

Conflicting Rewards in Student Groups: Effects of Scholarship Student or Student-Athlete Membership on Social Loafing and University Satisfaction

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Abstract

Undergraduate student reward-based membership, either being an academic scholarship student or a student-athlete, was theorized to affect social loafing and student satisfaction. Empirical investigation included a large student survey (N>500), combined with school-level data provided by the university. Research methods included traditional hypothesis testing, as well as data mining market segmentation. Results indicated both groups experienced more social loafing in groups, but more so for academic scholarship students. Profile analysis indicated clear differences between groups. Consistent with the argument of this paper, how students pay for their education clearly affects their student experience. Doing more work in student groups when others social loaf is a rational economic decision for academic scholarship students. Responding to coach's demands, even when it causes them to social loaf on their teams, is an economically rational decision for student-athletes. While both reward systems are rational, they create conflict when students work in groups.

Key Words: Social Loafing, Student-Athletes, Scholarship Students, Groups, Undergraduates.

1. Introduction

Why do students go to college, and how does a student's answer affect their behavior with other students in class groups? Social loafing is one form of student interaction that has a long history of research on this problematic behavior. Here social loafing is discussed from a social dilemma perspective whereby the loafer enjoys the benefits of other group member's efforts, which is an example of a rational economic decision. Why some students loaf on other group members has been studied from various levels-of-analysis. At the individual-level, personality of loafers and loafed on (i.e., those that do the work) has focused on Big 5 dimensions such as conscientiousness and agreeableness. At the group-level, the common factors of study include task interdependence and the structure of rewards for individual and group performance. While important and valid these factors do not consider the broader implications of the overall college experience on students' group behavior, which is the *why* college question noted above.

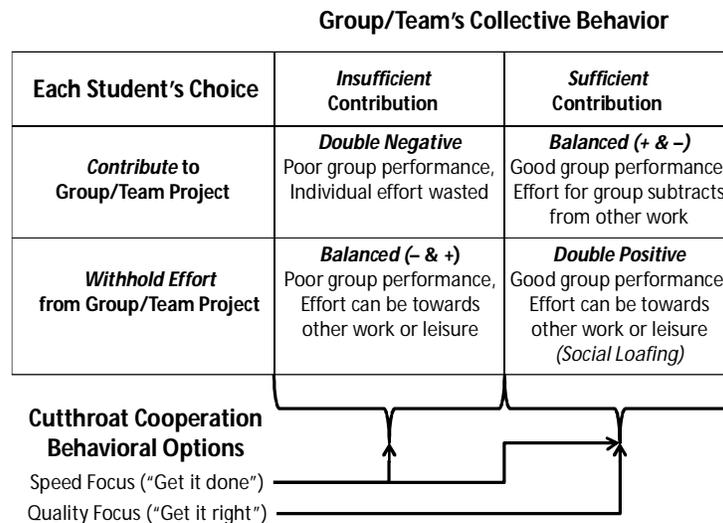
Why students go to college is likely to include a myriad of potential answers. From the academic's perspective, the primary reason hoped for is students attending college to maximize their knowledge, skills, and abilities towards their chosen field of study. The key indicator of this perspective is the grade point average (GPA), showing on a numerical scale a student's performance and rewarded upon graduation with honors if high enough (i.e., cum laude, magna cum laude, summa cum laude). From a social perspective, the college experience is one in which students meet new people. Some of these new people may become lifetime friends or spouses. Others may become nodes within an extensive social network students' may capitalize on to further their post-graduation careers. While answers to the *why* question may be numerous, it is not difficult to imagine students with varying priorities coming into conflict when placed within a common class group. The student that cares most about GPA may resent social teammates who might be more interested in a fraternity mixer than a good group grade. This paper adapts this broader college experience perspective narrowed from *why* to *how* students are attending college.

It is assumed whatever combination of answers to the why question eventually coalesce into "a better life" as the ultimate answer for all students. In order to achieve this goal via college, most students must find some source of money to pay for school. Hence, money for attendance is viewed as a broader reward required for continuing college rather a group-level reward as typically studied. The purpose of this paper is to study the effects of two posited reward systems on student's social loafing and university experiences. *How* students attend college are divided into reward systems for (1) students whose GPA determines their scholarship money (scholarship students), and (2) students whose coach determines their scholarship money (student-athletes). These are "conflicting reward systems," which students should respond to rationally. Having scholarship students and student-athletes in the same class group is assumed to be a cause of social loafing and results in different perceptions of the overall college experience.

2. Literature Review

Social loafing is when a group member does not do their fair share of work, yet receives full benefit of the collective group's rewards. Previous explanations for social loafing include individual-level variables such as conscientiousness (Ferrari and Pychyl, 2012) and preference for group work (Stark, Shaw, and Duffy, 2007); and group-level variables such as evaluation structure (Price, Harrison and Gavin, 2006), task visibility (George, 1992), and the groups as a social dilemma (Karau and Williams, 1993). A social dilemma is a context in which multiple individual's outcomes are influenced by the behavior of their own and other's behavior. A "give some" social dilemma is a context where individuals must contribute towards a group goal (i.e., they must "give" their individual contributions towards collective group goals to achieve a common outcome) (Dawes, 1980). For example, a student's decisions about a group meeting is either to (1) go to the meeting and contribute towards the group project, or (2) skip the meeting and spend the time studying for another class' exam. The effects of these decisions on the group's project depend on the collective contributions of the overall group. If enough group members contribute *sufficiently*, the group will receive a good grade on the project. If collective group contributions are *insufficient*, then the group will receive a bad grade on the project. The combined effects of the student's choice with the group's collective contributions are depicted in **FIGURE 1**.

Figure 1: "Give Some" Social Dilemma and Cutthroat Cooperation Group Context



The effects of the combined student choice and group contributions are as follows:

1. If the student chooses to contribute (i.e., goes to the meeting) but the group's contributions are insufficient, then the results are a bad group grade and the student is not as prepared exam. This is the worst possible scenario as a bad group grade is a "punishment" and not being prepared for the exam is another punishment. This situation represents a double punishment.
2. If the student contributes to the group and the group's contributions are sufficient, then the results are a good grade (a "reward") and the punishment of not being prepared for the exam. This is a "wash" since the student receives one reward and one punishment.

3. If the student chooses to withhold effort by not contributing toward group goals (i.e., skips the meeting in order to study for exam) and the group's contributions are insufficient, then the results are the punishment of a bad group grade and the reward of being prepared for the exam (i.e., a wash).
4. If the student chooses to withhold effort and the group's contributions are sufficient, then the results are the reward of a good group grade and the reward of being prepared for the exam. This is the best possible scenario, representing a double reward. This scenario is the one that "*maximizes utility*" for the student, which makes it "*economically rational*."

The scenario in the bottom right quadrant of **FIGURE 1** describes social loafing, where a student benefits on the efforts of others (i.e., sufficient contribution of the other group members) without them having to contribute. Decades ago, Kerr (1995) described how "Fouled Up Systems" can cause unintended consequences. I refer to these as "Backward Reward Systems" because these can *discourage good behavior* and/or *encourage bad behavior*. The problem is the backward reward system depicted in the bottom right quadrant of **FIGURE 1** encourages the bad behavior of social loafing. Although "bad" from the perspective of effective group work, social loafing is clearly the economically rational decision encouraged by the backward reward system.

For the non-contributing social loafer, the difference between a wash and double reward is the group they are part of. In order to maximize profit, it is imperative for the social loafer to find or be assigned to a group whose other members will make sure to make good group grades without their contribution. This is where the *how* issue (noted above) affects social loafing. Whether a student contributes towards a group grade, independent of other member's social loafing or not, is posited here to be strongly affected by the student's reward system. In other words, if staying in college depends on making good grades then contributing to group projects is a rational response. Allowing social loafer's behavior to adversely affect their grades could result in losing scholarships, and having to leave school. The two student groups believed to respond to different *how* reward systems are the following:

1. *Scholarship Students* who are rewarded based on their GPA. Therefore, "sufficient contribution" is essential even if social loafed on.
2. *Student-Athletes* who are rewarded based on the demands of their coach. Since GPA may or may not be important beyond remaining eligible for competition (and eventually matriculating to graduation), "sufficient contribution" on group projects is not essential.

The intriguing concept of "cutthroat cooperation" is used here to explain a likely process connecting the structure of groups as social dilemmas with the two types of students (Johnson, Hollenbeck, Humphrey, Ilgen, Jundt, and Meyer, 2006). Cutthroat cooperation is a consequence of changing from competitive to cooperative rewards systems. The theory and data show performance dimensions of accuracy (i.e., quality) and speed (i.e., quantity) vary within groups according to the reward systems used. Competitive reward systems encourage greater speed with lower accuracy, while cooperative rewards encourage greater accuracy at the expense of lower speeds. Their "friendly competition" condition (changing from cooperative to competitive rewards) showed positive effects of carry-over higher accuracy from the initial condition and increased speed. Cutthroat competition had both decreased accuracy and speed. Johnson and colleague's (2006) experiment put four undergraduate students together to perform a common task over two time periods. How much different is their experiment from student groups in undergraduate classrooms? The argument here is that the cutthroat cooperation concept likely parallels the experience of students placed in class groups. A student's course grade is determined from quizzes and exams (an individual competitive reward system), and from group work (a cooperative reward system).

While some courses involve intensive group work from the beginning, the primary pedagogy involves group work from the middle to the end of the semester. This means the reward system mimics cutthroat cooperation, competitive first then cooperative. Whether the group focus is speed or quality is theorized to depend on the student group reward system. Johnson et al. (2006) propose recommendations for how organizations may effectively manage cutthroat cooperation. Their "develop separate teams, some 'built for speed' and others 'build for accuracy'" seems applicable to student groups involving scholarship students with student-athletes. Scholarship students, needing to maintain a high GPA to keep scholarship money, would be similar to teams "built for accuracy." Hence, they would be more likely to make sure a group's contribution was sufficient to get a good grade even if they have to do most or all of the work (i.e., being social loafed on).

Student-athletes, needing to maintain a positive relationship with their coach to keep scholarship money, seem more likely to be similar to "built for speed" teams. This is not meant to imply that student-athletes are *incapable* of focusing on accuracy.

Quite the contrary, the discipline and competitiveness required to compete athletically at the college-level while completing academic studies often results in top academic performers and early career success (Sauer, Desmond, and Heintzelman, 2013).

That student-athletes' reward system is less dependent on GPA beyond the minimum required to remain eligible means they may be *unwilling* to focus as much energy on accuracy. For student-athletes, "getting it done" (speed) seems more likely than "getting it right" (accuracy). If assigned to a group whose members will complete the task without their help, then student-athletes may social loaf as a rational economic response to their reward system. Those scholarship students, when grouped with student-athletes, choose to provide "sufficient contribution" even if social loafing is also an economically rational response to their reward system. It is the separate reward systems for scholarship students and student-athletes that are in conflict, which result in dysfunctional group behaviors of social loafing and being social loafed on.

Hypothesis 1: Scholarship students are more likely to experience greater social loafing than student-athletes.

Since learning is typically considered the most prized outcome of higher education, grade point average (GPA) is frequently viewed as the "be-all-and-end-all" within academia. As would be anticipated, students with higher GPA's are highly valued by professors and administrators as evidence of their personal and institutional teaching success. Thus, high GPA students are fawned over by professors and administrators. As GPA is a measure of student performance, these students are more likely to have higher satisfaction with their college experience in a manner similar to the well-known job satisfaction-job performance relationship. The college experience of student-athletes, however, is likely different than high GPA students. The initial use of the term, "student-athlete," came into existence as a means to counter negative publicity concerning athletic-based scholarships (Staurowsky and Sack, 2005). While high GPA students justly "earn" their place based on class performance, student-athletes are perceived to unjustly "earn" their spot in college based on their performance in sports. Research has indicated a student-athlete identity has a negative effect on academic-based performance (Yopyk and Prentice, 2005; Stone, Harrison, and Mottley, 2012). Since most, especially academics, hold the true purpose of higher education to be learning student-athletes' place is viewed as lower than those of high GPA students. As student-athletes' place is devalued, their satisfaction with their university experience is likely to be lower just as the lower job satisfaction-job performance link.

Hypothesis 2: Scholarship students are more likely to have a positive attitude towards the university than student-athletes.

3. Methods

3.1. Student Survey

A total of 754 single-page, double-sided surveys (34 questions) were distributed (Fall 2011). These surveys were distributed initially to members of fraternities and sororities, then to 18 freshman- or senior-level classes at a small, private university in the southern United States. A total of 501 usable surveys were collected, which represented a gross response rate of 66.45%. While this was an impressive number, this does not represent the true response rate. Since fraternity and sorority members were surveyed first, some of them may have received the survey in their classes also. Students may have received the survey in multiple classes as well. Students were asked to complete the survey only once. To avoid misrepresenting the response rate, faculty and fraternity/sorority leaders were given a sheet with their packet of surveys noting the "Total number of surveys received" (i.e., how many surveys were in their packet), the "Total number of surveys distributed to students" (i.e., if a student indicated they had already completed the survey they would not get a second one), and "Total number of surveys completed." The total number of surveys NOT distributed was 116, making a sample of 638 unique recipients. Hence, the true response rate was 78.53%, which is nearly four times the typical response rate of 20%. Finally, the 501 responses corresponded to roughly 30% of the university's student population at the time (based on university-provided data).

3.2. University-Provided Data

Three types of data were requested and provided by the university's (1) top academic administrator, (2) top business administrator, and (3) institutional research administrator. Data were requested and provided at two levels - the overall university and for each of the schools within the university (e.g., business, education). An item on the student survey asked which school the respondent was majoring in ["Which is the school(s) of your major(s) or minor(s)? (Please mark *all* that apply)"] (emphasis included).

University-provided school-level data were imputed for each student according to their major school. In the case of multiple majors across schools, an average was calculated.

3.3. Two Phase Research Design

A two phase research design was used to study the thesis of this paper. The first phase utilized the traditional research approach in order to test the hypotheses developed a priori. In essence, the questions hypotheses 1 and 2 pose can be summarized as "Are there significant differences in the experiences of college students based on their reward system?" The second phase adopts the "Big Data" approach of "market segmentation," which is more consistent with traditional post hoc analysis. This is more of an exploratory approach seeking to answer the general question, "If the two reward-based groups are meaningfully different, what do these groups look like and what effects do they have with the addition of other potential covariates?"

3.4. Phase I – Traditional A Priori Hypothesis Testing

3.4.1 Social Loafing was measured as the mean of 5 items, 4 items from Mulvey and Klein (1998) and a single item developed here ("When working in groups, I do most or all of the group's work"). These assess the extent to which respondents have *experienced social loafing* in groups or teams at their university.

It does not assess if they have been the *social loafer*. The 6-point Likert-type response options (with coding numbers) were "Strongly Disagree" (1), "Disagree" (2), "Neither" (3), "Agree" (4), "Strongly Agree" (5), and "Not Applicable" (6). Two of the Mulvey and Klein (1998) items were reverse-scored and items with "6's" were dropped. Cronbach alpha inter-item reliability was .77 (N=460).

3.4.2. University Satisfaction was measured as a single 7-point semantic differential ("Please circle the number Between 1 and 7 that best reflects your assessment of ... your willingness to attend [university], if you had the chance to make the choice again") adapted from the National Survey of Student Engagement (NSSE) survey (see <http://nsse.indiana.edu/>). Response anchors were "Definitely No" (1) and "Definitely Yes" (7).

3.4.3. Scholarship Students was created as a two-form dummy code (Cohen and Cohen, 1983) where 1 was the case (scholarship student) and 0 was the control (not a scholarship student). The two student survey items used to create the dummy variable were the following:

1. *Scholarship GPA required* asked students "What is the *lowest* GPA required to keep *allof* your scholarships?" Response options were "2.00-2.49" (1), "2.50-2.99" (2), "3.00-3.49" (3), and "3.50-4.00" (4).
 - a. *High Academic GPA Students* was an initial dummy variable created where 1 was the case (scholarship GPA required ≥ 3) and 0 was the control (scholarship GPA required ≤ 2). High academic GPA students had to maintain a 3.00 or better to keep scholarships.
2. *Athletes-Level* was the item "About how many hours do you spend in a typical 7-day week doing each of the following? ...Participating as a member of a [university] athletic team." Response options were "0" (0), "1-5" (1), "6-10" (2), "11-15" (3), "16-20" (4), and "21+" (5).
 - a. *Athletes* was another initial dummy variable created where 1 was the case (athletes level ≥ 1) and 0 was the control (athletes level = 0).

The final scholarship student's dummy variable combination was the following:

1. Scholarship students (1) = high academic GPA students = 1 AND athletes = 0.
2. Controls (0) = high academic GPA students = 0 AND athletes = 1.

Thus, the dummy variable contrast was non-athlete students having to maintain a GPA greater than or equal to 3.00 to keep their scholarship (case) versus all athletes whose GPA required to keep their scholarship was equal to or less than 2.99.

3.4.4. Student-Athletes was also created as a two-form dummy code where 1 was the case (student-athlete) and 0 was the control (not a student-athlete). The one student survey item used to create the student-athlete dummy variable was the following:

1. *Athletes-Level* was the item "About how many hours do you spend in a typical 7-day week doing each of the following? ...Participating as a member of a [university] athletic team." Response options were "0" (0), "1-5" (1), "6-10" (2), "11-15" (3), "16-20" (4), and "21+" (5).
 - a. *Intensive athletes* was another initial dummy variable created where 1 was the case (athletes level ≥ 3) and 0 was the control (athletes level = 0).

The final student-athletes dummy variable combination was the following:

1. Student-athletes (1) = intensive athletes = 1.
2. Controls (0) = athletes = 0.

Thus, the dummy variable contrast was student-athletes who devote 11 or more hours per week towards their sport (case) versus all non-athletes.

3.5.Phase I – Traditional A Priori Hypothesis Testing

Once the two independent variables were created, a crosstabs analysis of cases was done to assess overlap (**Table 1**). Of the 113 controls for scholarship students, 60 were student-athletes. Of the 182 controls for student-athletes, 129 were scholarship students. There were 53 cases where students were controls for both dummy variables (29.12% for scholarship students and 46.90% for student-athletes). The dummy coding procedure succeeded in creating 2 variables whose cases were orthogonal, as there were no cases in which a student was both a scholarship student and a student-athlete.

Table 1: Conflicting Rewards Student Groups
Student-Athletes

Scholarship Students	0 (Control)	1 (Student-Athletes)	Total
0 (Control)	53	60	113
1 (Scholarship Students)	129	0	129
Total	182	60	242

Dummy Variable Criteria

- Scholarship Students – Lowest GPA required to keep scholarship ≥ 3.00 AND Number hours participating as university athlete = 0. (1)
- Lowest GPA required to keep scholarship ≤ 2.99 AND Number hours participating as university athlete ≥ 1 . (0)
- Student-Athletes – Number hours participating as university athlete ≥ 11 / week. (1)
- Number hours participating as university athlete = 0 / week. (0)

3.6.Phase II - Big Data Post Hoc Market Segmentation Analysis

Two categories of independent variables were used. Characteristics unique to each student were categorized as individual-level variables. Characteristics of students within schools they majored, following the method described above, were categorized as school-level variables.

3.6.1.Gender was measured with the single forced choice question, "What is your gender?" Check box response options for "Male" and "Female" were later coded 0 (male) or 1.

3.6.2.Classification was measured with the single question, "What is your current classification?" Check box response options for "Freshman," "Sophomore," "Junior," and "Senior" were later coded 1 (freshman), 2 (sophomore), 3 (junior), or 4 (senior).

3.6.3.Percent Scholarship was measured with the single question, ""Considering *all* of your scholarships (academic, athletic, lottery, music, etc.) , what percent of total [university] costs (tuition, fees, books, housing) do these pay for?" (emphasis included). The response option was a blank line with a percent symbol (____%).

3.6.4.Team Attitude was measured as the mean of the 7-point Semantic differential items, "Please circle the number between 1 and 7 that best reflects your assessment of ... (1) ...how effective working in groups or teams are for achieving good grades" and (2) ...how working in groups or teams produces creative results."

Anchors were "Not at All Effective" (1) and "Tremendously Effective" (7) for the first item, and "Not at All Creative" (1) and "Tremendously Creative" (7) for the second item. Cronbach alpha reliability was .85 (N=501).

3.6.5. Percent Athletes was calculated by the university's top academic administrator as the number of athlete majors in a school divided by the total number of majors in the school (times 100). If a student majored in multiple schools, they would be counted in each major school in the total number of majors (and for each school if they were an athlete as well). Because students were counted in each school of major, the total number of student majors exceeded total student enrollment. The percent of athletes for the overall university in fall 2011 was 23.29%, with school percent athletes ranging from 4.72-45.42%.

3.6.6. Percent Cost of Attendance was calculated by the university's top business administrator, and represents the percent of the student's total costs funded by the university rather than the student. The total percent cost of attendance for the overall university in Fall 2011 was 35.7%, with school percentages ranging from 31.2-37.8%. The administrator graciously separated percent cost of attendance for students on "Academic Aid" from students on "Athletic Aid."

Academic Aid - The percent cost of attendance for academic aid for the overall university in Fall 2011 was 35.5%, with school percentages ranging from 25.8-39.4%.

Athletic Aid - The percent cost of attendance for athletic aid for the overall university in Fall 2011 was 46.9%, with school percentages ranging from 36.5-57.2%.

4. Results

4.1 Phase I

Descriptive statistics on Phase I variables are shown in **Table 2**. The table also shows the zero-order correlations and inter-item reliability (Cronbach's alpha) for social loafing.

Table 2
Descriptive statistics and correlations among dependent and phase I independent variables¹⁻²

	Mean	Std. Dev.	1.	2.	3.	4.
<i>Dependent Variables</i>						
1. Social Loafing	2.86	.72	(.77)			
2. University Satisfaction	5.77	1.67	-.04			
<i>Independent Variables - Reward Groups</i>						
3. Scholarship Students	.47	.50	.17**	.27**		
4. Student-Athletes	.20	.40	-.02	-.35**	-.61**	
¹	* p<.05.					
²	** p<.01.					

4.1.1 Means and (Standard Deviations)

The mean of social loafing was 2.86 (0.72), thus being closer to "Neither" than "Disagree." These data indicate social loafing was not a significant problem throughout the university. The mean of university satisfaction was 5.77 (1.67), indicating a high degree of satisfaction on the 7-point semantic differential. The mean of scholarship students relative to the standard deviation (.47 to .50, respectively) indicates the relative balance between this group and control noted in **Table 1**. The inequity between mean (.20) and standard deviation (.40) for student-athletes shows the small number of cases relative to controls (**Table 1**) and is consistent with the 23.29% of student-athletes for the overall university at the time noted above.

4.1.2. Zero-order Correlations and Hypothesis Testing

Scholarship students were positively correlated with both social loafing (.17, p<.01) and university satisfaction (.27, p<.01). Student-athletes were uncorrelated with social loafing (-.02, p=NS) and strongly negatively correlated with university satisfaction (-.35, p<.02). The pattern of correlations with social loafing, scholarship students positive and student-athletes non-significant, provide initial support for Hypothesis 1. The pattern of correlations with university satisfaction, scholarship students strongly positive and student-athletes strongly negative, similarly provide initial support for Hypothesis 2.

The strong negative correlation between scholarship students and student-athletes ($-0.61, p < .01$) is consistent with the crosstabs analysis in **Table 1** showing the only overlap existed with 53 cases being controls for both variables.

4.1.3. Regressions and Hypothesis Testing

Regression analysis on social loafing for Phase I in **Table 3** show the block including scholarship students and student-athletes as significant ($\Delta R^2 = .05, p < .01$). Betas for both variables were positive, with scholarship students ($.27, p < .01$) being larger and more significant than student-athletes ($.20, p < .05$). The relationship between student-athletes and social loafing changed dramatically from the correlation data in **Table 2** (non-significant) to the regression data in **Table 3** (significantly positive). This shows student-athletes do also experience social loafing, but the difference in beta sizes in **Table 3** empirically demonstrates scholarship students' experience with social loafing to be more common. Thus, Hypothesis 1 was supported.

Regression analysis on university satisfaction for Phase I in **Table 3** show the block including scholarship students, student-athletes, and social loafing as significant ($\Delta R^2 = .16, p < .01$). Only the beta for student-athletes was significant, and strongly negative ($-.35, p < .01$). Correlation data in **Table 1** showed a positive relationship between scholarship students and university satisfaction that disappeared in the regression analysis. These data show the difference between the two groups is a substantially more negative experience for student-athletes. While the presumed mechanism of a positive relationship between scholarship students and university satisfaction supported in **Table 2** was incorrect, the overall result was that student-athletes satisfaction was dramatically lower than for scholarship students. Thus, Hypothesis 2 was also supported.

4.2 Phase II

Descriptive statistics on Phase II variables are shown in **Table 4**. The table also shows the zero-order correlations and Cronbach alpha reliability for social loafing and team attitude.

4.2.1. Means and (Standard Deviations)

The mean of social loafing and university satisfaction are the same as **Table 2** (described above). The mean of gender ($.61$) indicates the sample included more females than males (59.7% to 37.9%). Data provided by the university's institutional research administrator showed females comprised 53.20% of student enrollment in Fall 2011, indicating the sample was slightly more female than the overall population. The mean of 2.44 for classification is deceiving. The survey was distributed in mostly freshmen- and senior-level classes, so most respondents were freshmen ($N=165$) or seniors ($N=146$). The mean suggests the average was between a sophomore and junior, but these were the smallest groups having 94 sophomores and 95 juniors. The mean for scholarship percent was 57.40% , with a large standard deviation of 29.35% . As noted above, the university's top business administrator calculated the overall university's percent cost of attendance for Fall 2011 to be 35.7% , 20% lower than self-reported scholarship percent. The discrepancy may be due to students inflating their scholarship percent, or that their scholarship percent is accurate for covering tuition but neglects other costs such as housing (percent cost of attendance does include tuition, housing, fees, and books).

The mean of team attitude was $5.02 (1.35)$, indicating an overall positive attitude towards teams on the 7-point semantic differential. The mean for percent athletes of $24.64 (12.64)$ indicates roughly a quarter of all university students were student-athletes. Also noted above, the university's top academic administrator calculated the overall university's percent of student-athletes for Fall 2011 to be 23.29% , meaning the percent athletes for the sample essentially matched the population. The mean of $35.48 (1.52)$ for percent cost of attendance for academic aid was roughly 25% less than the mean of $46.96 (5.22)$ for percent cost of attendance for athletic aid. While the percent of student-athletes was roughly 25% , these data show a substantially larger percent of these student's college costs being covered than for academic aid students (consistent with the university's top business administrators data described above). These school-level variable means empirically validate the monetary difference between student-athletes and non-athletes, which may unintentionally engender a "mercenary mentality" or "otherness" perception among student-athletes.

4.2.2. Zero-order Correlations

Negative correlations with social loafing were for team attitude ($-.45, p < .01$) and percent cost of attendance - academic aid ($-.10, p < .05$). Negative correlations with university satisfaction were for percent athletes ($-.19, p < .01$) and percent cost of attendance - academic aid ($-.12, p < .01$), while positive correlations were for gender ($.24, p < .01$) and team attitude ($.13, p < .01$).

Among the Phase II individual- and school-level variables were 6 significant correlations, 4 of which were with percent cost of attendance - athletic aid. Classification and team attitude were negatively correlated ($-.11, p<.05$), while team attitude and percent cost of attendance - academic aid were positively correlated ($.10, p<.05$). Percent cost of attendance - athletic aid was positively correlated with classification ($.15, p<.01$) and percent athletes ($.25, p<.01$), while negatively correlated with gender ($-.10, p<.05$) and percent cost of attendance - academic aid ($-.72, p<.01$). The pattern of correlations for percent of cost attendance - athletic aid (strongly positive with percent athletes and very strongly negative with percent cost of attendance - academic aid) indicates some schools seem to attract and reward student-athletes and others attract and reward scholarship students (i.e., percent cost of attendance - academic aid). These school-level, objectively gathered data parallel the orthogonal nature of scholarship students and student-athletes noted in **Table 1**.

4.2.3. Big Data Market Segmentation - Group Profiles

Descriptive statistics of Phase II variables by student group are shown in **Table 5**, which are provided in this easier format rather than 2 additional columns in **Table 4**. The first number is the correlation coefficient. Numbers within the parentheses are the means for each of the dummy-coded cases (0 or 1). The first number in the parentheses is for "1's" (either scholarship students or student-athletes) and the second number represents "0's" (controls). The correlations for social loafing and university satisfaction are identical to **Tables 2** and **4**. The pattern that emerged for scholarship students is more social loafing experienced ($.17, p<.01$), higher university satisfaction ($.27, p<.01$), female ($.30, p<.01$), higher scholarship percent ($.19, p<.05$), negative team attitude ($-.18, p<.01$), and majored in schools with fewer athletes ($-.16, p<.01$ with percent athletes and $-.14, p<.05$ with percent cost of attendance - athletic).

The contrary pattern for student-athletes shows a negative attitude towards the university ($-.35, p<.01$), male ($-.28, p<.01$), higher scholarship percent ($.17, p<.01$), and majored in schools with more athletes ($.24, p<.01$ with percent athletes). The primary differences between scholarship students and student-athletes are the former are female, dislike teams, major in non-athlete schools, while the latter are male and major in athlete schools. The common element shared by both groups is that their percent scholarship is (1) significantly greater than controls, and (2) roughly the same for scholarship students and student-athletes (66.4% and 68.0%, respectively). These last data provide strong support for the basic thesis of this paper, namely that scholarship students and student-athletes both respond rationally to conflicting reward systems. Being a scholarship student confers essentially the same monetary benefit relative to control (66.4% v. 54.8%) as being a student-athlete does relative to control (68.0% v. 55.3%). *Why* to remain a member of these groups is clear...it's the reward system. *How* to remain a member of these groups is by focusing on GPA (scholarship students) or satisfying the coach (student-athletes).

4.2.4. Regressions and Hypothesis Testing

Hierarchical regression analysis on social loafing for Phase II in **Table 6** show the first block including individual- and school-level variables as strongly significant ($\Delta R^2=.26, p<.01$), and the second block including reward groups and social loafing as marginally significant ($\Delta R^2=.02, p<.10$). Betas for both reward group variables were positive, with scholarship students ($.17, p<.05$) being only slightly larger and more significant than student-athletes ($.16, p<.10$). Team attitude was clearly most strongly related with social loafing ($-.47, p<.01$). Although much less distinct, these data provide further support for Hypothesis 1. Hierarchical regression analysis on university satisfaction for Phase II in **Table 6** show the first including individual- and school-level variables as strongly significant ($\Delta R^2=.15, p<.01$), and the second block including reward groups and social loafing also significant ($\Delta R^2=.09, p<.05$). Only the beta for student-athletes was significant, and strongly negative ($-.30, p<.01$). Females were significantly more positive ($.17, p<.01$), team attitude was marginally more positive ($.12, p<.10$), while students from schools with a higher percent of athletes were more negative ($-.16, p<.05$). These data parallel the Phase I regression pattern in **Table 3**, thus providing additional strong support for Hypothesis 2.

5. Discussion

This study was intended and designed to assess the effects of conflicting reward systems on student's class and university experience. The two conflicting reward systems, one based on high GPA and the other based on athletic team participation, did have meaningful effects. As posited, scholarship students did experience more social loafing than student-athletes consistent with the social dilemma / cutthroat cooperation framework depicted in **Figure 1**. As this explanation for social loafing is new to the literature, it requires replication to verify its existence and strength at other universities.

Results also showed scholarship students college experience being substantially different than student-athletes. While different, the unanticipated result in **Table 3** shows highly significantly *lower* university satisfaction for student-athletes. This is a troubling result which needs further study.

The design of this study involved a traditional research design (Phase I) intended to assess the effects of *how* students are rewarded, coupled with a "Big Data" research design (Phase II) intended to determine *whom* members of each reward group were (**Table 5**). Scholarship students were primarily female, experienced more social loafing, had higher university satisfaction, had negative attitudes towards class teams, and majored in schools with fewer student-athletes. Student-athletes were primarily male, had lower university satisfaction, and majored in schools with more student-athletes. Of particular interest was that each group received high scholarship percent, providing further evidence of the basic assumption of this study that each group's members rationally responded to their reward system. That these reward systems are based on conflicting criteria is the reason for meaningful differences in these student's class and college experience.

6. References

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Table 3
Phase I Hierarchical Regression Results Predicting Student Perceptions and Attitudes

Block	Social Loafing Step 1 β	University Satisfaction Step 1 β
<i>1. Reward Groups & Social Loafing Variables</i>		
Scholarship Students	.27**	.06
Student-Athletes	.20*	-.35**
Social Loafing		-.09
<i>ΔR^2 for block</i>	.05**	.16**
<i>R^2 for model</i>	.05**	.16**

* $p < .05$; ** $p < .01$

Table 4
Descriptive statistics and correlations
among dependent and phase II independent variables¹⁻²

	Mean	Std. Dev.	1.	2.	3.	4.	5.	6.	7.	8.	9.
<i>Dependent Variables</i>											
1. Social Loafing	2.86	.72	(.77)								
2. University Satisfaction	5.77	1.67	-.04								
<i>Independent Variables - Individual-Level</i>											
3. Gender (1=female)	.61	.49	.07	.24**							
4. Classification (4=senior)	2.44	1.22	.06	.03	.03						
5. Scholarship Percent	57.40	29.35	.08	-.01	-.05	-.03					
6. Team Attitude	5.02	1.35	-.45**	.13**	-.03	-.11*	-.04	(.85)			
<i>Independent Variables - School-Level</i>											
7. Percent Athletes	24.64	12.64	.03	-.19**	-.03	.02	.05	.07			
8. Percent Cost of Attendance - Academic Aid	35.48	1.52	-.10*	-.12**	-.02	-.07	.05	.10*	.03		
9. Percent Cost of Attendance - Athletic Aid	46.96	5.22	.06	.03	-.10*	.15**	-.07	-.03	.25**	-.72**	

¹ * $p < .05$.

² ** $p < .01$.

Table 5: Conflicting Rewards Student Groups Profiles

Profile Characteristics	Scholarship Students	Student-Athletes
Dependent Variables		
Social Loafing	.17** (2.97 / 2.71)	-.02 (2.86 / 2.90)
University Satisfaction	.27** (6.14 / 5.19)	-.35** (4.71 / 6.12)
Individual-Level Var.		
Gender	.30** (0.71 / 0.41)	-.28** (0.34 / 0.68)
Classification	-.05 (2.40 / 2.51)	-.01 (2.42 / 2.46)
Scholarship Percent	.19** (66.4 / 54.8)	.17** (68.0 / 55.3)
Team Attitude	-.18** (4.77 / 5.26)	-.01 (4.96 / 5.00)
School-Level Var.		
Percent Athletes	-.16** (21.4 / 25.4)	.24** (30.4 / 22.6)
Academic – Percent Cost of Attendance	-.01 (35.5 / 35.6)	.02 (35.5 / 35.4)
Athletic – Percent Cost of Attendance	-.14* (45.6 / 47.1)	.05 (47.6 / 46.9)

Correlation coefficient
 Group Means ("1" / "0")
 * = p-value ≤ 0.05.
 ** = p-value ≤ 0.01.

Summary Profile

Scholarship Students

Experience more social loafing, higher university satisfaction, female, higher scholarship %, negative towards teams, fewer in high athlete % schools.

Student-Athletes

Lower university satisfaction, male, higher scholarship %, more in high athlete % schools

Table 6
Phase II Hierarchical Regression Results Predicting
Student Perceptions and Attitudes

Block	Social Loafing		University Satisfaction	
	Step 1 β	Step 2 β	Step 1 β	Step 2 β
1. Individual- & School-Level Variables				
Gender (1=female)	.02	.00	.23**	.17**
Classification (4=senior)	-.01	-.02	-.04	-.01
Scholarship Percent	.04	.00	.00	.03
Team Attitude	-.49**	-.47**	.13_	.12_
Percent Athletes	.09	.05	-.26**	-.16*
Percent Cost of Attendance - Academic Aid	-.08	-.06	-.07	-.07
Percent Cost of Attendance - Athletic Aid	-.05	-.01	.07	.08
2. Reward Groups & Social Loafing Variables				
Scholarship Students		.17*		.03
Student-Athletes		.16_		-.30**
Social Loafing				-.04
<hr/>				
ΔR^2 for block	.26**	.28**	.15**	.24**
R^2 for model	.26**	.02_	.15**	.09**

_p<.10; *p<.05; **p<.01