

Frequency and Demographics of Depression

A Study of the UT-Austin GSLIS Student Population

By

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Dr. Wyllys's LIS 397.1

Summer, 1999

ABSTRACT

This study was undertaken in an attempt to evaluate the need for a publicity campaign for campus mental health services targeted at GSLIS students. Researchers predicted that the study would show that GSLIS students show symptoms of depression and lack an awareness of campus mental health facilities. The group developed and administered a survey to test the two variables. The research found that the incidence and severity of symptoms resembled a Gaussian distribution, with more scores in the middle than on the ends. A high incidence of symptoms is correlated with the identification of oneself as depressed and with difficulty concentrating. The least reliable indicator was the admission of self-destructive behaviors. Males showed a higher incidence of symptoms according to one measure of symptoms, but not according to another. The researchers found no correlation between age and symptoms on either measure. There was also no correlation between time in the program and familiarity with campus mental health facilities. Females were found to have more familiarity, a more positive attitude, and more willingness to use facilities than men do. Finally, the research showed no correlation between one's familiarity with mental health facilities and one's comfort with them or willingness to use them.

1. Introduction:

Seventeen million people in the United States suffer from depression. National Depression and Manic Depression Association statistics (obtained from www.ndmda.org) suggest that two-thirds of these people are never treated. Depression is the world's leading disability, and its economic costs are \$44 billion dollars a year in the U.S. alone. Depression is related to myriad health problems, including coronary disease. It is the second leading cause of lost workdays in America. Medical professionals now consider it an illness like diabetes or heart disease, saying that it affects the entire body, not just the mind. Although one in five people suffer from depression in their lifetime, more than eighty percent of people who have it improve with treatment. Growing awareness of this problem has caused unprecedented growth in the expansion of facilities to deal with it, but those facilities reach only a fraction of those they could help. The disease of depression still has a stigma attached to it that causes many sufferers to endure the illness alone, without professional treatment.

The nature of the disease itself often precludes treatment. Sufferers feel hopeless, not worthy of treatment, and embarrassed about their condition. Stress also leads to an avoidance of treatment, especially the kind of stress experienced by a graduate student. The anxiety associated with the burdens of classes, deadlines, and job hunting can lead graduate students to despair. Likewise, the hectic pace of earning a graduate degree limits the time available for treatment. Graduate students may have so much to worry

about, they do not have time to take care of themselves. Depression often leads to a decline in grades and poor performance in classes, which will only leave the sufferer more despondent. For all of these reasons, it is important for graduate students to be aware of their mental health vulnerabilities, and facilities available that can provide treatment.

1.1 Background:

Publicity campaigns to raise awareness of diseases and health services have worked in the past. These campaigns are often motivated by health corporations or drug companies trying to raise revenue, but if their campaigns do the public good, we should be willing to help. Moreover, a publicity campaign to raise awareness about the symptoms and treatment of depression may help take the stigma away and encourage sufferers to seek treatment.

Nevertheless, before investing time and money in a publicity campaign, we should research its targeted population to determine if such a promotion is necessary. We chose to investigate our own community within the University of Texas, the students in the Graduate School of Library and Information. To do this, we adapted questions from the Goldberg Depression Inventory and developed a survey of questions that would measure symptoms of depression among GSLIS students. If GSLIS students displayed substantial symptoms of depression, then a publicity campaign to raise awareness of depression may be of good use. In addition, we surveyed graduate students' knowledge of the mental health services at the University of Texas at Austin. If students showed a lack of knowledge of campus facilities, we believed that a publicity campaign would be beneficial, even if the majority proved to be well adjusted.

1.2 Review of Literature:

Statistics from the National Depression and Manic Depression Association have already been quoted above. According to the American Psychological Association Task Force on Women and Depression, women have higher rates of depression than men (www.apa.org) do. The primary reason for this phenomenon is that women tend to focus more on their problems. Other reasons for a higher depression rate among women are the greater number of women in poverty, sexual abuse, fertility problems

and a general lack of assertiveness. One fourth of all women experience depression but only one-fifth are treated for it.

We were unable to find any articles about the incidence of depression among library and information students in particular. However, there have been several articles published concerning the incidence of depression among graduate students in general. A 1992 study at Vanderbilt University found that women experience greater mood variability than do men.¹ Another study, published in *The Journal of Counseling and Development*, suggested that female graduate students experience more stress than male graduate students because they receive less support from their families and academic departments.²³ While these findings are enlightening there are huge gaps in our understanding of how graduate students are affected by depression. For instance, is graduate school inherently depressing, i.e. will people who have spent longer in graduate school tend to be more depressed? Are graduate students qua alleged intellectuals more enlightened in their attitudes regarding depression and the mental health profession than the rest of the population, or will they share the aversion normally associated with the stigma of this disease? There is much research needed.

1.3 Purpose:

Our main purpose was to determine the need among GSLIS students at the University of Texas at Austin for a publicity campaign about mental health services. Our second purpose was to gain as much information as possible about the character of the depressed population. For instance, are there sexual differences in rates of depression? Are there differences in incidence by age or by time spent in the program? What are people's attitudes toward mental health professionals, and is there any correlation between such attitudes and mental health itself? How familiar are people already with the mental health services offered by the University of Texas? Answering these questions would help us determine the character of the target audience for a publicity campaign, thus enabling the appropriate school agencies to construct such a campaign more effectively.

¹Shelton, et al. A Comparison of Graduate and Professional: Daily Stressors. An ERIC document. 1992.

²Leong, Fred and Malinckrodt, Brent. "Social Support in Academic Programs and Family Environments: Sex Differences and Role Conflicts for Graduate Students." Journal of Counseling and Development v.70, no. 6, p. 716-23. July-August 1992.

2.1 Hypotheses:

We predicted that our study would demonstrate the need among GSLIS for a such a publicity campaign. In particular, we predicted a) that a substantial number (more than 20%) of GSLIS students show enough signs of depression to be considered legitimately “at risk” and b) that a substantial percentage of students in the department are not familiar with campus mental health services. We also predicted that some demographic divisions of the student body would show more signs of depression or lack of awareness of facilities, which would necessitate that the publicity campaign be targeted with them in mind.

3. Methods: The following paragraphs describe the procedures and materials employed for our study:

3.1 The Data:

Our data consisted of 120 questionnaires made up of twelve questions each (see Appendix A). The first three questions were demographic in nature, asking specifically the age, sex, and number of semesters enrolled in GSLIS. Responses to the other nine questions were formatted on a 0-4 Likert scale, from Strongly Agree to Strongly Disagree. Five of the Likert Scale questions dealt with behavioral aspects of depression and the remaining four with awareness or attitudes toward mental health facilities. The questions on this test were adapted from the Goldberg Depression Inventory. We obtained a shorter version of this test from www.depression.com. The website version, unlike the original Goldberg test, did not use the Likert scale, but offered a number of bulleted yes or no questions. We designed our test to capture the essential character of each question on both of the tests.

The Goldberg consists of eighteen questions with responses on the 0-5 Likert scale. The questions fall into six categories: despair/melancholy, anxiety/lack of concentration, loss of joy, low self-esteem, irregular sleep/eating patterns, and self-destructive behavior/suicide. We combined three questions dealing with melancholy into the question “I often feel depressed.” The question “I often have trouble concentrating” was a composite of Goldberg’s three questions on anxiety/lack of concentration. We consolidated three questions dealing with loss of joy into “I have lost interest in things I used to enjoy.” Goldberg’s three questions dealing with sleep irregularity and weight loss/gain became “I have difficulty maintaining consistent sleeping/eating patterns.” Our question “Some of my recent behavior has been self-

destructive” alludes to Goldberg and Depression.com questions on self-destructive behavior, including suicide.

We omitted a direct question concerning suicide for two reasons. First, it seemed too personal. We were not confident that people would answer honestly. A specific question on abuse of alcohol and drugs, a subcategory of “self-destructive behavior,” was also left out of the wording of the test for this reason. The second reason was that we felt it extremely likely that anyone answering “agree” or “strongly agree” to a suicide question would also have answered positively to a good number of other questions. Those individuals would already have been categorized as depressed by our other measures.

Our choice of questions had a direct effect upon the measures we ended up using. Our first measure, **depression index (DI)**, assigns a number 0-4 (0 for “strongly disagree,” 1 for “disagree,” etc.) to each of the five questions and simply adds them up. Had we chosen to include the suicide question in addition to the five used, our range of answers would have been from 0 to 25 instead of from 0 to 20. Though we think each question captures a different category of depressive symptoms, and that there are no distinct categories of symptoms beyond those listed (suicide could be considered part of self-destructive behavior), we realize that our choice is to some extent still ad hoc. We have tried to compensate for this by reporting the degree to which each question’s outcome affected the overall depression score (section 4.212).

Our second measure of depression was ad hoc to approximately the same degree. We chose to categorize a respondent as **“at risk”** for depression if he scored a 10 or higher total DI. This included all respondents who answered “strongly agree” to at least two questions (for a total of eight points, but everyone in this situation got at least a total of 2 from the other three questions), who answered “agree” to at least three questions (again, this totals only nine, but there was always at least one point from another of the two questions in these cases), or who answered “neutral” to all five (we figured if someone couldn’t disagree with any question, this counts as cause for alarm). While this measure may be somewhat imprecise, “at risk” is a vague notion in English. We feel our measure of “at risk” behavior is adequate.

3.2 Data Collection:

Our group surveyed four GSLIS classes between 21 and 23 June 1999: Dr. David Gracy's *Introduction fo Library and Information Science*; Dr. Ruth Palmquist's *Online Information Resources*; Michelle Zwierski's *Organization of Materials I*; and Dr. Ron Wyllys's *Introduction to Research in Library and Information Science*. Within these groups, we sent out 96 questionnaires and received 96 responses. Additionally, of 214 students who received questionnaires in their boxes on 23 June, 24 students returned completed questionnaires.

3.3 Data Analysis

During the next stage of our project, we entered our data into Microsoft Excel and subjected it to several statistical analyses. In particular, we looked for correlations between an individual's symptoms of depression and the demographic values we had collected (i.e. age, gender, time spent in the program). To assess the nature of this relationship, we made use of two key terms, both defined in section 3.1: "at risk" and depression index, or DI.

The tool we used the most to explore whether there were any significant relationships between sample categories was the Pearson r test for correlation. We first wished to see what contribution each question made to a person's final DI score. We thus set up a Pearson r test for each particular question to the sum total.

We then wanted to see what relationship our demographic data had to the depression questions. We recalculated all of our demographic totals just for the At Risk category (i.e. those with a $DI \geq 10$). This gave us a broad notion of how the numbers were changing as the depression index increased. We then moved on to breaking down the sample by sex, age grouping, and time in program.

We first looked at gender, since this seemed the most sharply delineated (in terms of DI) of any of our demographic factors. We attempted to back up this a 2X2 Chi-Square Independence test. To test for DI differences among our various age categories, we performed a single factor ANOVA test. We calculated Pearson r values to test the correlation between number of semesters in the program and DI.

At this point we also developed tests to see whether, given an apparent effect on levels of depression by age and by sex, one of these might be just an illusion caused by the action of the other. For

instance, if males are on average more depressed than females, then the younger people in our sample would appear to be more depressed on average, just because there are more younger males and older females in our sample. We did not include these tests, though, as it turned out that our previous tests did not show statistically significant effects for both age and gender, or for both age and time in program, or for both time and program and gender.

Our attention then focused on the relationship between our attitude questions (the last 4 on the survey) and time spent in the program. Each of these questions were tested (using the Pearson r) for co-occurrence with time in the program. Again, since there were no stark correlations, we did not go further in breaking down this data (e.g. evaluating this correlation for females alone, to remove the confounding factor of sex).

Another correlation we wanted to explore was the match between gender and the last 4 questions on the survey. We totaled those who responded positively to those questions and applied a Chi-Square test for Independence for each of these questions (using Yates' correction, since these were 2X2 Chi-Squares). The test for familiarity did not have enough samples to correctly perform the Chi-Square analysis.

We also analyzed was the possibility of a correlation (negative or otherwise) between depression and selected action questions. Specifically, we generated Pearson's coefficient scores to find any relationship between the respondents' depression levels and their familiarity with facilities, their willingness to use such facilities, or their degree comfort with the mental health profession.

Lastly, we wanted to determine if there existed any patterns within the last four questions (e.g. are those who were willing to access mental health facilities more likely to have a good attitude towards mental health professionals?). We therefore examined selected relationships among those four questions (mostly correlating familiarity with the other three).

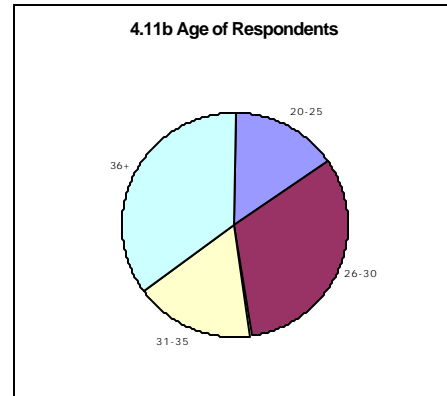
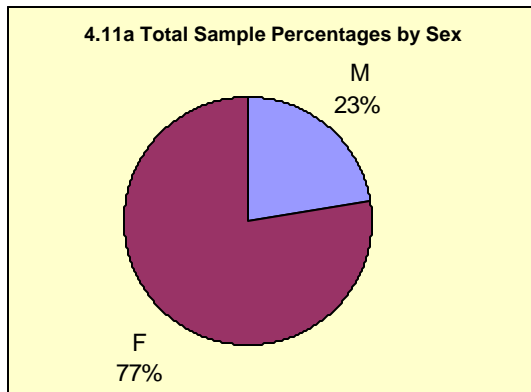
3.4 Assumptions Involved in this Procedure:

Strictly speaking, our results are meant to concern only the GSLIS population, so we do not need to assume that GSLIS is representative of the graduate school or university as a whole. However, we must assume that our sample is sufficiently representative of the GSLIS population. For whatever reason, Carol Carreon (graduate coordinator of GSLIS) was not able to provide us with statistics (e.g., number of

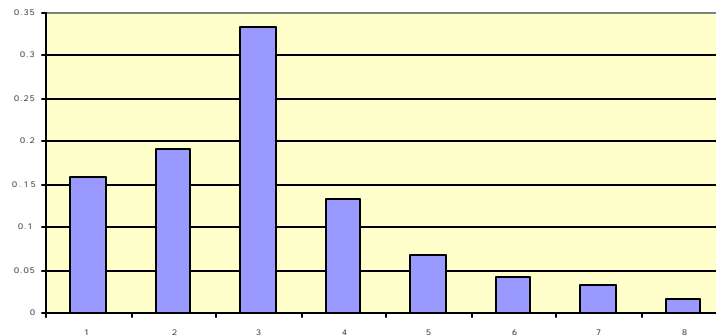
students, percentage female) for the summer, 1999 student body. She was, however, able to give data for fall, 1998: 411 students, 75.18% female. Even given this larger pool, our sample (120 respondents, 77% female), our sample still represents over 29% of the population. Now, we are aware that there are likely to be systematic differences between the summer student population and the rest of the population, given the number of teachers who take classes in the summer for school library certification. As these women tend to be older, we would expect our age data to be overrepresentative of the older age group. We had to assume that this would not significantly damage our findings.

We had to assume that our questions were structured and administered in such a way that respondents would be honest. If our questions required too much reflection, flip answers would likely result. In some classes we passed out candy as inducement to take the test. While we made sure to wait until *after* respondents filled out the surveys to give them candy, we must assume that the prospect of candy did not distort their assessment of the level of misery in their lives. Since a small percentage of the surveys were administered by putting them in everyone's mailbox (including those who had already taken the test in classes), we must assume that people did not, despite our direction, fill out more than one survey. It is well known that the low response rate from such mailings skews results; the respondents are self-selecting, and thus more likely to answer questions in the extreme than other respondents. We must assume that the percentage of our study made up by these self-selectors was sufficiently small that our results were not significantly distorted.

4. **Results:** We examined our sample data to gather information on a number of related issues.
- 4.1 **Demographics of our Sample:** What was the make-up of our sample group, and how well does it represent the population of GSLIS students?
- 4.11 **Sample Data:** The following pie charts break down our sample of 120 respondents by sex and age. The frequency distribution divides the sample by the number of semesters enrolled:



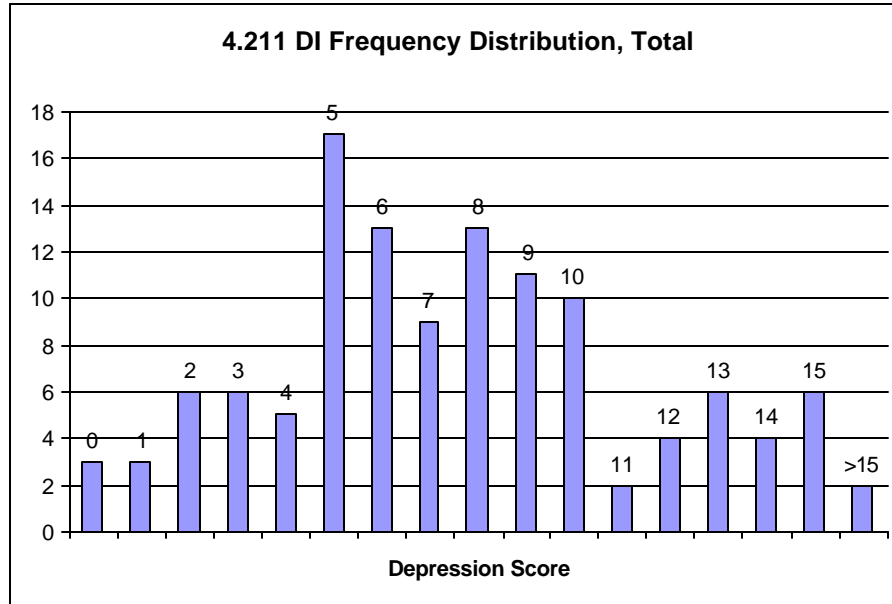
4.11C Percentage Distribution by Numbers of Semesters in GSLIS



4.2 Demographics of Depression: We took various measures of the symptoms of depression of our sample, did some analysis regarding the sources of those measures, and broke down these measures by the above demographic characteristics.

4.21. Depression Index: We calculated two measures of overall depression from the results of our survey. Both involved assigning a number between 0 through 4, with 0=strongly disagree, 1=disagree, 2=neutral, 3=agree, and 4=strongly agree, to each answer given for questions 4-8. The sum of these five scores for a given subject will hereafter be referred to as that subject's **Depression Index, or DI**.

4.211 Full Sample: The following frequency distribution shows how many subjects in our full sample received each available DI score:



For the full sample of subjects surveyed, the Mean Depression Index was 7.59

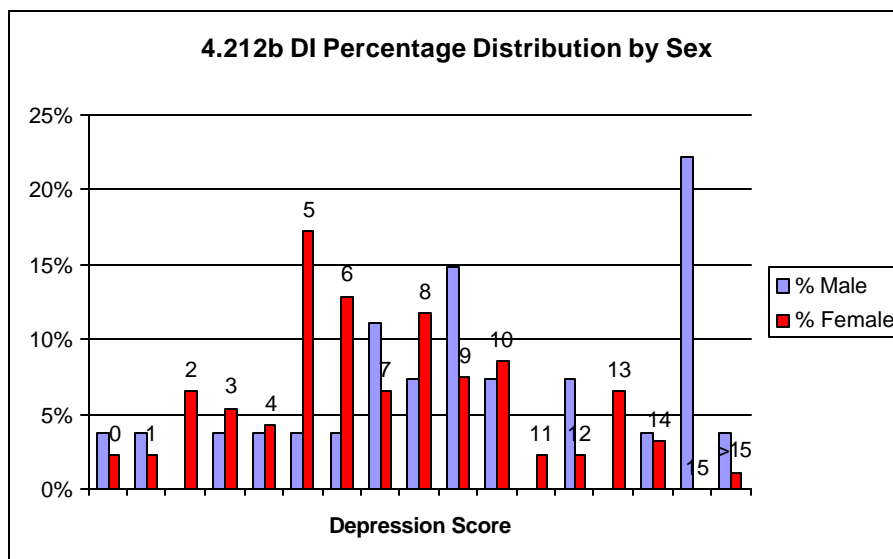
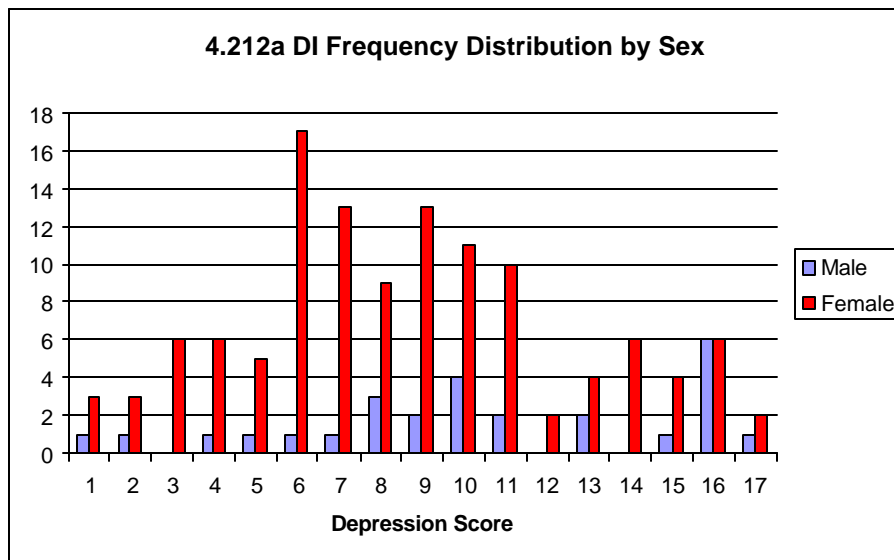
The standard deviation of DI's in the sample was 3.98

The mode of this collection of DI's was 6

4.212 Relative Contributions of Symptoms: Next we considered how much each symptom contributed to the subject's overall DI. How well was a positive answer (agree or strongly agree) to a given question correlated with his overall DI score? While we would of course expect all of the questions to correlate to the total (which they, after all, comprise 1/5 of), we suspected that some might correlate more strongly than others. The following table gives three values related to each question: First, the percentage of overall sample that answered agree or strongly agree to the question, second, the percentage of "at risk" group (i.e. members of sample whose $DI \geq 10$) that answered agree or strongly agree to the question, and third, the Pearson r coefficient comparing the score (0-4) for this question with the DI of each subject.

| | I often feel depressed | I often have trouble concentrating. | Lately, I have lost interest in things that I used to enjoy | Lately, I have lost interest in things that I used to enjoy | Some of my recent behavior has been self-destructive. |
|------------------------|------------------------|-------------------------------------|---|---|---|
| % Agree | 25.0% | 36.7% | 13.3% | 39.2% | 13.4% |
| % At Risk Agree | 58.8% | 79.4% | 35.3% | 73.5% | 39.4% |
| Pearson R | 0.80 | 0.77 | 0.69 | 0.71 | 0.57 |

4.212 Sex Comparisons: 4.212a, below is a frequency distribution like the one in 4.211 for male sample subjects and female sample subjects. Since there are more females than males in the sample, this chart may be misleading. 4.212b gives the same information using percentage values of the population according to gender.



The mean D.I. for males was 9.59. For females it was 7.01, a 26.9% difference.

The standard deviation for DI was 4.79 for males and 3.53 for females, a difference of 26.3%.

The mode D.I. for males in was 15, while for females it was 5.

4.2121 Comparison of these Results with Those of Previous Studies:

According to the University Mental Health Center, 60% of graduate students treated are female, while only 10% are male.

4.213 Age Comparisons:

The following table gives the mean DI and the standard deviation of the DI for each of the four age groups distinguished:

| | 20-25 | 26-30 | 31-35 | 36+ |
|--------------------|-------|-------|-------|------|
| Mean Depression | 8.72 | 7.66 | 7.80 | 6.80 |
| Standard Deviation | 4.06 | 3.45 | 4.98 | 3.82 |

To see if the differences between age groups were significant, we performed the ANOVA procedure over these four groups at 95% significance. Our results were as follows:

$F=852$

Critical value of $F=2.68$

4.214 Time in Program Comparison: The greater number of possible responses for time in program makes a table like the one above unwieldy. As before, though, we computed the Pearson correlation coefficient by comparing each subject's semesters in program score and his DI score. The resulting value of $r=-.00098$

4.22 At Risk: Already mentioned in 4.212, our second measure of depression was the classification of anyone with $DI \geq 10$ as "at risk." A discussion of this choice can be found in **section 3.3**. While DI and mean DI by demographic group are convenient ways to determine the general happiness of an individual or group, the determination of a target audience for a mental health publicity

campaign requires a simpler measure. The “at risk” category tells us the most likely potential customers of mental health services. Below is the breakdown of at risk subjects by the demographic categories above:

Percentage of Full Sample At Risk: 28.3%

Percentage of Males At Risk: 44.4%

Percentage of Females At Risk: 23.7%

Percentage of 20-25 At Risk: 44.4%

Percentage of 26-30 At Risk: 26.3%

Percentage of 31-35 At Risk: 40%

Percentage of 36+ At Risk: 17.1%

Percentage of students (out of 45) with 2 semesters in program who are at risk: 31.1%

Percentage of students (out of 84) with 3-4 semesters in program who are at risk: 31.0%

Percentage of students (out of 19) with 5+ semesters in program who are at risk: 21.1%

| Chi Square for At Risk | | | | | |
|------------------------------------|----------|----------|---------------------------------|-----|-----|
| Expected At Risk For Age | | | | | |
| | 20-25 | 26-30 | 31-35 | 36+ | |
| At Risk | 5 | 11 | 6 | 12 | 33 |
| Not At Risk | 13 | 27 | 14 | 29 | 84 |
| | 18 | 38 | 20 | 41 | 117 |
| Observed At Risk for Age | | | | | |
| | 20-25 | 26-30 | 31-35 | 36+ | |
| At Risk | 8 | 10 | 8 | 7 | 33 |
| Not At Risk | 10 | 28 | 12 | 34 | 84 |
| | 18 | 38 | 20 | 41 | 117 |
| Chi Sq | 6.294195 | | | | |
| Crit ChiSq | 7.82 | | NO SIGNIFICANT DIFFERENCE FOUND | | |
| Expected At Risk For Gender | | | | | |
| | M | F | Total | | |
| At Risk | 8 | 26 | 34 | | |
| Not At Risk | 19 | 67 | 86 | | |
| Total | 27 | 93 | 120 | | |
| Observed At Risk For Gender | | | | | |
| At Risk | 12 | 22 | 34 | | |
| Not At Risk | 15 | 71 | 86 | | |
| Total | 27 | 93 | 120 | | |
| | 1.937582 | 0.562524 | | | |
| | 0.766021 | 0.222393 | | | |
| Chi Sq | 3.488519 | | | | |
| Crit ChiSq | 3.84 | | NO SIGNIFICANT DIFFERENCE FOUND | | |

4.3 Demographics of Attitudes Toward Mental Health Facilities: We next analyzed the data for patterns linking answers for questions 9-12 with demographic data.

4.31 Question Nine: Familiarity: The following table reports mean familiarity of the group in question, i.e. the average score of all respondents in that group when their answer for question twelve is converted to a numeric value 0-4 as detailed in 4.21, the standard deviation in this score for the group in question, and the percentage of respondents in that group who can be classified as “familiar,” i.e. who answered “agree” or “strongly agree” to that question. The fourth row gives the value of the Pearson r coefficient calculated for each group correlating score on this question with the number of semesters members of that group have been in the program. The only Pearson correlation which came close was the greater familiarity of those in age group 26-30.

| | Total | Males | Females | 20-25 | 26-30 | 31-35 | 36+ |
|-----------------------------|----------|----------|----------|----------|----------|----------|----------|
| Mean Familiarity | 1.70 | 1.37 | 1.80 | 1.78 | 1.71 | 2.00 | 1.41 |
| Standard Deviation | 1.15 | 0.93 | 1.19 | 1.11 | 1.06 | 1.34 | 1.09 |
| % Agree/Strongly Agree | 28.3% | 7.4% | 34.0% | 27.8% | 28.9% | 45.0% | 17.1% |
| Pearson r Time in Program | 0.056388 | -0.16526 | 0.088521 | 0.008012 | 0.266497 | 0.083738 | 0.027259 |

The difference between men and women looked substantial, so we wanted to test its statistical significance with the Chi-Square Independence measure. We compared the observed incidence of familiar (i.e. scored 3 or 4 on the question) respondents of a particular sex to the expected incidence. Although the observed value of familiar males was less than five, the expected value for males was large enough to go through with the test.

| Chi Square for Sex and Familiarity | | | |
|------------------------------------|-------|---|-------|
| Expected | | | |
| | M | F | Total |
| Familiar (>=3) | 8 | 26 | 34 |
| Not Familiar (<8) | 19 | 67 | 86 |
| | 27 | 93 | 120 |
| Observed | | | |
| Familiar (>=8) | 2 | 32 | 34 |
| Not Familiar (<8) | 25 | 61 | 86 |
| | 27 | 93 | 120 |
| Yates Correction | 3.78 | 1.16 | |
| | 1.59 | .45 | |
| Chi Square | 6.988 | | |
| Crit Chi Sq (95%) | 5.99 | <i>Correlation between Sex and Familiarity with Campus Facilities</i> | |

4.32 Question Ten: Willingness to Use Services: Below is a table for question ten which is similar to the one used for question nine. While it seemed worthwhile to test for the relation between familiarity with services and time in program, because the action of publicity campaigns about mental health services (and sheer experience on campus) should make students more familiar with facilities over time, it did not seem germane for us to consider possible correlation between time in program and willingness to use services.

| | Total | Males | Females | 20-25 | 26-30 | 31-35 | 36+ |
|------------------------|-------|-------|---------|-------|-------|-------|-------|
| Mean Willingness | 2.61 | 2.11 | 2.75 | 2.78 | 2.53 | 2.55 | 2.76 |
| Standard Deviation | 1.20 | 1.09 | 1.19 | 1.00 | 1.18 | 1.28 | 1.22 |
| % Agree/Strongly Agree | 67.5% | 40.7% | 74.5% | 72.2% | 68.4% | 60.0% | 73.2% |

Again, the difference between men and women in this matter looked substantial enough for us to perform a Chi-Square Test for Independence. In this case we were able to do so:

| Chi Square for Sex and Willingness | | | |
|------------------------------------|-------|--|-------|
| Expected | | | |
| | M | F | Total |
| Willing (≥ 3) | 18 | 63 | 81 |
| Not Willing (< 3) | 9 | 30 | 39 |
| | 27 | 93 | 120 |
| Observed | | | |
| | M | F | Total |
| Willing (≥ 3) | 11 | 70 | 81 |
| Not Willing (< 3) | 16 | 23 | 39 |
| | 27 | 93 | 120 |
| Yates Correction | | | |
| | 4.111 | 0.646 | |
| | 2.827 | 1.966 | |
| Chi Square | 9.550 | <i>Correlation between Sex and Willingness</i> | |
| Crit Chi Sq (95%) | 3.84 | | |

4.33 Question Eleven: Hotline Access: As this was another “information” question, we would hope there to be some correlation between time in program and knowledge of hotline services. We have therefore included all four measures as in 4.31.

| | Total | Males | Females | 20-25 | 26-30 | 31-35 | 36+ |
|---------------------------|----------|-----------|----------|-----------|----------|-----------|-----------|
| Mean Access | 1.93 | 1.78 | 1.97 | 2.11 | 1.89 | 2.15 | 1.73 |
| Standard Deviation | 1.11 | 1.25 | 1.07 | 1.23 | 1.13 | 0.99 | 1.07 |
| % Agree/Strongly Agree | 34.2% | 33.3% | 34.4% | 44.4% | 31.6% | 40.0% | 29.3% |
| Pearson r Time in Program | 0.005550 | -0.260955 | 0.078878 | -0.068877 | 0.113777 | -0.066131 | -0.004321 |

Though we did not expect from these results any significant sex difference in this measure, we performed a Chi-Square test to make sure:

| Chi Square for Sex and Hotline Access | | | |
|---------------------------------------|-------|--|-------|
| Expected | | | |
| | M | F | Total |
| Access (>=3) | 9 | 32 | 41 |
| Little Access (<8) | 18 | 61 | 79 |
| | 27 | 93 | 120 |
| Observed | | | |
| | M | F | |
| Access (>=8) | 9 | 32 | |
| Little Access (<8) | 18 | 61 | 41 |
| | 27 | 93 | 79 |
| | | | 120 |
| Yates Correction | | | |
| | 0.008 | 0.002 | |
| | 0.004 | 0.001 | |
| Chi Square | 0.016 | | |
| Crit Chi Sq (95%) | 3.84 | <i>All Observed values match Expected values</i> | |

4.33 Question Twelve: Comfort Level/Positive Attitude: This question seems less similar to a yes or no question than the preceding. While a “neutral” response on question eleven, for instance, indicated to us that the subject did not have immediate access to a hotline number (though he/she probably thought it would not be too hard to find one), and so indicated someone in the target audience for a publicity campaign advertising the hotline number, a “neutral” response on this question really meant “neutral,” i.e. someone who could be benefited by a campaign designed to enhance comfort levels with mental health services, but not benefited as much (perhaps) as someone who scored lower. As with question ten, we supposed that the answer to question twelve would be minimally affected by time spent in the program. The following table, then, includes only the first two measures of the previous tables: the mean score for the various groups and the standard deviation of that.

| | Total | Males | Females | 20-25 | 26-30 | 31-35 | 36+ |
|--------------------------|----------|----------|----------|----------|----------|----------|----------|
| Mean Access | 2.61 | 2.22 | 2.72 | 2.72 | 2.63 | 2.60 | 2.55 |
| Standard Deviation | 1.03 | 1.01 | 1.01 | 0.96 | 0.85 | 1.14 | 1.17 |
| % Agree/Strongly Agree | 57.5% | 40.7% | 62.4% | 61.1% | 55.3% | 55.0% | 59.1% |
| Pearsonr Time in Program | -0.02837 | -0.12016 | -0.02356 | 0.158381 | 0.074478 | 0.032683 | -0.11982 |

Again, the difference between men and women looked significant. The Chi-Square table comparing observed number of “comfortable” (i.e. agree or strongly agree) respondents of either sex with their expected values is:

| Chi Square for Sex and Comfort | | | |
|--------------------------------|-------|--|-------|
| Expected | | | |
| | M | F | Total |
| Comfort (≥ 3) | 18 | 63 | 81 |
| Not Comfortable (< 3) | 9 | 30 | 39 |
| | 27 | 93 | 120 |
| Observed | | | |
| | M | F | Total |
| Comfort (≥ 3) | 11 | 70 | 81 |
| Not Comfortable (< 3) | 16 | 23 | 39 |
| | 27 | 93 | 120 |
| Yates Correction | 4.111 | 0.646 | |
| | 2.827 | 1.966 | |
| Chi Square | 9.550 | | |
| Crit Chi Sq (95%) | 3.84 | <i>Correlation between Sex and Comfort</i> | |

4.4 Depression and Attitudes Toward Mental Health Facilities: We then examined the data for correlations between our depression measures and our attitude measures. Since the more depressed individuals are the primary target audience for any publicity campaign, we had to gauge their attitudes in particular. It would be most alarming, for instance, if we found a negative correlation between depression level and willingness to seek help. While these findings may well be influenced by the various demographic factors (e.g. if the most depressed subjects tend to be

males, and if males have less willingness to seek help, then it will appear that depression and willingness are negatively correlated), we have for the most part left out consideration of these for the sake of brevity. An examination of sections 4.2 and 4.3 should serve to inform the interpretation of the results reported in this section.

4.41 Depression and Familiarity:

The Pearson r coefficient correlating score on question nine and DI was 0.0208.

The percentage of “at risk” respondents who fail to identify themselves as familiar (i.e. who answered a 0-2 on this question: “strongly disagree,” “disagree,” or “neutral”) was 73.5%.

4.42 Depression and Willingness:

The Pearson coefficient correlating score on question ten and DI was -0.2419.

The percentage at risk who fail to identify themselves as willing (i.e. scored 0-2) was 55.9%.

Perhaps more to the point here was the percentage at risk who identify themselves as unwilling, i.e. who scored a 0 or 1 (“strongly disagree” or “disagree”): 50%.

Of these 17 unwilling at risk individuals, 11 (i.e. 64.7%) were males.

4.43 Depression and Hotline Access:

The percentage of those at risk who fail to identify themselves as having access (i.e. answered 0-2 for question eleven) was 58.8%.

4.43 Depression and Comfort/Positivity:

The Pearson r coefficient correlating score on question twelve and DI was -0.1621. Although not as strong as the

The percentage of “at risk” respondents who fail to identify themselves as comfortable/positive (i.e. who answered a 0-2 on this question) was 55.9%.

4.5 Trends in Familiarity: Our final analysis involved examining correlations between answers for questions 9-12. While our choice of questions for this section was to ad hoc for us to in good conscience employ a “familiarity index” totaling the scores for these four questions, we hoped to draw conclusions about the character of a potentially effective publicity campaign by comparing a number of the individual measures.

- 4.51 Correlation of Willingness with Comfort:** The Pearson coefficient connecting scores for questions ten and twelve is .5008. As expected, there is a strong correlation between Willingness to make use of facilities and whether the respondent feels positively toward mental health professionals. Of the 19 respondents (i.e. 15.7% of the sample) who reported two point or greater difference between scores for these questions, 10 (i.e. 53% of these 19, 8.3% of the sample) rated themselves more comfortable but less willing, i.e. more “positive toward mental health services” but less willing to actually use these services.
- 4.52 Correlation of Familiarity with Comfort:** The Pearson coefficient connecting scores for questions nine and twelve is .2687. Again, considering the high degrees of freedom (*df*), there is a definite correlation between those who are comfortable with mental health professionals and knowledge of campus mental health services.
- 4.53 Correlation of Familiarity with Willingness:** The Pearson coefficient connecting scores for questions nine and ten is .2009, i.e. 25.2% less than our coefficient connecting familiarity and comfort.

5. Conclusions:

- The incidence and severity of symptoms of depression (as measured by DI) is distributed in a manner that appears Gaussian, in that there are more scores in the middle than on the ends. The bell curve is lopsided, though, with mean lower than expected. Possible explanations for its shape are:
 - a) The character of our questions; the way they were worded tended to discourage extreme answers.
 - b) Our use of the Likert scoring system forced the measurements into discrete intervals. A professionally standardized diagnostic survey would enable more precise scoring.
 - c) The large amount of variability in the sample, particularly among males. This can be explained by the small number of males in our sample.
- An At Risk Depression Index score correlates the most with self-diagnosis and with an observed difficulty concentrating. The least reliable indicator of whether the person would be considered “At Risk” was the admission of self-destructive behavior.

- As a group, males showed a greater average incidence of symptoms of depression than females, but there were not a statistically significant number more males than females (given the ration of males to females in the sample) in our “at risk” category.
- Despite what appeared from a cursory examination of the data to be a unusually low rate of depression among people in our oldest group, we could find no statistically significant correlation between age and depression symptoms by either the Chi-Square test for independence (comparing the expected with the observed number of “at risk” individuals in each age group) or by use of one factor ANOVA to determine whether significant DI differences existed between the four age populations.
- Also, from our tests on the data, we observed no correlation between time in program and depression symptoms.
- Interestingly, there is no correlation between time in program and familiarity with or attitudes towards mental health facilities. This deviates from what we would expect, since those who have been in the program a long time should have had more contact with campus facilities. This anomaly might be explained by the fact that many long-time students are also part-time students, commuters who work full-time and do not have the time to explore university services.
- The percentage of people describing themselves as familiar with mental health services or having access to a hotline number is low across subgroups of the sample. No differences between sex or age groups were noted in reported access to a hotline number.
- Females tend to be more familiar with facilities and more willing to use them. Females also report more positive attitudes/higher comfort levels toward the mental health profession than males.
- We observed a definite negative correlation between willingness to utilize mental health services and the DI score. The data also showed a negative correlation between comfort with mental health professionals and DI, and , but this was not nearly so pronounced.
- We observed no correlation between familiarity with campus facilities and DI.
- No correlation between age and any of the above four factors (including hotline access) was found.
- By far, the strongest correlation among the final four questions was the match between comfort and willingness. While there was also significant correlation between one’s comfort/positive attitude

towards mental health profession and familiarity with campus facilities, we would have expected a much stronger link.

6. Recommendations:

Our results clearly show that a publicity campaign is warranted. Less than 30% of all respondents report familiarity with services and less than 35% report access to a depression hotline number. Given these figures, many people in need of help will go untreated due to their ignorance (and their friends' ignorance) of available resources. The fact that a number of people show enough symptoms of depression to be considered at risk lends urgency to the current situation. We feel educating at least those individuals in preventative measures could save lives and money.

What recommendations can we make regarding the marketing of this campaign? One might question whether any comments we make could be helpful. For instance, we found a higher average DI in males than in females. Does this mean that a prospective campaign should include scantily clad women and beer? Certainly not. Nonetheless, marketing experts more skilled than ourselves may find the data useful in ways we cannot anticipate.

This said, it is still difficult for us to make any recommendations based on the observed correlation between sex and incidence of depression. If we are concerned in a campaign with helping the largest number of people possible, then the greater incidence in males would not concern us, as there are many more women in the population in question. Were the publicity campaign to target at risk males, the at risk females might be alienated. Helping the twenty-six women found at risk in our survey takes precedence over helping the eight men simply because twenty-six is greater than eight, even if the *proportion* of men at risk is greater than the proportion of women at risk.

Now, it is unlikely that a publicity campaign would be targeted at GSLIS alone. We chose the GSLIS population because it was easily accessible. Presumably a prospective campaign would be campus-wide, or would at least encompass the graduate school. In this case, the data about men would be relevant, because the overall population of graduate school has a much lower percentage of women than the population of GSLIS students.

In order to generalize our figures from the GSLIS to the whole graduate school or the entire university, one must take into account not only the demographic differences between GSLIS and the rest of the university population, but also less tangible factors. Can we be confident that our study's findings of depression will be comparable to depression in, the graduate chemistry or philosophy departments? Certainly the stereotype of GSLIS as non-academic suggests that the data might not be subject to generalization. We would not make any recommendations regarding a campus-wide publicity campaign, except to suggest other departments do similar studies. The belief that graduate school is inherently depressing (a suspicion which prompted this study), may be a supportable hypothesis in other, less job-oriented departments.

We find a number of patterns in the data that become evident in other departments. The statistically significant greater familiarity, comfort, and willingness to use facilities among women must be taken into account. This helps to explain why more women actually receive treatment for depression even though (according to one of our measures) more men suffer from it. It was interesting that nearly 20% of respondents gave substantially different (i.e. two or more points) responses between their comfort/positivity toward the profession and their willingness to employ services. A truly effective publicity campaign should make use of studies that explore this difference. The surprisingly low correlation we found between familiarity with facilities and willingness to use them makes it clear that a publicity campaign must do more than merely advertise the availability of the facilities. It must, if possible, involve a systematic effort to improve people's attitudes toward the mental health profession and the process of treatment.

Appendix A: Survey Instrument

Please answer the following questions by circling the appropriate answer. Return to Matthew Scheffrahn's mailbox when completed. Remember, this is an anonymous survey, so you need not identify yourself on this paper. Thank you for your time!

1. Please indicate your age 20-25 26-30 31-35 36+
2. Please indicate your sex: ____Male ____Female
3. How many semesters have you been in the GSLIS program, including the current semester? (Count both halves of the Summer semester as one semester)
- 1 2 3 4 5 6 7
4. I often fell depressed
Strongly Agree Agree Neutral Disagree Strongly Disagree
5. I often have trouble concentrating.
Strongly Agree Agree Neutral Disagree Strongly Disagree
6. Lately, I have lost interest in things that I used to enjoy.
Strongly Agree Agree Neutral Disagree Strongly Disagree
7. I find it difficult to maintain consistent sleeping and/or eating patterns
Strongly Agree Agree Neutral Disagree Strongly Disagree
8. Some of my recent behavior has been self-destructive.
Strongly Agree Agree Neutral Disagree Strongly Disagree
9. I am familiar with campus mental health facilities.
Strongly Agree Agree Neutral Disagree Strongly Disagree
10. If I felt that I was suffering from depression, I would consider consulting a mental health professional.
Strongly Agree Agree Neutral Disagree Strongly Disagree
11. I have access to a depression hotline number
Strongly Agree Agree Neutral Disagree Strongly Disagree
12. I feel comfortable/positive toward mental health professionals/services/hotlines
Strongly Agree Agree Neutral Disagree Strongly Disagree