# Academic Achievement and Extracurricular School Activities of At-Risk High School Students 

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This study compared the employment, extracurricular participation, and family structure status of students from low socioeconomic families that achieved state-approved benchmarks on ACT reading and mathematics tests to those that did not achieve the benchmarks. Free and reduced lunch eligibility was used to determine SES. Participants included 211 high school seniors from a large, rural southeastern bigh school. Eighty five of the participants met the low SES criterion and were the study's primary focus. The study found that at-risk students from low SES families that met ACT reading and mathematics benchmarks were more likely to participate in extracurricular activities than students that did not meet this benchmark. Unexpectedy, students who met the reading benchmark. were statistically less likely to bave both parents employed. Student employment status and family structure were not statistically associated with ACT performance. Implications and areas for future study are discussed.

Since the passage of the No Child Left Behind Act in 2000, schools across the country have become increasingly accountable to students who have historically underachieved. These students often come from readily identifiable groups who are at-risk for poor educational outcomes and are generally referred to as "gap" group students. By definition, a gap group student is any student who is of minority race, has a disability, has limited English proficiency, or qualifies for free and reduced price meals. Historically, students in these groups are at struggle academically compared to the general
student body and are afforded increased accountability by their schools.

Educational accountability systems differ across the country. Kentucky, for example, places an additional focus on the achievement of gap students. When a Kentucky high school receives an overall accountability score, achievement on state assessments by these at-risk students counts as 20 percent of the school's overall score (Kentucky Department of Education, 2012). Thus, the achievement of gap students is a high stakes issue for many schools and districts. While some gains have been seen in gap students, they continue to demonstrate poor performance relative to the general student population (Hemphill, Vanneman, \& Rahman, 2011; Vanneman, Hamilton, Baldwin-Anderson, \& Rahman, 2009). Disappointingly, there is little research regarding why some gap students, particularly those who qualify for free and reduced price meals, achieve scholastically. The purpose of this study, therefore, was to determine the employment, extracurricular, and family structure differences between high and low achieving students from low SES families in an effort to uncover the protective factors that support achievement for students from low SES families.

Students that receive free and reduced price meals, by definition, are from families with low income. Specifically, students who receive free meals are from families with incomes at or below $130 \%$ of the poverty level. Students who receive reduced priced meals are from families with incomes between $130 \%$ and $185 \%$ of the poverty level. From July 2013 through June 2014, 130\% of the poverty level was $\$ 30,615$ for a family of four; $185 \%$ was $\$ 43,568$ (United States Department of Agriculture, 2013). Just over $50 \%$ of students in Kentucky's 2014 graduating class in public schools received free and reduced price meals (Kentucky Department of Education, n.d.).

There is a strong, linear correlation between achievement on the ACT and a student's family income. According to Orlich and Gifford (2006), the higher a student's family income, the higher the student's ACT score. From the same study, scores on the Scholastic Aptitude Test (SAT), a similar college preparedness assessment, were equally predictable. In short, the wealthier a student's family, the higher the student's ACT and/or SAT score.

Why do students from low income or low socioeconomic status (SES) families achieve lower on average on the ACT and scholastically than students from middle or high SES families? Maslow's "hierarchy of needs" may be helpful in explaining this phenomenon. Maslow (1943) postulated that an individual is motivated to first meet physiological needs such as nutrition and shelter. With these met, a person will then seek safety and order, followed by acceptance from friends and family. When these needs are meet, esteem needs such as achievement, independence, and respect are pursued. When considering Maslow's hierarchy, it can be reasoned that students from low SES families might have unmet needs that are "lower" on the hierarchy. Maslow's model suggests that students with unmet basic needs will likely place a low priority on achievement at school.

Maslow's hierarchy provides one potential explanation why students from low SES families struggle in school. Researchers and educational professionals have found that students from low SES families are often not provided with family motivation to succeed at school (Usher \& Kober, 2012). Some parents expect their children to simply do as well as they did in school. Often, low income earners did not do well in school. Consequently some low income earners do not expect their children to do well in school (Hart, 2014).

Often, for a number of reasons, students from low SES families do not have the support they need from their parents with homework (University of Michigan, n.d.). Availability can be an issue because many low income parents are at work when their children are at home. Additionally, low income parents typically work longer hours and are more likely to work during afternoons and nights (University of Michigan, n.d.). Some low income parents do not have the confidence in their own ability to help their children, especially when more advanced concepts are introduced during middle and high school (University of Notre Dame, 2007). Finally, low income parents may not have the resources to hire tutors or extra help to assist with homework.

Factors other than home life must be considered when trying to understand student achievement. Some students are motivated to achieve scholastically by participation in extracurricular activities. This is true, in part, because academic eligibility is a requirement for participation in many activities (Massoni, 2011). This raises the questionDo students from low SES families participate in extracurricular activities as much as other students and if so, does this have a bearing on academic performance? Additionally, high school students often hold part-time jobs after school and on weekends during the school year. According to Singh (1998), working part time has a negative effect on school achievement, as an increase in working hours leads to a decrease in standardized scores and grades. Despite this finding, it is unclear if employment influences academic achievement for students from low SES families.

The ACT (formerly American College Testing) Test is a national assessment administered to high school students to evaluate their academic readiness for college. High school students across the country prepare vigorously for the ACT Test as many universities and colleges use the ACT Test
composite score as a large factor in not only admitting students, but in assigning scholarships (Unigo Expert Network, 2011). The test has four multiple choice sections: English, Mathematics, Reading, and Science.

States that test statewide commonly use the results of the ACT Test as a part of a school's accountability. In Kentucky, the ACT Test results are not only used as a measure of college readiness but also as a measure of student growth. Both college/career readiness and student growth are major factors in a Kentucky high school's accountability score (Kentucky Department of Education, 2012). College readiness is measured by how many students meet benchmarks in Reading and Mathematics. Student growth is measured by a school's overall progress shown in all students between the ACT Plan (given in September of a student's sophomore year) and the ACT Test (given in March of the student's junior year).

In Kentucky, $30 \%$ of the 2013 graduating class met the ACT Test college mathematics benchmark of 22, which would mean they were prepared for college algebra (ACT, 2013). Kentucky's Council on Postsecondary Education (CPE) established a lower benchmark of 19 for students in mathematics. Still, only 39.6\% of students from the 2014 graduating class met this lower state mandated math benchmark (Kentucky Department of Education, n.d.). Mathematics achievement in Kentucky is statistically lower compared to Reading and English. The CPE benchmarks for English (18) and Reading (20) are met at a higher rate than in Mathematics. Compared to $43.5 \%$ of students that met benchmark in Mathematics in the 2013-2014 academic year, $53.1 \%$ of students met the English benchmark and $47.1 \%$ of students met the Reading benchmark (Kentucky Department of Education, n.d.).

Like most states, data show that Kentucky's gap students score lower on the ACT Test. Gap students for

2013-2014 scored an average of 17.7 on the ACT reading test and 17.7 on the ACT Mathematics Test. For the same year $34 \%$ gap students met the state-approved benchmark of 20 in reading while $29.5 \%$ of gap students met the benchmark of 19 on the math test. It is important to note that $90 \%$ of gap students receive free and reduced price meals (Kentucky Department of Education, n.d.).

Kentucky's graduating class of 2014 had over 22,000 students from low SES families take the ACT their junior year. Regarding ACT performance, this group of students earned scores that were virtually identical to those of gap students was a whole-this is not surprising since, as noted earlier, $90 \%$ of gap students are from low SES families. Specifically, students from low SES households had a mean ACT reading score of 17.7 and a mean ACT math score of 17.7. In terms of the state-approved benchmark in reading, $34 \%$ of students from low SES families met the benchmark of 20 in reading scored and $29.6 \%$ met the benchmark of 19 in math. (Kentucky Department of Education, n.d.). Like gap students as a whole, students from low SES families struggle academically.

## Methods

Participants
Participants for this study attended a large, rural high school in Kentucky, took the ACT as a junior, and were in the May 2014 graduating class. During their junior year, the total class size was 295. At their senior year, the class size had decreased to 277 , due to students moving out of district, dropping out, and other normal attrition factors. Therefore the population for the survey included 277 students. Of these students, 221 or $76 \%$ completed the survey. Of the 221 surveys completed, 10 surveys were not used, either because the survey was completed anonymously or the student did not take the ACT as a junior. While the focus of the study was students from
low SES families, all students were surveyed to establish any differences on the ACT between students from low SES families and those not from low SES families.

The average ACT scores for the 211 participants were statistically reflective of the ACT scores of the entire class. As juniors, the entire class of 295 students took the ACT Test. For these 295 students, the average score on the reading test was 19.8 and the average score on the mathematics test was 19.1 (Kentucky Department of Education, n.d.). In the group surveyed, the average score on the reading test was 20.5 and the average mathematics score was 19.6.

The senior class of this high school is comparable to the state of Kentucky in terms of their ACT performance. In 2012-13, the average ACT Reading score was 19.8, compared to 19.4 statewide. The average ACT Mathematics score was 19.1, compared to 18.9 statewide. In this specific high school class, just under 41 percent of the students were eligible for free and reduced price meals. In Kentucky, just over $50 \%$ of students in the same class were eligible for free and reduced priced meals (Kentucky Department of Education, n.d.)

The high school under study differs from the remainder of the state in terms of its ethnic diversity. The high school where students were surveyed had a student membership in 2012-13 that was just under 98\% Caucasian. In the state of Kentucky during the same school year, just under $81 \%$ of students were Caucasian (Kentucky Department of Education, n.d.).

Of the 211 participants who completed the survey, 105 were males and 106 were females. These students primarily came from three different middle schools. Nearly $43 \%$ of students surveyed came from Middle School A. Middle School B accounted for $26 \%$ of students, and Middle School C accounted for $25 \%$ of students. Just over $6 \%$ of participants did not attend any of these middle schools within
the school district. Just over $66 \%$ of the participants reported living in a home with both parents.

The participants reported different levels of their parents' college education. Just over $40 \%$ of participants did not have a parent with a college degree. Approximately 30\% of participants had one parent with a college degree, and $23 \%$ of participants had two parents with college degrees. Thirteen participants, or $6 \%$, reported they were not sure of their parents' education level.

## Instrumentation

The survey instrument used was developed by the math teacher leader from the high school under study. The survey contained elements that were directly related to previous research on factors of student success (Ananat, Francis, Gassman-Pines, \& Gibson-Davis, 2011; Baumeister, Campbell, Krueger, \& Vohs, 2003; Massoni, 2011; Orlich \& Gifford, 2006; Usher \& Kober, 2012; University of Notre Dame, 2007) and were included to determine the association among important sociological variables (e.g., who the student lived with their junior year, student and parent employment the student's junior year, parent education, SES), student participation in extracurricular activities, and readiness for college and career success as defined by Kentucky (i.e., meeting ACT benchmarks). The type of extracurricular activity was not coded, although the majority of students at this school who were involved in extracurricular activities participated in team sports (e.g., football, soccer, basketball, band, or cheerleading). Free and reduced priced meal eligibility was used to determine socioeconomic status. The results of the ACT Test were used to determine levels of student achievement in reading and mathematics. With the exception of ACT scores, the data were categorical.

## Procedures

Participants were surveyed as part of a larger effort at the school by the math teachers to better understand their students' needs. Seniors at this high school were given the opportunity to complete the survey during their mathematics class. Participation was voluntary and was administered by high school mathematics teachers during their own classes. Each individual mathematics teacher was responsible for administration, collection and submission of all completed surveys. The math teacher leader received the completed surveys and compiled the data.

While the survey was administered during the students' senior year, the survey focused on the students' junior year experience because all students are required by the state to take the ACT Test during the junior year. Students were not required to report their ACT scores or their free and reduced lunch eligibility status. After the surveys were collected and submitted, the math teacher leader added the ACT Reading Score, ACT Mathematics Score, and the student's free and reduced lunch eligibility status onto each survey. The researchers used the ACT scores that were a part of regular school data. Since students are allowed to take the ACT multiple times, only the scores from the state mandated ACT Test taken during the students' junior year were considered in the study. The survey data, free and reduced lunch eligibility status, as well as the ACT data, were archived by the school and were obtained via written permission from the school's principal. All identifying information was destroyed after the data were compiled.

## Analyses

The data were first entered onto an Excel spreadsheet then uploaded to an SPSS program for statistical analysis. The first analysis involved comparing ACT performance (the dependent variables) between the students from low SES
families and the non-low SES students using t-tests. The second set of analyses required separating the students from low SES families into two groups-those that met the Reading or Math ACT benchmark and those that did not. To find the significant differences in independent variables (family structure, employment status, extracurricular activities) between high-achieving and low-achieving students from low SES families, non-parametric chi square tests were used to compare differences in proportionality. Chi-square tests were used for this study primarily because the variables of interest were dichotomous and not continuous. Additionally, the primary purpose of the study was to examine associations (not causal relationships) between sociological variables, participation in extracurricular activities, and ACT benchmark achievement. Kentucky places particular emphasis on the extent that students meet stateapproved benchmarks associated with college and career readiness.

## Results

Independent t-tests between the Free/Reduced meal/low SES group ( $N=85$ ) and Non-Free/Reduced meal group ( $N$ $=126)$ revealed statistically significant differences between the groups on the Reading and Math ACT scores. Specifically, regarding Reading ACT scores, the NonFree/Reduced group had a significantly higher mean score ( $t$ $=3.63, d f=201.5, p=.001)$. The Free $/$ Reduced group mean reading score was $18.8(S D=5.0)$ while the NonFree/Reduced group reading score was 21.6 ( $S D=6.1$ ). Regarding Math ACT score comparisons, the NonFree/Reduced group mean score of 20.5 ( $S D=4.6$ ) was significantly higher than the Free/Reduced group mean score of $18.2(S D=3.5)(t=4.21, d f=206.3, p=.000)$.

In terms of ACT benchmark differences, $58 \%$ of the Non-Free/Reduced group met benchmark in reading, while
$39 \%$ of the Free/Reduced group met benchmark. This difference was statistically significant $\left(\chi^{2}=8.814,1, d f=1, p=\right.$ $.009)$ according to the chi square analysis. In math, $56 \%$ of the Non-Free/Reduced met benchmark while $37 \%$ of the Free/Reduced group met benchmark. This difference too was statistically significant ( $\chi^{2}=7.41, d f=1, p=.006$ ). Thus, a statistically higher percentage of students in the NonFree/Reduced group met the ACT benchmarks for reading and math.

To discover those variables that were associated with meeting benchmark in reading and math for the Free/Reduced group, a series of chi square tests were again calculated. First, regarding involvement in extracurricular activities, those who met the reading benchmark were more likely to be involved in extracurricular activities ( $p=.05$ ). Those who met the math benchmark were similarly more likely to be involved in extracurricular activities ( $\chi^{2}=8.21$, df $=1, p=.004)$. In terms of whether the student worked and met reading or math benchmarks, there was no significant differences between the groups (Reading $p=.790$; Math $p=$ .914). Similarly, there were no statistically significant differences between those who met the reading and math benchmarks in terms of who the student lived with-both groups were statistically likely to meet the reading and math benchmarks regardless if they lived with both parents or did not during their junior year (Reading $p=.069$; Math $p=$ .983). Although there were no differences between those who passed the math benchmark and whose parents were employed ( $x=.948$ ), those who met the reading benchmark were less likely to have both parents employed ( $\chi^{2}=4.581$, df $=1, p=.032$ ).

In summary, students from the Non-Free/Reduced group had statistically higher reading and math ACT scores and were statistically more likely to pass both benchmarks. For the Free/Reduced group, those who met the reading and
math benchmarks were more likely to be involved in extracurricular activities, and those who met the reading benchmark were less likely to have both parents employed.

## Discussion

Reading and math scores of free and reduced lunch students were found to be significantly lower than those of non-free and reduced lunch students. This was predictable due to the abundance of research that has documented the underperformance of students from low SES families (Ananat et al., 2011; Finlayson, 2004; Orlich \& Gifford, 2006; Stevens \& Schaller, 2009). The data showed that students from low SES families who met the reading and math benchmarks were statistically more likely to participate in extracurricular activities, like sports and band. Several explanations, individually or in combination, may account for these associations. First, students will often achieve academically simply to remain eligible for these extracurricular activities (Massoni, 2011). Second, coaches and sponsors naturally influence students via mentoring and encouragement as part of their role-this positive influence likely contributes to improved academic functioning, a finding suggested by others (Mahoney, Vandell, Simpkins, \& Zarrett, 2009). Third, the students participating in extracurricular activities could have developed a sense of belonging and connection to the school which has strong associations with academic functioning (Centers for Disease Control, 2009). Lastly, it could be that those students from low SES families who participate in extracurricular activities are from families that are more organized, have more reliable transportation, or have more time to devote to supporting their children in their extracurricular pursuits. In combination, these factors could have led to a more advanced stage on Maslow's hierarchy, theoretically motivating the student to achieve.

Many students have part-time jobs after school or on weekends. While research has shown that working part-time jobs can negatively affect academic achievement (Singh, 1998; Singh \& Ozturk, 2000), the data for this study revealed no such association for students receiving free and reduced meals.

Society emphasizes the importance of a two-parent family and a range of research has demonstrated this advantage (McLanahan \& Booth, 1991; National Commission on Children, 1991; Painter \& Levine, 2000). Many believe that students from two-parent homes have a significant advantage over students from one-parent homes. The data from this study showed that among students receiving free and reduced lunch, there was no significant difference between living in a two-parent home or otherwise. This is contrary to conventional stereotypes from society that students who do not live with both parents are at a disadvantage at school.

The short-term employment status of a student's parents has shown to affect student achievement (Ananat et al., 2011); as such, this variable was included in the survey to explore the association between parent employment and academic achievement. The data from this study showed that students receiving free and reduced lunch, as a group, were more likely to meet the reading benchmark if at least one parent was unemployed. However, math achievement was not associated with parent employment. It is puzzling that unemployment was associated with student achievement in reading but not mathematics. Presumably, having a parent available to help with reading positively influenced ACT reading scores but not math scores. However, just having an unemployed parent does not necessarily convert to help with reading. In short, this finding is difficult to explain as it runs contrary to previous findings (e.g., Ananat et al., 2011) and could in fact, simply be a chance finding.

In summary, previous research has demonstrated the effects of extracurricular activities, part-time work, and family structure upon student achievement in general. However, when examining only students from low SES families, the current results only supported the positive association between participating in extracurricular activities and academic achievement, and between having an unemployed parent and reading performance.

## Implications

There are two primary implications from the results of this study. First, it is clear that students from low income households, as a group, continue to underperform relative to students who do not qualify for free/reduced meals. As such, students from low income families continue to need supplemental instruction and support to achieve. Second, schools should be encouraged by the findings regarding the positive association between participation in extracurricular activities and math achievement and should find ways to promote broader student participation in a range of extracurricular activities. The particular mechanism of influence regarding extracurricular activities cannot be discerned with this study as the study was not designed to study causality. It could be that students are motivated to achieve at school in order to stay eligible for those activities, because of the additional attention, mentoring, and encouragement from coaches and sponsors, and/or because of an increased sense of belonging and connection to the school.

## Limitations

In all studies, there are limitations that hinder the generalization of the study. First, the data from this study were taken in part from a retrospective survey that was completed by students at the end of their senior year who
were asked recall details from their junior year. As a result, it is possible that some students could have misremembered. Second, free and reduced lunch status is a reliable measure for determining family SES, but there are small caveats. Some students from low SES families that are eligible for free and reduced lunch may not necessarily pursue those benefits. These students would then be placed in the inappropriate data group for this study. Third, students from families that receive free/reduced meals are not a homogeneous group. Put another way, there was no way to determine why or how long students received free/reduced meals-it could be longterm or short-term in duration, due to persistent unemployment, or to long- or short-term parent disability. Fourth, students that attended an alternative school or dropped out of high school were not surveyed. Lastly, the population of this high school is $98 \%$ Caucasian, which would limit the generalizability of the findings. However, because of the lack of racial diversity in the school, race was controlled in the study.

## Conclusion

In conclusion, this study revealed a meaningful association between academic achievement and extracurricular participation in economically disadvantaged high school students. In contrast to previous research, living with two parents and student employment was not associated with meeting state-approved benchmarks. Future studies should include a more diverse student body and should explore which aspects of extracurricular participation (e.g., eligibility maintenance, encouragement___ from teachers, sense of belonging) are associated with college and career readiness.

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