

An Investigation of Factors that Influence the Academic Performance of Undergraduate Students of Public Universities in Ghana

Paul Alhassan Issahaku

Assistant Professor, School of Social Work, Memorial University of Newfoundland

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Abstract

*The aim of this study was to assess the extent to which background characteristics, students' attitudes to learning, and students' use of social media influence academic performance among undergraduates in Ghana. It was hypothesized that previous performance, hours of study, family income, having a personal study schedule, attending lectures regularly, participating in class discussions, taking notes during lectures, use of alcohol, and use of social media, among other factors will influence a student's grade point average (GPA). Questionnaires were distributed to 1,500 students across four universities, of which 626 completed questionnaires were returned (N = 626). Correlation analysis showed that only hours of study was strongly related to GPA ($r = .1, p = .05$). Independent-samples *t* tests showed that students who had personal study schedules, attended lectures regularly, participated in class, took notes, chatted on Facebook, did not use alcohol, regarded a higher GPA as important, and who lived Off-campus, respectively, had a higher mean GPA. The study has contributed to the literature on factors that affect undergraduate academic performance in Ghana by investigating the effect of several demographic and attitudinal factors on student GPA. The findings indicate that to enhance academic performance it is important to influence students' attitudes and dispositions toward learning, including lecture attendance, participation in class, self-initiated or independent learning, use of social media, and abstinence from alcohol.*

Keywords: Academic performance, Undergraduate academic performance, Transforming university classrooms in Ghana, Hours of study and the GPA

1. Introduction

Globally, the importance of formal schooling and higher education cannot be overemphasized. Formal schooling is seen as both an end in itself and as a means to other ends. The critical role that formal education plays for the individual, family, and nation has been emphasized and reiterated by scholars and policy analysts (Bloom, 2002; Poku, Aawaar & Worae, 2013). Given its potential to shape the individual and society, formal education has been declared a universal human right and governments are entreated to ensure that all children attain at least primary/basic education (World Education Forum, 2000). In line with this move, for example, Ghana has made basic education – schooling from kindergarten through primary to junior high school – free and compulsory (Ministry of Education, 2003).

Education up to university level equips an individual with critical communication skills, including arithmetic and numeracy, reading and writing, and presentation of oral arguments and instills discipline of character, life and professional skills, a sense of self-worth, and respect for human diversity (Chickering & Reisser, 1993). Bloom (2002) has noted that higher education promotes sustainable economic development and human growth. In line with this, the University of Ghana (2011) believes that its undergraduate and graduate education turns out “students who are equipped to meet the development needs of Ghana and Africa...” (p.1). In addition, economic policy analysts have explained that, in comparative terms, education brings a higher return-on-investment (ROI), in terms of job prospects, baseline pay, and pay increases over time (Black, Daniel & Smith, 2005; Deming & Dynarski, 2009; Flores-Lagunes & Light, 2010; Goldberg & Smith, 2008; Heckman, Lochner & Todd, 2006).

Although it is desirable that all children go to school, success in school is the main objective of stakeholders of the education system (Wright, Fox, Murray, Carruthers & Thrall, 2012). It is believed that the benefits of education will inure only if students pass through the system successfully. Various educational reforms in Ghana and in other countries have been undertaken with the goal to enhancing schooling success (Ministry of Education, 2003; Poku et al., 2013). Schooling success is measured in terms of academic performance – a pass mark or qualifying grade obtained in a designated assessment (Bailey, Calcagno, Jenkins, Kienzl & Leinbach, 2005; Calcagno, Bailey & Jenkins, 2008; Daniels & Thrall, 2008; Scott, Bailey & Kienzl, 2006; Wright et al., 2012). At the undergraduate level in Ghana, for example, academic performance is measured in terms of the Grade Point Average (GPA). This is the average of all exam scores a

student obtains for all credit courses of study in an academic year. By the academic standards of public universities in Ghana, the GPA ranges from a minimum of 1.0 to a maximum of 5.0. This indicates that for a student to pass through and successfully obtain an undergraduate degree he/she must maintain a minimum GPA of 1.0 while those who aspire to 1st class honors must work toward a final GPA close to 5.0.

What factors influence the academic performance – GPA – of undergraduate students of public universities in Ghana? In other words, what factors may distinguish between high and low achievers in terms of the GPA among undergraduate students in public universities in Ghana? No research has investigated this question and so it remains a gap to be filled in existing scholarship. One study (Foster & Offei-Ansah, 2012) has reported on the additional family responsibilities undertaken by female undergraduate students in Ghanaian public universities. However, the scholars did not ask any questions on academic performance generally, or on factors that influence student performance, specifically. It is important to investigate this and related questions, answers to which will have implications for restructuring university course schedules and teacher-student classroom engagement, redefining the nature and focus of parent-student engagement, and reorienting individual students' academic priorities. In addition to the role of background characteristics, the study aimed to assess the extent to which student attitude to learning, and students' use of social media influence academic performance among undergraduates in Ghana.

2. Literature Review

The existing literature has identified several factors as correlates or predictors of academic performance among undergraduates in various contexts. This type of scholarship is briefly reviewed in this section. Previous academic achievement and sufficient sleep (or sleep quality) have been found to significantly predict undergraduate academic performance (Gomes, Tavares & de Azevedo, 2011). In a sample of 1654 full-time undergraduate students Gomes et al. reported previous academic achievement, class attendance, and sufficient sleep as significant predictors of academic performance. Gomes et al.'s (2011) result regarding the effect of previous achievement corroborates findings of previous research (Cavell & Woehr, 1994; Woehr & Cavell, 1993; Tournon, 1983). For example, Tournon (1983) found secondary school scores to be significant predictors of academic achievement while Cavell and Woehr (1994) reported significant a correlation between high school grade point average (HSGPA) and academic achievement among undergraduate psychology students.

There is literature showing a relationship between time spent studying (effort) and academic performance but this is not conclusive (Diseth, Pallesen, Brunborg & Larsen, 2010; Plant, Ericsson, Hill & Asberg, 2005; Rau & Durand, 2000). For example, Diseth et al. (2010) found a significant correlation between effort and exam grade ($r = .44$), suggesting that effort probably influences performance. Similarly, Rau and Durand (2000) found a significant relationship between amount of study and performance ($r = .23$) but noted that the real effect of study time showed only when students had spent over 14 hours a week studying. Plant et al. (2005) also reported that amount of study time made a significant contribution to predicting academic performance only in the presence of previous achievement and quality of study. The study reported by George, Dixon, Stansal, Gelb, and Pheri (2008) makes a strong case for the influence of study time on academic performance. In a multiple regression model, the Canadian study found that time studying significantly predicted overall GPA. However, in a gender disaggregated model, time spent studying made a significant contribution only to male student GPA. Perhaps amount of study time acts in concert with other factors in influencing academic performance.

Gender and age have also been linked to undergraduate academic performance (Barrow, Reilly & Woodfield, 2009; Dayioglu & Turut-Asik, 2007; Ismail & Othman, 2006; Khwaileh & Zaza, 2011; Sheard, 2009; Smith, 2004). The majority of studies indicate that female gender is associated with better academic performance. Typical examples of these findings are reported by Khwaileh and Zaza (2011) and Dayioglu and Turut-Asik (2007). In a sample of 26,122 students in Jordan University, Jordan, Khwaileh and Zaza found that female students consistently recorded higher GPAs in a 5-year period. In a study involving 10,343 students at the Middle East Technical University, Turkey, Dayioglu and Turut-Asik (2007) also found that female students had a higher cumulative grade point average (CGPA) (2.70) compared to male students (2.48). Evidence on the effect of age on academic performance is not consistent. For example, Dayioglu and Turut-Asik (2007) reported a significant negative relationship between age and CGPA, suggesting that older age is associated with lower CGPA. This contradicts findings reported by Sheard (2009) which showed that mature-age students – students older than the typical undergraduate student – had higher final GPAs than younger undergraduates.

The use of alcohol and related drinks also influences academic performance among undergraduates (Pettit & De Bar, 2011; Ukwaiyi, Lucy, Chibuzo & Undelikwo, 2013; Wechsler, 1995; Wolaver, 2002). Ukwaiyi et al.'s (2013) Nigerian study reported a significant relationship between alcohol use and academic performance such that a unit increase in

alcohol consumption would result in 61% decrease in examination success. Pettit et al. (2011) also reported that more consumption of energy drink – drink that may have alcohol together with caffeine and other active ingredients in its content – was significantly negatively correlated with undergraduate GPA, suggesting that increased consumption is associated with a fall in the GPA. Although students give several reasons for taking alcohol, including to keep awake and for fun (Ukwayi et al., 2013), perhaps alcoholic drinks negatively affect the GPA by disrupting studies, reducing amount of study time, class attendance, and concentration during examination.

2.1 Hypotheses

From the brief review above it is seen that undergraduate academic performance (basically, the GPA) is influenced by a good number of personal and environmental factors. Although firm conclusions on the causal relationship between these factors and the GPA cannot be drawn the existing literature provides a firm basis on which to build continuing research. The current study was therefore designed to extend the body of scholarship on student success.

In addition to factors identified in the literature reviewed it was hypothesized that perceived health of the student, general attitude to studies, and family socioeconomic status (SES), among others, would have an effect on academic performance – GPA. Good perceived overall health may allow a student to put in more effort at learning to succeed. For example, George et al. (2008) found healthy diet to be a significant predictor of the GPA. Perhaps living on a healthy diet leads to good overall health which has a beneficial effect on the GPA. It was also reasoned that a student's general attitude to studies should influence the GPA. Included in the attitudes are: having a personal study time schedule/table; attending lectures regularly; actively participating in class discussions by making efforts to ask/answer questions; taking personal notes during lectures; joining a study/discussion group; showing a concern over getting and maintaining a higher GPA; and owning the required textbooks. Some of the factors listed here are captured by the concept of time management skills which George et al. (2008) found to be a significant predictor of the GPA.

Further, since social media platforms (especially Facebook) have gained popularity among young people in Ghana it was reasoned that students' use of social media (e.g., being on Facebook) will reflect in the GPA. This is perhaps similar to George et al.'s (2008) 'time spent in passive leisure' which was negatively related to GPA. Finally, it was suspected that family SES measured in terms of overall family income (annual) will influence academic performance. A higher SES may avail a student with relevant resources/materials for success in school.

3. Method

3.1 Participants

A non-random, self-selected sample of 1,500 upper year (Levels 300-400) undergraduate students in four public universities collected questionnaires for the study. Participants were recruited on university campuses during the academic year. A visit to each university enabled us identify class times and venues where we introduced the study to students. Posters introducing the study were placed on desks in the front of lecture halls for students to pick as they attended lectures. In addition, we asked for time with students in their classes to highlight the study and invited them to participate.

3.2 Data collection

Questionnaires designed in the English Language were distributed to participants in envelopes for data collection. The instrument was constructed based on the existing literature and pretested using 50 students from a Polytechnic. Undergraduate students enrolled in various courses self-administered the questionnaires at their convenience and returned the package to a secure drop box arranged with the postal service on each university campus. Because English is the medium of instruction in Ghanaian schools, these undergraduate students had enough English proficiency to understand all materials of the study. Participants were given up to three weeks to complete and return the questionnaires. Of the 1,500 questionnaires, 626 were returned, representing a 42% response rate.

3.3 Measures

Demographic characteristics: relevant participant characteristics included age, sex, family income (proxy for SES), whether participant lived off- or on-campus, whether participant takes alcohol, and perceived overall health (as 'in poor

health' vs 'in good health'). Participants were asked to indicate time spent doing independent study (number of hours per week), previous academic performance – high school aggregate score, and current GPA. Yes or No questions were used to capture whether participants: had a personal study time schedule/table; attended lectures regularly; participated in class discussions by making efforts to ask/answer questions; took personal notes during class discussions; belonged to a study/discussion group; regarded getting and maintaining a higher GPA as important; owned the required textbooks; and used Facebook (social media).

4. Results

4.1 Descriptive statistics and correlations

We first assessed the distribution (frequencies, means, and standard deviations) of the measures. Table 1 shows that 67% of participants were male, 68.5% lived On-campus, and almost everyone

Table 1: Frequency Distribution of Demographic and Other Variables (N = 626)

Variable	%Yes	%No	%(F)	%(M)	%(Off-campus)	%(On-campus)	%(P)	%(G)
Sex	-	-	33.3	66.7	-	-	-	-
Residence Status	-	-	-	-	31.5	68.5	-	-
Perceived Health	-	-	-	-	-	-	0.7	98.3
Personal Schedule	55.0	45.0	-	-	-	-	-	-
Required Text Books	57.2	42.8	-	-	-	-	-	-
Attend Lectures Reg.	70.4	29.6	-	-	-	-	-	-
Take notes in class	93.2	6.8	-	-	-	-	-	-
Participate In Class	52.6	47.4	-	-	-	-	-	-
Study Group	69.7	30.3	-	-	-	-	-	-
GPA is Important	90.1	9.9	-	-	-	-	-	-
Take Alcohol	12.9	87.1	-	-	-	-	-	-
Chat on Facebook	76.7	23.3	-	-	-	-	-	-

NB: G = Good, P = Poor, F = Female, M = Male

(98%) perceived their health as "Good". Further, 55% of participants had personal study schedules, 57% had the required textbooks, 70% attend lectures regularly, 93% take notes during lectures, 77% chat on Facebook, and for 90% of participants getting a higher GPA is important.

Means and standard deviations of some variables and their correlation with GPA are displayed in Table 2. The mean age of participants was 23.6 (SD = 2.91), mean GPA was 3.32 (SD = 0.55), the mean high school aggregate was 12.59 (SD = 4.87), mean family income was 13,686.53 Ghana Cedis (SD = 18,599.77), while mean weekly hours of study was 16.36 (SD = 14.60). As indicated in Table 2, GPA was significantly correlated only with hours of study ($r = .10$, $p < .05$).

Table 2: Descriptive statistics (mean, standard deviation) and correlation with Current GPA

Variable	Mean	Std. Deviation	Current GPA
Weekly Hours of Study	16.36	14.60	.10*
High School Aggregate	12.59	4.874	-.04
Age	23.60	2.905	.05
Family Annual Income	13,686.53	18,599.77	.04
Current GPA	3.3151	.55	-

* $p < .05$

4.2 Evaluation of hypotheses using independent-samples t tests

In subsequent analyses we used independent-samples *t* test to assess the effect of some variables on GPA. Because most of the independent variables were dichotomous measures (i.e., dividing cases into two mutually exclusive categories) the independent-samples *t* test was more appropriate for the analysis (see Green & Salkind, 2008). (The 'perceived health' variable was not included in the analysis since almost all participants rated their health as 'Good'.)

An independent-samples *t* test was conducted to evaluate the hypothesis that students perform better if they have personal study schedules as opposed to if they do not. The test was significant, $t(531) = 4.95$, $p = .01$. Students who had personal study schedules ($M = 3.42$, $SD = .53$) on average recorded a higher GPA than those with no personal study schedules ($M = 3.18$, $SD = .55$), 95% CI: 0.14-0.32.

An independent-samples *t* test was conducted to evaluate the hypothesis that students perform better if they attend lectures/classes regularly as opposed to if they do not. The test was significant, $t(531) = 4.04, p = .01$. Students who attended lectures regularly ($M = 3.38, SD = .55$) on average recorded a higher GPA than those who did not ($M = 3.17, SD = .53$), 95% CI: 0.11-0.31.

An independent-samples *t* test was conducted to evaluate the hypothesis that students perform better if they take notes in class/during lectures as opposed if they do not. The test was significant, $t(531) = 2.50, p = .01$. Students who took personal notes during lectures ($M = 3.33, SD = .54$) on average recorded a higher GPA than those who did not ($M = 3.10, SD = .67$), 95% CI: 0.05-0.42.

An independent-samples *t* test was conducted to evaluate the hypothesis that students perform better if they participate in class discussions as opposed if they do not. The test was significant, $t(530) = 2.18, p = .03$. Students who participated in class ($M = 3.37, SD = .53$) on average recorded a higher GPA than those who did not ($M = 3.26, SD = .57$), 95% CI: 0.01-0.20.

An independent-samples *t* test was conducted to evaluate the hypothesis that students perform better if they regard a higher GPA as important. The test was significant, $t(530) = 2.41, p = .02$. Students who regarded the GPA as important ($M = 3.33, SD = .54$) on average recorded a higher GPA than those who did not regard the GPA as important ($M = 3.14, SD = .60$), 95% CI: 0.04-0.35.

An independent-samples *t* test was conducted to evaluate the hypothesis that students perform better if they do not take alcohol as opposed to if they do. The test was significant, $t(522) = 2.46, p = .01$. Students who did not take alcohol ($M = 3.34, SD = .54$) on average recorded a higher GPA than those who took alcohol ($M = 3.16, SD = .58$), 95% CI: 0.04-0.32.

An independent-samples *t* test was conducted to evaluate the hypothesis that students perform better if they own the required textbooks as opposed to if they do not. The test was nonsignificant, $t(526) = .37, p = .71$. Students who reported owning the required textbooks ($M = 3.31, SD = .54$) did not perform better than those who did not own the textbooks ($M = 3.33, SD = .55$).

An independent-samples *t* test was conducted to evaluate the hypothesis that students perform better if they belong to a study/discussion group as opposed to if they do not. The test was nonsignificant, $t(528) = 1.18, p = .24$. Students who reported belonging to a study group ($M = 3.33, SD = .55$) did not perform better than those who did not ($M = 3.20, SD = .56$).

An independent-samples *t* test was conducted to evaluate the hypothesis that students' use of social media (chatting on Facebook) will influence their performance. The test was significant, $t(519) = 3.64, p = .001$. Students who reported chatting on Facebook ($M = 3.36, SD = .52$) on average recorded a higher GPA than those who did not ($M = 3.15, SD = .61$), 95% CI: 0.01-0.33.

An independent-samples *t* test was conducted to evaluate the hypothesis that students' residence status (Off- vs On-campus) made a difference in academic performance. The test was significant, $t(520) = 3.20, p = .001$. Students who lived Off-Campus ($M = 3.43, SD = .55$) on average recorded a higher GPA than those who lived On-Campus ($M = 3.26, SD = .54$), 95% CI: 0.06-0.26. However, there was no sex difference in performance, $t(521) = 1.53, p = .13$. The mean GPA for female students ($M = 3.37, SD = .50$) did not differ significantly from the mean GPA for male students ($M = 3.29, SD = .57$).

5. Discussion

The purpose of the present study was to identify what factors influence academic performance among undergraduate students in Ghana. It was thought that students' demographic and attitudinal factors as well as previous performance – high school aggregate – will all have an effect on performance – Current GPA.

The correlation analysis showed that only hours of study was strongly related to current GPA, indicating that if a student spent more hours studying they had a higher GPA. This corroborates previous research findings (Diseth et al., 2010; George et al., 2008; Rau & Durand, 2000). For example, Diseth et al. (2010) found a significant positive correlation between effort (hours of study per week) and exam grade. However, family income, age, and high school aggregate (previous performance) were not significantly related to GPA. The effect of age in the present study contradicts Dayioglu and Turut-Asik's (2007) research which found a significant negative correlation between age and GPA and the study by Sheard (2009) which found that older students had a higher GPA. It is surprising that unlike previous research which found a significant relationship between current performance and previous academic achievement – high school aggregate (see Cavell & Woehr, 1994; Gomes et al., 2011; Touron, 1983; Woehr & Cavell, 1993), there was no significant correlation between high school aggregate and GPA in the present study. It is also surprising that there was no

significant relationship between family SES (represented by family income) and GPA. This suggests that children from rich families do not have an advantage over those from low-income families as regards academic performance.

Independent-samples t tests showed that some attitudinal factors or cultivated habits influence academic performance. Students who do not use alcohol showed a higher mean GPA compared to those who take alcohol. Previous research has found a negative relationship between alcoholic/strong drinks and academic performance (Pettit & De Bar, 2011; Ukwayi et al., 2013; Wechsler, 1995; Wolaver, 2002). Perhaps alcoholic drinks cause disruptions or interference with students' commitment to learning, including failure to attend lectures, or adhere to personal schedule for independent learning, and/or developing a mindset that a higher GPA is not important. In addition: students who had personal study schedules had a higher mean GPA than those who did not have; students who attended lectures regularly had a higher mean GPA than those who did not; students who took notes during lectures had a higher mean GPA than those who did not; students who participated in class discussions had a higher mean GPA than those who did not; and students who attached importance to a higher GPA had a higher mean GPA than those who did not regard a higher GPA as important. These findings are unique but perhaps similar to some of the measures used in Diseth et al.'s (2010) study, such as 'deep', 'surface', and 'strategic' approaches to learning which were all related to performance. Having and following a personal study schedule show discipline in the learning process which perhaps motivates a student to put more effort into the learning activity. Also, regular class attendance, jotting down notes for personal use after class, and actively participating in class discussions all probably aid with retention and recollection of the material learnt for better performance. And, perhaps a self-fulfilling prophecy is at work where, if a student regards a higher GPA as important, they work hard for it and perform better.

Two other interesting findings in the present study are the finding that students who reported chatting on Facebook had a higher mean GPA than those who did not indicate they chat on Facebook as well as the finding that students who lived off-campus had a higher mean GPA than those who lived on-campus. These findings can be interpreted variously. Indeed, chatting on Facebook is somewhat similar to George et al.'s (2008) 'time spent in passive leisure' measure which showed a negative relationship with academic performance. The finding in the present study suggests that perhaps use of Facebook increases a student's stock of ideas/knowledge by providing the opportunity to ask for help with their learning from friends far and near. The finding that students who live off-campus perform better suggests that perhaps these students are receiving help from educated friends and relations, are spending more of their time studying rather than engage in idle talk, or are being monitored and encouraged to learn by parents/guardians.

This study has a number of limitations to be noted. The sample for the study was non-random, although participants came from a cross-section of students in four public universities. In addition, the data for this study were self-reports and most of them were simple yes/no categorical measures. This limited data analysis to the use of separate independent-samples t tests to evaluate the effect of each of the categorical variables on academic performance rather than combine them in a single test model to see their relative contributions. For these reasons, the findings reported in this study should be read with caution. However, the study is a pioneering research on factors that influence academic performance among undergraduate students in Ghana and is therefore important in starting a conversation on this topic.

6. Conclusion and Implications

Results of the present study both confirm and contradict previous research and add something new to the literature. As noted above, the strong positive correlation between hours of study and GPA found in this study together with the finding that students who do not take alcohol perform better is in accord with previous research findings. However, the finding that there is no relationship between age and GPA or between high school aggregate and GPA deviates from what has been reported in previous research. The findings that students who regard a higher GPA as important, students who have personal study schedules, students who attend lectures regularly, students who take notes during lectures, and students who participate in class discussions, respectively, perform better add to the literature. Further, findings that students who chat on Facebook (broadly seen as use of social media) and students who live off-campus perform better are unique contributions to the literature.

Findings of the present study have implications for educational policy and practice in Ghanaian universities. They call for transformed classrooms through innovations in curriculum design and teaching pedagogy. A transformed classroom is a teaching-learning environment in which teachers are less doctrinaire about what constitutes knowledge but more about students' curiosity, passion, and vision for learning. An important way of transforming the university classroom in Ghana is to make it dialogic, an interactional environment; that is, to move from the present monologue of teachers talking to students to a form of interaction in which students talk with each other and with the teacher. A dialogic classroom creates opportunity for students to contribute to their learning by asking questions and making critical

comments on what is presented to them. Further, transforming the classroom means making it a space where students come to share and reinforce what they have learned and actually encouraging students to cultivate the discipline of investing in their learning. The students would have done some required readings and more before coming to class so that they are prepared to engage in the discussions. This point is supported by the findings that (a) students who have personal study schedules register a higher mean GPA and (b) weekly hours of study is significantly positively correlated with current GPA.

Another implication is the need for educators to acknowledge the fact that learning and performance is not so much about what we do as it is about students' disposition to learning. As a result, flexibility will be better than rigidity, emergence and fluidity better than structure and determinism, and a focus on process better than a focus on content. This argument is supported by the findings that (a) students who regard a higher GPA as important, (b) students who participate in class, (c) students who live off-campus, and (d) students who make efforts to attend lectures regularly, respectively, have a higher mean GPA. Finally, the finding that students who use Facebook, the most popular of social media platforms, have a higher mean GPA suggests that educators should recognize, value, and encourage student learning that happens in virtual spaces. In this regard, students' use of social media is seen as an extension of learning that happens beyond the moment of classroom engagement.

In conclusion, the present study has contributed to the literature on factors that affect undergraduate academic performance in Ghana by investigating the effect of several demographic and attitudinal factors on student GPA. The findings indicate that to enhance academic performance it is important to influence students' attitudes and dispositions toward learning, including lecture attendance, participation in class, self-initiated or independent learning, use of social media, and use of alcohol. Future research should use a more rigorous design to throw more light on these findings as well as use qualitative designs to further tease out some of the underlying reasons for the relationship between these factors and student GPA.

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