted from 1997 to 1999 found that self reported hanging out with friends correlated with lower grades over time. Long-term participation in more structured activities, including

academic and religious groups correlated with higher grades over time. Students that worked during high school or did not participate in hanging out with friends or other structured groups showed inconsistent grade patterns overall (Jordan & Nettles, 1999). In general, there were apparent differences in club participation dependent on type of club.

These differences could be helpful for developmental psychologists in determining the most beneficial activities for high school aged youth. The way students spend their time in both high school and college is imperative to their academic success and learning. Students who practiced time management through clubs will have one foot forward when starting college (Thibodeaux, Deutsch, Kitsantas, & Winsler, 2017). Determining which time consuming activity is best for kids would be useful in crafting summer and afterschool policies and programs, as well as forming a preventative activity for troubled youth (Jordan & Nettlers, 1999; Aumetre & Poulin, 2018). Furthermore, Wimberly and Noeth's findings that high schools do not prepare students for post-secondary education indicates that other means, such as club participation, must be encouraged to better results in college and later careers. Since club participation has been found to improve time-management and self-regulation, they may be ideal for pre-college or pre-career preparations (2005; Thibodeaux, Deutsch, Kitsantas, & Winsler, 2017). Similar to a previous 2018 study, these results further imply that club participation during youth is essential for development and should be made into a global aspect of childhood (White, Scott, & Munson).

Research based on other studies seems to support the notion that not all clubs are equally beneficial (Eccles & Barber, 1999). Significant differences correlated with club type when comparing sports participation and academic and sports participation. While trends in the means do suggest a difference in academic performance, the lack of even distribution of participants

due to the convenient sampling method might contribute to the inconclusive and insignificant results. Further studies including larger, more even subject pools, would be needed to determine significance of grades comparing sports and academic clubs. An online survey where participants are compensated for their time would be beneficial for selecting participants from a broader spectrum of student types, like those who do not attend class. In order to increase validity and find more specific conclusions, the groups should be modified, specifically removing the “other” category. For example, there could be significant academic differences between someone who participated in high school soccer versus high school track. These results and studies should be heavily considered when developing school curriculum and advising students on time management skills.

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Figures

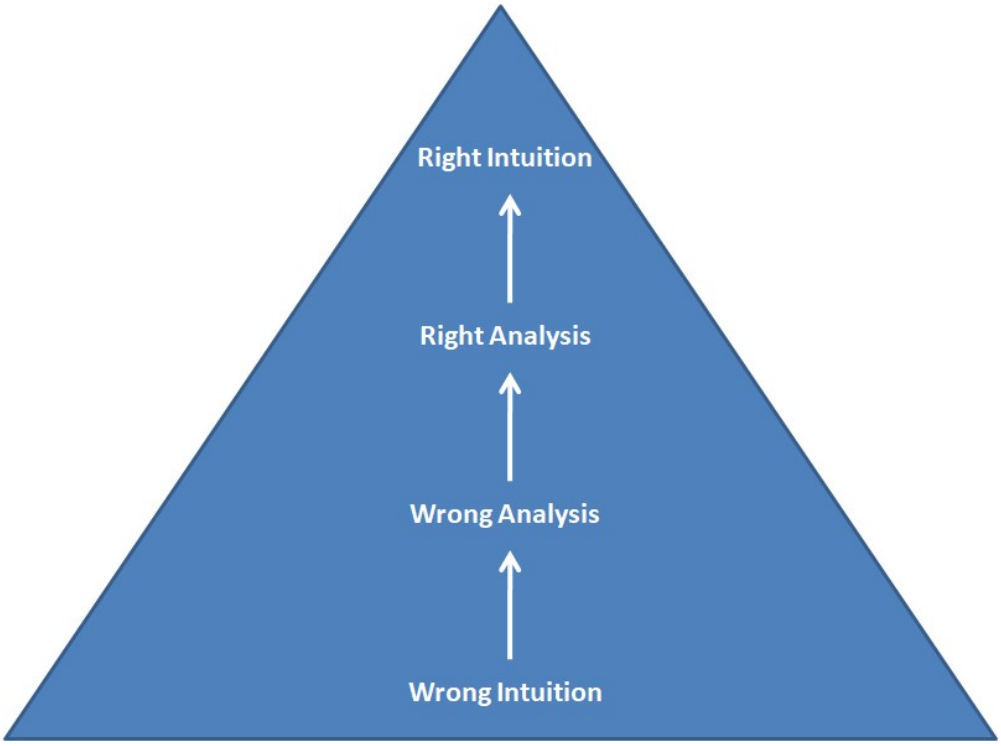

Figure 1. Pyramid of Psychological Competencies. The above triangle consists of the stages of psychological competency. This form of competency is based on the persons integration of skills and knowledge when performing a specific action. The stages start at the simplest point located at the bottom of the pyramid. As the person becomes more competent, they transition to the next higher stage of competency until they innately have the right intuition most of the time for a specific skill (Falender et al. 2004).

Table 1

High School Clubs Compared to Mean Percentages of Psychology 101 Test Score, Attendance, and Participation Scores

Performance Measure	Academic (n = 12)	Sports (n = 45)	Both (n = 67)	None (n = 7)	Other (n = 11)	Mean (n = 142)
Test Scores	81%	**75%***	**80%***	82%	81%	79%
Attendance	91%	84%	85%	88%	92%	86%
Participation Completion	87%	82%	86%	83%	82%	84%
Participation Correctness	87%	81%	84%	82%	81%	83%

Note. Students who were absent or did not participate in the survey were removed before data analysis so their results would not skew the data. * $p < 0.05$

Table 2

One-Way Analysis of Variance of Test Score, Attendance, and Participation Averages

Performance Measure		*df*	*SS*	*MS*	*F*	*p*
Test Scores	Between Groups	4	.098	.025	2.69	.034*
	Within Groups	137	1.25	.009		
	Total	141	1.35			
Attendance	Between Groups	4	.096	.024	1.11	.352
	Within Groups	137	2.97	.022		
	Total	141	3.01			
Participation Completion	Between Groups	4	.063	.016	.729	.574
	Within Groups	137	2.95	.022		
	Total	141	3.01			
Participation Correctness	Between Groups	4	.057	.014	.698	.595
	Within Groups	137	2.81	.021		
	Total	141	2.87			

Note. * $p < 0.05$