ANALYZING THE B-TERM PLUNGE

An Interactive Qualifying Project Report

submitted to the Faculty

of the

WORCESTER POLYTECHNIC INSTITUTE

in partial fulfillment of the requirements for the

Degree of Bachelor of Science

by

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Date: May 1, 2002

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Abstract

We intend to show, through statistical analysis of grades and survey data, the reasons why freshmen have difficulty during B-Term. We will be using the CIRP (Cooperative Institutional Research Program) survey data and MBTI (Myers-Briggs Type Indicator) types to identify traits that could lead to the B-Term Plunge.

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1 Introduction

Over the past few years, several studies have been conducted at WPI relating freshman-year grades to a learning style indicator called MBTI (Myers-Briggs Type Indicator). A very interesting trend appeared for nearly all students in the classes of 2002 and 2003, especially those of a certain type. For most types of students, grades dropped significantly between A-Term and B-Term, and rose again in C-Term. This phenomenon has since been named the B-Term "plunge."

The goal of this project was to determine why the B-Term plunge occurred. Through the use MBTI data gathered during freshman year, it is possible to determine which students are most likely to struggle during B-Term. Using these results, one can attempt to figure out who these people are, and identify factors that may have caused their drop, or at least predict for whom other factors can accentuate it to the point of endangering their chances of success overall.

The results of the project will benefit the WPI academic community as a whole. Teachers, administrators, and other faculty will know more about how to make WPI a better learning environment by anticipating specific changes in the behavior of freshman. Advisors will be able to help freshman decide their course loads and other academic choices based on the results of the project's description and explanation of the "seasonal variation" in performance by psychological type.

We have several theories regarding the B-Term plunge that we are planning on looking at

in detail to see if they hold. The first such theory is that the B-Term plunge most strongly affects math and science courses. WPI is an engineering school and almost all freshman take math and science courses during their first few terms. We suspect that students have the hardest time with these courses, as they are designed to cover all the necessary math and science knowledge to be used in later years.

In addition, we believe that humanities professors are less willing to fail students than math or science professors. This is understandable because math and science courses are the core of WPI's curriculum and *must* be mastered before a student can continue. Humanities courses, on the other hand, are something that every student has to complete, but are less directly related to their future. We argue that humanities courses are graded more on effort than math and science courses, which are graded on knowledge. We don't necessarily disagree with this practice and are not criticizing it.

It has been observed for the classes of 2002 and 2003 that the Sensing-Perceiving MBTI type is most affected by the B-Term plunge. SP's are known to have a hard time in school.[1] Since our study deals with the class of 2002, we already know that SP's are affected by the B-Term plunge. However, we intend to look deeper to see if there are any specific types of courses where the plunge can be be seen clearly.

The CIRP contains a plethora of information. There are so many variables that we could look at and not enough time to look at them all in detail. We plan to choose the most

[1] Judith A. Provost, *Procrastination* (Gainesville, FL:Center for Applications of Psychological Type:1988) 6-13

promising variables regarding academic self-image and combine them to see how well they work as a predictor of academic success. We believe that this new variable will have some sort of correlation to GPA, however small it may be.

2 Literature Review

2.1 MBTI

The Myers-Briggs Type Indicator is a tool used to categorize a person's personality or cognitive style. It is based on preferences involving four variables that affect energy, orientation, structure and the way they use their mind to process information and come to a decision.

2.1.1 History of the MBTI

The MBTI is the creation of Isabel Briggs Myers and her mother, Katharine Cook Briggs that was based on the work of the Swiss psychologist C. G. Jung. Jung wanted a way to explain the differing points of view people held that was observed in his work, so he came up with a typing system which included six major aspects arrayed on 3 variables. Four of these aspects, sensing, intuition, thinking and feeling, deal with a fundamental mental processes. The other two aspects, introversion and extraversion, described human attitudes towards the outside world.

Myers and Briggs took these types and added two more factors, judging and perceiving, to deal with Jung's concept that there was a dominant process to be identified. Interested in testing Jung's theory, they developed a questionnaire and showed that it was possible to type a person based on their answers. Katherine Briggs had been doing her own work attempting to categorize the differences between people, and Jung's work fit right in with

her own. They surveyed people, collecting their types, for 20 years.[2]

2.1.2 How the MBTI works

The Myers-Briggs Type Indicator is now a widely used method of rating an individual's learning styles and preferences. It uses a system of four preferences to assign a specific type to a person. The four dimensions are as follows:

Extraversion/Introversion (E/I) - A Preference for Extraversion means the person tends to focus on the outer world, consisting of other people and activities. They are attracted to activities where they can be part of the action. They draw energy from, and expend energy towards the outer world.

A Preference for Introversion means the person tends to focus on their own personal inner world, consisting of emotions, thoughts, and impressions. They are interested in unraveling the underlying explanations of how the world works.[3]

Sensing/Intuition (S/N) - This dimension deals with how a person perceives their environment. Sensing people use their five senses to gather information about their environment. They are primarily concerned with what is "real", meaning tangible.

An intuitive person prefers to look at the big picture. They concern themselves with how changes in their environment can affect everyone around them. Intuitive types look at the

[2]McCaulley, Mary H., Martin, Charles R.. "Career Assessment and the Myers-Briggs Type Indicator." *Journal of Career Assessment.* Vol 3, Number 2, Spring 1995, 219

[3]McCaulley and Martin, 221

abstractions or theories suggested by the facts and read between the lines.[4]

Thinking/Feeling (T/F) - The T/F dimension deals directly with a person's decision-making processes, and is the only one that shows any difference between the sexes. The majority of males are of the thinking type, while more females are in the feeling category. Thinking types use a dispassionate, logical process (such as the scientific method) to answer questions. They are generally interested in science and engineering careers where this type of problem-solving is best utilized.

People who prefer feeling focus more on how a decision will affect themselves, others, and the environment around them. They empathize with those affects and are drawn to careers that involve working with others, such as teaching and counselling.[5]

Judging/Perceiving (J/P) - This dimension describes what type of mental process a person uses while in an extraverted attitude. A judging person tends to make decisions as soon as possible. They will only wait until they have enough data to believe their decision is probably correct.

Perceiving types prefer to wait as long as possible before making a decision. They want to know everything regarding a particular matter before finalizing anything. A perceiving person will leave as many doors open as possible for as long as they can.[6]

[4]McCaulley and Martin, 221-222
[5]McCaulley and Martin, 222
[6]McCaulley and Martin, 222

2.1.3 The Types

ENFJ - Extraverted Feeling with Introverted Intuition - ENFJs are very sensitive to the needs of others, often putting others' needs before their own. They focus on helping others and bringing people together. As a leader, ENFJs draw out the best in everyone involved. They enjoy variety and new challenges. They are sociable, friendly, and can be persuasive to others. ENFJs are the highest in belief in a higher spiritual power. Female ENFJs are seen as most likely to have the least trouble in school.[7]

In school, ENFJs have little trouble in keeping up with academic work. The only issues they usually encounter involve relationships with others. ENFJs value stability in their relationships more than their grades and will go to great lengths to maintain the harmony. This can include intentionally ignoring work in order to appear on the same level of learning as a friend or significant other. [8]

ENFP - Extravert Intuition with Introverted Feeling - ENFPs are energetic and imaginative. They can adapt to most environments and learn to prosper there. They understand other people and will try to meet their needs whenever possible. Others see them as warm, friendly, and supportive. They enjoy meeting new people and having new experiences. ENFPs are usually very sociable and have a large circle of friends. Others are drawn to their

[7]Isabel Briggs Myers, *MBTI Manual* (Palo Alto, CA:Consulting Psychologists Press, Inc., 1998), 100-102
[8]Judith A. Provost, *Procrastination* (Gainesville, FL:Center for Applications of Psychological Type:1988) 13

ability to bring a zest to almost anything.[9]

In school, ENFPs find themselves overwhelmed by the number of tasks they take on. They are easily distracted by the amount of activities going on around them and have a difficult time focusing on the important tasks at hand. ENFPs suffering from this kind of procrastination need to be coached into dropping the less important tasks and focusing on the necessary schoolwork.[10]

ENTJ - Extraverted Thinking with Introverted Intuition - ENTJs have a natural tendency to organize people and get them moving towards their goal. Because of this, they prefer a leadership role. ENTJs have a desire to correct inefficiencies they find. They have the ability to think ahead to what will be needed and are skilled at devising large-scale plans. They are naturally critical of others and hold the same standards for themselves as they do for everyone else. ENTJs love interacting with other people. They enjoy learning through arguments, where both sides can openly express their opinions.[11]

In school, ENTJs are usually quite good about turning work in on time. They can, however, be overwhelmed by the complexity of a particular assignment and ignore it so they don't feel incompetent. If they encounter this kind of problem, the best method of helping them is to improve their skills or change the assignment. ENTJs want to feel in control of the situation and it is important to maintain that control. [12]

[9]Myers, 79-82
[10]Provost, 8
[11]Myers, 89-93
[12]Provost, 12

ENTP - Extraverted Intuition with Introverted Thinking - ENTPs are creative innovators. They are constantly watching for opportunities to arise in their environment. ENTPs enjoy solving complex problems in new and imaginative ways. They are usually quite skilled at interpreting other people's emotions and personalities and understanding their situation. Others see ENTPs as quick-witted and assertive. They enjoy verbal confrontation and are very adept at it.[13]

In their studies, ENTPs find it difficult to focus on their schoolwork. They are easily distracted by all the exciting activities going on around them and want to be involved in everything they find interesting. ENTPs will even go to the extent of sacrificing sleep and health to complete all the work they have promised to do. When the procrastination reaches this state, they need to be guided to the work that is most important.[14]

ESFJ - Extraverted Feeling with Introverted Sensing - ESFJs are people organizers who enjoy solving any sort of problem. They can bring people together and devise and implement a solution to a problem. ESFJs like celebrations and being social. They desire appreciation from other for what they do. They are uncomfortable in tense situations and are sensitive to the actions of others. They prefer to work in a routine rather than in a changing environment that requires expert knowledge of abstract ideas. ESFJs like structured situations and traditions, and like to do things in the accepted way. Others see them as organized,

[13]Myers, 77-80
[14]Provost, 8

sociable, and enthusiastic people.[15]

In school, ESFJs rarely have problems with handing assignments in on time. Problems are usually caused by relationships with others, not themselves. They do not wish to hurt others they may be competing with by looking smarter or better at a particular subject. They desire harmony in their relationships and will sacrifice grades in order to maintain it.[16]

ESFP - Extraverted Sensing with Introverted Feeling - ESFPs are active, energetic individuals. They like to add fun and enjoyment to every aspect of their life. Working in groups comes naturally to ESFPs, and focus on solving the problem at hand as easily as possible. They look forward to new experiences and meeting new people. Structures and rules don't mix well with ESFPs. They find regulations obstructive to their style and will avoid them as much as possible.[17]

In school, ESFPs have difficulty concentrating on long-term tasks. They are easily drawn away from their studies by outside activities. ESFPs tend to focus on short-term gratification and desire a variety of different things to keep them busy.[18]

ESTJ - Extraverted Thinking with Introverted Sensing - ESTJs have a preference for organization of systems. They enjoy utilizing known methods to solve problems that arise.

[15]Myers, 96-100
[16]Provost, 13
[17]Myers, 72-74
[18]Provost, 9

They expect others to follow a system of rules similar to their own. ESTJs make good administrators because of their abilities to work with systems and logistics. They are generally objectively critical and assertive with their opinions. Others see their organization and their preference for procedures and schedules. They can depend on ESTJs to get the job done. However, because of their assertiveness and self-confidence, sometimes they can seem overpowering.[19]

In school, ESTJs generally have little problem turning assignments in on time. Sometimes, however, they are given a task that is out of the scope of their abilities. These tasks can lead to procrastination in order to avoid the feeling incompetent or powerlessness. [20]

ESTP - Extraverted Sensing with Introverted Thinking - ESTPs have a very energetic outlook on life. They love it and do their best to make it as exciting as possible. Creative problem solving comes naturally to them and they are capable of inventing new ways to solve problems using existing methods and tools. ESTPs may have difficulty in school because of their learn-by-doing nature, and find reading and studying slow and uninteresting. Other people see them as spontaneous, fun-loving, risk-takers. They are very dynamic in their ability to solve problems, reacting however is necessary to get the job done. ESTPs have relatively low stress levels and tend to have satisfaction in their relationships.[21]

Studying is hard for ESTPs. They tend to lose focus on reading and writing and give in to

[19]Myers, 88-90
[20]Provost, 12
[21]Myers, 68-71

the excitement occurring around them. It is necessary for them to develop their introverted judgment function in order to maintain focus on the important tasks at hand.[22]

INFJ - Introverted Intuition with Extraverted Feeling - INFJs have a deep connection human feelings. They can sense the motivations and feelings of another person quite naturally and will dynamically respond to those senses. INFJs are not interested in details and data. They desire meaning and emotion in their lives. This longing extends through their work, relationships, and even material possessions. Others see INFJs as intense and individualistic.[23]

In their studies, INFJs can have a difficult time focusing their thoughts on the task at hand. When trying to write a paper, they can become frustrated from the maze of thoughts in their heads and have a difficult time converting those thoughts to writing. The best way to deal with this problem is to help the person understand their own type and process.[24]

INFP - Introverted Feeling with Extraverted Intuition - INFPs are sensitive, caring individuals who have idealistic views on the world. They desire their work to accomplish something that improves themselves and others and is not just a paycheck. INFPs establish priorities for themselves and work towards maintaining them. They are able to read other peoples' priorities and respond to them. Others see them as concerned and loyal friends. INFPs are capable of long-range planning and preparation. They take commitments to oth-

[22]Provost, 9
[23]Myers, 75-78
[24]Provost, 10

ers very seriously, but have a difficult time doing work that seems unimportant to them.[25]

In school, INFPs can have a difficult time knowing when to stop collecting information and begin to finalize an assignment. Their quest for perfection leads them to endlessly gather data in order to have the most accurate solution possible.[26]

INTJ - Introverted Intuition with Extraverted Thinking - INTJs are logical, long-range thinkers. They enjoy solving complicated problems on a global scale and can readily combine theoretical and abstract matters to apply to a particular situation. INTJs expect the best from themselves and from others. They use their own intuition even if it contradicts established practices. They frequently rise to leadership positions through their future planning abilities.[27]

In school, INTJs can have a hard time focusing on their academic work. Writing assignments can especially frustrate them because of the way they think. INTJs tend to have many thoughts running through their minds at one time. This situation can cause a person to lose concentration on the assignment. INTJs need to understand their type and how they process things in order to avoid this kind of problem in their studies.[28]

INTP - Introverted Thinking with Extraverted Intuition - INTPs are independent problem solvers. They are able to find a clear, objective analysis of a problem at hand. They prefer

[25]Myers, 95-97
[26]Provost, 6
[27]Myers, 74-76
[28]Provost, 10

to work alone where they are able to use unorthodox methods without criticism. INTPs have a natural tendency to be skeptical of any assumptions. They make their own decisions based on evidence they see first-hand. They prefer to work on complex problems where their logical and analytical abilities will be most helpful. Others see INTPs as quiet, detached observers who value autonomy.[29]

In their studies, INTPs may have a difficult time cutting off an assignment so they have time to complete all of their work. Their desire for perfection can cause them to spend too much time on individual projects and they will neglect their other assignments.[30]

ISFJ - Introverted Sensing with Extraverted Feeling - ISFJs are reliable and considerate people. They take great concern with the needs of others even when they don't necessarily agree. ISFJs tend to be cooperative and respectful of others, and work well in groups. Others see them as practical and realistic, not casting of quick judgment on anyone. ISFJ's are found to be the most susceptible to stress-related health problems, commonly caused by a rapidly changing workplace, family structure, and social institutions. They are among the highest in believing in a higher spiritual power.[31]

In their studies, there is a tendency to spend too much time collecting data and not enough time completing assignments. The quest for perfection on each task hinders their ability to manage many assignments simultaneously.[32]

[29]Myers, 85-87
[30]Provost, 6
[31]Myers, 67-69
[32]Provost, 11

ISFP - Introverted Feeling with Extraverted Sensing - ISFPs prefer to live their own lives the way they want. They like to take time to enjoy things and make their own schedules. The believe others should be free to follow their own course as well. ISFPs deeply care about others, and show their affections through quiet actions rather than words. They enjoy helping others and want to contribute to their well-being. ISFPs tend to be flexible unless their core values are endangered, then they can become very rigid. Others see them as quiet, reserved, and rather private individuals. They also appear to be tolerant of others.[33]

In school, ISFPs prefer open-endedness over closure. This causes them to avoid work that they may not see as immediately necessary and put it off to do later. Proper motivation is helpful in getting the student to do the work early. ISFPs need a personal motivator, such as pleasing their favorite teacher.[34]

ISTJ - Introverted Sensing with Extraverted Thinking - ISTJs prefer a rigid, easy to follow regiment. They like order and reliability in their life. At the work place, ISTJs feel most comfortable in an unchanging environment. Although preferring to work alone, they are very capable of working in groups, provided the other members have the same sense of quality and seriousness. ISTJs have a difficult time trusting others to accomplish the high level of quality they expect from themselves. They are among the more susceptible types to stress-related disorders like drug abuse, hypertension, and job burnout.[35]

[33]Myers, 91-95
[34]Provost, 7
[35]Myers, 65-67

In school, they take work very seriously and tend to relate grades to their own self-worth. ISTJ students aim for perfection on every assignment. When the workload becomes such that there is not enough time to achieve this level of perfection, they may become frustrated and avoid work in a particular area.[36]

ISTP - Introverted Thinking with Extraverted Sensing - ISTPs are careful observers. When a problem arises, they are able to quickly find a solution that is the most efficient and requires the least effort. ISTPs base decisions on facts and data, and tend to be more impersonal and objective. They do not worry about theoretical possibilities, rather, they only concern themselves with what is and what can be done with it. Others see ISTPs as independent, confident, and adaptable people. They are over-represented in groups for substance abuse, heart disease, and hypertension.[37]

In school, ISTPs prefer to leave assignments that are not due immediately and pursue something that has instant gratification. Good motivations for ISTPs are feelings of achievement and mastery.[38]

2.2 CIRP

The Cooperative Institutional Research Program, at UCLA is administered by the Higher Education Research Institute (HERI). HERI produces a CIRP survey each year for new

[36]Provost, 11
[37]Myers, 81-84
[38]Provost, 7

college freshmen and other surveys for people who have taken the CIRP earlier. It is designed to give institutions an instant look at the profile of their freshman class. It also includes a comparison to the national data collected. The data collected can be used in many ways:

- admissions and recruitment
- academic program development and review
- institutional self-study and accreditation activities
- public relations and development
- institutional research and assessment
- retention studies
- longitudinal research about the impacts of campus policies and programs

The survey is broad enough to apply to any institution. It covers many general issues like demographic characteristics, expectations of the college experience, secondary school experiences, degree goals and career plans, college finances attitudes, values, life goals, and reasons for attending college. Items from previous years are included in each subsequent survey for trend analysis. A sample CIRP survey can be found in Appendix C on page 74.

2.3 WPI Grades

The WPI grading system is a very unique one and is worthy of an explanation before you can fully understand this project. For each course, you may either earn a mark of A, B, C, or NR. NR is short for "No Record" and means that you did not pass the course, however you will not be penalized with a permanent mark saying you failed. This leaves you with three passing grades, A, B, and C. There are no plus or minus grades, and no D's or F's. This

project, along with all of those mentioned below, work on a three-point GPA scale. That is, A=3, B=2, C=1, and NR=0.

WPI also uses a quarter system, as opposed to the more standard semesters of other colleges. There are four seven-week quarters during a normal school year, named A-Term, B-Term, C-Term, and D-Term. There also exists an E-Term which runs during the summer.

The normal workload for a student is three classes per term. Taking more than three classes is called an overload, while taking less than three is referred to as an underload. A typical student would then take twelve courses in a year.

2.4 Related Projects

There were three previous IQP's that contained information relevant to what we were looking at. None of them specifically looked at the B-Term plunge, but two of them showed its existence.

2.4.1 Class of 2001 Study

Class of 2001 Study, by Peter Kline, Eric Niccoli, and Kane Sheldon, tried to find predictors of academic success. Relating to this report, they looked at the connections between students' overall GPA at WPI, their MBTI type, and their SAT I score. By looking at the correlations between GPA and SAT scores by MBTI type, they showed for which groups the SAT score was a good predictor of academic success. For the groups with correlations above 0.5, the

SAT score was able to explain between 26% and 43% of the variance in freshman-year grades.

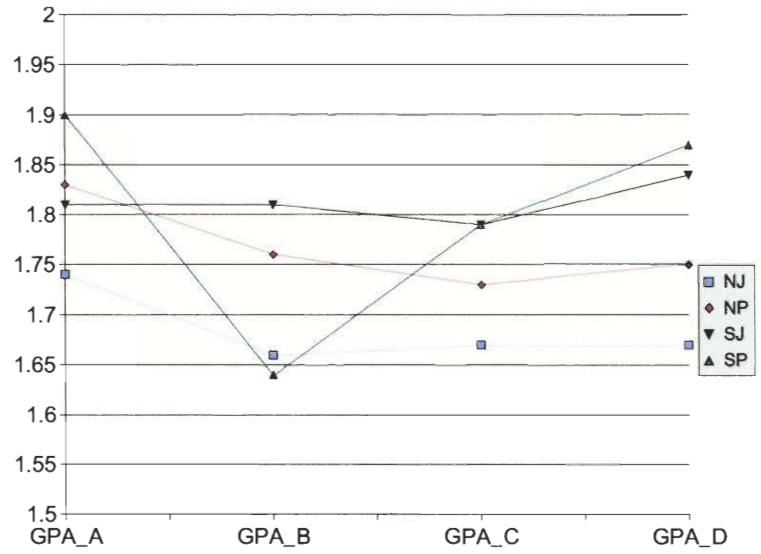
The six MBTI types for which SAT was a good predictor were ENTJ, ENTP, ESTJ, ESTP, INFJ, and ISTJ. It is noticeable that five of these six groups prefer thinking over feeling (T-F variable). For the "T" groups, SAT was a decent predictor. However, for the "F" groups, SAT scores had little use for predictions of WPI grades. Combining with the "JP" variable showed even more. All four TJ types had a high level of correlation while four of the bottom six correlations were FP types. The "EI" and "SN" dimensions did not appear to be associated in any way with the predictive value of the SAT.

2.4.2 1st Year Experience for Class of 2003

Another project, *1st Year Experience for Class of 2003*, by Tara Murphy, was the first project to report the B-Term plunge. However, it had been noted earlier by Greg Doerschler when he analyzed the class of 2002 data. He was not a student and as a paid analyst, he never wrote up a report. Murphy looked at the freshman-year grades of the class of 2003 and their MBTI types, knowing from Doerschler's research that the year before there had been a drop in grades during B-Term.

Figure 2.1 clearly shows a drop for most students from A to B-Term, and in some cases, a recovery in C-Term. This was most accentuated for the SP group, going from the highest GPA in A-Term to the lowest in B-Term, then back to the top for C and D Terms. In the class of 2002 the SP plunge was less dramatic since their GPA's were the lowest of the four

Figure 2.1: Freshman Class of 2003 by term and MBTI type



types in A-Term.

One major problem caused by the WPI grading system is that NR grades really are "not recorded." While the method we used for handling NR's is discussed later in the report, we feel it necessary to look at the validity of the procedure used by Murphy in her report. The problem is that there is no way of telling for sure how many classes a student received an NR in. It is only possible to see which classes were actually passed, so determining which classes were not passed is somewhat of a guess.

Murphy's analysis was based on the assumption that students took exactly three classes each term, and thus, twelve classes in a year. If a student had grades recorded for two classes, it was assumed that they received an NR in a third course. In short, you would normally find a student's average GPA by dividing the sum of their GPA's by the number of courses

passed. She attempted to work around this problem by fixing the denominator at 3. If a student took more than three courses (called an overload), they could receive a GPA that is well above 3 (the equivalent of an A). While its possible that her methods could have yielded accurate results, it is clear that she was penalizing people who underloaded and rewarding those who overloaded, regardless of how well they actually performed. This concerned us, and we tried to do a more accurate job of guessing what people failed.

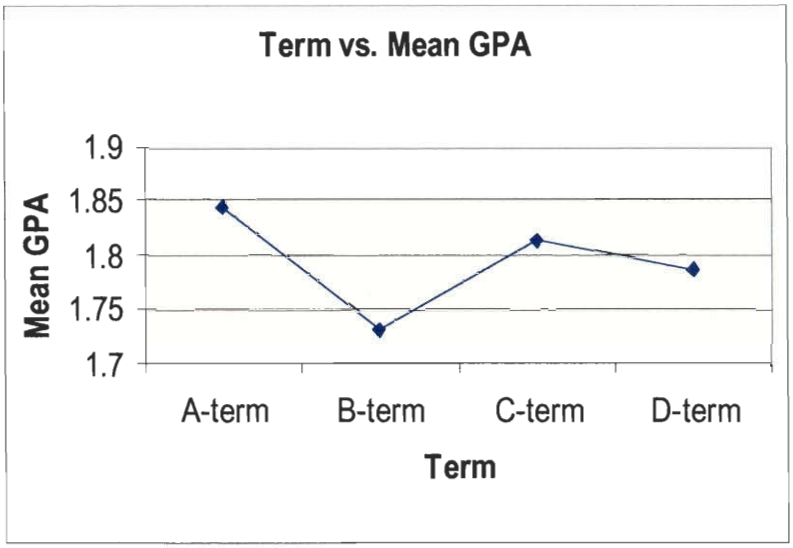
2.4.3 Data Mining to Predict Academic Success

A third IQP, *Data Mining to Predict Academic Success*, by Shannon Hoosick and Jesse Marzullo, was the most relevant to this report. They worked with the freshman-year grades of the class of 2002. They had both MBTI and CIRP data for the students, and offered some analyses of them. Their project specifically looked at the benefits of data mining, however the work they completed was very helpful towards performing a deeper analysis.

The end-result of their project was a large SPSS data file containing all students in the class of 2002, some basic grade data, high school grade data, sports information, MBTI, and CIRP. They performed some basic analysis on the data and reported the B-Term plunge results found by Doerschler and by Murphy. They pulled together data from both prior analyses in their report. Figure 2.2 shows a chart, taken right from their report, showing that overall the B-Term plunge did indeed exist for the class of 2002.

Unfortunately, their report does not go into as much detail as we would have liked. They

Figure 2.2: The B-Term plunge in Class of 2002



created three composite variables based on CIRP data, to show self-confidence, creativity, and activities, however they only compared these variables to MBTI types and gender. Most of their analyses involving MBTI looks at all 16 types, rather than focusing on one or two dimensions, making it harder to summarize. One item that we found lacking was a connection between their three composite variables and GPA's. While they might not have been interested in the results of such a comparison, it would have been a good preview of whether or not the CIRP data was useful as a predictor of academic success.

3 Methodology

3.1 Collection of Data

While the analysis in this report is focused on the freshman year of the class of 2002, we originally focused on the class of 2004 because it had not been looked at by anyone yet. While the data for the class of 2004 was never used, we are positive that the work we did complete towards obtaining data on them will be useful to another project in the future. Because of this, we are including information about the collection of data for the class of 2004.

3.1.1 Class of 2004 MBTI

The Class of 2004 MBTI scores were provided to us by our advisor, John Wilkes, in Excel format.

3.1.2 Class of 2004 Housing

At one point in our project, we considered using housing data from Residential Services. We were possibly going to look at how interactions between roommates of opposite MBTI types could affect grades and other similar ideas. This never got used, but we did collect the data. The housing office was able to give us, on paper, a detailed list of where every student on campus lived in A-Term 1998. We scanned this list into a computer and used Optical Character Recognition (OCR) to turn it into text. Next, we wrote a computer program to

import the text file into an access database.

3.1.3 Class of 2004 CIRP

At the time of this writing, the CIRP data for the Class of 2004 still has not been obtained. The reasons for this are somewhat complicated. Our plan was to link each student's CIRP data to their MBTI scores and grades. To make this link we need a unique identifier for each student, like the student's ID number. At WPI, the majority of the student body has their social security number as their ID number. HERI did not feel like they could release the students social security number to us unless the student specifically said they allowed it. An email from our advisor, John Wilkes, to William Korn at HERI and Mr. Korn's response is included in Appendix F on page 96. This email explains the situation pretty clearly, and HERI's feelings on it. However, it is now likely that HERI will let the WPI permission slip superceed theirs. We provided Prof. Wilkes with a copy of the data set noting those who had signed the WPI release.

3.1.4 Class of 2004 Grades

At the present time, we do not have grade data for the class of 2004. The reasons for this are less clear. There are standard procedures for making a request for data like this from the registrar, and those procedures were followed. We issued a request in B-Term 2001, and five months later we are still waiting. The Office of Academic Advising supported our request. When we checked the status of our request with the registrar, we were told that they were

just swamped with work and had no estimation as to when it would be done.

3.1.5 Change of Focus from 2004 to 2002

After three terms of waiting, we had not received the grades or the CIRP data for the class of 2004. We decided that it was necessary for us to stop waiting and change our focus to do the analysis of another class's data set. It was a minor setback for us as we were left with one term in which to analyze data that we had never seen before.

3.1.6 Class of 2002 Main Database

Our "Plan B" was made possible by the project *Data Mining to Predict Academic Success.* The end result of their project was a database incorporating freshman year grades, MBTI, CIRP, high school grades, and some information about sports. We obtained their database in SPSS format and it reduced our workload greatly as we no longer had to do any work collecting and combining data from many sources.

3.1.7 Class of 2002 Freshman-year grades in detail

While the database constructed by Hoosick and Marzullo was complete and well-organized, it lacked the detail in some areas that we were looking for. Regarding grades, they had simply summarized them into GPA's by term, overall GPA's, numbers of courses passed, and one section looking at specifically math classes. We wanted to know exactly what courses each student had passed so that we could see how the B-Term plunge looked inside different areas

of study.

When Hoosick and Marzullo obtained the freshman year grades for the class of 2002, they were in a very raw, unusable form. The job of putting them into SPSS was actually done by Greg Doerschler. His exact methods, as he wrote them, are included in appendix A on page 58. We saw in his documentation that there was a more raw form of the grades that contained all the data we really wanted. We obtained this file through our advisor, John Wilkes, and it had everything we wanted in it.

3.2 Reorganization of Data

3.2.1 Combining Freshman Grades with MBTI and CIRP

In order to analyze the data in a useful manner, some reorganization was necessary. We were provided with data files which included the following:

- A table containing class of 2002 student profile data, including CIRP responses and MBTI type information.
- A table with class of 2002 freshman grade data.

There exists no single program that had the capability to accomplish the kinds of analysis that we wanted, so we needed a portable data set. The student profile data was in SPSS format and had over 500 fields per student record. This was far too many to work with at any one time, so it was shortened to about 150 fields. The grade data was also not very

usable in the format we received it in. Its layout was such that all students had just one record each with all their classes. Such a format is not very versatile and it was changed into a single listing in which each class was listed individually with each student and what term the class was taken in. This allowed for much easier grouping than before. Cross-tab queries allowed the creation of customized, term-by-term data sets for analysis.

3.2.2 Assigning Course Types

For our analysis, we wanted to look at the types of courses that the students were taking. To do this, we split the courses into several categories. Humanities (Hu) consisted of all courses in HU, AR, EN, GN, HI, ID, PY, RE, RH, and SP. Pure sciences (Sci) were all courses in BB, CH, and PH. Engineering Sciences (Eng) were AS, BE, CM, CE, CS, EE, ES, FP, GE, MG, ME, and NE. The inclusion of management courses in our engineering sciences category may at first be surprising. In the end, it is actually pretty insignificant due to the small number of students taking MG courses freshman year, but we still feel it is justified. Social Sciences (SS) were all courses listed as SS. Math (Ma) was all courses listed as MA.

This breakdown was chosen for several reasons. This is how degree requirements are broken down for most majors. Everyone is required to take social science courses to graduate, and the majority of the student body does a sufficiency project in humanities. Every major has some basic requirement for math, and most majors separate pure science from engineering sciences. Pure science courses tend to be core courses for most majors, and people are likely

to get them out of the way during freshman year, whereas engineering sciences are courses they would take later, usually in their major (provided they are not majoring in a pure science).

These new course type categories were then applied to the cross-tab files made earlier. An average grade was made for each student in each of the five categories, and alongside it, a count of how many courses of that type were passed.

4 Analysis

4.1 GPA by Course Type

Using the five course categories set up before, we made a chart showing how the average GPA in each group changes from one term to another. In Figure 4.1 you can see that the B-Term plunge affected all course types other than engineering sciences. It may also be worth noting that students appear to be doing the worst in social sciences during A and B-Terms, with math and pure sciences also lower than engineering sciences and humanities. This chart could be misleading, however, because it does not count NR's. Only classes which were passed are accounted for. We will account for NR's in section 4.3 on page 41.

Figure 4.1: GPA by Course Type

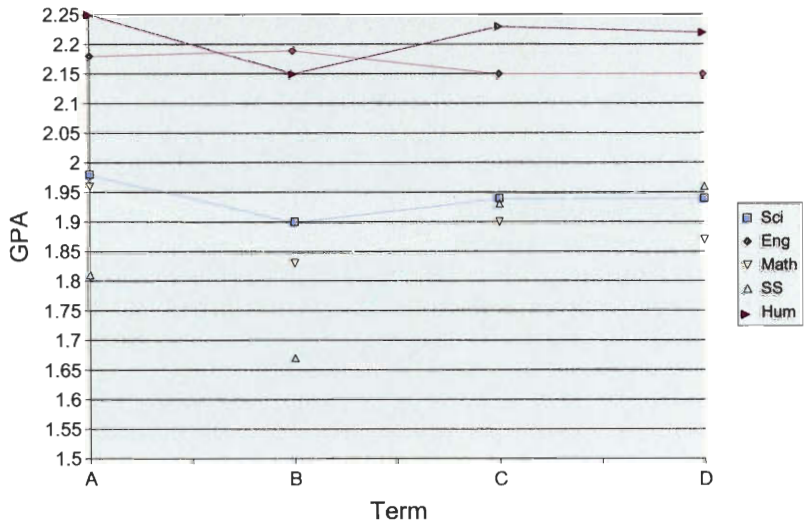


Table 4.1 shows how many students in each term we had both grade data and MBTI data

for, and how many of them took each type of class. Throughout all four terms, relatively few students take social science courses. While social science may show the most dramatic changes in figure 4.1, it is clear that it is by no means the cause of the B-Term plunge due to the small number of students taking those courses. C-Term was a low point for humanities courses, and the number of students taking engineering science courses almost doubled into C-Term and D-Term. Math drops off for the second half of the year (presumably many of these students must be taking engineering science courses for it to balance out), and social science stays pretty even.

Table 4.1: Number of students by term and course type

	A-Term	B-Term	C-Term	D-Term
Pure Science	432	373	409	316
Math	446	464	409	386
Engineering Science	179	159	272	278
Humanities	291	352	214	335
Social science	79	60	55	62
Total	529	520	511	509

4.2 GPA by Course Type and MBTI Type

Table 4.2 isn't particularly interesting on its own. NP's are definitely the most common type, with SJ's next, followed by NJ's and SP's about the same.

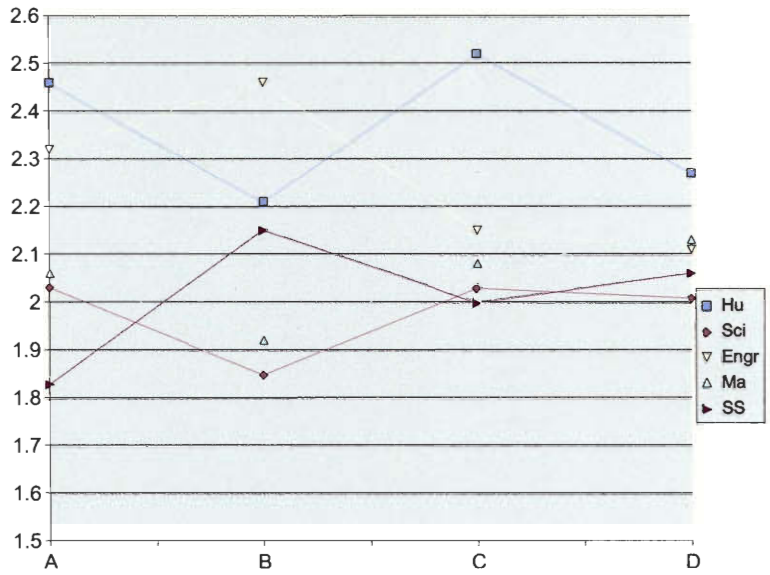
Table 4.2: Number of students by type and term

Type	A-Term	B-Term	C-Term	D-Term
NJ	92	94	92	90
NP	222	217	214	213
SJ	117	115	114	113
SP	98	94	91	93

Table 4.3: Courses taken by NJ's

Course type	A-Term	B-Term	C-Term	D-Term
Pure science	83	68	83	49
Math	81	83	69	71
Engineering science	22	26	53	48
Humanities	48	66	33	58
Social science	18	13	10	17

Figure 4.2: GPA by Course Type for NJ's



4.2.1 NJ's

Figure 4.2 shows the average GPA for NJ's in each of the five categories of courses throughout the whole year. Math, pure science, and humanities all show a plunge from A-Term to B-Term, followed by a recovery in C-Term. Both engineering sciences and social sciences show the opposite pattern, with a peak in B-Term. These two groups of courses are much less significant, however, with only 10-18 students taking social science courses and only 22-26 taking engineering sciences in A-Term and B-Term, going up to about 50 students for the rest of the school year. The social science line is not representative of all NJ's because only about 15% of NJ's took social science courses each term. Into D-Term, humanities shows a large drop, engineering sciences and pure sciences show a small drop, and math and social science show a rise.

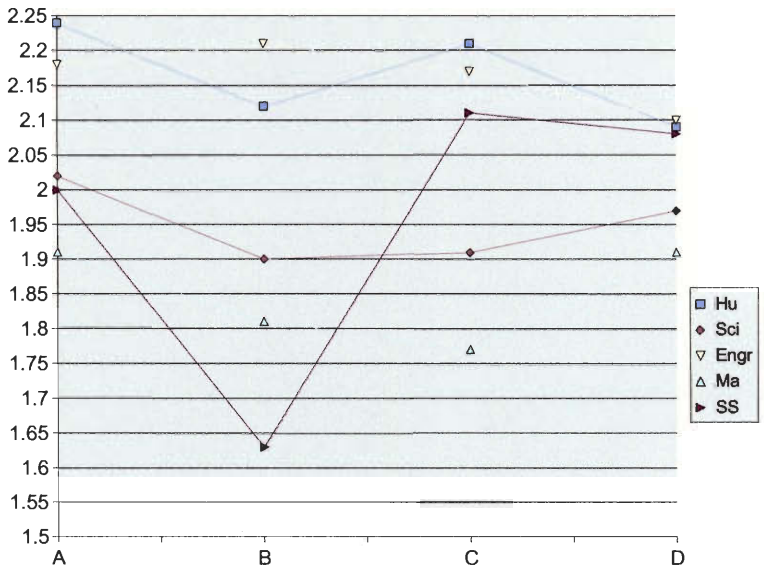
4.2.2 NP's

Table 4.4: Courses taken by NP's

Course type	A-Term	B-Term	C-Term	D-Term
Pure science	166	144	156	119
Math	188	193	170	151
Engineering science	95	79	124	133
Humanities	127	151	98	134
Social science	30	19	19	26

The first thing you notice when you look at figure 4.3 is the very dramatic social science line. Like with the NJ's, this line is not representative of NP's as only 10% to 15% of them

Figure 4.3: GPA by Course Type for NP's



took social science courses each term. Again, all three of humanities, pure science, and math show a drop from A-Term to B-Term, however only humanities shows a strong recovery. Pure science stays about the same, and math continues to drop. There are strong recoveries in D-Term for math and pure science, and drops for the other three groups of courses.

4.2.3 SJ's

Table 4.5: Courses taken by SJ's

Course type	A-Term	B-Term	C-Term	D-Term
Pure science	109	89	104	84
Math	101	110	96	90
Engineering science	31	34	59	57
Humanities	65	76	39	82
Social science	16	15	13	9

Figure 4.4: GPA by Course Type for SJ's

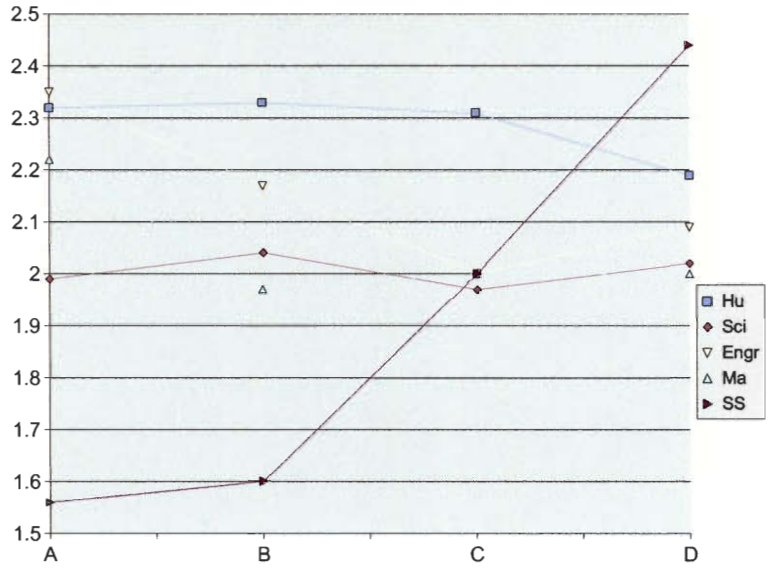


Figure 4.4 shows the breakdown for SJ's. Again, social science shows the most dramatic curve, but you can safely ignore it due to the small number of students who took social science courses. Again, too few students took engineering science courses in A-Term and B-Term to make the results very accurate. Pure science grades do not change much from one term to another. There is a pretty significant drop in Math from A-Term to B-Term, and humanities stay about the same until they drop off into D-Term.

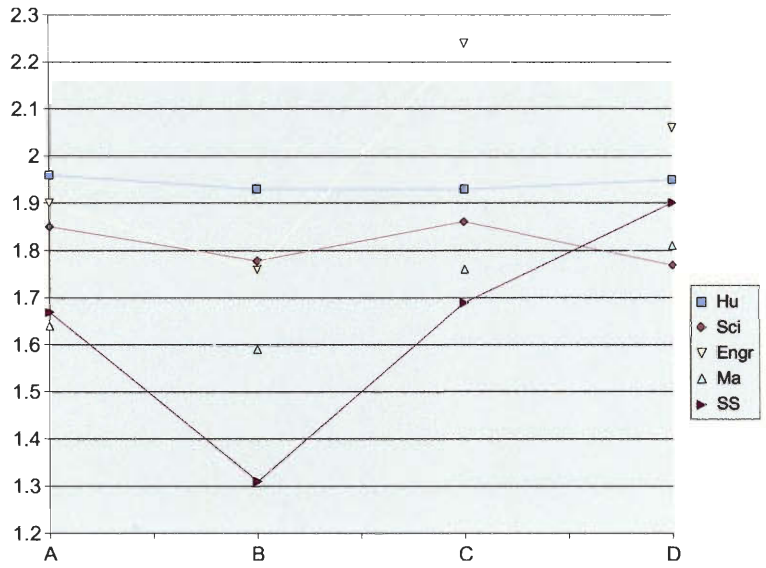
4.2.4 SP's

Figure 4.5 shows the grades by course type for SP students. Like the other three figures before this, social science shows a very dramatic line with too few students taking those courses to make it a large enough contributor to the B-Term plunge. For SP's, they have

Table 4.6: Courses taken by SP's

Course type	A-Term	B-Term	C-Term	D-Term
Pure science	74	72	66	64
Math	76	78	74	74
Engineering science	31	20	36	40
Humanities	51	59	44	61
Social science	15	13	13	10

Figure 4.5: GPA by Course Type for SP's



a plunge from A-Term to B-Term and a recovery into C-Term for all five types of courses, except for humanities which stay the same in C-Term as B-Term.

4.2.5 Summary

All four of the previous charts show interesting information, but it doesn't become very clear until you combine it all. Table 4.7 shows the difference between A-Term grades and

B-Term grades for four types of students. A negative number means the average grade in B-Term went down by that amount. Drops larger than 0.05 were placed in bold to make them more visible. All four types showed a decrease in math GPA into B-Term. Three of the four types showed a decrease in pure science GPA's too. These two types of courses are the most common among freshmen, and it is clear that they are the largest contributors of the B-Term plunge.

Table 4.7: Change in GPA from A-Term to B-Term

	NJ	NP	SJ	SP
Humanities	**-0.25**	**-0.12**	+0.01	-0.03
Pure science	**-0.18**	**-0.12**	+0.05	**-0.07**
Engineering science	+0.14	+0.03	**-0.18**	**-0.14**
Math	**-0.14**	**-0.10**	**-0.25**	**-0.05**
Social Science	+0.32	**-0.37**	+0.04	**-0.36**

4.3 Approximating NR's

The grade data we were given did not have NR grades recorded. We only had grades for those courses which were passed. Knowing which courses were passed and the grades for them is useful, but the solution to the B-Term plunge problem could possibly be seen just by looking at what classes were not passed.

The best we could do was to make educated guesses as to what courses were not passed. We did this by looking first at the people who passed three courses in a certain term. We examined what courses they took using the categories described earlier, and for each category,

figured out what percentage of students passed a course in that category that term. We then did the same thing for those who passed only one or two courses. Assuming that the students who did poorly took the same types of courses as those who passed all three, comparing the breakdowns would show us what area people were having the most trouble passing. If they looked the same, it would mean that students who only passed one or two classes that term were having trouble in different subjects. A lower percentage in a subject for students who passed one or two courses would mean it was likely that they were failing classes in that subject. Had they passed those classes, the percentages would have been higher, bringing them closer to the expected percentages determined from the students who passed all three classes.

The following charts are not easy to understand at first. They essentially show three dimensions of data; number of courses passed, type of course, GPA. It is also important, when looking at these charts, to remember the amount of students who passed one, two, or three courses. These numbers are included in Table 4.8. On the following charts, all of the bars of the same color add up to 1. Because of this, you can use these charts to see what percentages of students were taking what courses too.

Table 4.8: Number of students who passed one, two, or three courses

Courses passed	A-Term	B-Term	C-Term	D-Term
1	35	26	36	24
2	91	100	109	108
3	402	390	359	371
Total	528	516	504	503

It may be worthwhile to look at the numbers in figure 4.8 for a moment before moving on. The number of students steadily declines each term, going from 528 in A-Term to 503 in D-Term. With that in mind, the number of students passing 3 courses per term drops from A-Term through C-Term, with a recovery in D-Term. The number of students passing exactly two courses has the exact opposite trend. It rises from 91 in A-Term to 109 in C-Term, and goes down by one for D-Term. The number of students passing only one course has less of a trend. You would expect to see more students passing only one or two courses in B-Term given the B-Term plunge in grades, but this is not the case.

4.3.1 A-Term

Figure 4.6: Proportion of courses passed by number of courses passed in A-Term

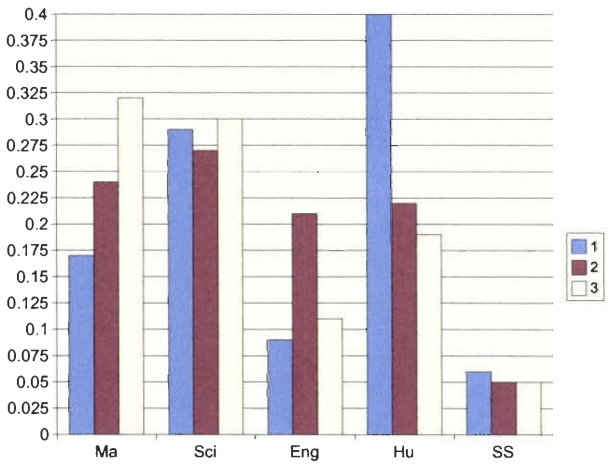


Figure 4.6 shows the breakdown for A-Term. First, lets look at how students fared in math. The graph for math is exactly what we would expect to see for a subject where

students are getting NR's. While 32% of students who pass three courses pass a math course, only 17% of those who pass one course pass a math course. This means one of two things. Either students who pass only one or two courses are less likely to *take* a math course, or those students are less likely to *pass* a math course. We're working on the assumption that the stronger and weaker students all take roughly the same types of classes with the same frequencies, so our analysis would show that students were receiving NR's in math courses in A-Term.

One reason for this large difference in math can be explained right now. WPI offers a slower-pace introductory calculus course, MA1020, which runs for 14 weeks instead of the normal 7. The B-Term grades show that 32 students passed MA1020, which means there were at least 32 students who would not have taken a math course during A-Term. There were 126 students in A-Term that passed less than 3 courses, so we can probably attribute at least 32 of them to MA1020.

The science area of the chart shows what we would expect to see for a course type where the number of NR's was low. The number of courses passed had no direct connection to the likelihood of passing a science course. Everyone had about a 27% to 30% chance of passing a pure science course.

Engineering science courses show a similar level between those who passed one course and three courses, however the students who passed two courses were much more likely to pass an engineering science course. The reasons why something like this would occur are

unknown to us, and we would say it was unexpected and likely a coincidence.

Humanities shows the pattern we would expect to see if students were *not* receiving NR's in a course. If a student only passed one course during A-Term, there was a 40% chance that it was a humanities course. This does not imply that the students who passed 2 or 3 courses were receiving NR's. You have to remember that if a student passed only one course and it was humanities, there were two other courses, probably not humanities, that this student didn't pass. The only thing you can infer from a chart like humanities is that students are most definitely not receiving many NR's in humanities.

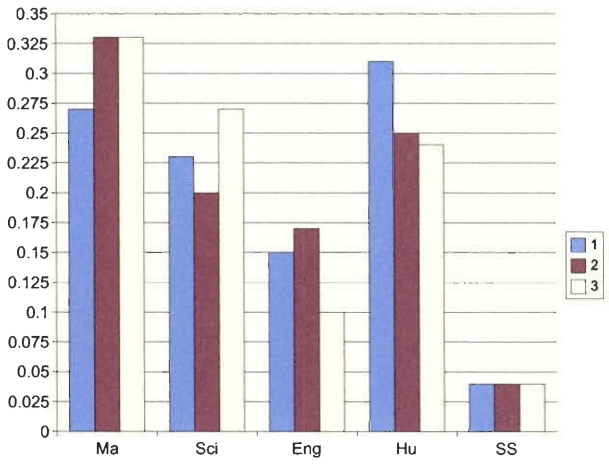
Social Science shows no change from one group of students to another. This means that the number of courses a student passes has no connection to the chance of passing a social science course. This is interesting to note seeing how social science courses had the lowest GPA overall. While the GPA is low (See Figure 4.1 on page 34), its clear that the NR rate is not high.

4.3.2 B-Term

You can see from figure 4.7 that in B-Term the patterns are much less dramatic. In fact, no area of courses stands out as particularly strong or weak, at least not like math and humanities from A-Term.

The math section of this chart shows a small drop in B-Term, from 33% for students passing 2 or 3 classes to 27% for students passing only one. This is one of the largest drops

Figure 4.7: Proportion of courses passed by number of courses passed in B-Term



on this entire graph and does mean that students were receiving NR's in math courses in B-Term.

Pure science also shows a drop, with the biggest drop for those with two classes. It goes from 27% for students passing 3 courses to 20% for students passing only one. It does go up again slightly, to 23% for students passing one course. The reasons for a pattern like this are unknown, but the drop most likely means that some students were receiving NR's in pure science courses too.

Engineering science courses have a similar pattern to A-Term, with the high point being with students who passed 2 courses. In fact, the low point is with the students who passed all three courses. This means that students were less likely to receive an NR in engineering science courses during B-Term.

Once again, humanities has a high for students passing only one course. We would

interpret this as meaning that students are less likely to NR a course in humanities.

The percents of students passing social science courses are completely the same for all three groups of students. This would mean that students are no more or less likely to NR a social science course.

4.3.3 C-Term

Figure 4.8: Proportion of courses passed by number of courses passed in C-Term

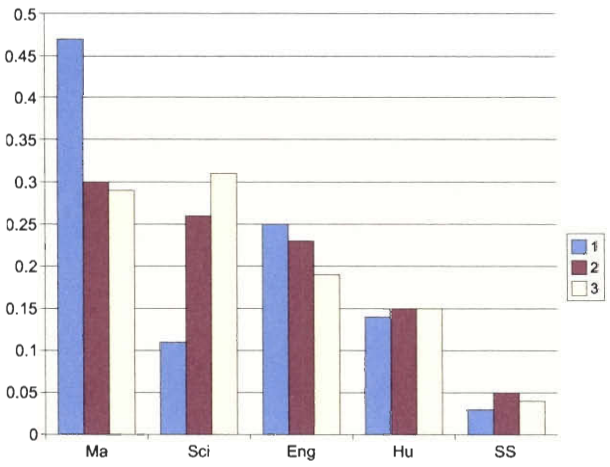


Figure 4.8 shows that C-Term yields a pattern that is different from the previous two. While math was consistently a weak area in A-Term and B-Term, it was clearly a strong point this term. It was such a strong point that 47% of students who only passed one course passed a math course, while only 29% of students who passed three courses passed a math course.

Pure science during C-Term shows one of the most dramatic charts of the entire year.

For students who passed 3 courses, 31% of them passed a pure science course, whereas only 11% of students who passed one course passed a pure science course. This shows a very high likelihood of students receiving NR's in pure science courses this term.

Engineering science, humanities, and social science all show approximately the same levels regardless of how many courses were passed. We would not expect there to be a high level of NR's in any of these areas during C-Term.

4.3.4 D-Term

Figure 4.9: Proportion of courses passed by number of courses passed in D-Term

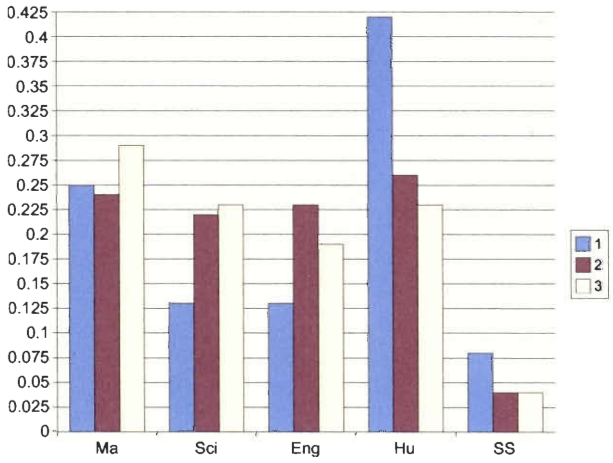


Figure 4.9 shows the breakdown for D-Term. It is probably the most surprising chart of them all. The percentages from one chart to another did not change much for the previous three charts. This chart shows math, pure science, engineering science, and humanities all around the same areas, while the previous three terms showed students passing more math

and science than humanities.

Math courses passed during D-Term shows nothing significant. The levels are all about the same, regardless of the number of courses passed. We would not expect students were receiving NR's in math in D-Term in any large amounts.

Pure science shows a large drop for those who passed only one course, from 23% to 13%. In fact, engineering sciences shows a very similar pattern, going from 19%, up to 23%, then back down to 13% for students who only passed one course. It looks like students were less likely to pass pure science and engineering science courses in D-Term.

Humanities courses again had a very strong point this term, with 42% of students passing one course passing a humanities course, compared to 23% of students passing 3 courses having one of those as humanities. This shows very strongly that students were not receiving NR's in humanities very often in D-Term.

Social science shows a very scaled down pattern similar to that of humanities this term. This pattern again implies that students were not receiving NR's in social science courses either.

4.3.5 Summary

We suspect, based on the students who passed three courses per term, that students were more likely to receive NR's in certain courses. In A-Term, these courses were math and engineering courses. In B-Term, it was math. C-Term showed a large number of students

receiving NR's in pure science courses. In D-Term, it appeared that students were receiving NR's in pure science and engineering science courses.

4.4 CIRP

Figure 4.10: Scatterplot of GPA vs. Academic Image

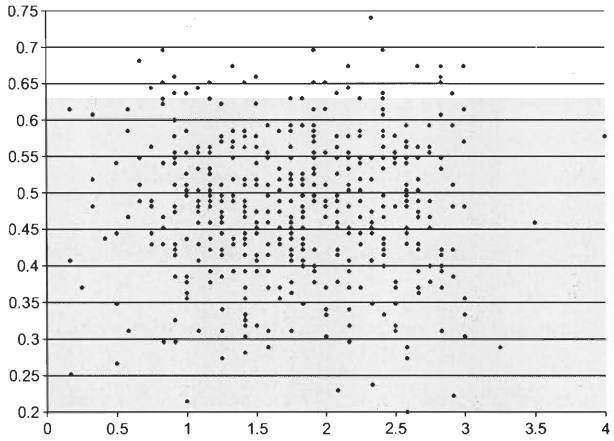


Figure 4.11: Correlations of GPA to academic image

		GPA	Acadmicl mage
GPA	Pearson Correlation	1	.004
	Sig. (2-tailed)	.	.937
	N	471	471
AcadmicImage	Pearson Correlation	.004	1
	Sig. (2-tailed)	.937	.
	N	471	494

In looking at CIRP data, we wanted to see if the results of the CIRP test could be used as a predictor for academic success. We made a composite variable combining all of the questions

that we thought were relevant to a student's self-image academically. The resultant variable was on a 0 to 1 scale, with 0 being the lowest academic image, and 1 being the highest. We used nine variables from CIRP to compose this. The first five were self-ratings for academic ability, drive to achieve, mathematical ability, intellectual self-confidence, and writing ability. We then factored in four more variables where students were asked to rate their reasons for going to school. The reasons we incorporated were to gain a general education, improve study skills, become more cultured, and to prepare for graduate school. There was also a section on possible future activities that we wanted to use, but upon review of the data, it appeared that less than half of the students completed that part. Future activities were dropped from the variable.

We first made a scatterplot just to show a simple visualization of GPA vs. our academic image variable. As you can see from Figure 4.10, there is no visible trend. To see if there was any correlation between the two variables, we imported the data into SPSS and calculated the correlation to be 0.004. This basically means that there was no connection between a student's academic image and their grades. There were instances of students with a very low academic image getting almost all A's, and some students who had a very high image were barely passing their courses.

If this analysis seems a bit incomplete, we would not disagree. We looked at a few of the variables individually to see if there was any correlation to GPA's, but we saw none. We would have liked to examine how a students mathematical self image related to their math

courses and other similar items, but we did not have the course category breakdown in the same database as CIRP, and did not have the time to combine them. There was a lot more work that could have been done with CIRP but we simply did not have the time in our project to do all of that.

5 Discussion and Conclusion

In the introduction of this report, we stated several hypotheses about what we would see when we inspected the data closely. After some careful analysis, it is still unclear whether or not some of our theories hold, but others are very strong.

5.1 C-Term Recovery

Our biggest theory was that a B-Term plunge would be followed by a C-Term recovery. This certainly makes sense for students who NR a course as they could be taking the exact same course again in the following term. One would assume that a students grade would be high the second time they take a given course. So was there a C-Term recovery? We already knew from previous IQP's that a C-Term recovery existed for the classes of 2002 and 2003 (otherwise this project would be looking at the B and C-Term Trough).

Figure 4.1 on page 34 showed that there was a C-Term recovery for all types of classes which had a B-Term plunge. That is, all classes other than engineering sciences had both a B-Term plunge and a C-Term recovery.

In our section about approximating NR's, starting on page 41, we also see a C-Term recovery. The pattern holds very strongly for math courses, with large numbers of students getting NR's in A and B-Terms. In C-Term, the pattern completely reverses with math one of the strongest areas. This very strongly supports our theory of students retaking math courses in C-Term.

5.2 CIRP

While we would have liked to have done a more in-depth look at CIRP as a predictor of academic success, we made a composite variable of what we thought were the most useful variables. Upon looking at this variable, we saw no correlation at all. It is clear that a students overall academic image at the time of the CIRP has no relation to their GPA later that year. Due to time constraints, we did not look in detail at the specific variables that were aggregated together. Some brief, somewhat sloppy analyses of these specific variables showed the same results as our aggregate variable. It may be possible, however, that there is an underlying link between types of courses and the CIRP variables, but a more detailed study would be necessary to show that.

We also suspect that students might not have taken the CIRP very seriously. The fact that only half of the students completed the future activities section leads us to believe that most students left before finishing completely.

5.3 MBTI

Unlike the CIRP, we have relatively complete data for the MBTI types of each student. We know from earlier projects that a B-Term plunge does exist and that Sensing-Perceiving types are the most affected by it. We focused on this in our study. It's a known fact that SPs have a hard time focusing on homework assignments and studying. It is difficult for

them to concentrate on what is important in the long run.[39]

We saw this difficulty in our analysis. You can see in Figure 4.5 on page 40 that the SPs had a difficult time maintaining their grades in math and had a relatively low, steady grade in science. The strange social science grades can only be explained by the lack of students taking those courses. The grades of SPs dropped in all subject areas from A-Term to B-Term, ruling out any one type of course as the primary factor of the B-Term plunge.

So what causes the drop in grades? We can only conclude that, with the study we have done, it is very complicated to predict the performance of a student during their freshman year. It will take a future project in more depth to show this. Possibly, if NR data is included, it may be possible to draw more conclusive results. The inclusion of NR data would eliminate the guesswork we needed to do in order to ascertain what classes students were failing.

5.4 Academic Policies

Although we have no hard evidence showing that humanities and social science courses give less NRs than math and science courses, we see a different pattern with them. Figures 4.6, 4.7, 4.8, and 4.9 show that while the number of students passing science and math courses each term fluctuates quite significantly in terms of how many other courses were passed, the number of students passing social science and humanities courses remains approximately

[39]Provost, 6-13

the same. When you ignore the actual grades people get and look solely at the number of courses passed, it becomes clear that students do not NR social science and humanities courses nearly as often as science and math courses.

5.5 Sources of Error

There were several significant possible sources of error with our data. The first and foremost was the data collection process. The MBTI and CIRP surveys were given on the first day of orientation to the freshman. There was a limited amount of time, and probably a even more limited amount of interest. We found the MBTI to be fairly complete, but the CIRP was quite bad. We had to throw out several variables we wanted to use because they were at the end of the survey, and not enough people answered those questions for us to have usable data.

Second, we did not collect and compile any of the data ourselves. We do, however, know the process, and if it was followed religiously, there should be little error with the data set that was compiled.

One of the most serious problems we encountered was a lack of NR data. We were forced to work around the problem, but there is no substitute for having the information. There is the small possibility that our theories could be incorrect, but we feel we did the best possible with the limited data.

Another issue we encountered was that we had no way of dealing with the variations

between professors teaching the same course. We did not have the data necessary to do any analysis of such a problem, therefore we can only speculate on the problems it will cause impacting the rate at which people get NR's in a given term.

5.6 Future Projects

There are many directions to take this project from here. We did not perform a very thorough look into CIRP, and its possible that some variables from it could be the secret to solving the B-Term plunge. A more in-depth look at MBTI could prove useful too.

The B-Term plunge has only been studied for the classes of 2002 and 2003. We intended to see if it was replicated for the class of 2004, but we never obtained the data for that class and had to change focus. If the B-Term plunge is repeated every year, it is a very significant finding, even without an explanation.

No one has yet looked to see if such a pattern exists in sophomore year either. Perhaps the B-Term plunge happens to certain students repeatedly, regardless of their year, simply due to seasonal variation. B-Term is the onset of winter and the beginning the Fraternity/Sorority Rush, among other things. A study could be focused on SPs and the effect of the social changes that occur in B-Term.

A Method for importing grades

Included here are Greg Doerschler's methods, as he wrote them, for importing a grade file into SPSS.

Some pages are
incorrectly numbered
or unnumbered

IQP/MQP SCANNING PROJECT

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October 10, 2000

IMPORTING AND CLEANING UP WPI FRESHMAN GRADE DATA FILES

WPI freshman year grade data files have been provided by the Registrar/CCC as ASCII files. These files contain an ID variable and course/project grades broken down by semester. Other information such as major, test scores, academic warning status, etch have also been included. Unfortunately, these files are quite awkward to work with for a number of reasons, and the easiest method so far has been to read them directly into SPSS as fixed width text files. See the comments in SPSS syntax file "wpi_frgrades_import2002.sps" for tips on how to do this.

Each student is listed in a single row of data, with the courses listed sequentially in columns. Course numbers include the field in the first 3 columns, the course number in the 1st thru 7th column, the entire class number in the 1st thru 12th column, and the grade in the 17th column. The term is revealed in the 9th column. A partial row of data might look something like this:

EN 2252-B01 :B MA 1023-A01P :C MA 1024-B01P :B

So it's simply a matter of determining what columns the information appears in, and telling SPSS to read the appropriate columns to find course number, term, grade, etc. However, project activity presents a particular problem because the term is not embedded in the project number. In the following example, terms for the two projects listed would be read as "D" and "5" respectively. This must be corrected by hand once the data is imported to SPSS.

CS 1005-A10 :C
IQP KMR-DRAW :B
IQP LP-5555 :B

Sometimes the words "No_data_for_this_term" have appeared in the data file when a student had no courses for the semester. These characters will be read by SPSS as if they were a course number, and must be deleted by had from the SPSS file (unless they are removed from the ASCII file prior to import).

Data cleanup:

Once the grade file has been imported to SPSS, there are a number of clean-up steps which must be performed manually before it is ready to be processed:

1. Visually scan the data to be sure it was read properly.
2. Scan for unwanted duplication of cases (names or ID numbers) or courses. Both have appeared in the past.
3. Delete any records associated with any students from whom we do not have signed consent to use their grade data.
4. Delete all ISP activity affiliated with humanities dept. faculty. This is done to level the playing field as much as possible for all students. These activities are quite prevalent, and are typically performance credit or music lessons. Most are 1/6 unit, but we have no way of recording them as anything less than 1/3 unit. Since these activities are not likely to represent core academic activity (especially in the freshman year), a decision was made to remove them in order to prevent artificial GPA inflation.
5. Remove ROTC courses from the data file (MS or AS courses). The rationale for doing this is the same as for humanities ISP's.
6. Remove Physical Education Courses (PE) from the data file, if present. Again, the rationale is to create as pure an indicator of actual academic progress as possible, and large numbers of PE courses will taint that indicator.
7. Assign all project or (non-humanities) ISP activity a term consistent with the semester in which the activity occurred. Since the term is not embedded in the project number, we do not know exactly when the activity occurred. The solution has been to assign them randomly as either A or B, or C or D; depending on the semester.
8. Locate all occurrences of Course "MA1020" This is a semester long introductory math course, but only carries 1/3 credit. To prevent penalizing people enrolled in this class when GPA calculation are generated, past practice has been to copy the course listing a second time for each case in the data file where it appears. Code the original occurrence as A term and the second (copied) occurrence as B term.
9. Scan the grade listing for any grade that is not either A, B or C. Delete these listings (both the course listing **AND** the grade). They will be considered missing data.

This list reflects the types of data problems encountered in the past and should serve as a guide for cleaning up future WPI grade data sets. However, future WPI grade files could arrive in different formats or present new problems to resolve. It is the users responsibility to determine what steps are necessary and appropriate to produce a valid working data file. Failure to properly clean up the data prior to analyses could seriously tarnish subsequent analyses.

wpi_frgrades_import2002.sps

```
*  The following syntax reads the raw WPI class-of-2002 freshman year grade data
*  file as supplied by the registrar and imports it to SPSS.  For each course in
*  the file, the following variables are generated:
*        Example:  MA 2051-A01A    B
*        field:         MA
*        course:     MA 2051
*        class:       MA 2051-A01A
*        term:        A
*        grade        B

*  The registrar's file is sorted by semester.  Variables *11 thru *18 below are
*  first semester courses.  Variables *21 thru *29 are 2nd semester courses.

*  Important:  Variable *29 was removed during data cleanup, so it is not
*  included in the subsequent "process" syntax routines.  Import routines should
*  always be checked & edited if necessary to make sure they read all variables
*  in the data file.  "Process" routines should similarly be checked to make
*  sure they include all variables in the resulting SPSS file.

* Note: It is convenient to open the raw data file using the command prompt
* (MS-DOS) "edit" function to determine the columns in which the records
* appear.  (They are displayed on the screen as you scroll across with the cursor.)
* It is easiest to import the data to SPSS first, and then clean it up.


SET
   BLANKS=SYSMIS BLANKS=SYSMIS
  UNDEFINED=WARN.
DATA LIST
  FILE='C:\personal\greg\ss\grades02.dat' FIXED RECORDS=1 TABLE /1 name 1
 -31(A) status 32-38(A) major 39-51(A) field11 52-54(A) course11 52-58(A)
  class11 52-63(A) term11 60-60(A) grade11 68-68(A) field12 71-73(A) course12
  71-77(A) class12 71-82(A) term12 79-79(A) grade12 87-87(A) field13 90-92(A)
  course13 90-96(A) class13 90-101(A) term13 98-98(A) grade13 106-106(A)
  field14 109-111(A) course14 109-115(A) class14 109-120(A) term14 117-117(A)
  grade14 125-125(A) field15 128-130(A) course15 128-134(A) class15 128-139(A)
  term15 136-136(A) grade15 144-144(A) field16 147-149(A) course16 147-153(A)
  class16 147-158(A) term16 155-155(A) grade16 163-163(A) field17 166-168(A)
  course17 166-172(A) class17 166-177(A) term17 174-174(A) grade17 182-182(A)
  field18 185-187(A) course18 185-191(A) class18 185-196(A) term18 193-193(A)
  grade18 201-201(A) field21 233-235(A) course21 233-239(A) class21 233-244(A)
```

— over —

```
  term21 241-241(A) grade21 249-249(A) field22 252-254(A) course22 252-258(A)
  class22 252-263(A) term22 260-260(A) grade22 268-268(A) field23 271-273(A)
  course23 271-277(A) class23 271-282(A) term23 279-279(A) grade23 287-287(A)
  field24 290-292(A) course24 290-296(A) class24 290-301(A) term24 298-298(A)
  grade24 306-306(A) field25 309-311(A) course25 309-315(A) class25 309-320(A)
  term25 317-317(A) grade25 325-325(A) field26
  328-330(A) course26 328-334(A) class26 328-339(A) term26 336-336(A) grade26
  344-344(A) field27 347-349(A) course27 347-353(A) class27 347-358(A) term27
  355-355(A) grade27 363-363(A) field28 366-368(A) course28 366-372(A) class28
  366-377(A) term28 374-374(A) grade28 382-382(A) field29 385-387(A) course29
  385-391(A) class29 385-396(A) term29 393-393(A) grade29 401-401(A) .
EXECUTE.
```

wpi_frgrades_process1-2002.sps

```
* After the wpi (2002) freshman year grade data from the registrar's file had been
* imported to SPSS and properly cleaned up, the following syntax was used to
* convert the A-B-C letter grades into our pseudo-GPA scale and calculate:
*       total WPI grade points earned,
*       # of courses passed each semester and  for the year
*       GPA (for the year, by semester, and by term)

* DO NOT RUN THIS SYNTAX UNTIL YOU ARE SURE THAT THE DATA
* HAS BEEN CLEANED UP AND IS READY TO GO.

RECODE
  agrade11
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade11 .
RECODE
  agrade12
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade12 .
RECODE
  agrade13
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade13 .
RECODE
  agrade14
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade14 .
RECODE
  agrade15
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade15 .
RECODE
  agrade16
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade16 .
RECODE
  agrade17
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade17 .
RECODE
  agrade18
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade18 .
RECODE
  agrade21
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade21 .
RECODE
  agrade22
  ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade22 .
RECODE
```

```
   agrade23
   ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade23 .
 RECODE
   agrade24
   ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade24 .
 RECODE
   agrade25
   ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade25 .
 RECODE
   agrade26
   ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade26 .
 RECODE
   agrade27
   ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade27 .
 RECODE
   agrade28
   ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade28 .
 RECODE
   agrade29
   ('A'=3)  ('B'=2)  ('C'=1)  INTO  grade29 .
 EXECUTE .

 *  Convert missing grades (blank fields) to 0.

 RECODE
   grade11 grade12 grade13 grade14 grade15 grade16 grade17 grade18 grade21
   grade22 grade23 grade24 grade25 grade26 grade27 grade28  (SYSMIS=0)  .
 EXECUTE .

 *  Add up the grade points

 COMPUTE gradepts = grade11 + grade12 + grade13 + grade14 + grade15 + grade16
  + grade17 + grade18 + grade21 + grade22 + grade23 + grade24 + grade25 +
   grade26 + grade27 + grade28 .
 VARIABLE LABELS gradepts 'Total grade points earned' .
 EXECUTE .

 *  Compute pseudo-GPA based on an assumed load of 12 courses

 COMPUTE gpa = gradepts / 12 .
 VARIABLE LABELS gpa 'WPI Grade Point Equivalent' .
```

```
EXECUTE .

*  Count function counts the number of courses passed for each semster by
*  considering all 1s, 2s & 3s as passed.

COUNT
  passed1 = grade11 grade12 grade13 grade14 grade15 grade16 grade17 grade18
  (1 thru 3)  .
VARIABLE LABELS passed1 'Courses passed 1st semester' .
EXECUTE .
COUNT
  passed2 = grade21 grade22 grade23 grade24 grade25 grade26 grade27 grade28
  (1 thru 3)  .
VARIABLE LABELS passed2 'Courses passed 2nd semester' .
EXECUTE .
COMPUTE passedyr = passed1 + passed2 .
VARIABLE LABELS passedyr 'Courses passed freshman year' .
EXECUTE .

*  Compute GPA for each semester based on assumed load of 6 courses/semester.


COMPUTE gpa1st = (grade11 + grade12 + grade13 + grade14 + grade15 + grade16 +
  grade17 + grade18) / 6 .
VARIABLE LABELS gpa1st '1st semester GPA equivalent' .
COMPUTE gpa2nd = (grade21 + grade22 + grade23 + grade24 + grade25 + grade26 +
  grade27 + grade28) / 6 .
VARIABLE LABELS gpa2nd '2nd semester GPA equivalent' .
EXECUTE .

*  The following syntax checks for the term of each course (A-B-C-D) and computes
*  term-by-term GPAs based on an assumed load of 3 courses/term.  If no course
*  were passed in a semsester, the two term GPAs are not calculated.  (We make
*  an assumption that the student likely dropped out, rather than snowflaked twice.)
*  Note that project or ISP activities (without the term imbedded into the course number)
*  were randomly assigned to one of the two terms in the applicable semester.

*  Note:  After completing this, it is wise to visually check for people who did well
*  first semester ( passed 5 or 6 courses) and passed nothing second semester.
*  These people probably transferred out mid-year.  Their 2nd semester GPA should be
*  recoded as "missing".  Copy their  first semester GPA to their GPA score for the year.
```

```
*  (We assume that 1st sem. GPA is a reasonable estimate of what they would have scored
*  if they stayed for the whole year.  This enables us to salvage the case for analysis *
*  work.)

IF (passed1 >= 1) gpa_a = 0 .
IF (term11 = 'A') gpa_a = grade11/3 .
IF (term12 = 'A') gpa_a = gpa_a + grade12/3 .
IF (term13 = 'A') gpa_a = gpa_a + grade13/3 .
IF (term14 = 'A') gpa_a = gpa_a + grade14/3 .
IF (term15 = 'A') gpa_a = gpa_a + grade15/3 .
IF (term16 = 'A') gpa_a = gpa_a + grade16/3 .
IF (term17 = 'A') gpa_a = gpa_a + grade17/3 .
IF (term18 = 'A') gpa_a = gpa_a + grade18/3 .
VARIABLE LABELS gpa_a 'A-term GPA equivalent' .
IF (passed1 >= 1) gpa_b = 0 .
IF (term11 = 'B') gpa_b = grade11/3 .
IF (term12 = 'B') gpa_b = gpa_b + grade12/3 .
IF (term13 = 'B') gpa_b = gpa_b + grade13/3 .
IF (term14 = 'B') gpa_b = gpa_b + grade14/3 .
IF (term15 = 'B') gpa_b = gpa_b + grade15/3 .
IF (term16 = 'B') gpa_b = gpa_b + grade16/3 .
IF (term17 = 'B') gpa_b = gpa_b + grade17/3 .
IF (term18 = 'B') gpa_b = gpa_b + grade18/3 .
VARIABLE LABELS gpa_b 'B-term GPA equivalent' .
IF (passed2 >= 1) gpa_c = 0 .
IF (term21 = 'C') gpa_c = grade21/3 .
IF (term22 = 'C') gpa_c = gpa_c + grade22/3 .
IF (term23 = 'C') gpa_c = gpa_c + grade23/3 .
IF (term24 = 'C') gpa_c = gpa_c + grade24/3 .
IF (term25 = 'C') gpa_c = gpa_c + grade25/3 .
IF (term26 = 'C') gpa_c = gpa_c + grade26/3 .
IF (term27 = 'C') gpa_c = gpa_c + grade27/3 .
IF (term28 = 'C') gpa_c = gpa_c + grade28/3 .
VARIABLE LABELS gpa_c 'C-term GPA equivalent' .
IF (passed2 >= 1) gpa_d = 0 .
IF (term21 = 'D') gpa_d = grade21/3 .
IF (term22 = 'D') gpa_d = gpa_d + grade22/3 .
IF (term23 = 'D') gpa_d = gpa_d + grade23/3 .
IF (term24 = 'D') gpa_d = gpa_d + grade24/3 .
IF (term25 = 'D') gpa_d = gpa_d + grade25/3 .
IF (term26 = 'D') gpa_d = gpa_d + grade26/3 .
```

```
IF (term27 = 'D') gpa_d = gpa_d + grade27/3 .
IF (term28 = 'D') gpa_d = gpa_d + grade28/3 .
VARIABLE LABELS gpa_d 'D-term GPA equivalent' .
EXECUTE .
```

wpi_frgrades_process2-2002.sps

```
*  This syntax computes average WPI freshman year math grade, science
*  grade, and combined science-math grade for the class-of-2002 WPI grade
*  SPSS file.  The numbers of science couses passed, math courses passed,
*  and combined science/math courses passed are also generated.

*  Variable lables are not generated within this syntax.

COMPUTE mthgrad = 0 .
COMPUTE scigrad = 0 .
COMPUTE scmagrad = 0 .
COMPUTE scmanum= 0 .
COMPUTE scnum = 0 .
COMPUTE manum = 0 .
DO IF (field11 = 'MA') .
   COMPUTE mthgrad = mthgrad + grade11 .
   COMPUTE manum = manum + 1 .
   COMPUTE scmagrad = scmagrad + grade11 .
   COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field12 = 'MA') .
   COMPUTE mthgrad = mthgrad + grade12 .
   COMPUTE manum = manum + 1 .
   COMPUTE scmagrad = scmagrad + grade12 .
   COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field13 = 'MA') .
   COMPUTE mthgrad = mthgrad + grade13 .
   COMPUTE manum = manum + 1 .
   COMPUTE scmagrad = scmagrad + grade13 .
   COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field14 = 'MA') .
   COMPUTE mthgrad = mthgrad + grade14 .
   COMPUTE manum = manum + 1 .
   COMPUTE scmagrad = scmagrad + grade14 .
   COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field15 = 'MA') .
   COMPUTE mthgrad = mthgrad + grade15 .
   COMPUTE manum = manum + 1 .
   COMPUTE scmagrad = scmagrad + grade15 .
```

```
     COMPUTE scmanum = scmanum + 1 .
 END IF .
 DO IF (field16 = 'MA') .
     COMPUTE mthgrad = mthgrad + grade16 .
     COMPUTE manum = manum + 1 .
     COMPUTE scmagrad = scmagrad + grade16 .
     COMPUTE scmanum = scmanum + 1 .
 END IF .
 DO IF (field17 = 'MA') .
     COMPUTE mthgrad = mthgrad + grade17 .
     COMPUTE manum = manum + 1 .
     COMPUTE scmagrad = scmagrad + grade17 .
     COMPUTE scmanum = scmanum + 1 .
 END IF .
 DO IF (field18 = 'MA') .
     COMPUTE mthgrad = mthgrad + grade18 .
     COMPUTE manum = manum + 1 .
     COMPUTE scmagrad = scmagrad + grade18 .
     COMPUTE scmanum = scmanum + 1 .
 END IF .
 DO IF (field21 = 'MA') .
     COMPUTE mthgrad = mthgrad + grade21 .
     COMPUTE manum = manum + 1 .
     COMPUTE scmagrad = scmagrad + grade21 .
     COMPUTE scmanum = scmanum + 1 .
 END IF .
 DO IF (field22 = 'MA') .
     COMPUTE mthgrad = mthgrad + grade22 .
     COMPUTE manum = manum + 1 .
     COMPUTE scmagrad = scmagrad + grade22 .
     COMPUTE scmanum = scmanum + 1 .
 END IF .
 DO IF (field23 = 'MA') .
     COMPUTE mthgrad = mthgrad + grade23 .
     COMPUTE manum = manum + 1 .
     COMPUTE scmagrad = scmagrad + grade23 .
     COMPUTE scmanum = scmanum + 1 .
 END IF .
 DO IF (field24 = 'MA') .
     COMPUTE mthgrad = mthgrad + grade24 .
     COMPUTE manum = manum + 1 .
```

```
    COMPUTE scmagrad = scmagrad + grade24 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field25 = 'MA') .
    COMPUTE mthgrad = mthgrad + grade25 .
    COMPUTE manum = manum + 1 .
    COMPUTE scmagrad = scmagrad + grade25 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field26 = 'MA') .
    COMPUTE mthgrad = mthgrad + grade26 .
    COMPUTE manum = manum + 1 .
    COMPUTE scmagrad = scmagrad + grade26 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field27 = 'MA') .
    COMPUTE mthgrad = mthgrad + grade27 .
    COMPUTE manum = manum + 1 .
    COMPUTE scmagrad = scmagrad + grade27 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field28 = 'MA') .
    COMPUTE mthgrad = mthgrad + grade28 .
    COMPUTE manum = manum + 1 .
    COMPUTE scmagrad = scmagrad + grade28 .
    COMPUTE scmanum = scmanum + 1 .
END IF


DO IF (field11 = 'BB' | field11 = 'CH' | field11 = 'PH') .
    COMPUTE scigrad = scigrad + grade11 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade11 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field12 = 'BB' | field12 = 'CH' | field12 = 'PH') .
    COMPUTE scigrad = scigrad + grade12 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade12 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
```

```
DO IF (field13 = 'BB' | field13 = 'CH' | field13 = 'PH') .
    COMPUTE scigrad = scigrad + grade13 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade13 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field14 = 'BB' | field14 = 'CH' | field14 = 'PH') .
    COMPUTE scigrad = scigrad + grade14 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade14 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field15 = 'BB' | field15 = 'CH' | field15 = 'PH') .
    COMPUTE scigrad = scigrad + grade15 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade15 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field16 = 'BB' | field16 = 'CH' | field16 = 'PH') .
    COMPUTE scigrad = scigrad + grade16 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade16 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field17 = 'BB' | field17 = 'CH' | field17 = 'PH') .
    COMPUTE scigrad = scigrad + grade17 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade17 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field18 = 'BB' | field18 = 'CH' | field18 = 'PH') .
    COMPUTE scigrad = scigrad + grade18 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade18 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field21 = 'BB' | field21 = 'CH' | field21 = 'PH') .
    COMPUTE scigrad = scigrad + grade21 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade21 .
    COMPUTE scmanum = scmanum + 1 .
```

```
END IF .
DO IF (field22 = 'BB' | field22 = 'CH' | field22 = 'PH') .
    COMPUTE scigrad = scigrad + grade22 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade22 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field23 = 'BB' | field23 = 'CH' | field23 = 'PH') .
    COMPUTE scigrad = scigrad + grade23 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade23 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field24 = 'BB' | field24 = 'CH' | field24 = 'PH') .
    COMPUTE scigrad = scigrad + grade24 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade24 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field25 = 'BB' | field25 = 'CH' | field25 = 'PH') .
    COMPUTE scigrad = scigrad + grade25 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade25 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field26 = 'BB' | field26 = 'CH' | field26 = 'PH') .
    COMPUTE scigrad = scigrad + grade26 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade26 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field27 = 'BB' | field27 = 'CH' | field27 = 'PH') .
    COMPUTE scigrad = scigrad + grade27 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade27 .
    COMPUTE scmanum = scmanum + 1 .
END IF .
DO IF (field28 = 'BB' | field28 = 'CH' | field28 = 'PH') .
    COMPUTE scigrad = scigrad + grade28 .
    COMPUTE scnum = scnum + 1 .
    COMPUTE scmagrad = scmagrad + grade28 .
```

```
    COMPUTE scmanum = scmanum + 1 .
END IF

IF (manum > 0) mthgrad = mthgrad / manum .
IF (scnum > 0) scigrad = scigrad / scnum .
IF (manum > 0 | scnum > 0) scmagrad = scmagrad / scmanum .

EXECUTE .
```

B Database file index

This document shows the filenames and descriptions for the data created by Greg Doerschler for the first group doing the class of 2002 study.

Database file index

WPI Class of 2002

SPSS data files:

wpi2002main.sav
: Primary class-of-2002 data file; contains all GCSI & MBTI variables, WPI freshman course and grade processed variables, and High School course & grade processed variables. Unless new variables need to be created from raw data stored in other files, this file should contain all variables needed for analyses.

wpi_frgrades2002.sav
: WPI class of 2002 data file containing freshman year course & grade raw data and processed variables.

hs_grades_wpi2002.sav
: WPI class of 2002 data file containing high school course & grade raw data and processed variables.

hs_grades_processed_wpi2002.sav
: WPI class of 2002 data file containing high school course & grade processed variables only (no raw data).

SPSS Syntax files:

rat_wpi2002.sps
: Syntax used to create remote association hi/lo variables from raw scores.

dif_wpi2002.sps
: Syntax which dichotemizes raw differentiation scores generated by John Shutt's program.

mbti_data_import.sps
: Syntax which imports CAPT data files to SPSS.

mbti_dichotemized_variables.sps
: Syntax which converts MBTI continuous scores to dichotemized variables: E-I, S-N, T-F, J-P, and to SN-JP quadrants.

wpi2002_create_majorcat.sps
: Converts the "major" variable from the registrar's file to major "categories" suitable for analyses.

wpi_frgrades_import2002.sps
: Imports wpi freshman year grade ASCII data file from registrar to SPSS. File is then "cleaned up" manually in SPSS prior to generating processed variables.

wpi_frgrades_process1-2002.sps
wpi_frgrades_process2-2002.sps
: Generate processed working variables after raw data has been manually cleaned up. (See comments in the actual syntax files for a description of what each one does.) Processed variables are subsequently added to the main SPSS 2002 data file.

hs_grades_import_wpi2002.sps
: Imports high school course/grade Excel data entry file (saved as ASCII text) to SPSS

hs_grades_cleanup_wpi2002.sps
Syntax which was run after HS data was imported to SPSS, fixes many common coding mistakes.

hs_grades_process-1_wpi2002.sps
hs_grades_process-2_wpi2002.sps
hs_grades_process-3_wpi2002.sps
Generate processed working variables from raw high school SPSS grade data file. (See comments in the actual syntax files for a description of what each one does.) Processed variables are subsequently added to the main SPSS 2002 data file.

Misc. files

wpi2002main.doc
Documentation for the wpi2002main.sav data file.

hscoding.doc
Documentation of the system used to code HS course/grade transcript data.

wpi2002_mbti_gcsi_types-list.xls
Convenient summary list of class-of-2002 MBTI & GCSI types (Excel file). File may not be as up-to-date as the mail class-of-2002 SPSS data file.

wpi2002_consentlist.doc
List of WPI-2002 students for whom we had signed consent on file as of freshman orientation.

wpi2002.zip
Old versions of raw data, will only be needed if we ever have to go back to investigate suspected data errors.

WPI Class of 2001

wpi2001main.sav
Primary class-of-2001 GCSI & MBTI SPSS data file.

class01_cogstyle_syntax.sps
Syntax file used to generate cognitive style variables from remote assoc & diff scores.

wpi2001_mbti_gcsi_types-list.xls
Convenient summary list of class-of-2001 MBTI & GCSI types (Excel file).

majors.doc
List of majors offered at WPI and their associated 2 or 3 letter abbreviations.

wpi2001.zip
Old versions of raw data and other files that probably won't be needed again.

WPI Class of 2003

mbti03.sav
mbti03.xls
: SPSS & Excel versions of CAPT 2003 MBTI data file.

mbti2003abriged.sav
mbti2003abriged.xls
: Abriged versions of above files containing only those MBTI variables likely to be needed for analyses.

wpi2003CAPTfiles.zip
: Archive containing original WPI-2003 CAPT data files.

wpiscores03.sav
: Class of 2003 SAT scores.

wpi_frgrades2003.sav
: WPI class-of-2003 freshman grade data, including processed variables.

fr_grades_processed_wpi2003.sav
: WPI class of 2003 freshman grade processed variables (raw data removed).

wpi_trgrades99-00.sav
: WPI 99-00 grade data (including processed variables) for new transfer students in 99-00.

wpi_trgrades99-00-processed.sav
: WPI 99-00 grade data for new tranfer students in 99-00, processed variables only.

wpi2003.zip
: Archive of interim files used to process wpi 2003 freshman grade data, will not be needed unless any suspected data errors need to be investigated.

Note: Consent variable still missing

Class of 2002 SPSS Date File

List of variables on the main working file
'wpi2002main.sps'

Note: Numbers in brackets represent variable type (A=string variable) and number of columns/decimal places). Value labels are included with most variables for which they have been defined.

Variable Name	Variable Label	Position
NAME	Student's name [A30] (registrar)	1
ID	Student ID number (registrar) [F10]	5
DOB	DOB (registrar) [ADATE8]	6
GENDER	Gender [A1] (registrar)	7
GENDER#	Gender [F1.0] (numeric conversion of above GENDER variable	
GROUP	Orientation group number [F2]	8
EMSEP	EMSEP student? [F1.0]	
MAJOR	Major [A5] (registrar)	9
MAJORCAT	Major (grouped by categories defined in syntax file) [F2.0]	
STATUS	Academic Status [A5] (registrar)	10
MBTINAME	Name (From MBTI answer sheet) [A16]	11
CAPTCODE	CAPT code [A3]	13
CAPTSUBJ	CAPT ID number [F9]	14
MBTISEX	Gender (from MBTI form) [F1]	15
	1 female	
	2 male	
MBTITYPE	MBTI Type (numeric) [F2]	16
	1 ESTJ	
	2 ESTP	
	3 ESFJ	
	4 ESFP	
	5 ENTJ	
	6 ENTP	
	7 ENFJ	
	8 ENFP	
	9 ISTJ	
	10 ISTP	
	11 ISFJ	
	12 ISFP	
	13 INTJ	
	14 INTP	
	15 INFJ	
	16 INFP	
MBTILTR	MBTI type (string) [A4]	17
EI	Dichotemized E-I MBTI variable (derived from continuous scores)	
SN	Dichotemized S-N MBTI variable (derived from continuous scores)	
TF	Dichotemized T-F MBTI variable (derived from continuous scores)	
JP	Dichotemized J-P MBTI variable (derived from continuous scores)	
SN_JP	4-Quadrant SN-JP variable (derived from above dichotemized variables).	
MBTIAGE	Age (from MBTI form) [F2]	18
E_POINTS	MBTI E-points [F2]	19
I_POINTS	MBTI I-points [F2]	20
EI_CONT	E-I Continuous score (MBTI) [F3]	21
EIPHRASE	E-I phrase questions [F3]	22
EIWORDPR	E-I word pairs [F3]	23
EIXHALF	E-I x-half [F3]	24
EIYHALF	E-I y-half [F3]	25
S_POINTS	MBTI S-points [F3]	26
N_POINTS	MBTI N-points [F3]	27
SN_CONT	S-N continuous score (MBTI) [F3]	28
SNPHRASE	S-N phrase questions [F3]	29
SNWORDPR	S-N word pairs [F3]	30
SNXHALF	S-N x-half [F3]	31

SNYHALF	S-N y-half [F3]	32
MBTIEDUC	Education level (from MBTI) [F2]	33
MBTIOMIT	Number of omitted items on MBTI [F3]	34
MBTIDATE	Date (from MBTI form) [F8]	35
T_POINTS	MBTI T-points [F2]	36
F_POINTS	MBTI F-points [F2]	37
TF_CONT	T-F continuous score (MBTI) [F3]	38
TFPHRASE	T-F phrase questions [F3]	39
TFWORDPR	T-F word pairs [F3]	40
TFXHALF	T-F x-half [F3]	41
TFYHALF	T-F y-half [F3]	42
J_POINTS	MBTI J-points [F2]	43
P_POINTS	MBTI P-points [F2]	44
JP_CONT	J-P continuous scores [F3]	45
JPPHRASE	J-P phrase questions [F3]	46
JPWORDPR	J-P word pairs [F3]	47
JPXHALF	J-P x-half [F3]	48
JPYHALF	J-P y-half [F3]	49
MBTI_DOB	DOB (from MBTI form) [F8]	50
EI_PREF	MBTI E-I preference score [A3]	51
SN_PREF	MBTI S-N preference score [A3]	52
TF_PREF	MBTI T-F preference score [A3]	53
JP_PREF	MBTI J-P preference score [A3]	54
MBTIFORM	MBTI form [A3]	55
LANGUAGE	Native language (from GMCS form) [F1]	56
	1 American English	
	2 Other (not Americal English)	
CONSENT	Signed consent for access to records [F1]	57
	1 Yes	
	2 No	
FEEDBACK	Signed request for MBTI feedback [F9]	58
	1 Yes	
	2 No	
MBTI_RES	Attended MBTI feedback session [F1]	59
	1 Yes	

[Note: The following 20 items are remote association raw item scores.]

RAT_A1 [F1]	60
RAT_A2 [F1]	61
RAT_A3 [F1]	62
RAT_A4 [F1]	63
RAT_A5 [F1]	64
RAT_A6 [F1]	65
RAT_A7 [F1]	66
RAT_A8 [F1]	67
RAT_A9 [F1]	68
RAT_A10 [F1]	69
RAT_B1 [F1]	70
RAT_B2 [F1]	71
RAT_B3 [F1]	72
RAT_B4 [F1]	73
RAT_B5 [F1]	74
RAT_B6 [F1]	75
RAT_B7 [F1]	76
RAT_B8 [F1]	77
RAT_B9 [F1]	78
RAT_B10 [F1]	79

RAT1	Rem. Assoc. - 1st set (the "college" set) [F2]	80
	(Variable indicates total number of correct and "acceptable" responses)	
RAT2	Rem. Assoc. - 2nd set (the "high school" set) [F2]	81

(Variable indicates total number of correct and "acceptable" responses)

RATBOTH Combined Rem. Assoc. score [F2] 82

(Variable indicates total number of correct and "acceptable" responses)

RATRANGE RAT2 minus RAT1 [F2] 83
RATCOL4 College Remote Assoc. (4 thru 10=Hi) [F1] 84
1 Remote
2 Local
RATHS5 H.S. Remote Assoc. (5 thru 10=Hi) [F1] 85
1 Remote
2 Local
RATHS6 H.S. Remote Assoc. (6 thru 10=Hi) [F1] 86
1 Remote
2 Local

DIVERGE Divergent thinking - # or responses [F2] 87
DESCRIBE Descriptiveness of divergent thinking responses [F1] 88
1 Brief answers
2 Some detials
3 Much detail

PREFER Word game preference (from GMCS form) [F1] 89
1 Word Puzzles (Rem. Assoc.)
2 Barrel (Divergent thinking)
3 Neither
EASIER Word game ease [F1] 90
1 Word Puzzles (rem. assoc.) easier
2 Barrel (divergent thinking) easier
3 Neither

[NOTE: The following 20 items are differentiation raw numeric data]

FOCUS_A [F2] 91
FOCUS_B [F2] 92
FOCUS_C [F2] 93
FOCUS_D [F2] 94
FOCUS_E [F2] 95
FOCUS_F [F2] 96
FOCUS_G [F2] 97
FOCUS_H [F2] 98
FOCUS_I [F2] 99
FOCUS_J [F2] 100
CREAT_A [F2] 101
CREAT_B [F2] 102
CREAT_C [F2] 103
CREAT_D [F2] 104
CREAT_E [F2] 105
CREAT_F [F2] 106
CREAT_G [F2] 107
CREAT_H [F2] 108
CREAT_I [F2] 109
CREAT_J [F2] 110

CR_MORSE Morse DIFF score (creativity) [F11.6] 111
CR_NEUMN Neumann DIFF score (creativity) [F11.6] 112
CR_F6 F6 DIFF score (creativity) [F11.6] 113
CR_F7 F7 DIFF score (creativity) [F11.6] 114
FO_MORSE Morse DIFF score (focus) [F11.6] 115
FO_NEUMN Neumann DIFF score (focus) [F11.6] 116
FO_F6 F6 DIFF score (focus) [F11.6] 117
FO_F7 F7 DIFF score (focus) [F11.6] 118
DIF_M_CR Differentiation (Morse) - Creativity [F1] 119
1 Differentiated

	2 Non-Differentiated	
DIF_6_CR	Differentiation (F6) - Creativity [F1]	120
	1 Differentiated	
	2 Non-Differentiated	
DIF_M_FO	Differentiation (Morse) - Focus [F1]	121
	1 Differentiated	
	2 Non-Differentiated	
DIF_6_FO	Differentiation (F6) - Focus [F1]	122
	1 Differentiated	
	2 Non-Differentiated	
COGST_M4	Cognitive style (morse 1.4/Col. RAT 4-10= Hi) [F1]	123
	1 Integrator	
	2 Problem assessor	
	3 Problem solver	
	4 Implementor	
CRT	Calculus Readiness Test score [F2]	124
MATH_A	A98 Math course [F2]	125
	20 MA1020	
	21 MA1021	
	22 MA1022	
	23 MA1023	
	24 MA1024	
MATHGR_A	A98 Math grade [F1]	126
	0 NR	
	1 C	
	2 B	
	3 A	
MATH_B	B98 Math course [F2]	127
	20 MA1020	
	21 MA1021	
	22 MA1022	
	23 MA1023	
	24 MA1024	
MATHGR_B	B98 Math grade [F1]	128
	0 NR	
	1 C	
	2 B	
	3 A	

GRADPTS	Total WPI grade points earned freshman year
GPA	WPI Grade Point Equivalent for freshman year
GPA1ST	1st semester freshman year GPA equivalent
GPA2ND	2nd semester freshman year GPA equivalent
GPA_A	A-term freshman year GPA equivalent
GPA_B	B-term freshman year GPA equivalent
GPA_C	C-term freshman year GPA equivalent
GPA_D	D-term freshman year GPA equivalent
PASSED1	# of courses passed 1st semester freshman year
PASSED2	# of courses passed 2nd semester freshman year
PASSEDYR	# of courses passed freshman year
SCMAGRAD	Avg. WPI GPA equivalent of 1st yr science & math courses passed (BB, CH, PH, MA)
MTHGRAD	Avg. WPI GPA equivalent of 1st year math courses passed.
SCIGRAD	Avg. WPI GPA equivalent of 1st year science course passed (BB, CH, PH)
SCMANUM	# of WPI science & math courses passed 1st year (BB, CH, PH, MA)
MANUM	# of WPI math courses passed 1st year
SCNUM	# of WPI science courses passed 1st year

ACHIEVE	Achievement test score
SAT_VERB	SAT Verbal test score
SAT_MATH	SAT Math test score
SAT_BOTH	SAT combined test score
TOEFL	TOEFL test score
CLSRANK	HS Class rank
CLSSIZE	HS Class size

SCILEV	Avg. level of HS science classes
MTHLEV	Avg. level of HS math classes
ENGLEV	Avg. level of HS english classes
HISLEV	Avg. level of HS history classes
SSLEV	Avg. level of HS social studies classes
AGGLEV	Avg. level of HS classes listed above.

Levels are rated on a 1-3 scale
3=highest; HS AP or college courses)
2=Honors or Advanced
1=General/college prep.

SCIGRADE	Avg. HS science grade earned.
MTHGRADE	Avg. HS math grade earned.
ENGGRADE	Avg. HS english grade earned.
HISGRADE	Avg. HS history grade earned.
SSGRADE	Avg. HS. social studies grade earned.
AGGGRADE	Abg. HS grade of courses listed above.
SCINUM	# of HS science semesters taken
MTHNUM	# of HS math semesters taken
ENGNUM	# of HS english semesters taken
HISNUM	# of HS history semesters taken
SSNUM	# of HS social studies semesters taken
AGGNUM	Total # of HS semesters taken of above subjects

SCINUMGR, MTHNUMGR, ENGNUMGR, HISNUMGR, SSNUMGR, AGGNUMGR
As above, but excludes semesters without valid grades on transcript

THE FOLLOWING VARIABLES PERTAIN TO HIGH SCHOOL FOREIGN LANGUAGE COURSES:

frenchyr	'Languange years - French'
germanyr	'Language years - German'
latinyr	'Language years - Latin'
spanyr	'Language years - Spanish'
portyr	'Language years - Portuguese'
italyr	'Language years - Italian'
russyr	'Language years - Russian'
japanyr	'Language years - Japanese'
chinayr	'Language years - Chinese'
asianyr	'Language years - Other Asian'
africayr	'Language years - Other African'
europeyr	'Language years - Other European'
langyr	'Language years - Sum of all languages'
lang#	'Number of languages studied in HS'
frenchgr	'Avg. grade - French lang. courses'
germangr	'Avg. grade - German lang. courses'
latingr	'Avg. grade - Latin lang. courses'
spangr	'Avg. grade - Spanish lang. courses'
portgr	'Avg. grade - Portuguese lang. courses'
italgr	'Avg. grade - Italian lang. courses'
russgr	'Avg. grade - Russian lang. courses'
japangr	'Avg. grade - Japanese lang. courses'
chinagr	'Avg. grade - Chinese lang. courses'
asiangr	'Avg. grade - Other Asian lang. courses'
africagr	'Avg. grade - Ohter African lang. courses'
europegr	'Avg. grade - Other European lang. courses' .

C Sample CIRP Survey

This is what the CIRP survey looks like to the student taking it. This is a sample copy from HERI's web site. (http://www.gseis.ucla.edu/heri/cirp.htm)

PLEASE PRINT NAME AND PERMANENT/HOME ADDRESS (one letter or number per box)

NAME: FIRST | M I | LAST

When were you born? Month (01-12) Day (01-31) Year

ADDRESS:

CITY: STATE: ZIP: PHONE: – –

2001 STUDENT INFORMATION FORM

DIRECTIONS

Your responses will be read by an optical mark reader. Your careful observance of these few simple rules will be most appreciated.

- Use only black lead pencil (No. 2 is ideal).
- Make heavy black marks that fill the oval.
- Erase cleanly any answer you wish to change.
- Make no stray markings of any kind.

EXAMPLE:

Will marks made with ballpoint or felt-tip marker be properly read? Yes . . . ○ No . . . ●

FORM NO: 225309

PLEASE PROVIDE YOUR SOCIAL SECURITY NO.

Mark here if directed: GROUP CODE A, GROUP CODE B

Dear Student:

This information is being collected as part of a continuing study of higher education conducted by the American Council on Education and the University of California at Los Angeles. Your participation in this research will help us to achieve a better understanding of how students are affected by their college experiences. Detailed information on this research program is available from the Higher Education Research Institute at UCLA. Identifying information has been requested in order to make subsequent mail follow-up studies possible. Your responses are held in the strictest professional confidence.

Sincerely,

Alexander W. Astin, Director
Higher Education Research Institute

PLEASE USE #2 PENCIL

1. Your sex: ○ Male ○ Female

2. How old will you be on December 31 of this year? (Mark one)

- 16 or younger ○
- 17 ○
- 18 ○
- 19 ○
- 20 ○
- 21-24 ○
- 25-29 ○
- 30-39 ○
- 40-54 ○
- 55 or older ○

3. Is English your native language?

○ Yes ○ No

4. In what year did you graduate from high school? (Mark one)

- 2001 ○
- 2000 ○
- 1999 ○
- 1998 or earlier ○
- Did not graduate but passed G.E.D. test ○
- Never completed high school ○

5. Are you enrolled (or enrolling) as a: (Mark one)

Full-time student? ○ Part-time student? ○

6. How many miles is this college from your permanent home? (Mark one)

- 5 or less ○
- 6-10 ○
- 11-50 ○
- 51-100 ○
- 101-500 ○
- Over 500 ○

7. What was your average grade in high school? (Mark one)

- A or A+ ○
- A- ○
- B+ ○
- B ○
- B- ○
- C+ ○
- C ○
- D ○

8. What were your scores on the SAT I and/or ACT?

SAT VERBAL

SAT MATH

ACT Composite

9. Citizenship status:

- ○ U.S. citizen
- ○ Permanent resident (green card)
- ○ Neither

10. Have you had, or do you feel you will need, any special tutoring or remedial work in any of the following subjects? (Mark all that apply)

	Have Had	Will Need
English	○	○
Reading	○	○
Mathematics	○	○
Social Studies	○	○
Science	○	○
Foreign Language	○	○
Writing	○	○

11. Prior to this term, have you ever taken courses for credit at this institution?

○ Yes ○ No

12. Since leaving high school, have you ever taken courses at any other institution? (Mark all that apply in each column)

	For Credit	Not for Credit
Yes, at a community/junior college	○	○
Yes, at a 4-yr. college or university	○	○
Yes, at some other postsecondary school (For example: technical, vocational, business)	○	○

13. Where do you plan to live during the fall term? (Mark one)

- With my family or other relatives ○
- Other private home, apartment or room ○
- College dormitory ○
- Fraternity or sorority house ○
- Other campus student housing ○
- Other ○

14. Is this college your: (Mark one)

- First choice? ○
- Second choice? ○
- Third choice? ○
- Less than third choice? ○

15. To how many colleges other than this one did you apply for admission this year?

- None ○
- 1 ○
- 2 ○
- 3 ○
- 4 ○
- 5 ○
- 6 ○
- 7-10 ○
- 11 or more ○

16. During high school (grades 9-12) how many years did you study each of the following subjects? (Mark one for each item)

	None	½ yr	1	2	3	4	5 or more
English	○	○	○	○	○	○	○
Mathematics	○	○	○	○	○	○	○
Foreign Language	○	○	○	○	○	○	○
Physical Science	○	○	○	○	○	○	○
Biological Science	○	○	○	○	○	○	○
History/Am. Govt.	○	○	○	○	○	○	○
Computer Science	○	○	○	○	○	○	○
Arts and/or Music	○	○	○	○	○	○	○

17. What is the highest academic degree that you intend to obtain? (Mark one in each column)

	Highest Planned	Highest Planned at this College
None	○	○
Vocational certificate	○	○
Associate (A.A. or equivalent)	○	○
Bachelor's degree (B.A., B.S., etc.)	○	○
Master's degree (M.A., M.S., etc.)	○	○
Ph.D. or Ed.D.	○	○
M.D., D.O., D.D.S., or D.V.M.	○	○
LL.B. or J.D. (Law)	○	○
B.D. or M.Div. (Divinity)	○	○
Other	○	○

18. Are your parents: (Mark one)

- Both alive and living with each other? ○
- Both alive, divorced or living apart? ○
- One or both deceased? ○

19. How much of your first year's educational expenses (room, board, tuition, and fees) do you expect to cover from each of the sources listed below? (Mark one answer for each possible source)

	None	Less than $1,000	$1,000-2,999	$3,000-5,999	$6,000-9,999	$10,000+
Family resources (parents, relatives, spouse, etc.)	○	○	○	○	○	○
My own resources (savings from work, work-study, other income)	○	○	○	○	○	○
Aid which need not be repaid (grants, scholarships, military funding, etc.)	○	○	○	○	○	○
Aid which must be repaid (loans, etc.)	○	○	○	○	○	○
Other than above	○	○	○	○	○	○

20. What is your best estimate of your parents' total income last year? Consider income from all sources before taxes. (Mark one)

- ○ Less than $6,000
- ○ $6,000-9,999
- ○ $10,000-14,999
- ○ $15,000-19,999
- ○ $20,000-24,999
- ○ $25,000-29,999
- ○ $30,000-39,999
- ○ $40,000-49,999
- ○ $50,000-59,999
- ○ $60,000-74,999
- ○ $75,000-99,999
- ○ $100,000-149,999
- ○ $150,000-199,999
- ○ $200,000 or more

21. Current religious preference: (Mark one in each column)

	Yours	Father's	Mother's
Baptist	Ⓨ	Ⓕ	Ⓜ
Buddhist	Ⓨ	Ⓕ	Ⓜ
Eastern Orthodox	Ⓨ	Ⓕ	Ⓜ
Episcopal	Ⓨ	Ⓕ	Ⓜ
Islamic	Ⓨ	Ⓕ	Ⓜ
Jewish	Ⓨ	Ⓕ	Ⓜ
LDS (Mormon)	Ⓨ	Ⓕ	Ⓜ
Lutheran	Ⓨ	Ⓕ	Ⓜ
Methodist	Ⓨ	Ⓕ	Ⓜ
Presbyterian	Ⓨ	Ⓕ	Ⓜ
Quaker	Ⓨ	Ⓕ	Ⓜ
Roman Catholic	Ⓨ	Ⓕ	Ⓜ
Seventh Day Adventist	Ⓨ	Ⓕ	Ⓜ
United Church of Christ	Ⓨ	Ⓕ	Ⓜ
Other Christian	Ⓨ	Ⓕ	Ⓜ
Other Religion	Ⓨ	Ⓕ	Ⓜ
None	Ⓨ	Ⓕ	Ⓜ

22. Please indicate the ethnic background of yourself, your father, and your mother. (Mark all that apply in each column)

	You	Father	Mother
White/Caucasian	Ⓨ	Ⓕ	Ⓜ
African American/Black	Ⓨ	Ⓕ	Ⓜ
American Indian/Alaska Native	Ⓨ	Ⓕ	Ⓜ
Asian American/Asian	Ⓨ	Ⓕ	Ⓜ
Native Hawaiian/Pacific Islander	Ⓨ	Ⓕ	Ⓜ
Mexican American/Chicano	Ⓨ	Ⓕ	Ⓜ
Puerto Rican	Ⓨ	Ⓕ	Ⓜ
Other Latino	Ⓨ	Ⓕ	Ⓜ
Other	Ⓨ	Ⓕ	Ⓜ

23. Do you consider yourself a born-again Christian?

○ Yes ○ No

24. For the activities below, indicate which ones you did during the past year. If you engaged in an activity frequently, mark Ⓕ. If you engaged in an activity one or more times, but not frequently, mark Ⓞ (occasionally). Mark Ⓝ (Not at all) if you have not performed the activity during the past year. (Mark one for each item)

	Frequently	Occasionally	Not at all
Attended a religious service	Ⓕ	Ⓞ	Ⓝ
Was bored in class	Ⓕ	Ⓞ	Ⓝ
Participated in organized demonstrations	Ⓕ	Ⓞ	Ⓝ
Tutored another student	Ⓕ	Ⓞ	Ⓝ
Studied with other students	Ⓕ	Ⓞ	Ⓝ
Was a guest in a teacher's home	Ⓕ	Ⓞ	Ⓝ
Smoked cigarettes	Ⓕ	Ⓞ	Ⓝ
Drank beer	Ⓕ	Ⓞ	Ⓝ
Drank wine or liquor	Ⓕ	Ⓞ	Ⓝ
Felt overwhelmed by all I had to do	Ⓕ	Ⓞ	Ⓝ
Felt depressed	Ⓕ	Ⓞ	Ⓝ
Performed volunteer work	Ⓕ	Ⓞ	Ⓝ
Played a musical instrument	Ⓕ	Ⓞ	Ⓝ
Asked a teacher for advice after class	Ⓕ	Ⓞ	Ⓝ
Overslept and missed class or appointment	Ⓕ	Ⓞ	Ⓝ
Discussed politics	Ⓕ	Ⓞ	Ⓝ
Voted in a student election	Ⓕ	Ⓞ	Ⓝ
Socialized with someone of another racial/ethnic group	Ⓕ	Ⓞ	Ⓝ
Came late to class	Ⓕ	Ⓞ	Ⓝ
Attended a public recital or concert	Ⓕ	Ⓞ	Ⓝ
Visited an art gallery or museum	Ⓕ	Ⓞ	Ⓝ
Discussed religion	Ⓕ	Ⓞ	Ⓝ
Communicated via e-mail	Ⓕ	Ⓞ	Ⓝ
Used the Internet for research or homework	Ⓕ	Ⓞ	Ⓝ
Participated in Internet chat rooms	Ⓕ	Ⓞ	Ⓝ
Other Internet use	Ⓕ	Ⓞ	Ⓝ
Performed community service as part of a class	Ⓕ	Ⓞ	Ⓝ
Used a personal computer	Ⓕ	Ⓞ	Ⓝ

25. How many Advanced Placement courses or exams did you take in high school? (Mark one in each row)

	None	1	2-3	4-6	7-10	11+
AP Courses	○	○	○	○	○	○
AP Exams	○	○	○	○	○	○

26. What is the highest level of formal education obtained by your parents? (Mark one in each column)

	Father	Mother
Grammar school or less	○	○
Some high school	○	○
High school graduate	○	○
Postsecondary school other than college	○	○
Some college	○	○
College degree	○	○
Some graduate school	○	○
Graduate degree	○	○

27. From what kind of secondary school did you graduate? (Mark one)

- Public ○
- Private (denominational) ○
- Private (non-religious) ○
- Other ○

28. In deciding to go to college, how important to you was each of the following reasons? (Mark one answer for each possible reason)

	Very Important	Somewhat Important	Not Important
My parents wanted me to go	Ⓥ	Ⓢ	Ⓝ
I could not find a job	Ⓥ	Ⓢ	Ⓝ
Wanted to get away from home	Ⓥ	Ⓢ	Ⓝ
To be able to get a better job	Ⓥ	Ⓢ	Ⓝ
To gain a general education and appreciation of ideas	Ⓥ	Ⓢ	Ⓝ
To improve my reading and study skills	Ⓥ	Ⓢ	Ⓝ
There was nothing better to do	Ⓥ	Ⓢ	Ⓝ
To make me a more cultured person	Ⓥ	Ⓢ	Ⓝ
To be able to make more money	Ⓥ	Ⓢ	Ⓝ
To learn more about things that interest me	Ⓥ	Ⓢ	Ⓝ
To prepare myself for graduate or professional school	Ⓥ	Ⓢ	Ⓝ
A mentor/role model encouraged me to go	Ⓥ	Ⓢ	Ⓝ
To get training for a specific career	Ⓥ	Ⓢ	Ⓝ

29. Rate yourself on each of the following traits as compared with the average person your age. We want the most accurate estimate of how you see yourself. (Mark one in each row)

	Highest 10%	Above Average	Average	Below Average	Lowest 10%
Academic ability	○	○	○	○	○
Artistic ability	○	○	○	○	○
Computer skills	○	○	○	○	○
Competitiveness	○	○	○	○	○
Cooperativeness	○	○	○	○	○
Creativity	○	○	○	○	○
Drive to achieve	○	○	○	○	○
Emotional health	○	○	○	○	○
Leadership ability	○	○	○	○	○
Mathematical ability	○	○	○	○	○
Physical health	○	○	○	○	○
Persistence	○	○	○	○	○
Popularity	○	○	○	○	○
Public speaking ability	○	○	○	○	○
Religiousness	○	○	○	○	○
Self-confidence (intellectual)	○	○	○	○	○
Self-confidence (social)	○	○	○	○	○
Self-understanding	○	○	○	○	○
Spirituality	○	○	○	○	○
Understanding of others	○	○	○	○	○
Writing ability	○	○	○	○	○

30. Mark only three responses, one in each column.

Ⓜ Your mother's occupation
Ⓕ Your father's occupation
Ⓨ Your probable career occupation

NOTE: If your father or mother is deceased, please indicate his or her last occupation.

	Ⓨ	Ⓕ	Ⓜ
Accountant or actuary	Ⓨ	Ⓕ	Ⓜ
Actor or entertainer	Ⓨ	Ⓕ	Ⓜ
Architect or urban planner	Ⓨ	Ⓕ	Ⓜ
Artist	Ⓨ	Ⓕ	Ⓜ
Business (clerical)	Ⓨ	Ⓕ	Ⓜ
Business executive (management, administrator)	Ⓨ	Ⓕ	Ⓜ
Business owner or proprietor	Ⓨ	Ⓕ	Ⓜ
Business salesperson or buyer	Ⓨ	Ⓕ	Ⓜ
Clergy (minister, priest)	Ⓨ	Ⓕ	Ⓜ
Clergy (other religious)	Ⓨ	Ⓕ	Ⓜ
Clinical psychologist	Ⓨ	Ⓕ	Ⓜ
College administrator/staff	Ⓨ	Ⓕ	Ⓜ
College teacher	Ⓨ	Ⓕ	Ⓜ
Computer programmer or analyst	Ⓨ	Ⓕ	Ⓜ
Conservationist or forester	Ⓨ	Ⓕ	Ⓜ
Dentist (including orthodontist)	Ⓨ	Ⓕ	Ⓜ
Dietitian or home economist	Ⓨ	Ⓕ	Ⓜ
Engineer	Ⓨ	Ⓕ	Ⓜ
Farmer or rancher	Ⓨ	Ⓕ	Ⓜ
Foreign service worker (including diplomat)	Ⓨ	Ⓕ	Ⓜ
Homemaker (full-time)	Ⓨ	Ⓕ	Ⓜ
Interior decorator (including designer)	Ⓨ	Ⓕ	Ⓜ
Lab technician or hygienist	Ⓨ	Ⓕ	Ⓜ
Law enforcement officer	Ⓨ	Ⓕ	Ⓜ
Lawyer (attorney) or judge	Ⓨ	Ⓕ	Ⓜ
Military service (career)	Ⓨ	Ⓕ	Ⓜ
Musician (performer, composer)	Ⓨ	Ⓕ	Ⓜ
Nurse	Ⓨ	Ⓕ	Ⓜ
Optometrist	Ⓨ	Ⓕ	Ⓜ
Pharmacist	Ⓨ	Ⓕ	Ⓜ
Physician	Ⓨ	Ⓕ	Ⓜ
Policymaker/Government	Ⓨ	Ⓕ	Ⓜ
School counselor	Ⓨ	Ⓕ	Ⓜ
School principal or superintendent	Ⓨ	Ⓕ	Ⓜ
Scientific researcher	Ⓨ	Ⓕ	Ⓜ
Social, welfare or recreation worker	Ⓨ	Ⓕ	Ⓜ
Therapist (physical, occupational speech)	Ⓨ	Ⓕ	Ⓜ
Teacher or administrator (elementary)	Ⓨ	Ⓕ	Ⓜ
Teacher or administrator (secondary)	Ⓨ	Ⓕ	Ⓜ
Veterinarian	Ⓨ	Ⓕ	Ⓜ
Writer or journalist	Ⓨ	Ⓕ	Ⓜ
Skilled trades	Ⓨ	Ⓕ	Ⓜ
Laborer (unskilled)	Ⓨ	Ⓕ	Ⓜ
Semi-skilled worker	Ⓨ	Ⓕ	Ⓜ
Unemployed	Ⓨ	Ⓕ	Ⓜ
Other	Ⓨ	Ⓕ	Ⓜ
Undecided	Ⓨ		

31. Mark one in each row:

① Disagree Strongly
② Disagree Somewhat
③ Agree Somewhat
④ Agree Strongly

There is too much concern in the courts for the rights of criminals	④	③	②	①
Abortion should be legal	④	③	②	①
The death penalty should be abolished	④	③	②	①
If two people really like each other, it's all right for them to have sex even if they've known each other for only a very short time	④	③	②	①
Marijuana should be legalized	④	③	②	①
It is important to have laws prohibiting homosexual relationships	④	③	②	①
Employers should be allowed to require drug testing of employees or job applicants	④	③	②	①
The federal government should do more to control the sale of handguns	④	③	②	①
Racial discrimination is no longer a major problem in America	④	③	②	①
Realistically, an individual can do little to bring about changes in our society	④	③	②	①
Wealthy people should pay a larger share of taxes than they do now	④	③	②	①
Colleges should prohibit racist/sexist speech on campus	④	③	②	①
Same-sex couples should have the right to legal marital status	④	③	②	①
Affirmative action in college admissions should be abolished	④	③	②	①
The activities of married women are best confined to the home and family	④	③	②	①

32. During your last year in high school, how much time did you spend during a typical week doing the following activities?

Hours per week:	None	Less than 1 hour	1-2	3-5	6-10	11-15	16-20	Over 20
Studying/homework	○	○	○	○	○	○	○	○
Socializing with friends	○	○	○	○	○	○	○	○
Talking with teachers outside of class	○	○	○	○	○	○	○	○
Exercise or sports	○	○	○	○	○	○	○	○
Partying	○	○	○	○	○	○	○	○
Working (for pay)	○	○	○	○	○	○	○	○
Volunteer work	○	○	○	○	○	○	○	○
Student clubs/groups	○	○	○	○	○	○	○	○
Watching TV	○	○	○	○	○	○	○	○
Household/childcare duties	○	○	○	○	○	○	○	○
Reading for pleasure	○	○	○	○	○	○	○	○
Playing video/computer games	○	○	○	○	○	○	○	○
Prayer/meditation	○	○	○	○	○	○	○	○

33. Do you have any concern about your ability to finance your college education? (Mark one)

- ○ None (I am confident that I will have sufficient funds)
- ○ Some (but I probably will have enough funds)
- ○ Major (not sure I will have enough funds to complete college)

34. How would you characterize your political views? (Mark one)

- ○ Far left
- ○ Liberal
- ○ Middle-of-the-road
- ○ Conservative
- ○ Far right

35. Are you presently married? ○ Yes ○ No

36. Did your high school require community service for graduation? ○ Yes ○ No

37. Below are some reasons that might have influenced your decision to attend this particular college. How important was each reason in your decision to come here? (Mark one answer for each possible reason)

	Very important	Somewhat important	Not important
My relatives wanted me to come here	Ⓨ	Ⓢ	Ⓝ
My teacher advised me	Ⓨ	Ⓢ	Ⓝ
This college has a very good academic reputation	Ⓨ	Ⓢ	Ⓝ
This college has a good reputation for its social activities	Ⓨ	Ⓢ	Ⓝ
I was offered financial assistance	Ⓨ	Ⓢ	Ⓝ
This college offers special educational programs	Ⓨ	Ⓢ	Ⓝ
This college has low tuition	Ⓨ	Ⓢ	Ⓝ
High school counselor advised me	Ⓨ	Ⓢ	Ⓝ
Private college counselor advised me	Ⓨ	Ⓢ	Ⓝ
I wanted to live near home	Ⓨ	Ⓢ	Ⓝ
Not offered aid by first choice	Ⓨ	Ⓢ	Ⓝ
This college's graduates gain admission to top graduate/ professional schools	Ⓨ	Ⓢ	Ⓝ
This college's graduates get good jobs	Ⓨ	Ⓢ	Ⓝ
I was attracted by the religious affiliation/orientation of the college	Ⓨ	Ⓢ	Ⓝ
I wanted to go to a school about the size of this college	Ⓨ	Ⓢ	Ⓝ
Not accepted anywhere else	Ⓨ	Ⓢ	Ⓝ
Rankings in national magazines	Ⓨ	Ⓢ	Ⓝ
Information from a website	Ⓨ	Ⓢ	Ⓝ
I was admitted through an Early Action or Early Decision program	Ⓨ	Ⓢ	Ⓝ
My friends are attending	Ⓨ	Ⓢ	Ⓝ
I was offered:			
an athletic scholarship	Ⓨ	Ⓢ	Ⓝ
a merit-based scholarship	Ⓨ	Ⓢ	Ⓝ
a need-based scholarship	Ⓨ	Ⓢ	Ⓝ

38. Below is a list of different undergraduate major fields grouped into general categories. Mark only one oval to indicate your probable field of study.

ARTS AND HUMANITIES
- Art, fine and applied ①
- English (language and literature) ②
- History ③
- Journalism ④
- Language and Literature (except English) ⑤
- Music ⑥
- Philosophy ⑦
- Speech ⑧
- Theater or Drama ⑨
- Theology or Religion ⑩
- Other Arts and Humanities ⑪

BIOLOGICAL SCIENCE
- Biology (general) ⑫
- Biochemistry or Biophysics ⑬
- Botany ⑭
- Environmental Science ⑮
- Marine (Life) Science ⑯
- Microbiology or Bacteriology ⑰
- Zoology ⑱
- Other Biological Science ⑲

BUSINESS
- Accounting ⑳
- Business Admin. (general) ㉑
- Finance ㉒
- International Business ㉓
- Marketing ㉔
- Management ㉕
- Secretarial Studies ㉖
- Other Business ㉗

EDUCATION
- Business Education ㉘
- Elementary Education ㉙
- Music or Art Education ㉚
- Physical Education or Recreation ㉛
- Secondary Education ㉜
- Special Education ㉝
- Other Education ㉞

ENGINEERING
- Aeronautical or Astronautical Eng ㉟
- Civil Engineering ㊱
- Chemical Engineering ㊲
- Electrical or Electronic Engineering ㊳
- Industrial Engineering ㊴
- Mechanical Engineering ㊵
- Other Engineering ㊶

PHYSICAL SCIENCE
- Astronomy ㊷
- Atmospheric Science (incl. Meteorology) ㊸
- Chemistry ㊹
- Earth Science ㊺
- Marine Science (incl. Oceanography) ㊻
- Mathematics ㊼
- Physics ㊽
- Statistics ㊾
- Other Physical Science ㊿

PROFESSIONAL
- Architecture or Urban Planning (51)
- Home Economics (52)
- Health Technology (medical, dental, laboratory) (53)
- Library or Archival Science (54)
- Medicine, Dentistry Veterinarian (55)
- Nursing (56)
- Pharmacy (57)
- Therapy (occupational, physical, speech) (58)
- Other Professional (59)

SOCIAL SCIENCE
- Anthropology (60)
- Economics (61)
- Ethnic Studies (62)
- Geography (63)
- Political Science (gov't., international relations) (64)
- Psychology (65)
- Social Work (66)
- Sociology (67)
- Women's Studies (68)
- Other Social Science (69)

TECHNICAL
- Building Trades (70)
- Data Processing or Computer Programming (71)
- Drafting or Design (72)
- Electronics (73)
- Mechanics (74)
- Other Technical (75)

OTHER FIELDS
- Agriculture (76)
- Communications (77)
- Computer Science (78)
- Forestry (79)
- Kinesiology (80)
- Law Enforcement (81)
- Military Science (82)
- Other Field (83)
- Undecided (84)

DO NOT WRITE IN THIS AREA

39. Please indicate the importance to you personally of each of the following: (Mark one for each item)
(E) Essential (V) Very Important (S) Somewhat Important (N) Not Important

	E	V	S	N
Becoming accomplished in one of the performing arts (acting, dancing, etc.)	E	V	S	N
Becoming an authority in my field	E	V	S	N
Obtaining recognition from my colleagues for contributions to my special field	E	V	S	N
Influencing the political structure	E	V	S	N
Influencing social values	E	V	S	N
Raising a family	E	V	S	N
Having administrative responsibility for the work of others	E	V	S	N
Being very well off financially	E	V	S	N
Helping others who are in difficulty	E	V	S	N
Making a theoretical contribution to science	E	V	S	N
Writing original works (poems, novels, short stories, etc.)	E	V	S	N
Creating artistic work (painting, sculpture, decorating, etc.)	E	V	S	N
Becoming successful in a business of my own	E	V	S	N
Becoming involved in programs to clean up the environment	E	V	S	N
Developing a meaningful philosophy of life	E	V	S	N
Participating in a community action program	E	V	S	N
Helping to promote racial understanding	E	V	S	N
Keeping up to date with political affairs	E	V	S	N
Becoming a community leader	E	V	S	N
Integrating spirituality into my life	E	V	S	N

40. What is your best guess as to the chances that you will: (Mark one for each item)
(V) Very Good Chance (S) Some Chance (L) Very Little Chance (N) No Chance

	V	S	L	N
Change major field?	V	S	L	N
Change career choice?	V	S	L	N
Graduate with honors?	V	S	L	N
Participate in student government?	V	S	L	N
Get a job to help pay for college expenses?	V	S	L	N
Work full-time while attending college?	V	S	L	N
Join a social fraternity or sorority?	V	S	L	N
Play varsity/intercollegiate athletics?	V	S	L	N
Make at least a "B" average?	V	S	L	N
Need extra time to complete your degree requirements?	V	S	L	N
Get a bachelor's degree (B.A., B.S., etc.)?	V	S	L	N
Participate in student protests or demonstrations?	V	S	L	N
Drop out of this college temporarily (exclude transferring)?	V	S	L	N
Drop out permanently (exclude transferring)?	V	S	L	N
Transfer to another college before graduating?	V	S	L	N
Be satisfied with your college?	V	S	L	N
Participate in volunteer or community service work?	V	S	L	N
Seek personal counseling?	V	S	L	N
Develop close friendships with other students?	V	S	L	N
Communicate regularly with your professors?	V	S	L	N
Socialize with someone of another racial/ethnic group?	V	S	L	N
Participate in student clubs/groups?	V	S	L	N

41. Do you give the Higher Education Research Institute (HERI) permission to include your ID number should your college request the data for additional research analyses? HERI maintains strict standards of confidentiality and would require your college to sign a pledge of confidentiality. ◯ Yes ◯ No

The remaining ovals are provided for questions specifically designed by your college rather than the Higher Education Research Institute. If your college has chosen to use the ovals, please observe carefully the supplemental directions given to you.

42. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	49. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	56. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
43. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	50. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	57. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
44. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	51. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	58. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
45. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	52. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	59. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
46. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	53. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	60. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
47. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	54. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	61. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ
48. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	55. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ	62. Ⓐ Ⓑ Ⓒ Ⓓ Ⓔ

THANK YOU!

D CIRP Survey Key

This is the document which describes the format of the CIRP data that we get from HERI.

An answer key is provided for each question on the survey.

Higher Education Research Institute
Graduate School of Education & Information Studies
University of California, Los Angeles
3005 Moore Hall / Mailbox 951528
Los Angeles, California 90095-1528

FILE DOCUMENTATION

1998 FRESHMAN SURVEY

File Name: CIRP1998.DAT

Record Length: 390

1-4	ACE:	College (ACE) I.D.
5-6	SHRED:	Shred (Breakout) Code
7-10	WPI:	WPI Code NOTE: "----" a matched record with no code " " a non-matched record
11-16		(not used)
17-25	SSN:	Social Security Number
26-26	SEX:	Sex *1=male* *2=female*
27-28	AGE:	Age on December 31, 1998 *1=16 or younger* *2=17* *3=18* *4=19* *5=20* *6=21 to 24* *7=25 to 29* *8=30 to 39* *9=40 to 54* *10=55 or older*
29-29	NATENGSP:	Is Student Native English Speaker? *1=no* *2=yes*
30-30	YRGRADHS:	Year Graduated from High School *1=1998* *2=1997* *3=1996* *4=1995 or earlier* *5=H.S. equivalency (G.E.D. test)* *6=never completed high school*
31-31	FULLSTAT:	Student Status *1=part-time* *2=full-time*
32-32	DISTHOME:	Miles from College to Home *1=5 or less* *2=6 to 10* *3=11 to 50* *4=51 to 100* *5=101 to 500* *6=more than 500*
33-33	HSGPA:	Average High School Grade *1=D* *2=C* *3=C+* *4=B-* *5=B* *6=B+* *7=A-* *8=A or A+*
34-34	CITIZEN:	Citizenship Status *1=neither* *2=permanent resident (green card)* *3=U.S. citizen*

Years of High School Study
1=none
2=one-half
3=one
4=two
5=three
6=four
7=five or more

35-35 YRSTUD1: English
36-36 YRSTUD2: mathematics
37-37 YRSTUD3: foreign language
38-38 YRSTUD4: physical science
39-39 YRSTUD5: biological science
40-40 YRSTUD6: history/Am. government
41-41 YRSTUD7: computer science
42-42 YRSTUD8: arts and/or music

43-43 PREVCRED: Prior Credit at This Institution
1=no
2=yes

Credit Courses at Other Institution
1=not marked
2=marked

44-44 CRED1: yes, at junior or community college
45-45 CRED2: yes, at 4-yr college or university
46-46 CRED3: yes, at other postsecondary

Non-credit Courses at Other Institution
1=not marked
2=marked

47-47 NOCRED1: yes, at junior or community college
48-48 NOCRED2: yes, at 4-yr college or university
49-49 NOCRED3: yes, at other postsecondary

50-50 LIVEPLAN: Plan to Live in Fall 1998
1=with parents or relatives
2=other private home,apartment,room
3=college dormitory
4=fraternity or sorority house
5=other campus housing
6=other

51-51 HSTYPE: Type of High School
1=public
2=denominational
3=non-religious
4=other

52-52 CHOICE: Choice of College
1=less than third choice
2=third choice
3=second choice
4=first choice

Number of Other College
1=none
2=one
3=two
4=three
5=four
6=five
7=six
8=seven to ten
9=eleven or more

53-53 NUMAPPLY: applications
54-54 NUMACCPT: acceptances

Highest Degree Planned
1=none
2=vocational certificate
3=associate (A.A. or equivalent)
4=bachelor's (B.A., B.S.)
5=master's (M.A., M.S.)
6=Ph.D. or Ed.D.
7=M.D., D.O., D.D.S., D.V.M.
8=LL.B. or J.D. (law)
9=B.D. or M.Div. (divinity)
10=other

55-56 DEGASP98: anywhere
57-58 HIDEGHRE: at freshman institution

59-59 PARSTAT: Status of Parents
1=one or both deceased
2=both alive - divorced or separated
3=both alive - living with each other

Sources of Financial Aid
1=none
2=$1 to $499
3=$500 to $1,499
4=$1,500 to $3,000
5=over $3,000

60-60 AID01: parental or family aid
61-61 AID02: spouse
62-62 AID03: savings from summer work
63-63 AID04: other savings
64-64 AID05: part-time job on campus
65-65 AID06: part-time job off campus
66-66 AID07: full-time job while in college
67-67 AID08: Pell Grant (*)
68-68 AID09: Supplemental Educational Opportunity Grant (*)
69-69 AID10: state scholarship or grant (*)
70-70 AID11: College Work-Study Grant (*)
71-71 AID12: other college grant or scholarship
72-72 AID13: Vocational Rehabilitation funds
73-73 AID14: other private grant
74-74 AID15: other government aid (ROTC,BIA,GI,etc.)
75-75 AID16: Stafford/Guaranteed Student Loan (*)
76-76 AID17: Perkins Loan (*)
77-77 AID18: other college loan
78-78 AID19: other loan
79-79 AID20: other

80-81 INCOME: Estimated Parental Income
1=less than $6,000
2=$6,000 to $9,999
3=$10,000 to $14,999
4=$15,000 to $19,999
5=$20,000 to $24,999
6=$25,000 to $29,999
7=$30,000 to $39,999
8=$40,000 to $49,999
9=$50,000 to $59,999
10=$60,000 to $74,999
11=$75,000 to $99,999
12=$100,000 to $149,999
13=$150,000 to $199,999
14=$200,000 or more

	Religios Preference of
	1=Baptist
	2=Buddhist
	3=Eastern Orthodox
	4=Episcopal
	5=Islamic
	6=Jewish
	7=LDS (Mormon)
	8=Lutheran
	9=Methodist
	10=Presbyterian
	11=Quaker
	12=Roman Catholic
	13=Seventh Day Adventist
	14=United Church of Christ
	15=other Christian
	16=other religion
	17=none
82-83	**RELIG98D: student**
84-85	**FRELIG: father**
86-87	**MRELIG: mother**
	Activities in Past Year
	1=not at all
	2=occasionally
	3=frequently
88-88	**ACT9701: attended a religious service**
89-89	**ACT9702: was bored in class**
90-90	**ACT9703: participated in organized demonstrations**
91-91	**ACT9704: tutored another student**
92-92	**ACT9705: studied with other students**
93-93	**ACT9706: was a guest in a teacher's home**
94-94	**ACT9707: smoked cigarettes**
95-95	**ACT9708: drank beer**
96-96	**ACT9709: drank wine or liquor**
97-97	**ACT9710: felt overwhelmed by all I had to do**
98-98	**ACT9711: felt depressed**
99-99	**ACT9712: performed volunteer work**
100-100	**ACT9713: played musical instrument**
101-101	**ACT9714: asked teacher for advice after class**
102-102	**ACT9715: overslept & missed class/appt**
103-103	**ACT9716: discussed politics**
104-104	**ACT9717: voted in student election**
105-105	**ACT9718: socialized w/diff ethnic group**
106-106	**ACT9719: took prescribed anti-depressant**
107-107	**ACT9720: came late to class**
108-108	**ACT9721: attended public recital or concert**
109-109	**ACT9722: visited art gallery or museum**
110-110	**ACT9723: discussed religion**
111-111	**ACT9724: read editorial page in daily newspaper**
112-112	**ACT9725: check out book/journal from school library**
113-113	**ACT9726: communicated via e-mail**
114-114	**ACT9727: used internet for research or homework**
115-115	**ACT9728: participated in internet chat rooms**
116-116	**ACT9729: played computer games**
117-117	**ACT9730: other internet use**

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	Racial Background
	1=not marked
	2=marked
118-118	**RACE01: White/Caucasian**
119-119	**RACE02: African American/Black**
120-120	**RACE03: American Indian**
121-121	**RACE04: Asian American/Asian**
122-122	**RACE05: Mexican American/Chicano**
123-123	**RACE06: Puerto Rican**
124-124	**RACE07: other Latino**
125-125	**RACE08: other**
126-126	**ADOPTED: Adopted by Family?**
	1=no
	2=yes, at 0-2 years
	3=yes, at 3-7 years
	4=yes, at 8-12 years
	5=yes, at 13+ years
127-127	**FOSTCARE: Ever in Foster Care?**
	1=no
	2=yes
	Parent's Education
	1=grammar school or less
	2=some high school
	3=high school graduate
	4=postsecondary other than college
	5=some college
	6=college degree
	7=some graduate school
	8=graduate degree
128-128	**FATHEDUC: father**
129-129	**MOTHEDUC: mother**
	Reasons for Attending College
	1=not important
	2=somewhat important
	3=very important
130-130	**REASON01: parents wanted me to go**
131-131	**REASON02: could not find a job**
132-132	**REASON03: wanted to get away from home**
133-133	**REASON04: get a better job**
134-134	**REASON05: gain general education**
135-135	**REASON06: improve reading and study skills**
136-136	**REASON07: become a more cultured person**
137-137	**REASON08: make more money**
138-138	**REASON09: role model/mentor encouraged me to go**
139-139	**REASON10: prove to others I could succeed**
140-140	**REASON11: prepare for grad/prof school**
141-141	**REASON12: because friends were going**
	Self-Ratings
	1=lowest 10%
	2=below average
	3=average
	4=above average
	5=highest 10%
142-142	**RATE9701: academic ability**
143-143	**RATE9702: artistic ability**
144-144	**RATE9703: athletic ability**
145-145	**RATE9704: competitiveness**
146-146	**RATE9705: cooperativeness**
147-147	**RATE9706: creativity**
148-148	**RATE9707: drive to achieve**
149-149	**RATE9708: emotional health**
150-150	**RATE9709: leadership ability**

(continued)

	Self-Ratings (continued)
	1=lowest 10%
	2=below average
	3=average
	4=above average
	5=highest 10%
151-151	**RATE9710: mathematical ability**
152-152	**RATE9711: physical health**
153-153	**RATE9712: popularity**
154-154	**RATE9713: public speaking ability**
155-155	**RATE9714: self-confidence (intellectual)**
156-156	**RATE9715: self-confidence (social)**
157-157	**RATE9716: self-understanding**
158-158	**RATE9717: spirituality**
159-159	**RATE9718: understanding of others**
160-160	**RATE9719: writing ability**
	Career/Occupation of
	1=accountant or actuary
	2=actor or entertainer
	3=architect or urban planner
	4=artist
	5=business (clerical)
	6=business executive (management,administrator)
	7=business owner or proprietor
	8=business salesperson or buyer
	9=clergy (minister,priest)
	10=clergy (other religious)
	11=clinical psychologist
	12=college administrator/staff
	13=college teacher
	14=computer programmer or analyst
	15=conservationist or forester
	16=dentist (including orthodontist)
	17=dietitian or home economist
	18=engineer
	19=farmer or rancher
	20=foreign service worker (including diplomat)
	21=homemaker (full-time)
	22=interior decorator (including designer)
	23=lab technician or hygienist
	24=law enforcement officer
	25=lawyer (attorney) or judge
	26=military service (career)
	27=musician (performer,composer)
	28=nurse
	29=optometrist
	30=pharmacist
	31=physician
	32=policymaker/government
	33=school counselor
	34=school principal or superintendent
	35=scientific researcher
	36=social, welfare or recreation worker
	37=therapist (physical,occupational,speech)
	38=teacher or administrator (elementary)
	39=teacher or administrator (secondary)
	40=veterinarian
	41=writer or journalist
	42=skilled trades
	43=other career
	44=undecided
	45=laborer (unskilled)
	46=semi-skilled worker

(continued)

	Career/Occupation of (continued)
	47=other occupation
	48=unemployed
161-162	**CAREER98: student (probable)**
163-164	**FCAREERD: father**
165-166	**MCAREERD: mother**
	Student Opinions
	1=disagree strongly
	2=disagree somewhat
	3=agree somewhat
	4=agree strongly
167-167	**VIEW9801: too much concern for rights of criminals**
168-168	**VIEW9802: abortion should be legal**
169-169	**VIEW9803: abolish death penalty**
170-170	**VIEW9804: sex OK if people like each other**
171-171	**VIEW9805: marijuana should be legalized**
172-172	**VIEW9806: prohibit homosexual relations**
173-173	**VIEW9807: employers can require drug testing**
174-174	**VIEW9808: man not entitled to sex on date**
175-175	**VIEW9809: federal government do more to control handguns**
176-176	**VIEW9810: racial discrimination no longer a problem**
177-177	**VIEW9811: individual can do little to change society**
178-178	**VIEW9812: wealthy people should pay more taxes**
179-179	**VIEW9813: colleges should prohibit racist/sexist speech**
180-180	**VIEW9814: legal marital status for same sex couples**
181-181	**VIEW9815: fed gov regulate material on internet**
	Hours per Week in Last Year Spent
	1=none
	2=less than one
	3=1 to 2
	4=3 to 5
	5=6 to 10
	6=11 to 15
	7=16 to 20
	8=over 20
182-182	**HPW9701: studying or doing homework**
183-183	**HPW9702: socializing with friends**
184-184	**HPW9703: talking with teacher outside class**
185-185	**HPW9704: exercise or sports**
186-186	**HPW9705: partying**
187-187	**HPW9706: working (for pay)**
188-188	**HPW9707: volunteer work**
189-189	**HPW9708: student clubs and groups**
190-190	**HPW9709: watching TV**
191-191	**HPW9710: housework/childcare**
192-192	**HPW9711: reading for pleasure**
193-193	**HPW9712: playing video games**
194-194	**HPW9713: prayer/meditation**
195-195	**FINCON: Concern About Financing College**
	1=none
	2=some
	3=major
	Disabilities
	1=not marked
	2=marked
196-196	**DISAB1: none**
197-197	**DISAB2: speech**
198-198	**DISAB3: orthopedic**
199-199	**DISAB4: learning disability**
200-200	**DISAB5: health-related**
201-201	**DISAB6: partially sighted or blind**
202-202	**DISAB7: other**

203-203 **CSVREQ: HS Requirement for Cmth Svc?**
1=no
2=yes

204-204 **POLIVW98: Political Orientation**
1=far right
2=conservative
3=middle of the road
4=liberal
5=far left

Reasons for Choosing This College
1=not important
2=somewhat important
3=very important

205-205 **CHOOSE01: relatives wanted me to come**
206-206 **CHOOSE02: teacher advised me**
207-207 **CHOOSE03: good academic reputation**
208-208 **CHOOSE04: good social reputation**
209-209 **CHOOSE05: offered financial assistance**
210-210 **CHOOSE06: offers special programs**
211-211 **CHOOSE07: low tuition**
212-212 **CHOOSE08: high school guidance counselor advised me**
213-213 **CHOOSE09: private college counselor advised me**
214-214 **CHOOSE10: wanted to live near home**
215-215 **CHOOSE11: not offered aid by first choice**
216-216 **CHOOSE12: graduates go to top graduate schools**
217-217 **CHOOSE13: graduates get good jobs**
218-218 **CHOOSE14: religious affiliation/orientation of college**
219-219 **CHOOSE15: size of college**
220-220 **CHOOSE16: not accepted anywhere else**
221-221 **CHOOSE17: rankings in national magazines**
222-222 **CHOOSE18: infor in multicollege guidebook**

223-224 **MAJOR98D: Student's Probable Major**
1=art, fine and applied
2=English (language & literature)
3=history
4=journalism
5=language and literature (except English)
6=music
7=philosophy
8=speech
9=theater or drama
10=theology or religion
11=other arts and humanities
12=biology (general)
13=biochemistry or biophysics
14=botany
15=environmental science
16=marine (life) science
17=microbiology or bacteriology
18=zoology
19=other biological science
20=accounting
21=business administration (general)
22=finance
23=international business
24=marketing
25=management
26=secretarial studies
27=other business
28=business education
29=elementary education
30=music or art education
(continued)

223-224 **MAJOR98D: Student's Probable Major (continued)**
31=physical education or recreation
32=secondary education
33=special education
34=other education
35=aeronautical or astronautical engineering
36=civil engineering
37=chemical engineering
38=electrical or electronic engineering
39=industrial engineering
40=mechanical engineering
41=other engineering
42=astronomy
43=atmospheric science (including meteorology)
44=chemistry
45=earth science
46=marine science (including oceanography)
47=mathematics
48=physics
49=statistics
50=other physical science
51=architecture or urban planning
52=home economics
53=health technology (medical,dental,laboratory)
54=library or archival science
55=medicine, dentistry, veterinarian
56=nursing
57=pharmacy
58=therapy (occupational,physical,speech)
59=other professional
60=anthropology
61=economics
62=ethnic studies
63=geography
64=political science (gov't,int relations)
65=psychology
66=social work
67=sociology
68=women's studies
69=other social science
70=building trades
71=data processing or computer programming
72=drafting or design
73=electronics
74=mechanics
75=other technical
76=agriculture
77=communications (radio,TV,etc)
78=computer science
79=forestry
80=law enforcement
81=military science
82=other field
83=undecided

	Goals & Values
	1=not important
	2=somewhat important
	3=very important
	4=essential
225-225	GOAL9801: become accomplished in performing art
226-226	GOAL9802: become authority in my own field
237-237	GOAL9803: obtain recognition from colleagues
228-228	GOAL9804: influence political structure
229-229	GOAL9805: influence social values
230-230	GOAL9806: raise a family
231-231	GOAL9807: have administrative responsibility
232-232	GOAL9808: be very well off financially
233-233	GOAL9809: help others in difficulty
234-234	GOAL9810: make theoretical contribution to science
235-235	GOAL9811: write original works
236-236	GOAL9812: create artistic work
237-237	GOAL9813: be successful in own business
238-238	GOAL9814: be involved in environmental clean-up
239-239	GOAL9815: develop meaningful philosophy of life
240-240	GOAL9816: participate in community action program
241-241	GOAL9817: promote racial understanding
242-242	GOAL9818: keep up to date with political affairs
243-243	GOAL9819: be a community leader
	Possible Future Activities
	1=no chance
	2=very little chance
	3=some chance
	4=very good chance
244-244	FUTACT01: change major field
245-245	FUTACT02: change career choice
246-246	FUTACT03: fail one or more courses
247-247	FUTACT04: graduate with honors
248-248	FUTACT05: be elected to student office
249-249	FUTACT06: get job to pay expenses
250-250	FUTACT07: work full-time while attending
251-251	FUTACT08: join social fraternity or sorority
252-252	FUTACT09: play varsity/intercollegiate athletics
253-253	FUTACT10: be elected to an academic honor society
254-254	FUTACT11: make at least "B" average
255-255	FUTACT12: need extra time for degree
256-256	FUTACT13: get bachelor's degree
257-257	FUTACT14: participate in student protests
258-258	FUTACT15: drop out temporarily
259-259	FUTACT16: drop out permanently
260-260	FUTACT17: transfer to another college
261-261	FUTACT18: be satisfied with college
262-262	FUTACT19: marry while in college
263-263	FUTACT20: participate in volunteer/cmty svc work
264-264	FUTACT21: seek personal counseling
265-265	PERMIT98: Permission to Use Student I.D.
	1=no
	2=yes

	Optional Questions
	1=a
	2=b
	3=c
	4=d
	5=e
266-266	OPTQ9801: question #42
267-267	OPTQ9802: question #43
268-268	OPTQ9803: question #44
269-269	OPTQ9804: question #45
270-270	OPTQ9805: question #46
271-271	OPTQ9806: question #47
272-272	OPTQ9807: question #48
273-273	OPTQ9808: question #49
274-274	OPTQ9809: question #50
275-275	OPTQ9810: question #51
276-276	OPTQ9811: question #52
277-277	OPTQ9812: question #53
278-278	OPTQ9813: question #54
279-279	OPTQ9814: question #55
280-280	OPTQ9815: question #56
281-281	OPTQ9816: question #57
282-282	OPTQ9817: question #58
283-283	OPTQ9818: question #59
284-284	OPTQ9819: question #60
285-285	OPTQ9820: question #61
286-286	OPTQ9821: question #62
	Student's Probable Career (aggregated_
	1=no
	2=yes
287-287	CAR9801: artist
288-288	CAR9802: business
289-289	CAR9803: business (clerical)
290-290	CAR9804: clergy
291-291	CAR9805: college teacher
292-292	CAR9806: doctor (MD or DDS)
293-293	CAR9807: education (secondary)
294-294	CAR9808: education (elementary)
295-295	CAR9809: engineer
296-296	CAR9810: farmer or forester
297-297	CAR9811: health professional
298-298	CAR9812: homemaker (full-time)
299-299	CAR9813: lawyer
300-300	CAR9814: military (career)
301-301	CAR9815: nurse
302-302	CAR9816: research scientist
303-303	CAR9817: social/welfare/rec worker
304-304	CAR9818: skilled worker
305-305	CAR9819: other choice
306-306	CAR9820: undecided
	Father's Career (aggregated)
	1=no
	2=yes
307-307	FCAR01: artist
308-308	FCAR02: business
309-309	FCAR03: business (clerical)
310-310	FCAR04: clergy
311-311	FCAR05: college teacher
312-312	FCAR06: doctor (MD or DDS)
313-313	FCAR07: education (secondary)
314-314	FCAR08: education (elementary)
315-315	FCAR09: engineer
316-316	FCAR10: farmer or forester

(continued)

	Father's Career (continued)	
	1=no	
	2=yes	
317-317	FCAR11:	health professional
318-318	FCAR12:	homemaker (full-time)
319-319	FCAR13:	lawyer
320-320	FCAR14:	military career
321-321	FCAR15:	nurse
322-322	FCAR16:	research scientist
323-323	FCAR17:	social/welfare/rec worker
324-324	FCAR18:	skilled worker
325-325	FCAR19:	semi-skilled worker
326-326	FCAR20:	unskilled worker
327-327	FCAR21:	unemployed
328-328	FCAR22:	other
	Mother's Career (aggregated)	
	1=no	
	2=yes	
329-329	MCAR01:	artist
330-330	MCAR02:	business
331-331	MCAR03:	business (clerical)
332-332	MCAR04:	clergy
333-333	MCAR05:	college teacher
334-334	MCAR06:	doctor (MD or DDS)
335-335	MCAR07:	education (secondary)
336-336	MCAR08:	education (elementary)
337-337	MCAR09:	engineer
338-338	MCAR10:	farmer or forester
339-339	MCAR11:	health professional
340-340	MCAR12:	homemaker (full-time)
341-341	MCAR13:	lawyer
342-342	MCAR14:	military career
343-343	MCAR15:	nurse
344-344	MCAR16:	research scientist
345-345	MCAR17:	social/welfare/rec worker
346-346	MCAR18:	skilled worker
347-347	MCAR19:	semi-skilled worker
348-348	MCAR20:	unskilled worker
349-349	MCAR21:	unemployed
350-350	MCAR22:	other
	Student's Major (aggregated)	
	1=no	
	2=yes	
351-351	MAJ9801:	agriculture
352-352	MAJ9802:	biological science
353-353	MAJ9803:	business
354-354	MAJ9804:	education
355-355	MAJ9805:	engineering
356-356	MAJ9806:	English
357-357	MAJ9807:	health professional
358-358	MAJ9808:	history or political science
359-359	MAJ9809:	humanities
360-360	MAJ9810:	fine arts
361-361	MAJ9811:	mathematics or statistics
362-362	MAJ9812:	physical science
363-363	MAJ9813:	social science
364-364	MAJ9814:	other technical
365-365	MAJ9815:	other non-technical
366-366	MAJ9816:	undecided

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	Response to	
	1=no	
	2=yes	
367-367	**RESPATT:**	**previous attendance**
368-368	**RESPRACE:**	**race**
369-369	**STUDSTAT:**	**Norms Status**
	1=first-time,full-time	
	2=first-time,part-time	
	3=not a freshman	
	Test Scores	
370-372	**SATV:**	**SAT Verbal Score**
373-375	**SATM:**	**SAT Math Score**
376-377	**ACTCOMP:**	**ACT Composite Score**
378-383	**DOB:**	**Date of Birth (mmddyy)**
384-385	**HOMSTATE:**	**State Code**
	10=Alabama	
	11=Alaska	
	12=Arizona	
	13=Arkansas	
	14=California	
	15=Colorado	
	16=Connecticut	
	17=Delaware	
	18=District of Columbia	
	19=Florida	
	20=Georgia	
	21=Hawaii	
	22=Idaho	
	23=Illinois	
	24=Indiana	
	25=Iowa	
	26=Kansas	
	27=Kentucky	
	28=Louisiana	
	29=Maine	
	30=Maryland	
	31=Massachusetts	
	32=Michigan	
	33=Minnesota	
	34=Mississippi	
	35=Missouri	
	36=Montana	
	37=Nebraska	
	38=Nevada	
	39=New Hampshire	
	40=New Jersey	
	41=New Mexico	
	42=New York	
	43=North Carolina	
	44=North Dakota	
	45=Ohio	
	46=Oklahoma	
	47=Oregon	
	48=Pennsylvania	
	49=Rhode Island	
	50=South Carolina	
	51=South Dakota	
	52=Tennessee	
	53=Texas	
	54=Utah	
	55=Vermont	
	56=Virginia	

384-385	**HOMSTATE: State Code (continued)** *57=Washington* *58=West Virginia* *59=Wisconsin* *60=Wyoming* *61=U.S. Service Schools* *62=Outlying Areas*
386-390	**HOMEZIP: Student's Home ZIP Code**

E Project proposal and Budget Summary

Introduction

Freshmen at WPI in the classes of 2002 and 2003 have been studied with some care using a learning style indicator call the MBTI (Myers-Briggs Type Indicator). A very interesting trend has developed among students of a certain type. Grades dropped after A-Term and slowly rose back up again by D-Term for about 100 members of each class. The most significant change is from A-Term to B-Term for the class of 2002, but in 2003 C-Term was the low point overall. Still, in both years the same type bottomed out in B-Term, hence we call it the B-Term "plunge". Overall, the average freshman's grades drop in B-Term, so the phenomenon seems to affect particular personality types much more significantly than others.

The goal of the project is to determine why the B-Term plunge occurs. Through the use MBTI data gathered during freshman year, it is possible to determine which students are most likely to struggle during B-Term. Using these results, one can attempt to figure out who these people are, and identify factors that may have caused their drop, or at least predict for whom other factors can accentuate it to the point of endangering their chances of success overall.

The proposed research project will combine a statistical analysis of grades, MBTI, and the CIRP (a freshman survey conducted by The Cooperative Institutional Research Program)

data and information collected through interviews of students both affected and unaffected by the B-Term plunge.

The results of the project will benefit the WPI academic community as a whole. Teachers, administrators, and other faculty will know more about how to make WPI a better learning environment by anticipating specific changes in the behavior of freshman. Advisors will be able to help freshman decide their course loads and other academic choices based on the results of the project's description and explanation of the "seasonal variation" in performance by psychological type.

Background

During freshman orientation, all incoming students are supposed to be administered the MBTI measure, and 85% to 90% typically do so. MBTI stands for Myers-Briggs Type Indicator. It is a well-known indicator given to describe personality and learning style. The indicator assigns a specific type to a person based on four of their preferences, not necessarily on how they actually behave. For example, most people are either left or right handed, but are perfectly capable of using both hands. However, they tend to use one, and it is more adept.

The result of the MBTI is a four character (i.e. ISFP) code that describes a person's "psychological type" in terms of Jung's theory of personality. The first letter indicates the focus of the person's attention. I stands for Introvert, or people who focus on the inner

world of ideas, and E stands for Extrovert, focusing on the outer world of ideas. The second letter indicates the way a person perceives or acquires information, either Sensing or iNtuitive. Intuition involves attention to information beyond what can be obtained through the five senses. The third letter, either T or F, for Thinking or Feeling, describes how the person makes decisions. T indicates the person thinks through decisions and stresses logic and justice, and avoids subjectivity when trying to decide. F indicates the person uses empathy and takes feelings into account to achieve harmony when making decisions rather than stressing logic, emphasizing stability, closure, and predictability. Decisions are case by case rather than based on general principles in an attempt to treat everyone alike. The J-P scale indicates the lifestyle a person would like to adopt. J indicates a judging attitude, and P indicates a perceiving attitude, in which open-ended exploration and unending information gathering is preferred.[40]

The Cooperative Institutional Research Program (CIRP) is a national study of the American higher education system. The CIRP Freshman Survey is another indicator administered to all incoming freshman during orientation. It can be useful to determine a person's aspirations, perceptions, self image, and high school background. The CIRP survey will give us insight into the feelings of students prior to starting their first class at WPI. It contains questions that get at the students reasons for attending college, possible future activities, and highest degree planned. Students are also asked to rate themselves on academic ability,

[40]Gordon Lawrence, *Descriptions of the Sixteen Types* (Gainesville, FL: Center for Applications of Psychological Type, Inc., 1998), 2

drive to achieve, competitiveness, and self-confidence. It asks the students to list their SAT scores and their average high school grade. The answers to all of these questions will be very useful in building a personality profile that relates closely to what we are studying.

Several other IQP's have been completed on similar subjects. One report by Kline, Niccoli, and Sheldon used MBTI and grade data, along with SAT and High school grades to look at performance of the class of 2001 as freshmen. While this report did not specifically look at the B-Term plunge, it did examine grade patterns as a whole. Their project singled out the 50-70 people who would have the greatest need of assistance by the end of the year, and looked at the connection between SAT and MBTI scores, and their grades. Their report concluded that high school grades were the best for predicting college performance, much better than SAT scores and MBTI types. However, McCormick reanalyzed their data using another analytical technique available in SPSS, but not in Excel, the program used by Sheldon, Niccoli, and Kline. He demonstrated that the combination of the S-N MBTI orientation and the indication of how the challenge of the high school science program combined to produce a very potent lead indicator.

Greg Doerschler was hired to analyze the WPI class of 2002 data set and he uncovered the B-Term plunge.

Another IQP by Tara Murphy looked at the class of 2003 grade data. She used several measures, including MBTI types, in a purely descriptive study of academic performance during freshman year. She also found a B-Term plunge, but noted that it primarily affected

one type of learner.

A third IQP, by Jonathan Oexner, built a Microsoft Access database of the class of 2001 grades, MBTI, and CIRP data, and intended to see if the B-Term plunge was present, but unnoticed, in the class of 2001 data set. He never got to the analysis part, but the analysis still can be done as part of this project.

Procedure

We plan on analyzing the grade data along with MBTI scores for students and we are expecting to replicate a B-Term plunge for the sensing-perceiving (SP) type of learner, as they have been shown to have done so in the classes of 2002 and 2003. We hope to find that a similar plunge occurred in the grades of the freshman classes of 2001 and 2004.

The classes of 2001 and 2004 are prime candidates for study because the MBTI data and grade data exists for both classes. The MBTI was not collected for earlier classes and later classes have not had a freshman year experience yet. The MBTI data is required to connect grade average results to the learning style dimension (S-N and J-P) in order to determine exactly what type of learner was most likely to have trouble during B-Term for the class of 2004, our replication study group. However, we'll also need it to know who to interview in the prior years, among those who had a grade decline in B-Term.

In addition to looking at freshman year grades, it will be worth studying other years to see if the B-Term plunge pattern continues. No other study has looked at grades past the

freshman year at WPI. We plan on following those students who had trouble during B-Term of freshman year to see if they also have trouble during B-Term of the following years. We would also look at the grades of the students who did not have trouble to make sure they continue have unusual levels of success past freshman year. This would require us to obtain these sophomore and junior grades from the Registrar's office at WPI, or perhaps the Office of Academic Advising.

From the registrar or Office of Academic Advising we need the final grades for each class that each student took in the years we plan on analyzing. When we obtain these grades, we need the student's ID numbers or names so that we may match each student to their MBTI scores. We prefer to work with ID numbers, either the schools' or ones that we create for the purpose of this project.

We also plan on conducting interviews with certain students to discover the reasons for the B-Term plunge. The classes of 2002 through 2004 are still on campus, which makes it possible to talk to some people who had problems during B-Term of freshman year and try to understand exactly why they did relatively poorly. Interviews are the only way to really know exactly what specific students were doing when they did poorly, and we expect to see similarities in their individual descriptions and the reasons for their reduced success. We would also interview students of the same learning style who did well during B-Term to make sure those similarities only affect the students whose grades dropped, and not all students of a given type. These interviews definitely need to be completed before the students who

have been studied thus far in classes of 2002 and 2003 graduate and leave WPI. Subjective recall will already be an issue and one does not want to add inaccessibility to that.

The method of analyzing data in this project is similar to the projects done before. (see Background) The B-Term plunge can be seen most clearly by simply looking at the average grades of all students during all four terms freshman year. B-Term grades register much lower than any other term. By splitting up students by their MBTI types, a pattern will emerge. In previous studies, the sensing-perceiving (SP) group was the largest contributor to the plunge while other groups were mildly affected, if at all. We also plan on looking at specifically what classes students took during their freshman year. We will see which groups of classes (Math, Science, Humanities, etc.)contribute to the pattern the most and least. Timing in a typical schedule of given courses might explain some of the year-after-year pattern of a difficult November through December.

To make this study as successful as it can be, the CIRP data will need to be obtained. Without the CIRP data, we only have a students MBTI types, and this is not nearly sufficient for constructing a profile of a student. With the CIRP data, we will be able to pick out particular questions and take the individual answer to them for comparison. The CIRP will tell about the students' backgrounds and how the students believed they were going to perform in college on arrival. This may lead us to valuable information in identifying those students who are vulnerable to the B-Term plunge using information available in advance.

The budget of this project will consist of the small fee of $250 required to buy the CIRP

data back from the Higher Educational Research Institute. WPI has the CIRP results for the classes of 2001-2002, but we lack 2003 and 2004 and require it to do any research on those classes. WPI has already spent $800 a year having the data collected, and for another $250 a year we might get a very substantial return on that investment.

Another project group, that of Paradise and Gonsalves, has already submitted a separate proposal requesting funds for the class of 2003 CIRP data. This request will therefore involve funding to obtain the class of 2004 data as well.

Budget Summary

CIRP Data	$250.00
Interviews	$40.00
Total	$290.00

F Communication with HERI

Date: Tue, 12 Mar 2002 23:25:07 -0600
From: William Korn <wkorn@ucla.edu>
To: John M Wilkes <jmwilkes@WPI.EDU>
Subject: Re: Your Requests

I'm glad your response was quicker than mine. I'm even gladder (more glad?) that you were blunt. You raise an issue that has been bothering me for a number of years, but with my HERI blinders on, I could not see a solution.

The increasing tendency for students not to say "yes" to the permission question has clearly made the CIRP data file less useful as a baseline measurement for longitudinal databases such as the one you describe. Indeed, I was getting so discouraged (and feeling like I was selling a "pig in a poke" whenever I made a data file for someone) that I had suggested in one of our Executive Committee meetings that it would be better if we:

* Distributed data files without any SSNs (at a lower price, for less value received),
* Lowered the price of the data merge service (to make multiple merges more feasible), and
* Kept copies of all merged data sets so we could continuously add data as the customers had more data to merge.

You'll probably be pleased to hear that the rest of the Executive Committee responded to my proposition about as coolly as you did (it wasn't a very good proposition, but it was the best I could come up with at the time).

I like your idea much better. I expect we would need copies of your consent forms -- not because we don't trust you, but because we'd be in unbelievably deep doo-doo if one of your students complained to our IRB for any reason and we didn't have it. In any event, our IRB might want us to cross-check your permissions against the data records you send us. (I hope not, and don't think it would be necessary in your case, but who can tell what they might want?)

Let me propose the following. I will present all this to our resident IRB expert, Jennifer Lindholm, tomorrow (i.e. Wednesday). She has an uncanny

knack for dealing positively with the UCLA IRB (something I couldn't do without heavy tranquilization). Jennifer might be able to unofficially broach the issue with her contacts in the IRB office without bringing the roof down on us (something I couldn't do even with heavy tranquilization). In the meantime, I will also raise the issue at our next Executive Committee meeting (on Thursday). In order to make the process go smoother, it would be good if you can:

* FAX me (310-206-2228), a sample copy of your permission slip, and
* Let me know if you've gotten approval for the permission slip from your IRB

as soon as possible.

I really hope this plan can work, not only to allow your various projects to go forward, but to make up for my incredible blunder in not mentioning the privacy issue in the first place (I thought I was getting old, now I know it!).

As for the other issues you raised...

Given our experiences thus far, do you think it would it be better for me just to send all the merged files directly to you and only to you? Since you know all the students actually working the analyses, you'd be in a better position to know what to distribute to whom.

It's really not a problem to give you the merged files either as SPSS System Files or as text files with an associated SPSS Syntax File. We do the CIRP portion of the syntax file anyhow, since SPSS is our main statistical analysis tool. Just let me know what would be easiest for you. I should point out that it would be trivial to remove the SSNs from the merged files before passing them on to the students, if the files were in SPSS System File format.

Finally, thank you again for being a "problem child". I would really like to have all this work out to your satisfaction.

At 04:50 PM 3/12/02 -0500, you wrote:

>Thanks for getting back to me. I was afraid you would find the dispersion
>of authorization, oversite and payment contacts confusing. I was trying
>to get the student assistants to move faster and forwarn you of their

>"soon to arrive" orders given that I knew you would get busy by late
>November. I thought you could do the job and set it aside until they got
>the paperwork right. However, this was all new to them and they delayed
>and fumbled right into your busy period due to inability to write a
>credible proposal for the funding on the first , second or third try.
>After 3 weeks of revisions they still had to have their proposal reviewed-
>so that was my fault. I had them contact you a month too early due to my
>overconfidence that the proposal and funding process would be
>straightforward.
>
>When you finally got the file from Anthony I had sent faxed instructions
>asking you not to return it to him---thinking that if you returned in to
>me you could offer more ID information than if it went to a student. I
>asked him to be very clear that he already had the ID numbers so that you
>would not be giving them to him. But I still wanted to have them removed-
>and wanted to do it personally- so I thought the problem was that you
>returned it to him rather than me. I can see now that you intended to
>remove them regardless.
>
>No, we have never discussed this matter of ID before- and since you have
>now clarified your policies I will be forced to raise a question about
>them. Bluntly they make no sense if you really want us to be able to do
>serious ongoing institutional research of the type that was clearly in
>mind when the CIRP items were developed. I think I can propose a way to
>ethically meet your needs while not obstructing our intended research
>program or opening a door through which other people with less attention
>to confidentiality concerns and informed consent can abuse.
>
>As I see it, the problem stems from your organization's model of what
>institutional research involves. You think adding your data is the final
>step. It probably is not. Think about it. You are T1- on arrival- data.
>In any logical research model we want your stuff fast- and will add to it
>what is coming from admissions, and then add in the first year grades as
>they are earned. In our case we also add in the learning styles data from
>the MBTI which we collect during New Student Orientation along with the
>CIRP. Using MBTI (learning styles) and CIRP(self image and perceptions)
>and HS transcript (background) data we think we can predict what students
>are most likely to be in trouble by the end of the first year. This is
>quite a feat- since the SAT is not predictive of that key matter and
>neither will the HS transcript data do it alone- and CIRP data cannot

>distinquish the bottom 10% from the rest either. We asked you to run that
>analysis for us 2 years ago and it was a complete failure except where
>you asked about HS grades, which we already knew about. Only with the
>MBTI as a control variable can the SAT and CIRP data take on predictive
>value in terms of first year performance.
>
>However, first year grades are just the beginning of the study--which for
>each cohort will go on 4 more years as waves of performance and
>participation data are created.
>
>Clearly there has to be a way to add on data after your CIRP data arrives-
>or one can't even check out the most trivial of your predictive items-
>those involving whether the students really did the things they said they
>expected to do- like join sports teams, fail a course or whatever. It is
>not really interesting to wait 4 years and then do the analysis when the
>students are no longer in the system and no new data can be produced.
>data mining has its place but it is usually a first step toward producing
>a useful dynamic data base- of which the CIRP could be one element. The
>students are in dynamic mode, changing majors and the like and so the
>analysis needs to be in year by year layers- and the CIRP is of the
>greatest use in year one, so there will be 3 more years of data..
>
>I understand your problem in that you said you would not release the SSN I
>initially thought you would consider that moot if I could demonstrate that
>I already had access to it but in a way I am glad that you did not. Given
>what I thought your rule was would have made it a farce, too easy to
>circumvent. However, you really do not have an ethical problem letting us
>add a new ID as long as we have a more comprehensive or farreaching
>permission slip here- which we do- giving us permission to link HS
>transcript, MBTI, CIRP and Grade data. The question is what evidence do
>you need that this step was taken and which students approved this process
>of linkage?
>
>I guess in a way if we send you a data base with those students indicated-
>you are effectively taking our word for it, but assuming a little trust,
>if I were you I would want a copy of the actual permission slip on file
>and a signed statement saying that indeed all these students indicated
>approved the release of their CIRP data to go into this larger growing
>data set governed by promises of confidentiality- not anonymity. If I had
>that I would be satisfied. The burden of proof and the ethical

>responsibility is now shifted from HERI to WPI.
>
>In theory there should be another way, but in practice I do not think
>there is, at least given our experience here. It is not going to work that
>we wait until have everything else that we want put into a data set and
>have you do the final linkage of all of it at once for the very practical
>reason that the data dribbles in from half a dozen WPI offices- always
>very late. There is no Institutional Resaerch office here running the show
>and the registrar has no time for it- so in effect it has been delegated
>to a few faculty members. Student analysis teams working for those
>faculty members have to work to schedule. They are getting credit for
>projects that happen in a given period of time. During that time they add
>new data - or work with what we have---but they cannot be hung out to dry
>with no one being able to do anything until everyone at WPI has actually
>provided what they promised. Nothing would ever get done that way. At
>present we are at least a year behind on linking grade data for the Class
>of 2001, 2002, 2003 and 2004.
>
>As soon as we have Freshman grade data we have to be able to get to work
>and do what can be done with what we have. Right now it is the MBTI-
>CIRP- Freshman Grades connection that is under study and I have been
>repeatedly requesting the Class of 2004 freshman year grades from last
>year for 6 months to no avail. Now we have to put up the CIRP data with
>the MBTI data and hope the rest comes soon or give the team another
>analysis mission to save their project. They will still get to work with
>CIRP data- but what will be the outcome data if they still lack Grade data
>3 weeks from now? We have a back up plan given that the housing
>arrangement data from that class has arrived. You see the problem the
>order of data arrival is tied up in local politics and priorities that
>have nothing to do with a reasonable research agenda. The student
>teams can't wait any longer and I will not be able to afford to have
>the CIRP data linked more than once,-and the rest of the grades have yet
>to come for most classes-in years to come. Hence, I can't have you strip
>off all the ID's and prematurely end the process of data assembly or
>increase its overall price above our proposed funding level.
>
>I propose that we move away from the use of SSN's and establish a new set
>of rules governing alternative ID's, that we have to justify to you, but
>that you accept as a representation of what we have as a set of written
>releases covering the CIRP data.

>
>As for SPSS- I had to get involved personally- and consult with a
>colleague- but in the end we did create an SPSS file from the
>documentation that you sent for the Class of 2003 data set. The students
>could not do it- but I now know how to do so.
>
>As for clients who want SPSS- just call their variables v1, v2, etc. and
>let them rename the variables when they get the data set back and you will
>be fine. Don't make it hard for yourself. We can work with either format
>now-as the definition file that you sent is something we can now do and
>can teach the various student teams to do.
>
>As for your generous proposal that you add data later in waves as it comes
>to us- at no charge- I couldn't accept the offer in good conscience given
>that I expect we will augment 5 data sets a total of 8 times each over the
>period of the next 4 years. You don't want to be involved.
>
>As for not getting the CIRP 2000 and 2001 data now - it would be a
>disaster for the student teams that have worked so hard to write proposals
>around their analysis plans to justify obtaining it. The funding will go
>away if it is not used in this academic year. No- we have to have them
>ASAP with two project groups in real trouble if there is serious delay.
>There is no chance of waiting until we have everything here all nice and
>neat and you would be horrified at the huge data sets we would be sending
>you that cover a whole HS transcript course by course and team sports
>participation, the WPI grade data- the MBTI data set alone has 100
>variables in it as it arrives from CAPT. The CIRP data set will
>ultimately be less than 1/3rd of the final data set for each cohort.
>
>In summation, we have to crack the problem of how to get the CIRP data
>into the still growing data set in a safe, confidential and ethical way.
>For the future we might well be able to add items to the WPI version of
>the CIRP that are more detailed release guidelines. Many fewer students
>are going to let you (as outsiders) have permission to provide their SSN's
>to anyone that asks than would be okay with letting their home
>institutions know who they are for purposes of data linkage for in house
>research. We are getting about 90% compliance when we ask very specificly
>about this issue.
>
>So, we think we have the release slips necessary to cover this issue.

>Why don't you confer with your protection of human subjects protection
>committee, if necessary. I think that the Class of 2005 data set that you
>got includes notations for those who filled out our release. Unfortunately
>we are still collecting MBTI data from that class and hence are still
>getting releases as part of the followup. It would be better if you could
>let me zap the cases we do not get permission to use in the end. The
>backbone of the Class of 2004 data set probably does not include a column
>for that information. Those permission slips are still in paper folders,
>but at least we have about finished collecting MBTI data for the class.
>However, if you send the results to me I will have the permission slip
>data column added first and delete the cases that we do not have
>permission slips for before it goes on to the student groups doing the
>analysis. I do want to avoid any further delays that would affect their
>project, but I will hold them up that long.
>
>Does that cover all of the issues you raised? Does that solution seem
>satisfactory?
>
>Sorry to be a problem child.

****
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