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# Assessing Mental Health Literacy of First- and Third-Year Medical Students : Knowledge and Beliefs About Mental Disorders

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Philadelphia College of Osteopathic Medicine

Department of Psychology

ASSESSING MENTAL HEALTH LITERACY OF FIRST- AND THIRD-YEAR  
MEDICAL STUDENTS: KNOWLEDGE AND BELIEFS ABOUT  
MENTAL DISORDERS

By Patricia A. Cheslock

Submitted in Partial Fulfillment of the Requirements of the Degree of

Doctor of Psychology

October, 2005

02

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**PHILADELPHIA COLLEGE OF OSTEOPATHIC MEDICINE  
DEPARTMENT OF PSYCHOLOGY**

**Dissertation Approval**

This is to certify that the thesis presented to us by Patricia A. Cheslock  
on the 13<sup>th</sup> day of July, 2005, in partial fulfillment of the requirements for the degree of  
Doctor of Psychology, has been examined and is acceptable in both scholarship and  
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## Abstract

Mental health literacy is the knowledge and beliefs about mental disorders that influence their identification, treatment, and prevention. It is highly pertinent for the primary care physician to possess appropriate mental health literacy, because it is in that sector that the majority of individuals first seek treatment. As many as 90% of individuals who experience symptoms of a mental disorder are first seen by their primary care physician. However, general practitioners often do not detect or diagnose the presence of a mental disorder, and as many as 50% of these disorders remain unidentified and untreated.

This study explored the mental health literacy of first- and third-year medical students to assess their knowledge and beliefs about mental disorders. Medical students were required to read vignettes describing an individual who was experiencing symptoms of “stress” or a “mental disorder,” and to indicate a diagnosis. It was hypothesized that: a) third-year medical students would have a significantly greater number of accurate diagnoses; b) the male-gendered vignettes would be significantly underdiagnosed by first-year-medical students; c) the female-gendered vignette describing stress would be significantly overdiagnosed as a mental disorder by first-verses third-year medical students; and d) third-year medical students would report significantly less mental health stigma.

Results of this study found evidence that third-year medical students were better able to accurately diagnose a mental disorder as compared to first-year medical students after reading a vignette that described an individual experiencing symptoms of a mental disorder. The male-gendered vignettes were not significantly underdiagnosed by

first-verses third-year medical students, and the female-gendered vignette depicting stress was not significantly overdiagnosed as a mental disorder by first-verses third-year medical students. Third-year medical students overdiagnosed the female-gendered stress vignette, while first-year medical students “underdiagnosed” the female-gendered generalized anxiety disorder vignette. The use of vignettes that describe individuals with symptoms of mental disorders appears to be a valid and reliable method of assessing mental health literacy. In addition, agreements and statistically significant differences are reported regarding prognosis, stigma, and the helpfulness of various interventions. Limitations and implications for future research are discussed.

## Table of Contents

Chapter 1 .....	1
Introduction .....	1
<i>Mental Health Literacy Conceptualized Through Health Literacy</i> .....	1
<i>What is Mental Health Literacy?</i> .....	5
<i>Current Research</i> .....	5
<i>Public's Knowledge and Beliefs about Mental Disorders</i> .....	6
<i>General Public's Beliefs Regarding Causes and Risk Factors of         Mental Disorders</i> .....	7
<i>Health Professionals' and General Public's Beliefs Regarding         Interventions for Mental Disorders</i> .....	8
<i>Effects of Professional Contact on Mental Health Literacy</i> .....	9
<i>Prevalence of Mental Disorders</i> .....	10
<i>Comorbidities Associated with Mental Disorders</i> .....	12
<i>Mental Disorders within the Elderly</i> .....	15
<i>Postpartum Depression</i> .....	16
<i>Suicide</i> .....	18
<i>The Burden of Mental Disorders</i> .....	19
<i>The Impact of Mental Disorders on Quality of Life</i> .....	21
<i>Relationship between Gender and Mental Disorders</i> .....	22
<i>The Role of Primary Care Physicians in Treating         Mental Disorders</i> .....	23
<i>Failure to Diagnose Mental Disorders in Primary Care</i> .....	24
<i>Patient Attribution Style and Rate of Diagnosis</i> .....	27



<i>Mental Health Stigma</i> .....	28
<i>The Role of Culture and Ethnicity in Presentation of Mental Disorder Symptoms</i> .....	30
<i>Mental Health Training within Medical Schools</i> .....	31
<i>Purpose of the Study</i> .....	32
<i>Hypotheses</i> .....	33
Chapter 2 .....	34
Method .....	34
<i>Participants</i> .....	34
<i>Study Design</i> .....	35
<i>Instruments Used in this Study</i> .....	35
<i>Procedure</i> .....	38
<i>Coding of the Data</i> .....	42
<i>Statistical Analysis Conducted</i> .....	48
Chapter 3 .....	50
Results .....	50
<i>Inter-rater Reliability Participant Demographics</i> .....	50
<i>Data Analysis of Inter-rater Reliability</i> .....	51
<i>Mental Health Literacy Medical Student Survey Results</i> .....	52
<i>Mental Health Literacy Student Survey Participant Demographics</i> .....	52
<i>Data Analysis of Mental Health Literacy Medical Student Survey</i> .....	60
<i>Diagnoses of the Individuals Described in the Student Survey Vignettes</i> .....	61
<i>Recommendations Regarding Best Source of Help for Mental Disorders</i> .....	66

<i>Statistically Significant Differences in Student Survey Responses</i> .....	79
<i>Agreement on Helpfulness of Treatments</i> .....	139
<i>Likely Outcome without Professional Help</i> .....	149
<i>Personal Beliefs Regarding Stigma and Discrimination</i> .....	153
<i>Data Analysis of Attitudes and Beliefs Regarding Mental Health Stigma for Evaluating Hypothesis 5</i> .....	161
Chapter 4 .....	165
Discussion .....	165
<i>Discussion of the Research Hypotheses Testing</i> .....	166
<i>Additional Outcomes Regarding Mental Health Literacy</i> .....	175
<i>Recommendation Regarding the Best Source of Help for Mental Disorders</i> .....	176
<i>Statistically Significant Differences Regarding ECT, Medication, Prognosis, Discrimination, and Stigma</i> .....	176
<i>General Outcomes and Notable Findings</i> .....	180
<i>Educational Implications for Mental Health Training in Medical Schools</i> .....	183
<i>Limitations of this Study</i> .....	185
<i>Recommendations for Future Research</i> .....	187
References .....	190
Appendix A <i>Inter-rater Reliability Packet</i> .....	205
Appendix B B1: <i>Script for requesting participation in the inter-reliability phase of this study</i> .....	216
B2: <i>Script for delivering instructions to Medical Students</i> .....	217
Appendix C <i>Mental Health Literacy Student Survey</i> .....	219
Appendix D <i>Percentages of correct and incorrect diagnoses designated by first- and third-year medical students</i> .....	222

List of Tables .....xi

## List of Tables

Table 1: <i>Student Survey Coding for Entering Elective Rotations Data</i> .....	44
Table 2: <i>Coding for Entering Inter-rater Reliability Data</i> .....	47
Table 3: <i>Demographic Survey Frequencies, Percents, Valid Percents and Cumulative Percents</i> .....	54
Table 4: <i>Frequencies, Percents, Valid Percents, and Cumulative Percents for Elective Rotations of Third-Year Medical Students</i> .....	57
Table 5: Item 10 (Vignette 1) <i>Percentages of medical students' beliefs about the "best" source of help for the individual in the male "generalized anxiety disorder" vignette</i> .....	67
Table 6: Item 10 (Vignette 2) <i>Percentages of medical students' beliefs about the "best" source of help for the individual in the male "major depression" vignette</i> .....	68
Table 7: Item 10 (Vignette 3) <i>Percentages of medical students' beliefs about the "best" source of help for the individual in the male "schizophrenia" vignette</i> .....	69
Table 8: Item 10 (Vignette 4) <i>Percentages of medical students' beliefs about the "best" source of help for the individual in the male "stress" vignette</i> .....	71
Table 9: Item 10 (Vignette 5) <i>Percentages of medical students' beliefs about the "best" source of help for the individual in the female "generalized anxiety disorder" vignette</i> .....	73
Table 10: Item 10 (Vignette 6) <i>Percentages of medical students' beliefs about the "best" source of help for the individual in the female "major depression" vignette</i> .....	75
Table 11: Item 10 (Vignette 7) <i>Percentages medical students' beliefs about the "best" source of help for the individual in the female "schizophrenia" vignette</i> .....	76
Table 12: Item 10 (Vignette 8) <i>Percentages of medical students' beliefs about the "best" source of help to the individual in the female "stress" vignette</i> .....	78

Table 13: Item 11 (Vignette 1) <i>Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various interventions when applied to the male “generalized anxiety disorder” vignette</i> .....	80
Table 14: Item 11 (Vignette 2) <i>Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various interventions when applied to the male “major depression” vignette</i> .....	84
Table 15: Item 12 (Vignette 2) <i>Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the male “major depression” vignette</i> .....	88
Table 16: Item 14 (Vignette 2) <i>Mean Ratings and Standard Deviations of medical students’ degrees of agreement and disagreement regarding beliefs about the male “major depression” vignette</i> .....	90
Table 17: Item 11 (Vignette 3) <i>Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various interventions when applied to the male “schizophrenia” vignette</i> .....	92
Table 18: Item 12 (Vignette 3) <i>Mean ratings, Standard Deviation, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the male “schizophrenia” vignette</i> .....	96
Table 19: Item 14 (Vignette 3) <i>Mean Ratings and Standard Deviations of medical students’ degrees of agreement and disagreement regarding beliefs about the male “schizophrenia” vignette</i> .....	98
Table 20: Item 11 (Vignette 4) <i>Mean ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding the helpfulness of various interventions when applied to the male “stress” vignette</i> .....	100
Table 21: Item 12 (Vignette 4) <i>Mean ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the male “stress” vignette</i> .....	104

Table 22: Item 13 (Vignette 4) *Mean ratings and Standard Deviations of medical students’ beliefs about the likely result if the individual in the male “stress” vignette did not receive professional help* .....106

Table 23: Item 14 (Vignette 4) *Mean Ratings and Standard Deviations of medical students’ degrees of agreement and disagreement regarding beliefs about the male “stress” vignette* .....108

Table 24: Item 11 (Vignette 5) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various interventions when applied to the female “generalized anxiety disorder” vignette* .....110

Table 25: Item 12 (Vignette 5) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the female “generalized anxiety disorder” vignette* .....114

Table 26: Item 14 (Vignette 5) *Mean Ratings and Standard Deviations of medical students’ degrees of agreement and disagreement regarding beliefs about the female “generalized anxiety disorder” vignette* .....116

Table 27: Item 11 (Vignette 6) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various interventions when applied to the female “major depression” vignette* .....118

Table 28: Item 11 (Vignette 7) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various interventions when applied to female “schizophrenia” vignette* .....122

Table 29: Item 12 (Vignette 7) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the female “schizophrenia” vignette* .....126

Table 30: Item 13 (Vignette 7) *Mean Ratings and Standard Deviations of medical students’ beliefs about the likely result if the individual in the female “schizophrenia” vignette did not receive professional help* .....128

Table 31: Item 14 (Vignette 7) <i>Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the female "schizophrenia" vignette</i> .....	130
Table 32: Item 11 (Vignette 8) <i>Mean Ratings, Standard Deviations, and Percentages of "don't know" responses of medical students regarding helpfulness of various interventions when applied to the female "stress" vignette</i> .....	132
Table 33: Item 12 (Vignette 8) <i>Mean Ratings, Standard Deviations, and Percentages of "don't know" responses of medical students regarding helpfulness of various treatments including medication when applied to the female "stress" vignette</i> .....	136
Table 34: Item 13 (Vignette 8) <i>Mean ratings and Standard Deviations of medical students' beliefs about the likely result if the individual in the female "stress" vignette did not receive professional help</i> .....	138
Table 35: Item 12 (Vignette 1) <i>Mean Ratings, Standard Deviations, and Percentages of "don't know" responses of medical students regarding helpfulness of various treatments including medication when applied to the male "generalized anxiety disorder" vignette</i> .....	141
Table 36: Item 12 (Vignette 6) <i>Mean Ratings, Standard Deviations, and Percentages of "don't know" responses of medical students regarding helpfulness of various treatments including medication when applied to the female "major depression" vignette</i> .....	147
Table 37: Item 13 (Vignettes 1, 2, 3, 5, 6) <i>Mean Ratings and Standard Deviations of medical students' beliefs about the likely results if the individuals described in the vignettes did not receive professional help</i> .....	151
Table 38: Item 14 (Vignette 1) <i>Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the male "generalized anxiety disorder" vignette</i> .....	154
Table 39: Item 14 (Vignette 6) <i>Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the female "major depression" vignette</i> .....	158

Table 40: Item 14 (Vignette 8) <i>Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the female "stress" vignette</i> .....	160
Table 41: Item 14 (Stigma and Discrimination). <i>Mean Ratings and Standard Deviations of medical students' attitudes and beliefs about mental disorders for all vignettes combined</i> .....	162
Table 42: Secondary analysis of Item 14 (Stigma and Discrimination) regarding gender effect. <i>Mean Ratings and Standard Deviations comparing female and male medical students' attitudes and beliefs about mental disorders</i> .....	164



## Chapter 1

### Introduction

#### *Mental Health Literacy Conceptualized Through Health Literacy*

Health literacy is defined as the ability of an individual to obtain, comprehend, and utilize basic information with regard to health care. This includes making decisions for improving and maintaining one's physical well-being, along with preventing a decline in health status. It is estimated that more than 90 million Americans are unable to fully understand basic health information that is available or presented to them. Moreover, this low health literacy results in about a \$73 billion a year burden to the health care system (Kirsch, Jungeblut, Jenkins, & Kolstad, 1993).

Poor health literacy results in excessive and preventable doctor visits and hospitalizations, in addition to medical expenses that are four times greater than those experienced by individuals who exhibit sufficient health literacy (American Medical Association Foundation, 2004). These individuals also report less frequency in utilizing preventive health services, such as vaccinations and screenings for cancer (Scott, Gazmararian, Williams, & Baker, 2002), along with greater use of emergency services which are more costly than primary care visits (Institute of Medicine, 2004).

On June 14, 2003 (United States Department of Health & Human Services, 2003) the United States Surgeon General addressed the American Medical Association House of Delegates and stated that low health literacy hinders progress that would otherwise be made in the areas of prevention and care. He further revealed that several

educational initiatives aimed at the public have seemingly been ignored. Regardless of the efforts that have been made to educate the public about the harmful effects of nicotine, each day approximately 4,000 American children younger than 18 smoke their first cigarette. Furthermore, the National Heart, Lung, and Blood Institute worked for more than 25 years to convince the American public that it is important to know one's blood pressure level and to seek appropriate treatment when necessary. Despite attempts to educate the public regarding preventive screenings for breast, colorectal, and cervical cancer, many Americans continue to avoid these procedures.

A health-literate public can result in a nation where the health and well-being of millions of individuals is improved, inequality in health care is eliminated, lives are saved, and health-care costs are decreased. The Surgeon General referenced Healthy People 2010 (National Institutes of Health), an initiative of the United States Department of Health and Human Services, recommending that physicians take a major role in improving health literacy. One suggestion calls for physicians not only to be educated, but also to become educators. The premise is that health professionals need to receive additional education regarding health communication skills in order to facilitate patients' health literacy, resulting in an increase in patients' understanding of health maintenance and prevention. Another recommendation is for physicians to present health information to patients even if it is not solicited.

The American Medical Association (AMA) in 1998 recognized the weaknesses of low health literacy and began addressing this issue (American Medical Association Foundation, 2004). The AMA (1999) further suggested that health literacy in the public sector could be increased by strategically training medical students and physicians with

skills necessary to improve their abilities to appropriately and confidently educate their patients. On April 12, 2004 the AMA Foundation announced that it was expanding its movement to improve health literacy. Future plans will include training sessions for physicians and increased distribution of health literacy “toolkits” to physicians. These materials will assist physicians in educating their patients and addressing the problem of health literacy (AMA Foundation, 2004).

Mental health literacy follows the concept of health literacy and is equally as important as physical health to an individual’s general health and well-being. The World Health Organization (2001) reported that mental disorders will affect one in four people worldwide. In the United States almost 50 million adults are affected by a mental disorder and require numerous services. The first Surgeon General’s report on mental health and mental illness, released in December, 1999 (National Mental Health Information Center), emphasized the connection between mental health and physical health. Furthermore, this report highlighted the correlation between mental health and physical health and well-being.

Early treatment is important and necessary in order for individuals who have a mental disorder to return to pre-illness functioning, retain employment, and preserve quality family relationships. Even though improvements have been made in treating mental disorders, almost one-half of individuals with severe mental illnesses do not seek or receive treatment (National Mental Health Information Center). Healthy People 2010 not only focused on the importance of maintaining physical health, but also included a segment on improving mental health and preventing mental illness.

The stated goal of Healthy People 2010 was to “Improve mental health and ensure access to appropriate, quality mental health services.” Fourteen objectives were developed with a focus on mental health improvement, access to mental health services, and equitable care. Targeted goals included diminishing the rate of suicide, decreasing the number of homeless adults who have serious mental disorders, increasing employment for individuals who have serious mental disorders, expanding mental health screening and assessment in the primary care sector, increasing treatment opportunities for individuals with mental disorders, and addressing the mental health needs of, and services to, the elderly.

The majority of individuals who have a mental disorder first contact their general practitioners, and very often present with somatic rather than psychological symptoms. Therefore, it is highly pertinent for general practitioners to receive the education necessary to be able to detect, diagnose, and treat mental disorders. It is equally imperative for the general practitioner to not only provide medication, but also to refer patients to mental health practitioners for therapy.

It is easy to perceive that an abundance of effort has ensued to promote the physical well-being of individuals, the results of which have, in many cases, taken a long period of time to reach fruition. Those in the field of medicine have realized the importance of health literacy and have embarked on an even more aggressive campaign to promote health literacy by training physicians to become facilitators. These physicians will, in turn, educate patients, thereby creating an increasingly health-literate public. Physicians must also realize the significance of mental health literacy in their

practices in order to provide appropriate treatment and improve a patient's quality of life.

### *What is Mental Health Literacy?*

The term “mental health literacy” was introduced by Jorm et al. (1997a) and is defined as the “knowledge and beliefs about mental disorders which aid their recognition, management or prevention.” Jorm (2000) further conceptualized the components of mental health literacy and described them as the following:

- (a) the ability to recognize specific disorders or different types of psychological distress;
- (b) knowledge and beliefs about risk factors and causes;
- (c) knowledge and beliefs about self-help interventions;
- (d) knowledge and beliefs about professional help available;
- (e) attitudes which facilitate recognition and appropriate help-seeking; and
- (f) knowledge of how to seek mental health information.

### *Current Research*

Information on this topic is sparse, and is primarily found in studies conducted in Australia (Fisher & Goldney, 2003; Goldney, Fisher, & Wilson, 2001; Goldney, Fisher, Wilson, & Cheok, 2002; Jorm, 2000; Jorm et al., 2003; Jorm et al., 1997a, 1997b, 1997d, Jorm, Korten, Jacomb, Rodgers, Pollitt, 1997c), Singapore (Chen, Parker, Kua, Jorm, Loh, 2000; Parker, Mahendran, Yeo, Loh, & Jorm, 1999; Yeo et al.,

2001), Scandinavia (Wright, McGorry, Harris, Harrington, and Jorm, 2002), and Switzerland (Lauber, Nordt, Falcató, and Rossler, 2003). These studies assessed the mental health literacy of the general public, psychiatric nurses, mental health professionals, and general practitioners. All the studies utilized brief diagnostic vignettes describing individuals with mental disorders and followed the format of those used by Jorm et al. (1997a). One vignette described an individual who met the DSM-IV (American Psychiatric Association, 1994) and ICD-10 (World Health Organization, 1992) criteria for major depression, while another portrayed an individual who met the DSM-IV and ICD-10 criteria for schizophrenia. A third diagnostic vignette depicting mania was introduced by Parker, Chen, Kua, Loh, and Jorm (2000), and later utilized by Yeo et al. (2001). The DSM-IV is the Diagnostic and Statistical Manual of Mental Disorders (4<sup>th</sup> ed.), and is the classification system of psychological disorders that is used in the medical setting and by mental health professionals. The ICD-10 is the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, and is the official coding system of medical, mental, and behavioral disorders used throughout the world. The classifications found in the DSM-IV are congruent with those in the ICD-10 (DSM-IV-TR; American Psychiatric Association, 2000).

#### *Public's Knowledge and Beliefs about Mental Disorders*

Results of a study by Jorm et al. (1997a) assessing the public's ability to recognize mental disorders showed that the majority of participants acknowledged the presence of a mental disorder, but were unable to correctly identify the disorder. Only

39% correctly labeled the one vignette as depression, and just 27% correctly identified the other as schizophrenia. This study also reported that 83% of the general public perceived the general practitioner to be most helpful for depression, while psychiatrists and psychologists were perceived as being less helpful. In the public sector, only 51% believed that a psychiatrist would be helpful to a person with depression, while just 49% viewed psychologists as helpful. Counselors, close family, and friends were rated much higher than psychiatrists and psychologists with regard to helpfulness, with 74% of the public specifying counselors, 73% choosing close family, and 70% identifying friends as being helpful to an individual with depression.

For the schizophrenia vignette, 81% of the general public rated counselors and 74% rated general practitioners as most helpful. Psychiatrists and psychologists received 74% and 71% respectively. Assessment of the general public's view of psychiatric treatments (Jorm et al., 1997a) revealed that many individuals considered vitamins and special diets to be more helpful than antidepressant and antipsychotic medications in the treatment of mental disorders. Admission to a psychiatric ward, electroconvulsive therapy, and medications were also more often regarded as harmful rather than helpful.

#### *General Public's Beliefs Regarding Causes and Risk Factors of Mental Disorders*

Another Australian study (Jorm et al., 1997b) assessed the general public's beliefs about causes and risk factors for mental disorders, and utilized vignettes identical to those used in the former study depicting major depression and

schizophrenia. The majority of those surveyed viewed social environmental issues as causative factors in the development of both depression and schizophrenia. Genetics was perceived as an important entity in the development of schizophrenia, but only 50% viewed the role of genetics to be a significant factor in depression. “Weakness of character” was deemed as causing depression and schizophrenia by 50% of those surveyed. Jorm et al. (1997b) expressed concern about erroneous public beliefs, especially the prominent support of weakness of character as a cause of depression and schizophrenia, along with the high importance placed on environmental causes of schizophrenia.

*Health Professionals' and General Public's Beliefs Regarding Interventions for Mental Disorders*

Depression and schizophrenia vignettes were again used in a study comparing the beliefs of health professionals (general practitioners, psychiatrists, clinical psychologists) and the general public regarding the helpfulness of various interventions for mental disorders (Jorm et al., 1997d). Health professionals and the general public demonstrated distinctly different beliefs in intervention helpfulness. Health professionals endorsed antidepressants for depression, and antipsychotic medications for schizophrenia as appropriate, beneficial interventions. The public displayed a more negative view of medications, but was inclined to place greater importance on close friends, vitamins, minerals, a special diet, and relaxation training.



Health professionals tend to more strongly approve of interventions delivered by their own profession (Jorm et al., 1997c). Clinical psychologists rated psychological and lifestyle interventions as being more helpful than did psychiatrists, while psychiatrists regarded medications as more helpful. However, younger members of each profession appeared to be more willing to accept the validity of interventions outside their own profession. Jorm, Korten, Jacomb, Christensen, and Henderson (1999) found that health professionals were more likely than the public to possess negative attitudes toward people who have mental disorders. Psychiatrists, general practitioners, and clinical psychologists were also pessimistic about long-term outcomes. These professionals perceived that individuals with mental disorders would experience some form of discrimination.

A study conducted by Parker et al. (2001) further reinforced these concepts and indicated that physician responses are not culture specific, but rather show similarities across cultures. Physicians in both Australia and Singapore rated family doctors and psychiatrists to be most helpful for both depression and schizophrenia. They also rated antidepressants to be most helpful for depression, and chose antipsychotic medication as the best treatment for schizophrenia.

### *Effects of Professional Contact on Mental Health Literacy*

Contact with professionals appears to have little effect on mental health literacy of patients. Goldney et al. (2002) found that increased professional contact did not foster increased mental health literacy in individuals with major depression or those

with major depression and suicidal ideation. Few differences were detected when subjects with major depression who received professional treatment, and those with major depression and suicidal ideation who obtained treatment, were compared with subjects from the general community. Treatment with antidepressant medications was considered to be harmful by 40% of the respondents in each group. These results were consistent with those found by Jorm et al. (1997a). All three groups of subjects, regardless of the extent of professional contact, perceived family and friends as being more helpful than psychiatrists or psychologists, although less helpful than counselors or social workers. Those with major depression and suicidal ideation more often stated that the individual depicted in the depression vignette had a physical illness. This group also more often advocated the use of analgesics. Goldney et al. (2002) expressed the idea that, although erroneous, the analgesics could be perceived as helpful in relieving what Shneidman (1999) referred to as “psychache,” which he described as the mental pain found in those who present with symptoms of suicidality.

### *Prevalence of Mental Disorders*

Kessler et al. (1994) reported that there is a 50% lifetime risk of developing a mental disorder. This means that almost everyone in the entire population will, in some way, have a connection to someone who develops a mental disorder. A relative, friend, acquaintance, or they, themselves, will develop a mental disorder. Furthermore, 13% to 19% of those who reside in rural areas display greater psychiatric impairment than their urban counterparts (Roberts, Battaglia, Smithpeter, & Epstein, 1999). This population

experiences higher levels of depression, views mental disorders more negatively, and attaches more stigma to mental disorders than those who reside in urban areas (Bushy, 2000).

Results of the National Comorbidity Survey conducted between February, 2001 and December, 2002 (Kessler et al., 2003) indicated that the prevalence of lifetime Major Depressive Disorder (MDD) is 16.2% and affects 32.6 to 35.1 million adults in the United States. Twelve-month Major Depressive Disorder affects 13.1 to 14.2 million U. S. adults (6.6%). Of these, 10.4% were specified as mild, 38.6% as moderate, 38% severe, and 12.9% as very severe. Treatment was found to be adequate in only 21.7% of individuals diagnosed with 12-month Major Depressive Disorder, even though 51.6% of the 12-month cases received health care treatment for this mental disorder (Kessler et al., 2003).

Major Depressive Disorder (MDD) affects individuals at similar rates regardless of income, education, ethnicity, or marital status (DSM-IV-TR; American Psychiatric Association, 2000). Although MDD can present at any age, the average age of onset is the mid-20s. However, those born more recently may experience MDD at a younger age. Some individuals experience numerous episodes of MDD, while others remain symptom-free for many years between occurrences. Another group of individuals encounter episodes that continuously increase with age. It has been estimated that at least 60% of those who experience a single episode of MDD will likely experience a second episode. The severity of the first episode is predictive of subsequent episodes. The more severe the first episode the more likely the individual will experience future occurrences of MDD (DSM-IV-TR; American Psychiatric Association, 2000).

Anxiety disorders have a lifetime prevalence of 25%, and a 12-month prevalence of approximately 17% (Kessler et al., 1994). They are more chronic than either affective disorders or substance use disorders (Johnson et al., 1990). The age of onset of generalized anxiety disorder is usually childhood or adolescence, however it is not uncommon to present after the age of 20. Although chronic, generalized anxiety disorder often fluctuates and tends to become more pronounced during stressful situations (DSM-IV-TR; American Psychiatric Association, 2000).

Schizophrenia appears to have remained stable and affects about 1% of the worldwide population (WHO, 2000). This means that one in every 100 individuals will develop schizophrenia in their lifetime. Individuals born in an urban area have a greater risk of developing schizophrenia than those born in a rural area. The age of onset for a first psychotic episode is late teens to early 30s, although it can begin after the age of 45, however this occurs with much less frequency (DSM-IV-TR). Schizophrenia generally begins with the onset of depressive symptoms, continues with impairments in cognitive and social functioning, and then progresses into psychotic symptoms. The first two stages usually develop in a five-year period of time, with psychotic symptoms developing several years later (Haffner, Loffler, Maurer, Hambrecht, & an der Heiden, 1999)

### *Comorbidities Associated with Mental Disorders*

Kessler et al. (2003) further reported that a primary diagnosis of Major Depressive Disorder is atypical, and a comorbid DSM-IV diagnosis of anxiety,

substance use, or impulse control is common in both lifetime and 12-month Major Depressive Disorder. The rate of the aforementioned comorbidity in lifetime Major Depressive Disorder is 72.1%, and for 12-month Major Depressive Disorder is 78.5%. The presence of a chronic medical condition is a risk factor for more frequent and enduring future episodes of Major Depression (DSM-IV-TR). It is estimated that as many as 20% of the individuals who have a medical problem also experience the comorbidity of a mental disorder (Murray & Lopez, 1996). Depression has been found to coexist in patients who have HIV (Asch et al., 2003), diabetes (Ciechanowski, Katon, & Russo, 2000), coronary heart disease (Carney, Freedland, Eisen, Rich, & Jaffe, 1995), asthma (Bosley, Fosbury, & Cochrane, 1995), and pain (Karp et al., 2005; Soysal, Topacoglu, Karcioglu, Koyuncu, & Sarikaya, 2005).

Lin et al. (2004) identified major depression in 12% of primary care diabetes patients, and also found that major depression was more prevalent in female than male patients. Comparison of diabetes patients with and without depression revealed that those with depression smoked twice as much, were more sedentary, more frequently ate high fat-content foods, ate fruits and vegetables less frequently, and exhibited less medication compliance. This lack of medication compliance was determined to be prevalent not only for oral hypoglycemic medication, but also for medications for hypertension and cholesterol. Therefore, diabetic patients who have major depression are at risk for less favorable diabetes and health-related outcomes.

Comorbid pain and depression have a reciprocal effect, and each predicts the return of the other at some time in the future. The presence of chronic pain not only results in depression, but also affects the treatment of recurrent depression (Karp et al.,

2005). Patients who reported symptoms of both pain and depression responded to therapy at a slower rate when compared to patients who reported only depression. The co-occurrence of pain and depression may indicate a more aggressive treatment for symptoms of depression (Karp et al., 2005). Additionally, the presence of depression increases the perception of pain. A study conducted by Soysal et al. (2005) examined the degree of pain experienced during intravenous (IV) catheter insertion during emergency treatment. Patients with a history of depression reported a greater intensity of pain with IV insertion than patients who were not experiencing symptoms of depression.

Anxiety disorders are prevalent (Kessler et al., 1994), and often present with Co-morbidity (Johnson, Weissman, & Klerman, 1990). They are frequently correlated with depression, suicide (Johnson et al., 1990), alcohol and drug abuse (Leon et al., 1995), cardiovascular disease (Kawachi, Sparrow, Vokonas, & Weiss, 1994), and asthma (Brown, Khan, & Mahadi, 2001). Patients who have moderate to severe asthma appear to have high rates of mood and anxiety disorders that remain untreated. Brown and colleagues (2001) conducted a structured clinical interview on patients with moderate to severe asthma and detected major depression in 25%, specific phobias in 28%, social anxiety in 13%, and panic disorder in 16%. All patients with panic disorder were receiving appropriate treatment, while only 25% of those reporting symptoms of major depression reported receiving treatment.

Moreover, mental disorders, such as depression and anxiety are common disorders found in dermatology patients (Cotterill & Cunliffe, 1997; Gupta & Gupta, 1996). Even mild to moderate facial acne can be associated with significant depression

and suicidal ideation (Gupta & Gupta, 1998). However, mental disorders are frequently unrecognized in dermatological patients. Picardi et al. (2004) found that dermatologists were better able to recognize anxiety disorders than depression in their patients. In addition, they were found to incorrectly diagnose male patients more frequently than female patients. Furthermore, the onset and course of dermatology disorders can be considerably affected by stress, emotional disturbances, or psychiatric disorders (Folks & Warnock, 2001).

### *Mental Disorders within the Elderly*

The fastest growing segment of the population in the United States is the elderly, with the greatest growth among the oldest old (Administration on Aging, 2001). The number of persons older than 85 will reach almost 9 million by the year 2030. The health care needs of this escalating population are continually increasing, along with the need for an improvement in the recognition, management, and prevention of mental disorders. Many people believe that aging and depression are synonymous, however depression has not been found to be a natural consequence of the aging process (Blazer, Hybels, & Pieper, 2001; Unutzer et al., 2000). The primary complaint of elderly individuals who experience an episode of Major Depressive Disorder is generally memory-related and may be erroneously perceived as early signs of dementia (DSM-IV-TR). Failure to diagnose late-life mood disorders remains a serious and costly public health dilemma.

When depression does occur in late life, those who are affected become more of a burden to caregivers, and suffer from a general decline in the quality of life. This decline includes deterioration in functioning, noticeable increase in disability, and greater probability of being hospitalized, along with increased utilization of services. Mortality from comorbid medical conditions or suicide is an additional issue (Charney et al., 2003). The elderly often experience exceptional challenges in seeking and receiving mental health care services because of inequitable insurance coverage and reimbursement policies, or failure of the chosen health care provider to diagnose a mood disorder. The health care setting most often used by the elderly is the primary care physician (Unutzer et al., 1999), and it is in this setting that late-life mood disorders are significantly underdiagnosed (Charney et al., 2003).

### *Postpartum Depression*

Depression is a disorder that can also arise after giving birth to a child. This specific type of depressive disorder, postpartum depression, is fairly common and can occur at any time during the postpartum year (Davies, Howells, & Jenkins, 2003). During the period ranging from one month to one year after childbirth, between 8% and 26% of new mothers will be affected by postpartum depression (Watt, Sword, Krueger, & Sheehan, 2002). The symptoms can include low mood, loss of enjoyment, tearfulness, loss of concentration, guilt, self-blame, along with thoughts of suicide, and can be diagnosed as mild, moderate, or severe. At the severe stage, there is a risk of self-harm or suicide, and also a risk of harm to the baby (Harris, 1996).



About 20% of new mothers are affected by postpartum depression at the 6-week benchmark following childbirth (Harris, Huckle, Thomas, Johns, & Fung, 1989), however, a study conducted by Davies et al. (2003) detected a substantial number of women suffering from postnatal depression for the first time 12-months after childbirth. It is extremely important to detect and treat postnatal depression in the early stages in order to prevent this type of depression from progressing to a more severe stage (Harris, 1996). Seventy-five percent of those mothers who were determined to have depression at 1 or 3 months after childbirth and received treatment, no longer suffered from postnatal depression when assessed 12 months postpartum (Davies et al., 2003).

However, because 25% of these mothers were diagnosed with depression after the 1-and/or-3-month benchmark and continued to struggle with postnatal depression 12 months after childbirth, Davies et al. (2003) suggested that the primary care physician may not be able to appropriately treat this population and should refer these patients to a mental health professional. In the primary care sector, only about 5% of patients who were recognized as experiencing emotional distress after childbirth were referred to mental health professionals for treatment (King, 1998). Goodman (2004) found that, for a substantial percentage of women, postpartum depression persists for several months to years after childbirth. Some women continued to experience postpartum depression when assessed 2 ½ years after giving birth.

Unfortunately, not all new mothers who struggle with postpartum depression are identified. Watt et al. (2002) and Wilson et al. (1996) found that, regardless of the fact that several new mothers had seen a physician with regard to either their own health or that of their babies, postpartum depression remained undetected. This could be due to

the fact that the focus is on the baby's health rather than the mother's, or that the mother might have normalized her symptoms which would have otherwise been associated with depression (Watt et al., 2002). Additionally, primary care providers cannot assume that if a woman's prepregnancy or prenatal mental health status does not present with depression that this is predictive of postpartum mental health (O'Connor et al., 1998).

### *Suicide*

Suicide is a serious public health problem, is associated with depression, and is the eighth leading cause of death in the United States (Hoyert, Kochanck, & Murphy, 1999). Suicidal ideation is more frequently found in individuals with major depression, generalized anxiety disorder, alcohol use disorders, and pulmonary disease (Goodwin, Kronke, Hoven, & Spitzer, 2003). Those with suicidal ideation are more commonly male, younger, divorced, separated, or never married, and with less education.

Moreover, there is a correlation between physical illness and suicidal ideation. Those who are diagnosed with pulmonary disease, liver disease, or diabetes are more likely to have major depression. Patients who experience the comorbidity of pulmonary disease and depression are almost 10 times more likely to experience suicidal ideation. Additionally, major depression is more common among women who are separated or divorced (Goodwin et al., 2003).

Individuals with schizophrenia are at significant risk for suicide, with 10% to 15% of individuals with schizophrenia dying a premature death in this manner (Amador et al., 1996; Caldwell & Gottesman, 1992). Typically, this individual is young,

unmarried, and has never lived independently. Risk factors include onset of schizophrenia before the age of 30, development of social adjustment difficulties at an early age, exhibits social impairments, and experiences work difficulties. Symptoms of depression are generally present, and include a sense of hopelessness. The risk for suicide appears to be greater for individuals who have schizophrenia than for those who have been diagnosed with a mood disorder (Caldwell & Gottesman, 1992)

The majority of individuals who died in this manner, particularly older adults, made contact with their primary care providers within a month to a year beforehand (Luoma, Martin, & Pearson, 2002). Approximately 45% of individuals in all age groups contacted their primary care physician one month before committing suicide. During the period within one year of suicide, approximately 77% contacted a primary care provider. An average of 58% of adults age 55 and older contacted their primary care physician one month before suicide, while 77% had contact within the year beforehand (Luoma et al., 2002). Furthermore, elderly men have the highest rate of suicide in the United States (Hoyert et al., 1999), while women have a higher rate of contact with a primary care physician prior to suicide (Luoma et al., 2002).

### *The Burden of Mental Disorders*

In the United States, mental disorders account for 15% of the overall burden of disease, and create more of a burden than is associated with all forms of cancer (Murray & Lopez, 1996). The World Health Organization (2002) ranks depressive disorders as the fourth most burdensome disease in the world, and anticipates that by 2020 it will be

ranked second. Only coronary heart disease will outrank depression as a cause of disability and premature death. Severe social or work-related impairment was reported by 59.3% of those diagnosed with 12-month Major Depressive Disorder. The comorbidity of chronic medical illness and depression increases medical costs by approximately 50% (Katon, 2003).

Individuals who have anxiety disorders are high utilizers of health care services, especially those who are undiagnosed (Fifer et al., 1994). Furthermore, anxiety disorders result in substantial direct health care costs, including hospital emergency visits, hospitalizations, diagnostic and laboratory tests, and pharmacy costs, along with indirect economic costs due to lost or reduced work productivity (Dupont et al., 1996; Greenberg, Sisitsky, & Kessler, 1999).

Mental conditions rarely cause premature death; however, because they are usually chronic, severe, and enduring, they directly impact and significantly increase the cost of health care (World Health Organization, 2000). In Ontario, Canada, between the years 1992 and 1998, mental health services escalated by 13%, while health care services expanded by only 4%. During that time period, mental health services were utilized by 28% of the patients and resulted in an 18% cost increase for the delivery of those services. The total health care budget increased by 11% because of this increased use of mental health services (Lin & Goering, 1999). Moreover, Lin and Goering (1999) further reported that there was a 47% increase in the number of patients with medical problems rather than psychiatric conditions who utilized psychotherapy services. This translated to a 60% increase for the cost of this type of treatment.

In addition to impacting the cost of health care, mental disorders also create a financial strain on the business world. In the United States, it is estimated that the loss of productivity that results from absenteeism, inferior job performance, increased accidents, legal proceedings, and financial settlements that are related to mental health disorders is \$80 billion a year (Arboleda-Florez & Saraceno, 2001). It has been reported that 15% to 30% of sick-day absences are attributed to mental disorders, and is comparable to most chronic medical conditions (Broadhead, Blazer, George, & Tse, 1990; Wells et al., 1989). Furthermore, mental disorders also indirectly affect and place a strain on the budgets of social service, welfare, and legal systems.

#### *The Impact of Mental Disorders on Quality of Life*

The presence of a mental disorder can substantially impair an individual's health-related quality of life (HRQL) (Spitzer et al., 1995). An individual's quality of life is affected by physical well being, social and role functioning, freedom from bodily pain, mental health, and the individual's perception of general health. Common mental disorders, such as mood, anxiety, somatoform (unexplained somatic complaints), and eating disorders, are associated with greater HRQL impairment than common medical disorders such as cardiac disease, arthritis, hypertension, and diabetes in most areas except physical functioning. Mood disorders create impairments in physical functioning that are comparable to those observed in patients who have cardiac disease or arthritis (Spitzer et al., 1995).

Mood disorders, in particular, produce considerably greater impairment in all areas of HRQL than do common medical disorders. Furthermore, even patients who are diagnosed with minor depression and anxiety disorder, not otherwise specified, also display considerable HRQL impairment (Spitzer et al., 1995). Individuals who exhibit depressive symptoms or have been diagnosed with a current depressive disorder, experience poorer physical, social, and role functioning, and more bodily pain than individuals who do not exhibit a chronic psychological condition.

This decrease in functioning is comparable with or worse than that found in individuals who have hypertension, diabetes, or arthritis (Wells et al., 1989). Selected areas of HRQL are affected by different clusters of mental disorders. Mood disorders have an impact on all components of HRQL, while anxiety disorders are primarily associated with mental health and social functioning. Somatoform disorders most prominently produce impairments in role functioning, bodily pain, and general health perception. Eating disorders impact social functioning and bodily pain. In addition, those who experience impairments in health-related quality of life display increase utilization of health care services (Schor, Lerner, & Malspeis, 1995). Effective treatment of mental disorders frequently results in improvement in health-related quality of life (Mintz, Mintz, Arruda, & Hwang, 1992; Von Korff, Ormel, Katon, & Lin, 1992).

### *Relationship between Gender and Mental Disorders*

Mood, anxiety, somatoform disorders, and psychiatric co-morbidity are all found to be significantly more prevalent in women than in men (Spitzer et al., 1995).

Adolescent and adult females are twice as likely as adolescent and adult males to develop Major Depressive Disorder (DSM-IV-TR). Furthermore, women who live in rural areas experience more depression and anxiety than their urban counterparts. It is estimated that 41% of women who live in rural areas experience depression or anxiety, whereas the rate for women in urban areas is only 13% to 20% (Mulder et al., 2001).

Women also have a tendency to present with more of a “psychologising” attributional style and are, therefore, more likely to receive a psychological diagnosis. Men tend to present with somatic symptoms and to utilize a normalizing attributional style (Kessler, Lloyd, Lewis, & Gray, 1999). For the first psychotic episode of schizophrenia, men have an earlier age of onset, generally have poorer premorbid functioning than women, and have a poorer prognosis than women. Likewise, the rate of schizophrenia is higher for men than women (DSM-IV-TR).

#### *The Role of Primary Care Physicians in Treating Mental Disorders*

The family physician plays a key role in the recognition, management, and prevention of mental disorders. It is the general practitioner, rather than the specialist, who is not only called upon to assess and care for the physical health of individuals, but is also the one who diagnoses and treats a great majority of mental disorders. Several researchers have found that mental health care is predominantly practiced by the primary care physician (Slawson, Shaughnessy, & Bennett, 1994; Von Korff & Myers, 1987). It has been estimated that as many as 90% of individuals who have symptoms of

depression and anxiety are treated within the primary care area (Shepherd, Cooper, Brown, & Kalton, 1996).

A survey of primary care physicians conducted by Spitzer et al. (1995) revealed that 39% of the patients who were evaluated in the primary care setting were diagnosed with one or more mental disorders. Mood disorders, such as major depression and dysthymia, were detected in 26% of those evaluated, while 18% received a diagnosis of an anxiety disorder (generalized anxiety, panic disorder, or symptoms of anxiety). Comorbidity appeared to be common in those diagnosed with a mental disorder, with both mood and anxiety disorders being identified in 56% of those patients.

It has been estimated that up to 33% of patients who present with physical symptoms actually have a mood or anxiety disorder (Roy-Byrne & Wagner, 2004). Nevertheless, general practitioners often do not detect or diagnose mental disorders in patients (Simon & Von Korff, 1996), with as many as 50% of depression and anxiety cases undetected (Goldberg & Huxley, 1992). Depression and other mental disorders in the elderly are also underdiagnosed. Many physicians fail to recognize and diagnose late-life mood disorders (Charney et al., 2003), even though the primary care setting is the one predominantly accessed by the geriatric population (Unutzer et al., 1999).

#### *Failure to Diagnose Mental Disorders in Primary Care*

Mental health problems and existing mental disorders often go undetected and unrecognized in the primary care setting for several reasons. The primary care physician may not be able to accurately assess and diagnose mental illness because of lack of



training in mental health issues, time constraints, lack of assessment tools, and the fact that patients often present with somatic complaints. The attributional style presented by the patient also affects the rate of recognition. Other influences may be the beliefs and attitudes of the public and professional sectors, along with the norms, beliefs, and behaviors of various cultures and ethnic groups.

Physician knowledge, beliefs, and attitude have an effect upon the recognition, management, and prevention of mental disorders, and may be clouded by gender bias. Primary care physicians report that, with regard to mental health issues, they are more aware of depression in women than in men (Potts, Burnam, & Wells, 1991).

Furthermore, they are more likely to provide treatment for women's mental health problems, or to refer female patients to mental health providers than they are for men (Borowsky et al., 2000). Medical practitioners are also less likely to diagnose depression in men, even when they present with the same symptomology as women (Potts et al., 1991).

Physician preference for counseling patients also affects the rate of detection. Meredith, Wells, Kaplan, and Mazel (1996) found that physicians who feel comfortable with, and enjoy counseling, patients are more likely to detect depression in their patients. In addition, medical practitioners are more likely to detect the presence of a mental disorder in a patient who experiences the co-morbidity of a medical illness, such as diabetes or hypertension. The fact that the patient who experiences co-morbidity is seen more often by the physician may be an influencing factor. This patient may also feel more comfortable in discussing personal symptoms of psychological distress with

the primary care physician due to the greater frequency of patient-physician contacts (Borowsky et al., 2000).

There are several obstacles that prevent primary care physicians from appropriately recognizing and diagnosing late-life depression. Many physicians along with individuals in the public sector continue to believe that depression is synonymous with aging. Physicians may not detect depression in the elderly because of insufficient training, similarity of depression characteristics to those of dementia, or the presence of a medical condition that overrides the symptoms of depression. Patients often report vague symptoms or symptoms that overlap and mimic those of a diagnosed medical condition (Mulsant & Ganguli, 1999).

Health care providers frequently disregard symptoms of dysthymia, such as lack of energy, loss of interest in activities that were once enjoyable, boredom, blunted affect, along with various somatic complaints. These symptoms are often viewed as a normal part of aging, and are commonly ignored in nursing homes, especially when medical illnesses are present (Schulberg et al., 1998). The symptoms of dysthymic disorder are chronic, continue for several years, and create difficulty in various areas of functioning. Individuals may experience periods of time when symptoms are not present, but this period of time is generally no longer than two months (DSM-IV-TR, American Psychiatric Association, 2000). It is recommended that late-life mood disorders be investigated in patients who exhibit high usage of health-care services, a sense of hopelessness, psychomotor retardation, anhedonia, and unexplained weight loss or fatigue (Gallo & Rabins, 1999).

Additionally, there is a correlation between the severity of symptoms of depression and rate of detection. Primary care physicians are more likely to recognize and treat symptoms of depression in patients who exhibit the more serious symptoms of major depression, rather than those who present with milder symptoms (Borowsky et al., 2000). However, an assessment of pediatricians' knowledge and views regarding postpartum depression indicated that pediatricians have limited understanding of this type of depression (Wiley, Burke, Gill, & Law, 2004). Furthermore, 50% of the pediatricians received little or no education about postpartum depression, 51% underestimated its prevalence, 80% estimated the frequency in their own practices to be less than the published number, and 69% did not feel confident in their ability to recognize postpartum depression (Wiley et al., 2004).

#### *Patient Attribution Style and Rate of Diagnosis*

The rates at which depression and anxiety are detected by primary care physicians are additionally influenced by the patients' beliefs about their somatic symptoms and the way in which these individuals choose to present these symptoms to their doctors (Kessler et al., 1999). A patient who has a normalizing attribution style tends to minimize symptoms, ascribes a common explanation for the symptoms, and is less likely to be diagnosed with a mental disorder. Those who attribute symptoms of fatigue to too much or too little exercise minimize the importance of the symptoms and are less likely to be diagnosed with a mental disorder. Individuals who present with a "psychologizing" attribution style, and perhaps attribute their symptoms of fatigue to

emotional and psychological factors, are more likely to receive a psychological diagnosis. Kessler et al. (1999) found that when patients presented with a psychologizing style of symptom attribution, approximately 62% were diagnosed with depression or anxiety. On the other hand, when patients exhibited a predominantly normalizing style of symptom attribution, approximately 85% went undetected for depression or anxiety. Therefore, only 15% of those patients who viewed their symptoms as “normal,” and attribute them to a common occurrence, received a diagnosis of depression or anxiety.

### *Mental Health Stigma*

Help-seeking may also be hindered because of a stigma that many people attach to mental disorders. Many are reluctant to seek treatment for depression because they fear it will have a negative impact on their employment situation (Regier et al., 1988). In addition to employment concerns, stigma is also related to health insurance and friendships. Roeloffs et al. (2003) assessed depression-related stigma and found that 67% of patients diagnosed with depression expected this diagnosis to have a negative effect on their employment, 59% feared that diagnosed depression would impact their health insurance, and 24% perceived that friendships would be affected. Additionally, there was a greater stigma associated with depression than for hypertension or diabetes. This study also found that women reported more employment-related stigma, while young men reported less. Ethnicity was found to be related to stigma regarding health insurance.

A study conducted by Pill, Prior, and Wood (2001) found that individuals failed to consult a physician because they were uncertain as to whether or not their symptoms were an actual illness. Another reason cited was that even if they, themselves, recognized the symptoms as a legitimate illness, they feared that the physician would not offer appropriate treatment. Others often “normalized” the symptoms, or viewed mental and emotional distress as “trivial” and simply part of life. Those who experienced the symptoms of a common mental disorder, such as depression or anxiety, felt that the physician did not have the time to devote to their problems because they were not experiencing somatic complaints. These individuals also felt that the physician would only prescribe medication, such as an antidepressant, and not seek answers to the “real” problem. In addition, others expressed great skepticism and negativism toward the use of medication, viewing antidepressants as potentially harmful or even addictive (Pill et al., 2001).

A public opinion survey conducted by Angermeyer, Matschinger, & Riedel-Heller (1999) found that individuals in the public sector would contact a family physician only if help to alleviate symptoms of depression could not be achieved through contact with family and friends. Additionally, 86% of African Caribbean and 90% of white European individuals who had consulted their general practitioner were reluctant to seek help for psychological problems, citing that “the doctors would not be helpful for such problems” (Shaw, Creed, Tomenson, Riste & Cruickshank, 1999).

*The Role of Culture and Ethnicity in Presentation of Mental Disorder Symptoms*

Culture can influence the way an individual experiences and expresses depression and anxiety. Mediterranean and Latin American cultures may complain of headaches or nerves. Asians may make reference to somatic terms such as tiredness, weakness, or a feeling of imbalance. Middle Eastern and American Indians may refer to being heartbroken, while West Africans may state they are brain tired or experiencing brain fog (DSM-IV-TR). Culture can also influence the way in which an individual with schizophrenia is viewed. Mexican-American families utilize the term *nervios* when referring to the condition of schizophrenia in a relative. This may serve to reduce the stigma that is associated with illness while encouraging a sense of unification and support (Jenkins, 1988). Korean Americans generally score very high on the Center for Epidemiologic Studies Depression scale (CES-D) indicating an elevated level of depression. However, this assessment may not be accurate, and the level of depression may not be as elevated as indicated (Okazaki, 2000).

Disparities concerning help-seeking and detection of mental disorders have been observed in the primary care sector. Borowsky et al. (2000) discovered that there is a low rate of detection of mental disorders in African-Americans and Hispanics. Olfson et al. (2002) found that, in the general medical setting, African Americans and Latinos were less likely than Caucasian patients to be diagnosed with depression. Current findings from a study conducted by Miranda and Cooper (2004) indicate that Latinos and African Americans are less likely than their Caucasian counterparts to seek care for

depression, and are also less likely than to take medication for mental disorders, such as depression. General practitioners were also found to less frequently refer African-Caribbean patients than Caucasian patients who had schizophrenia to a mental health professional (Burnett et al., 1999).

### *Mental Health Training within Medical Schools*

Medical education programs that lead to the M.D. degree are required to meet specific standards in curriculum and experience. A segment on mental health is generally included, however, this is often brief and does not include the depth of information necessary to appropriately diagnose and properly treat patients in the primary care setting. It is often necessary for general practitioners to obtain continuing education in order to improve their psychiatric knowledge.

Medical schools in the United States and Canada that are accredited by the Liaison Committee on Medical Education (LCME, 2003) are obligated to comply with a variety of “must” and “should” areas of instruction and experience. These programs must consist of at least 130 weeks of instruction, and must include subjects in the areas of basic science, organ systems, behavior, socioeconomics, and primary care clinical experience. Curriculum must also provide instruction in physician communication skills, recognition and treatment of violence and abuse, cultural diversity, ethics, and must also address gender and cultural biases. Clinical experience in primary care should include family medicine, internal medicine, pediatrics, obstetrics and gynecology, psychiatry, and surgery (LCME, 2003).

Medical students in Canada who participated in a two-year residency program that included mental health training reported a greater degree of confidence in the ability to attend to the mental health needs of their patients (Bethune, Worrall, Freake, & Church, 1999). A study conducted in Australia found that general practitioners who received mental health education and training expressed more positive attitudes toward depression in patients along with the ability to provide appropriate treatment. They were also more likely to use non-pharmacological treatments for depression and expressed more confidence in the ability to do so (Richards, Ryan, McCabe, Groom, & Hickie, 2004). Conversely, Sahhar and O'Connor (2004) found that 66% of the general practitioners who were surveyed indicated that they received inadequate training in medical school with regard to counseling skills. Furthermore, educational inadequacies existed in psychopharmacology, along with training in the diagnosis and treatment of anxiety, depression, substance abuse, and personality disorders. Moreover, these physicians stated that the only mental illness they received information on was psychosis.

### *Purpose of the Study*

The purpose of this study was two-fold. The first objective was to determine if the vignettes that were used in this study would reliably depict specific mental disorders. The second facet explored first- and third-year medical students' mental health literacy, which encompassed the knowledge and personal beliefs about mental disorders that aid in their recognition, management, or prevention. It was surmised that



this study could demonstrate educational implications and possibly serve as a reference for educational direction and strategies in medical schools with regard to improving the mental health literacy of future general practitioners along with those who intend to further specialize.

*Hypotheses:*

1. The Kuder-Richardson Formula 20 inter-rater reliability of the diagnosis obtained by mental health experts reviewing the vignettes used in this study would be  $r \geq .75$ .
2. Third year medical students would have a significantly greater number of accurate diagnoses of mental disorders as compared to first-year medical students.
3. The male-gendered vignettes would be significantly underdiagnosed by first verses third-year medical students.
4. The female-gendered vignette depicting stress would be significantly overdiagnosed as a mental disorder by first verses third-year medical students.
5. Third-year medical students would report significantly less mental health stigma with regard to mental disorders as compared to first-year medical students.

## Chapter 2

### Method

#### *Participants*

Prior to assessing the mental health literacy of first- and third-year medical students, it was necessary to determine the reliability of the vignettes that were going to be used in this phase of the study. Participants for determining the reliability of the vignettes were from Philadelphia College of Osteopathic Medicine, Philadelphia; East Stroudsburg University, East Stroudsburg, PA; and Newton Memorial Hospital, Newton, NJ. Individuals approached included board certified psychiatrists, licensed and non-licensed psychologists, licensed professional counselors, licensed and non-licensed social workers, and students pursuing a doctorate degree in clinical psychology. Participation was entirely voluntary and completely anonymous. A total of 68 inter-rater reliability packets were distributed and 54 completed packets were returned. This represents a 79% return rate.

Survey participants were a convenience sample of 364 medical students (172 first-year and 192 third-year) at Philadelphia College of Osteopathic Medicine (PCOM), Philadelphia. The researcher contacted various instructors in the Medical Department at PCOM and was granted permission to assess students during several classes. As with the inter-rater reliability of the vignettes, this portion of the study was completely voluntary and anonymous. A total of 401 surveys were distributed to first- and third-year medical students, and a total of 374 surveys were returned. Of these, five were from fourth-year students, four were incomplete, and one was returned blank.

Therefore, of the 401 surveys that were distributed, 364 were returned completed. This represented a 91% rate of return.

### *Study Design*

A between-subjects survey research approach was used to measure the effects of the independent variable of students' current enrollment year in medical school on the dependent variable of mental health literacy. Mental health literacy as defined by Dr. Jorm et al. (1997a) is "the knowledge and beliefs about mental disorders that aid in their recognition, management, or prevention." Several variables that comprise mental health literacy in this study are personal opinions regarding a diagnosis that would best describe the subject portrayed in a given vignette, a recommendation of how that particular subject could best be helped, rating the helpfulness of various treatments or strategies, and beliefs regarding discrimination issues along with those involving the future of the individual depicted in the vignette.

### *Instruments Used in this Study*

*Inter-rater Reliability of the Vignettes.* For determining the reliability of the vignettes, materials consisted of a packet containing a demographics page and eight vignettes that provided clinical information describing stress, and the DSM-IV-TR diagnoses of generalized anxiety disorder, schizophrenia, and major depressive disorder (see Appendix A). Each of these four diagnoses was presented in both male and female

genders. The name “John” represented the male individual in each of the four vignettes, while the name “Susan” characterized the female individual.

The demographics page requested information regarding the highest degree obtained, current credential, and years of experience practicing in the mental health field with that current credential. Each of the vignette pages also contained a list of 12 choices describing what might be wrong with “John” or “Susan.” These were: adjustment disorder, attention deficit/hyperactivity disorder, cancer, generalized anxiety disorder, heart attack, major depression, panic disorder, psychological/mental/emotional problems, schizophrenia, split personality, experiencing stress, and there is no problem. The depression and schizophrenia vignettes were used in former studies of mental health literacy, and were approved for use in this study by Dr. Jorm and his colleagues (1997a). Both vignettes were slightly altered for this study and were also approved by Dr. Jorm. One vignette depicting generalized anxiety disorder, and another describing stress were created for use in this study. Participants were required to read each vignette and choose a diagnosis from the given menu.

*Mental Health Literacy Survey.* Materials for assessing the mental health literacy of medical students consisted of a four-page packet that was composed of one vignette and a 14-item survey. The first page of the survey contained eight items requesting demographic information, the second page contained one vignette, and the remaining two pages consisted of items regarding knowledge, personal opinions, and beliefs about mental disorders (see Appendix B). The vignettes provided clinical information illustrating stress, and described the mental disorders of major depression,

generalize anxiety, and schizophrenia. The name “John” represented the male subject in each of the four vignettes, while the name “Susan” characterized the female subject. The vignettes were similar to those used by Jorm (2000), and Jorm, et al. (1997a; 1997b; 1997c; 1997d).

The demographic page of the questionnaire requested information including current enrollment year at medical school, age group, gender, undergraduate major, undergraduate minor, a “yes-no” item regarding graduate school attendance, and graduate school major. The last item was open-ended and inquired about an elective rotation. Students who completed elective rotations were requested to write the titles of classes that were chosen. The second page consisted of one of the eight vignettes that were utilized in the inter-rater reliability phase of this study. The remaining items on the survey pertained to knowledge and personal beliefs about mental disorders. The survey items were similar to those used in former survey studies conducted by Jorm (2000), and Jorm et al. (1997a; 1997b; 1997c; 1997d).

The first survey item after the vignette required the participant to circle one choice from a menu of disorders that would best describe what is wrong with John or Susan depicted in the vignette. The item that followed requested the participant to make one choice from a menu regarding how John or Susan could best be helped. The remaining items assessed knowledge and beliefs about the helpfulness of resources and treatments, prognosis if the individual described in the vignette did not receive professional help, and personal beliefs that are associated with stigma and discrimination.

The item regarding helpfulness of resources consisted of 15 strategies, professionals, and treatments that individuals might access or utilize to aid in alleviating the symptoms of a mental disorder. The seven-part item that followed expanded on this concept and included several options in medications. Participants responded by circling their answers on a Likert-type scale coded 0 for “Don’t Know,” 1 for “Very Harmful,” 2 for “Harmful,” 3 for “Neither,” 4 for “Helpful,” and 5 for “Very Helpful.” The prognosis item elicited a response concerning the individual depicted in the vignette and the likely result that would occur if the he or she did not receive professional help. Choices included “Don’t know,” “His problem would get worse,” “No improvement in his problem,” “Partial recovery,” “Full recovery, but problems would probably recur,” and “Full recovery with no relapse.” For the female vignettes, the word “her” was substituted for the word “his,” and “she” for “he.” The final item entailed personal beliefs regarding mental disorders and solicited responses to statements, such as, “A problem like John’s is a sign of personal weakness,” and “If I had a problem like Susan’s I would not tell anyone.” Participants again responded on a Likert-type scale composed of the following descriptors: “strongly agree,” “disagree,” “neither,” “agree,” and “strongly agree.” This particular item assessed medical students’ mental health stigma.

### *Procedure*

*Vignette Inter-rater Reliability.* Early in February, 2005, potential participants for vignette reliability were approached at the three sites, primarily through telephone,

asked to participate, and informed that they would have the opportunity, at a future date, to review the results. Participants at Newton Memorial Hospital, East Stroudsburg University, and those from the Department of Psychology at PCOM, were first contacted by telephone by the researcher. A script was read to each prospective participant concerning the purpose of the study, dissemination of the material, time needed to complete the packet of material, and instructions pertaining to completed packets. Potential participants were informed that involvement in the study was completely voluntary; that no identifying information, such as names, was required; and that all information would be confidential. If the individual was unavailable, a message was left on the answering machine, but did not require a telephone response.

Vignette pages were systematically randomized and placed in packets. Systematic randomization allowed for eight different packets to be created, with the first one beginning with Vignette 1 and continuing in order through Vignette 8. The second packet began with Vignette 2, continued with 3, 4, 5, 6, 7, 8, and ended in Vignette 1. Subsequently, the next packet began with Vignette 3, ended with Vignette 2, and so on.

Packets consisting of a demographic page, and eight systematically randomized vignettes were randomly placed into 9" x 12" envelopes. Each envelope also contained a cover letter reiterating the telephone message stating the purpose of the study, the fact that it would take about 10 minutes to complete, verifying the voluntary and anonymous aspects of the study, directions for returning the completed packet, contact names and phone numbers. The 9" x 12" envelopes containing inter-rater reliability packets and cover letters were placed in prospective participants' mailboxes at Newton Memorial

Hospital, Philadelphia College of Osteopathic Medicine (PCOM), and East Stroudsburg University (ESU). Participants were instructed to place the completed packet back into the envelope and deposit it in a specific mailbox located in the staff mailbox areas at Newton Memorial Hospital, PCOM, and ESU. Students enrolled in the Doctor of Psychology program at PCOM were approached during a class, asked to participate in this study, and requested to deposit the completed surveys into a specific location in the classroom. Surveys were collected from February, 2005 through March, 2005.

*Mental Health Literacy Medical Student Survey.* First-year students were approached during two classes at PCOM and asked to participate in a survey that assesses mental health literacy. The first survey administration ensued on March 8, 2005, while the second was instituted on April 19, 2005. A script was read to the students stating that the purpose of the study was to identify strengths and weaknesses in medical students' knowledge and beliefs regarding mental disorders, that the study should take approximately 7 to 10 minutes to complete, that participation was completely voluntary, no penalty would be incurred for refusing to participate, that all information would be strictly confidential, and that no names or other identifying information was required. Students were also advised that if any of the items promoted uncomfortable feelings that they could discontinue at any time. Moreover, students were informed that this study was considered important and worthy of their time. Additionally, students were requested to place the completed packets in boxes marked "Surveys" located at the exit doors. A sample of the script that was read to the medical students can be found in Appendix C.



Survey packets that were systematically randomized by vignette were distributed among the students. A cover letter was included with each packet reinforcing the oral script and also included contact numbers for the researcher and dissertation chair. Students were required to complete a demographic page, read a vignette, diagnose the problem as health or mentally related, choose a mental diagnosis if appropriate, and answer a series of items regarding their beliefs and knowledge about the disorder. Each student received only one of eight vignettes, four of which were male and four female. The four female vignettes were exactly the same as the male vignettes.

Third-year medical students at PCOM were approached during classes that ranged from 10 to 22 students. Survey distribution and collection began March 9, 2005 and was completed on May 6, 2005. The process was similar to that conducted during the first-year survey administration. A script was read to the students asking them to participate in a study, the purpose of which would be to identify strengths and weaknesses in medical students' knowledge and beliefs about mental disorders. They were notified that the survey would take approximately 10 minutes to complete, and informed about the voluntary and confidentiality aspects of the study, along with the fact that they could discontinue at any time without penalty. Additionally, students were advised that the study was considered important and worthy of their time, and included a request to place completed packets in a box clearly marked "Surveys" near the classroom entrance.

Packets consisting of a demographic page, one vignette, a two-page survey, and a copy of the script that listed the names and contact numbers of the researcher and dissertation chair (Appendix C) were distributed and collected immediately upon

completion. All third-year students were assessed after completing the mandatory psychiatric rotation. Some groups completed this rotation during fall, 2005 while others had finalized their rotations just prior to the survey assessment. The specific dates of data collection were March 9, March 14, April 8, April 11, and May 6, 2005.

*Inter-rater Reliability and Survey Data.* In order to ensure that individuals could not be identified, inter-rater reliability packets were accumulated, numbered from 1 through 54, and data codes were then entered in the Statistical Program for the Social Sciences (SPSS, Version 11.5) for analyses. The first- and third-year surveys were collected at one site in quantities that ensured greater anonymity; therefore, identification numbers were entered on each packet shortly after survey administration. Quantities of each of the eight vignettes were also noted to more nearly approximate the minimum number established for appropriate statistical analysis. Greater amounts of those vignette numbers that were lacking were then distributed during the proceeding survey assessments.

#### *Coding of the Data*

The data entry and analysis process was facilitated by using the precoding that was incorporated into the inter-rater vignettes and the student survey. The diagnostic category list that accompanied each of the inter-rater vignettes was prenumbered from 1 to 12 and standardized throughout all the vignettes (Appendix A). The same coding system for vignette diagnosis was included in the student survey. In addition, a similar

one was created for responding to “how the individual in the vignette could best be helped” and was integrated into the survey. The “Likert-type” scale numbers served as coding for the participant responses (Appendix B). The numerical values that were preassigned and printed on the demographic page of the student survey were used in the data entry process for school year, age group, gender, undergraduate major, undergraduate minor, and graduate school major.

Additional coding was necessary on both instruments in order to enter the data on the Statistical Program for Social Sciences (SPSS, Version 11.5). Numerical codes were allocated to the elective rotation list because this particular item was open-ended. Students were required to respond in writing by entering the elective rotation that they completed, rather than selecting from a menu of electives. Forty-one elective rotations were noted, compiled into a list, and then coded (Table 1).

Table 1: *Student Survey Coding for Entering Elective Rotations Data*

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Allergy, Asthma, Immunology	= 1
Anesthesiology	= 2
Cardiology	= 3
Dermatology	= 4
Detox	= 5
Emergency Medicine	= 6
Ear, Nose, & Throat	= 7
Family Medicine	= 8
General Surgery	= 9
Geriatrics	= 10
Internal Medicine	= 11
Nephrology	= 12
Neurosurgery, Neurology	= 13
Orthopedics	= 14
Pathology	= 15
Pediatrics	= 16
Plastic Surgery	= 17
Physical Medicine, Rehabilitation	= 18
Radiology	= 19
Sports Medicine	= 20
Third World Medicine	= 21
Urology	= 22

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Gerontology	= 23
Pulmonary Med	= 24
Biomedical research	= 25
Oncology	= 26
Ophthalmology	= 27
Endocrinology	= 28
Infectious Disease	= 29
Ambulatory Surgery	= 30
Ob/Gyn, Maternal Fetal Medicine	= 31
Psychiatry	= 32
Gastroenterology	= 33
Breast Cancer Surgery	= 34
Ortho Surgery	= 35
Pain Management	= 36
Neonatal Intensive Care Unit	= 37
Sleep Medicine	= 38
Hematology	= 39
Pediatric Cardiology	= 40
Christian Medical Mission Trip	= 41

The demographics page of the inter-rater reliability packet also required coding. Numerical values were assigned to “the highest degree obtained,” “descriptor of the degree obtained” (e.g. licensed psychologist, non-licensed psychologist), “years of experience practicing with current credential,” and “current year of enrollment as a Psy.D. student,” if applicable (Table 2).

Table 2: *Coding for Entering Inter-rater Reliability Data*

## Highest degree obtained:

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Masters Degree in Counseling/Psychology/LPC	= 1
Masters Degree in Social Work/ LCSW	= 2
Ed.D/Psy.D/Ph.D/ Licensed and Non-licensed	= 3
MD/DO/ Psychiatrist/ Board Certified Psychiatrist	= 4

## Diagnoses Codes for Vignettes 1 through 8:

Adjustment Disorder	= 1
Attention Deficit/ Hyperactivity Disorder	= 2
Cancer	= 3
Generalized Anxiety Disorder	= 4
Heart Attack	= 5
Major Depression	= 6
Panic disorder	= 7
Psychological/mental/emotional problems	= 8
Schizophrenia	= 9
Split personality	= 10
Experiencing Stress	= 11
There is no problem	= 12

*Statistical Analysis Conducted*

A database was created on the Statistical Program for the Social Sciences (SPSS, Version 11.5) in which all data were entered. Numerical codes that were incorporated into the inter-rater reliability packet and the student survey packet, along with those that were assigned were recorded. Data that were missing on the student survey were noted by empty cells on the database spreadsheet.

Calculations were determined for inter-rater reliability, agreements and differences, sample frequencies, percentages, and cumulative percentages. Independent T-Tests were conducted to determine if differences existed in the mean percentages correct on the mental health literacy vignettes between and among first- and third-year medical students. Statistics were computed to compare the means of 35 responses of first- and third-year medical students for each of the eight vignettes. The number of valid responses, means, and standard deviations were calculated on each of the 35 variables for each of the eight vignettes.

For hypothesis 1, regarding the inter-rater reliability of the vignettes describing symptoms of “generalized anxiety disorder,” “major depression,” “schizophrenia,” and “stress,” Kuder-Richardson Formula 20 was used to determine the inter-rater agreement for each vignette and for the eight vignettes overall.

For hypothesis 2, tallies and percentages for all diagnoses were calculated. Correct diagnoses were then recoded as “1,” incorrect diagnoses as “0,” and an independent samples *T*-test was used to determine if third-year medical students had a significantly greater number of accurate diagnoses than first-year medical students.



For hypothesis 3, an independent samples *T*-test was used to determine if the male vignettes describing a mental disorder were significantly underdiagnosed by first-verses third-year medical students. Underdiagnosed was defined as the male-gendered vignettes describing mental disorders incorrectly diagnosed as “stress” or “no problem.” Prior to conducting the *T*-test, all incorrect diagnoses of “stress” or “no problem” were recoded as “1.” All other diagnoses were recoded as “2.”

For hypothesis 4, an independent samples *T*-test was again used to determine if the female-gendered vignette describing “stress” was significantly overdiagnosed as a mental disorder by first-verses third-year medical students. Overdiagnosed was defined as the female-gendered vignette describing symptoms of “stress” incorrectly diagnosed as a DSM-IV-TR disorder. Prior to conducting the *T*-test, all correct diagnoses of “stress” and “no problem” were recoded as “1,” and all remaining diagnoses were recoded as “2.”

For hypothesis 5, a Multi-Analysis of Variance (MANOVA) was the statistical tool used to assess group differences across seven dependent variables. These variables evaluated participant stigma, and measured attitudes toward individuals with mental disorders. The last item in these seven dependent variables assessed beliefs about discrimination in relationship to the individual depicted in the vignette.

## Chapter 3

### Results

The primary purpose of this study was to assess the mental health literacy of first- and third-year medical students. Prior to initiating this phase of the study, it was first necessary to determine the reliability of the vignettes that were used. Two of the vignettes were similar to those used in former studies conducted in Australia, (Jorm et al., 1997a) and Singapore (Parker et al., 2000). The survey was similar to the one used by Jorm et al. (1997a, 1997b, 1997c, 1997d) to assess the mental health literacy of the public and various health professionals. Results of this study are presented in this chapter and begin with an analysis of the demographic characteristics of the individuals who participated in the inter-rater reliability phase of the study. This is followed by a statistical analysis to evaluate hypothesis 1.

#### *Inter-rater Reliability Participant Demographics*

Participants for the inter-rater reliability phase of this study consisted of a combined total of 54 board certified psychiatrists, licensed and non-licensed psychologists, licensed professional counselors, licensed and non-licensed social workers, and students pursuing a doctorate in clinical psychology. Participants indicated that 40.7% of them had obtained a Masters Degree in Counseling or Psychology, or were Licensed Professional Counselors. An additional 11% indicated that they had obtained a Masters Degree in Social Work, and were either licensed or nonlicensed.

Another 17% specified that they were licensed or non-licensed psychologists, with degrees that consisted of Ed.D, Psy.D, or Ph.D. Of those who contributed to this portion of the study, 4% were psychiatrists and stipulated degrees of M.D., D.O., and Board Certified. The number of years practicing with the current credential ranged from one to thirty years.

#### *Data Analysis of Inter-rater Reliability*

*Hypothesis 1:* Kuder Richardson Formula 20 was the statistical tool used to determine inter-rater agreement on each vignette and for the eight vignettes overall. Overall, an inter-rater reliability was established and significance was obtained,  $r = .95$ . Vignettes 2 and 6,  $r = 1.0$ , and 3 and 7,  $r = 1.0$ , had perfect correlations. Significance was obtained for Vignettes 1 and 5,  $r = .90$ , and also for Vignettes 4 and 8,  $r = .87$ . Percentages correct for each of the vignettes was calculated and ranged from .63 to 1.0. Individual results are: Vignette 1 = 89%, Vignette 2 = 100%, Vignette 3 = 100%, Vignette 4 = 65%, Vignette 5 = 89%, Vignette 6 = 100%, Vignette 7 = 100%, Vignette 8 = 63%. Inter-rater reliability was high due to the agreement of diagnosis by the raters. However, the inter-rater reliability may also be high in that raters agreed on incorrect diagnoses for Vignette 4 and Vignette 8.

*Mental Health Literacy Medical Student Survey Results*

The second phase of this study explored the mental health literacy of first- and third-year medical students, and assessed knowledge and beliefs about mental disorders. Hypothesis 2 stated that third-year medical students would have a significantly greater number of accurate diagnoses of mental disorders as compared to first-year medical students. Hypothesis 3 stipulated that the male-gendered vignettes would be underdiagnosed, whereas hypothesis 4 indicated that the female-gendered vignette depicting “stress” would be overdiagnosed by first- versus third-year medical students. Hypothesis 5 specified that third-year medical students would report less mental health stigma than first-year medical students.

Demographic characteristics of the medical students who participated in the survey phase of this study are presented first. Following the demographic characteristics are the results of the statistical analysis of the student survey along with the analyses to test hypothesis 2 through hypothesis 5.

*Mental Health Literacy Student Survey Participant Demographics*

Participants for the student survey phase of this study consisted of 172 first-year and 192 third-year medical students enrolled at Philadelphia College of Osteopathic Medicine. Table 3 provides demographic information regarding the medical students who completed the survey, indicating frequencies, percents, valid percents, and cumulative percents. Participants indicated that 91.2% were within the 21 to 30 age

range, 7.7 were aged 31 to 40, and 1.1% designated an age of 41+. Of these, 45.3 were male, while 53.6 were female. Within this population, 47.3% were first-year students, whereas 52.7% were third-year medical students. Further gender analyses determined that 35.5% of the total first-year study participants were male, and 62.8% were female. Third-year gender categorization established that 54.2% were male, while 45.3% were female medical students. Four individuals involved in this study opted not to reveal their gender. Three of these students (1.7%) were registered as first-year medical students, while one (.5%) was enrolled as a third-year medical student.

*Educational Background.* Within the medical student population studied, 61.3% majored in biology, 5.8% were psychology majors, 2.7% majored in a behavioral science other than those indicated, and 30.2% chose a major other than the above specified choices (Table 3). Within this population, 5.2% chose biology as an undergraduate major, 6.9% identified psychology, 1.9% specified “other behavioral science,” 40.1% stipulated a minor other than those listed, and 45.9% noted that they did not minor in any undergraduate coursework. Furthermore, 33% of this population attended graduate school and majored in the following: biology (1.6%), psychology (.8%), Bio-Medical Sciences (17.3%), other behavioral science (1.1%), and 12.1% identified a graduate school major other than those choices listed.

Table 3: *Demographic Survey Frequencies, Percents, Valid Percents, and Cumulative**Percents*

Measure	Frequency	Percent	Valid Percent	Cumulative Percent
<b>YEAR</b>				
1	172	47.3	47.3	47.3
3	192	52.7	52.7	100.0
<b>AGE</b>				
21 to 30	322	91.2	91.2	91.2
31 to 40	28	7.7	7.7	98.9
41 plus	4	1.1	1.1	100.0
<b>GENDER</b>				
(1) MALE	165	45.3	45.8	45.8
(2) FEMALE	195	53.6	54.2	100.0
<b>UNDERGRADUATE MAJOR</b>				
(1) Biology	223	61.3	61.3	61.3
(2) Psychology	21	5.8	5.8	67.0
(3) Other Behavioral Science	10	2.7	2.7	69.8
(4) Other	110	30.2	30.2	100.0

Measure	Frequency	Percent	Valid Percent	Cumulative Percent
<b>UNDERGRADUATE MINOR</b>				
(1) None	167	45.9	45.9	45.9
(2) Biology	19	5.2	5.2	51.1
(3) Psychology	25	6.9	6.9	58.0
(4) Other Behavioral Science	7	1.9	1.9	59.9
(5) Other	146	40.1	40.1	100.0
<b>GRADUATE SCHOOL</b>				
(1) Yes	120	33.0	33.0	33.0
(2) No	244	67.0	67.0	100.0
<b>GRADUATE SCHOOL MAJOR</b>				
(1) Biology	6	1.6	5.0	5.0
(2) Psychology	3	.8	2.5	7.5
(3) Bio-Medical Science	63	17.3	52.5	60.0
(4) Other Behavioral Science	4	1.1	3.3	63.3
(5) Other	44	12.1	36.7	100.0

*Elective Rotations of Third-Year Medical Students.* Table 4 displays the frequencies, percents, valid percents, and cumulative percents for the elective rotations in which third-year students participated. Within this study population, 83.3% of third-year medical students specified that they engaged in 41 classifications of elective rotations. Furthermore, of those students who completed an elective rotation, 14.4% completed a second rotation, while an additional 3% completed a third rotation. Only one student indicated a psychiatry rotation, and 12.5% completed a rotation in family medicine. A psychiatry rotation exposes participants to additional education in the diagnosis and treatment of mental disorders. Students who participate in family medicine as an elective rotation receive diverse experiences that may include exposure to patients who have mental disorders. If numerous students had participated in elective rotations that had provided additional exposure to diagnosis and treatment of mental disorders, this variable would have had to be accounted for in the results.



Table 4: *Frequencies, Percents, Valid Percents, and Cumulative Percents for Elective Rotations of Third-Year Medical Students*

Measure	Frequency	Percent	Valid Percent	Cumulative Percent
ELECTIVE ROTATION (n= 160 third-year students)				
1) Allergy, Asthma, Immunology	2	1.3	1.3	1.3
2) Anesthesiology	5	3.1	3.1	4.4
3) Cardiology	3	1.9	1.9	6.3
4) Dermatology	7	4.4	4.4	10.6
5) Detox	1	0.6	.6	11.3
6) Emergency Medicine	7	4.4	4.4	15.6
7) Ear, Nose, & Throat	15	9.4	9.4	25.0
* 8) Family Medicine	20	12.5	12.5	37.5
9) General Surgery	2	1.3	1.3	38.8
10) Geriatrics	4	2.5	2.5	41.3
11) Internal Medicine	9	5.6	5.6	46.9
12) Nephrology	9	5.6	5.6	52.5
13) Neurosurgery, Neurology	5	3.1	3.1	55.6
14) Orthopedics	13	8.1	8.1	63.8
15) Pathology	2	1.3	1.3	65.0
16) Pediatrics	2	1.3	1.3	66.3

Measure	Frequency	Percent	Valid Percent	Cumulative Percent
17) Plastic Surgery	2	1.3	1.3	67.5
18) Physical Medicine & Rehabilitation	0	0.0	0.0	67.5
19) Radiology	1	0.6	0.6	68.1
20) Sports Medicine	1	0.6	0.6	68.8
21) Third World Medicine	1	0.6	0.6	69.4
22) Urology	6	3.8	3.8	73.1
23) Gerontology	1	0.6	0.6	73.8
24) Pulmonary Med	6	3.8	3.8	77.5
25) Biomedical research	1	0.6	0.6	78.1
26) Oncology	3	1.9	1.9	80.0
27) Ophthalmology	12	7.5	7.5	87.5
28) Endocrinology	2	1.3	1.3	88.8
29) Infectious Disease	4	2.5	2.5	91.3
30) Ambulatory Surgery	1	0.6	0.6	91.9
31) Ob/Gyn, Maternal fetal medicine	1	0.6	0.6	92.5
*32) Psychiatry	1	0.6	0.6	93.1
33) Gastroenterology	1	0.6	0.6	93.8
34) Breast Cancer Surgery	1	0.6	0.6	94.4

Measure	Frequency	Percent	Valid Percent	Cumulative Percent
35) Ortho Surgery	1	0.6	0.6	95.0
36) Pain Management	1	0.6	0.6	95.6
37) Neonatal Intensive Care Unit	1	0.6	0.6	96.3
38) Sleep Medicine	0	0.0	0.0	96.3
39) Hematology	5	3.1	3.1	99.4
40) Pediatric cardiology	0	0.0	0.0	99.4
41) Christian Medical Mission Trip	1	0.6	0.6	100.0

*Data Analysis of Mental Health Literacy Medical Student Survey*

Items 9 and 10 required medical students to read a vignette describing symptoms of “stress” or a “mental disorder,” select a diagnosis, and then choose one “best” method of “help” to the male or female individual depicted in the vignette. Frequencies and percentages were computed and then analyzed. The results for the analysis of item 9 were used to test hypothesis 2, hypothesis 3, and hypothesis 4.

Item 11 involved rating 20 modes of helpfulness, whereas item 12 involved rating 7 therapeutic interventions that included medication. Item 13 entailed choosing a prognosis if the particular individual portrayed in the vignette did not receive professional help. Medical students were required to rate their opinions on a Likert-type scale ranging from “0” to “5” and consisted of the following: “Don’t Know,” “Very Harmful,” “Harmful,” “Neither,” “Helpful,” and “Very Helpful.”

Item 14 required the participant to rate the “degree of agreement or disagreement” after reading statements related to “mental health stigma.” Medical students were again required to rate their opinions on a Likert-type scale, however the range was from “1” to “5” and consisted of “Strongly Disagree,” “Disagree,” “Neither,” “Agree,” and “Strongly Agree.” Results of the analysis of Item 14 were used to test hypothesis 5.

Independent measures *T*-tests were conducted and descriptive statistics were obtained for both year-one and year-three medical students. *T*-tests were performed in order to determine if significant differences existed in the responses between and within

first-year- and third-year medical students. Mean ratings, standard deviations, and percentages of “don’t know” responses were also computed.

*Diagnoses of the Individuals Described in the Student Survey Vignettes*

*Hypothesis 2:* Item 9 of the student survey required both first- and third-year medical students to read the vignette that was included in the packet they received, and then choose one diagnosis from a menu of 12 choices. Eight vignettes were systematically randomized and included in packets that were randomly distributed. Following are the results of the calculation of frequencies and percents (Appendix D) and an analysis to test Hypothesis 2:

Vignette 1, describing a male who was exhibiting symptoms of “generalized anxiety disorder,” was included in survey packets that were completed by 12.4% of the total number of participants in this study. The correct DSM-IV-TR diagnosis of “generalized anxiety disorder” was obtained by 80% of both first-year and third-year medical students. The incorrect diagnoses of “stress” and “panic attack” were also specified. “Stress” was the diagnosis chosen by 15% of first-year, and 8% of third-year students, while “panic attack” was selected by 5% of first-year, and 12% of third-year students.

Vignette 2, explaining a male who was displaying symptoms of “major depression,” was included in survey packets that were completed by 13.5% of the total number of participants. The correct DSM-IV-TR diagnosis of “major depression” was identified by 87.5% of first-year, and 92% of third-year students. The remaining

first-year medical students (12.5%), and 4% of the third-year medical students did not specify a precise diagnosis, but did recognize the fact that the character portrayed in the vignette was experiencing a “psychological/mental/emotional problem.” Additionally, 4% of third-year students incorrectly designated “stress” as the disorder.

Vignette 3, representing a male who was demonstrating symptoms of Schizophrenia was included in survey packets that were completed by 12.1% of the total number of participants. The correct DSM-IV-TR diagnosis of “schizophrenia” was specified by 61.9% of first-year medical students, and 100% of third-year medical students. Of the remaining first-year students, 28.5% recognized that the vignette described an individual experiencing a “psychological/mental/emotional problem,” but did not choose a specific disorder. The incorrect diagnoses of “generalized anxiety disorder” (4.8%) and “split personality” (4.8%) were additional choices of first-year students.

Vignette 4, demonstrating a male who was experiencing symptoms of “stress,” was included in packets that were completed by 12.4% of the total number of participants. The correct diagnosis of “stress” was indicated by 81% of first-year medical students and 83.1% of third-year students. The remaining first-year medical students specified incorrect diagnoses of “generalized anxiety disorder” (9.5%), and “adjustment disorder” (9.5%), while the remaining third-year students denoted “generalized anxiety disorder” (4.3%), “adjustment disorder” (8.3%), and “schizophrenia” (4.3%).

Vignette 5, portraying a female who was encountering symptoms of “generalized anxiety disorder,” was incorporated into survey packets that were

completed by 12.1% of the individuals who participated in this study. The correct DSM-IV-TR diagnosis of “generalized anxiety disorder” was established by 60% of 1st-year medical students, and 88% of third-year medical students. Incorrect diagnoses of “panic disorder” (5% of first-year medical students; 4% of third-year medical students), “stress” (25% of first-year medical students), and “heart attack” (4% of third-year medical students) were also selected. Remaining medical students (10% of first year; 4% of third year) recognized the presence of a “psychological/mental/emotional problem,” but were unable to ascertain a definitive diagnosis.

Vignette 6, depicting a female who presented symptoms of “major depression” was integrated into survey packets that were completed by 12.1% of the total number of medical students who were involved in this study. The correct DSM-IV-TR diagnosis of “major depression” was recognized by 95% of first-year medical students and 86% of third-year medical students. Five-percent of both first- and third-year medical students identified an incorrect diagnosis of “adjustment disorder,” while 9% of third-year medical students selected “stress” as the diagnosis.

Vignette 7, describing a female who displayed symptoms of “schizophrenia,” was assembled into survey packets that were completed by 12.9% of the medical students who participated in this study. The correct DSM-IV-TR diagnosis of “schizophrenia” was established by 52.2% of first-year medical students and 83.5% of third-year medical students. A high percentage of first-year medical students (43.5%) and the 12.5% of third-year medical students acknowledged the occurrence of a “psychological/emotional/emotional problem,” but were inconclusive with regard to a definitive diagnosis. An additional 4.3% of first-year medical students, and 4% of

third-year medical students incorrectly diagnosed “generalized anxiety disorder” for the individual depicted in this vignette.

Vignette 8, which illustrated a female who was exhibiting the physical symptoms of “stress,” was contained in survey packets that were completed by 12.6% of the medical students who participated in this study. An accurate diagnosis of stress was acknowledged by 95.2% of first-year medical students, and 60% of third-year medical students. The incorrect diagnosis of “adjustment disorder” was given by 4.8% of first-year medical students and 28% of third-year medical students. In addition, third-year medical students indicated “generalized anxiety disorder” (4%), “major depression” (4%), and “there is no problem” (4%).

For all vignettes combined, 84% of third-year medical students, and 77% of first-year medical students recognized the correct diagnosis ( $t = 1.69; p < .09$ ) after reading a vignette describing a male or female individual experiencing symptoms of generalized anxiety, major depression, schizophrenia, or stress. This alpha value is indicative of a statistical trend (i.e., an alpha value that falls between .05 and .1), noting that third-year medical students are better able to identify the presence of a mental disorder than first-year medical students.

*Hypothesis 3:* An independent samples *T*-test was used to determine if the three male vignettes describing mental disorders were significantly underdiagnosed by first- versus third-year medical students. Underdiagnosed is defined as the male-gendered vignettes describing mental disorders incorrectly diagnosed as “stress” or “no problem.” Results indicated that this hypothesis was not supported. For the three male vignettes combined, no differences were observed in first- versus third-year medical



students' abilities to diagnose the symptoms described in the vignettes as mental disorders ( $t = .20$ ;  $p = \text{N.S.}$ ). The symptoms described in Vignette 1 were diagnosed as a specific mental disorder by 85% of first-year medical students and 92% of third-year medical students. The symptoms described in Vignette 2 were diagnosed as a specific mental disorder or "psychiatric/mental/emotional problem" by 100% of first-year medical students and 96% of third-year medical students. All third-year medical students (100%) and 66.7% of first-year medical students diagnosed the symptoms described in Vignette 3 as a specific mental disorder. However, 28.5% of first-year medical students did recognize the description as a "psychiatric/mental/emotional problem" and did not underdiagnose the symptoms as "stress" or as "no problem" (Appendix D). These findings indicate that first-year medical students were able to recognize the presence of a mental disorder or psychological problem, as well as third-year medical students when presented with vignettes describing males who were exhibiting symptoms of mental disorders. Furthermore, first-year medical students are not inclined to "underdiagnose" mental disorders in males when presented with vignettes of males who are described as exhibiting symptoms of mental disorders.

*Hypothesis 4:* An independent samples *T*-test was used to determine if the female-gendered vignette describing "stress" was significantly overdiagnosed as a mental disorder by first- versus third-year medical students. Overdiagnosed is defined as the female-gendered vignette describing symptoms of "stress" incorrectly diagnosed as a DSM-IV-TR disorder. Data collected did not support this hypothesis. Instead, the findings approached a statistical trend (i.e., an alpha level that falls between .10 and .15) indicating that third-year medical students showed a stronger tendency to

overdiagnose as compared to first-year medical students ( $t = 1.6; p < .12$ ). The female described in Vignette 8 as exhibiting physical symptoms of “stress” was correctly diagnosed as “stress” by 95.2% of first-year medical students, and by 60% of third-year medical students. Third-year medical students (28%) overdiagnosed “stress” as “adjustment disorder,” and an additional 8% overdiagnosed these symptoms as “generalized anxiety disorder” or “major depression” (see Appendix D).

#### *Recommendations Regarding Best Source of Help for Mental Disorders*

Item 10 required students to choose one answer from a menu of nine choices regarding how the individual described in the vignette that they received in their particular packet could “best” be helped. Frequencies and percents were computed for each vignette and menu category, and comparisons of responses between first- and third-year medical students were examined. Results of the analysis are as follows:

Both first- and third-year medical students who assessed Vignette 1, which described a male who was experiencing symptoms of “generalized anxiety disorder,” endorsed “seeing a psychiatrist” as the “best” help for “John” at rates of 40% and 44% respectively. Other common recommendations of first- and third-year medical students were “seeing a psychologist” (15% - first year; 28% - third year), “seeing a counselor” (20% - first year; 4% - third year), “taking prescription medication” (5% - first year; 8% - third year), and “discussing problems with family and friends” (10% - first year; 4% - third year). Less common recommendations were from first-year students (10%)

who endorsed “exercising,” while remaining third-year students (12%) supported “seeing a general practitioner” (Table 5).

Table 5: Item 10 (Vignette 1). *Percentages of medical students’ beliefs about the “best” source of help for the individual in the male “generalized anxiety disorder” vignette*

Measure	First-Year	Third-Year
	Medical Students (n = 20)	Medical Students (n = 25)
1) Seeing a doctor (GP)	0%	12.0%
2) Seeing psychologist	15.0%	28.0%
3) Seeing a psychiatrist	40.0%	44.0%
4) Seeing a counselor	20.0%	4.0%
5) Taking prescription medication	5.0%	8.0%
6) Discussing his problems with family/friends	10.0%	4.0%
7) Seeking help from clergy	0%	0%
8) Exercising	10.0%	0%
9) He is not in need of help	0%	0%

First- and third-year medical students who evaluated Vignette 2, depicting a male experiencing symptoms of “major depression,” again concurred that the “best” source of help to “John” was “seeing a psychiatrist.” Seeing a psychiatrist was recommended by 66.7% of first-year students, while the rate of agreement among third-year students was 64%. First- and third-year medical students also suggested “seeing a psychologist” (25% - first year; 4% - third year), and “seeing a general practitioner” (4.2% - first year; 16% - third year). These and less common recommendations can be seen in Table 6.

Table 6: Item 10 (Vignette 2) *Percentages of medical students’ beliefs about the “best” source of help for the individual in the male “major depression” vignette*

Measure	First-Year	Third-Year
	Medical Students (n = 24)	Medical Students (n = 25)
1) Seeing a doctor (GP)	4.2%	16.0%
2) Seeing psychologist	25.0%	4.0%
3) Seeing a psychiatrist	66.7%	64.0%
4) Seeing a counselor	0%	4.0%
5) Taking prescription medication	0%	4.0%
6) Discussing his problems with family & friends	0%	4.0%
7) Seeking help from clergy	0%	4.0%
8) Exercising	4.2%	0%
9) He is not in need of help	0%	0%

After appraising Vignette 3, which illustrated a male who exhibited symptoms of schizophrenia, both first- and third-year medical students again supported “seeing a psychiatrist” as the “best” means of help for this individual. However, the rating of third-year medical students (82.6%) was much stronger than that of first-year students (38.1%). Additional endorsements of first- and third-year medical students were “taking medication” (23.8% - first year; 13% - third year), and “seeing a general practitioner” (9.5% - first year; 4.3% - third year). Less common recommendations of first-year medical students are detailed in Table 7.

Table 7: Item 10 (Vignette 3) *Percentages of medical students’ beliefs about the “best” source of help for the individual in the male “schizophrenia” vignette*

Measure	First-Year	Third-Year
	Medical Students (n = 21)	Medical Students (n = 23)
1) Seeing a doctor (GP)	9.5%	4.3%
2) Seeing psychologist	19.0%	0%
3) Seeing a psychiatrist	38.1%	82.6%
4) Seeing a counselor	4.8%	0%
5) Taking prescription medication	23.8%	13.0%
6) Discussing his problems with family/friends	4.8%	0%
7) Seeking help from clergy	0%	0%
8) Exercising	0%	0%
9) He is not in need of help	0%	0%

Both first- and third-year medical students rated “family and friends” as the “best” source of help to the male individual in Vignette 4, who was experiencing symptoms of stress. “Family and friends” was rated more highly by first-year medical students (47.6%) than by third-year students (39.1%), as was “seeing a counselor” (19% first year; 4.3% - third year), and “seeing a general practitioner” (14.3% - first year; 8.7% - third year). Third-year medical students valued “exercise” more highly (14.3% – first year; 21.7% - third year), and “seeing a psychologist” (4.8% - first year; 8.7% - third year) than did first-year students. Additionally, third-year medical students gave merit to “seeing a psychiatrist” (13%), and taking prescription medication (4.3%) (Table 8).

Table 8: Item 10 (Vignette 4) *Percentages of medical students' beliefs about the "best" source of help for the individual in the male "stress" vignette*

Measure	First-Year	Third-Year
	Medical Students (n = 21)	Medical Students (n = 23)
1) Seeing a doctor (GP)	14.3%	8.7%
2) Seeing psychologist	4.8%	8.7%
3) Seeing a psychiatrist	0%	13.0%
4) Seeing a counselor	19.0%	4.3%
5) Taking prescription medication	0%	4.3%
6) Discussing his problems with family/friends	47.6%	39.1%
7) Seeking help from clergy	0%	0%
8) Exercising	14.3%	21.7%
9) He is not in need of help	0%	0%

Table 9 shows that third-year medical students (41.7%) concluded that “seeing a psychologist” would be the “best” source of help for the female in Vignette 5 who was experiencing symptoms of “generalized anxiety disorder.” On the other hand, first-year-students (30%) viewed “seeing a psychiatrist” as the best means of help for this individual. Third-year medical students also gave merit to “seeing a psychiatrist” at approximately the same rate (33.3%) as did first-year students (30%). General practitioners were regarded more highly by first-year medical students (20%) than by third-year students (12.5%). First-year medical students recommended “seeing a counselor” (20%), and “exercising” (5%), while third-year students approved of “family and friends” (4.2%) and “seeking help from clergy” (8.3%).



Table 9: Item 10 (Vignette 5) *Percentages of medical students' beliefs about the "best" source of help for the individual in the female "generalized anxiety disorder" vignette*

Measure	First-Year	Third-Year
	Medical Students (n = 20)	Medical Students (n = 24)
1) Seeing a doctor (GP)	20.0%	12.5%
2) Seeing psychologist	25.0%	41.7%
3) Seeing a psychiatrist	30.0%	33.3%
4) Seeing a counselor	20.0%	0%
5) Taking prescription medication	0%	0%
6) Discussing her problems with family/friends	0%	4.2%
7) Seeking help from clergy	0%	8.3%
8) Exercising	5.0%	0%
9) She is not in need of help	0%	0%

The “best” source of help to the female experiencing symptoms of major depression in Vignette 6 was deemed “seeing a psychiatrist” by both first-year medical students (45.5%) and third-year medical students (66.7%). However, 36.4% of first-year medical students endorsed “seeing a psychologist,” while only 4.8% of third-year students did so. Further suggestions of first- and third-year medical students were “talking to family and friends” (13.6% - first year; 4.8% - third year), and “seeing a counselor” (4.5% - first year; 4.8% - third year). Additional choices of third-year medical students included “taking prescription medication (4.8%), “seeing a general practitioner” (9.5%), and “exercising” (4.8%), (Table 10).

Table 10: Item 10 (Vignette 6) *Percentages of medical students' beliefs about the "best" source of help to the individual in the female "major depression" vignette*

Measure	First-Year	Third-Year
	Medical Students (n = 22)	Medical Students (n = 21)
1) Seeing a doctor (GP)	0%	9.5%
2) Seeing psychologist	36.4%	4.8%
3) Seeing a psychiatrist	45.5%	66.7%
4) Seeing a counselor	4.5%	4.8%
5) Taking prescription medication	0%	4.8%
6) Discussing his problems with family/friends	13.6%	4.8%
7) Seeking help from clergy	0%	0%
8) Exercising	0%	4.8%
9) She is not in need of help	0%	0%

First- and third-year medical students both determined that the female in Vignette 7, who demonstrated symptoms of Schizophrenia, could “best” be helped by “seeing a psychiatrist” (73.9% - first year; 66.7% - third year). Additional recommendations of first- and third-year medical students were “taking prescription medication” (4.3% - first year; 29.2% - third year), and “seeing a psychologist” (13% - first year; 4.2% - third year). The remaining first-year medical students (8.7%) recommended “seeing a general practitioner” (Table 11).

Table 11: Item 10 (Vignette 7) *Percentages of medical students’ beliefs about the “best” source of help for the individual in the female “schizophrenia” vignette*

Measure	First-Year	Third-Year
	Medical Students (n = 23)	Medical Students (n = 24)
1) Seeing a doctor (GP)	8.7%	0%
2) Seeing psychologist	13.0%	4.2%
3) Seeing a psychiatrist	73.9%	66.7%
4) Seeing a counselor	0%	0%
5) Taking prescription medication	4.3%	29.2%
6) Discussing his problems with family/friends	0%	0%
7) Seeking help from clergy	0%	0%
8) Exercising	0%	0%
9) She is not in need of help	0%	0%

Both first- and third-year medical students more highly rated “discussing her problem with family and friends” as the “best” source of help to the female in Vignette 8, who exhibited physical symptoms of stress (42.9% - first year; 32% - third year). First- and third-year medical students also supported “seeing a counselor” (23.8% - first year; 20% - third year), “seeing a psychologist” (9.5% - first year; 12% - third year), “seeing a psychiatrist” (4.8% - first year; 16% - third year), “seeing a general practitioner” (9.5% - first year; 8% - third year), and “exercising” (4.8% - first year; 8% - third year). The remaining first-year medical students (4.8%) and third-year medical students (4%) viewed that “she was not in need of help” (Table 12).

Table 12: Item 10 (Vignette 8) *Percentages of medical students' beliefs about the "best" source of help to the individual in the female" stress" vignette*

Measure	First-Year	Third-Year
	Medical Students (n = 21)	Medical Students (n = 25)
1) Seeing a doctor (GP)	9.5%	8.0%
2) Seeing psychologist	9.5%	12.0%
3) Seeing a psychiatrist	4.8%	16.0%
4) Seeing a counselor	23.8%	20.0%
5) Taking prescription medication	0%	0%
6) Discussing his problems with family/friends	42.9%	32.0%
7) Seeking help from clergy	0%	0%
8) Exercising	4.8%	8.0%
9) She is not in need of help	4.8%	4.0%

*Statistically Significant Differences in Student Survey Responses*

Independent measures *T*-tests were conducted and descriptive statistics were obtained for both year-one and year-three medical students for items 11 thru 14 on the student survey. *T*-tests were performed in order to determine if significant differences existed in the responses between and within first-year and third-year medical students. Mean ratings, standard deviations, and percentages of “don’t know” responses for all items with respect to all eight vignettes can be found in Table 13 through Table 34.

*Vignette 1*: described a male who was experiencing symptoms of “generalized anxiety disorder.” Statistically significant differences were observed in items 11k and 11q. Both items requested the participant’s opinion regarding the helpfulness of treatments including “calling a telephone hotline,” and “receiving Electroconvulsive Therapy (ECT).” First-year students rated “calling a telephone hotline” (item 11k) as being “more helpful” ( $M = 3.74$ ;  $SD = .45$ ) than did third-year medical students ( $M = 3.32$ ;  $SD = .63$ ) for the male depicted in Vignette 1 ( $t = 2.50$ ;  $p < .02$ ). One first-year medical student refrained from answering this item. With regard to “Electroconvulsive Therapy (ECT)” (item 11q), first-year medical students ( $M = 1.64$ ;  $SD = .63$ ) perceived ECT to be “more harmful” than did third-year medical students ( $M = 2.61$ ;  $SD = .78$ ), whose views are more in the area of being “neither harmful nor helpful” to the individual in the vignette who was experiencing symptoms of “generalized anxiety disorder” ( $t = 3.90$ ;  $p < .001$ ). Nearly one-third of first-year and 8% of third-year medical students answered “don’t know” to this item (Table 13).

Table 13: Item 11 (Vignette 1) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various interventions when applied to the male “generalized anxiety disorder” vignette*

Key: 0-Don’t Know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t
				Know
11a) Seeing a typical family GP or doctor	1 n= 20	4.00	.46	
	3 n= 25	3.88	.44	
b) Receiving therapy from a licensed professional counselor	1 n= 20	4.40	.50	
	3 n= 24	4.46	.51	(n=1, 4%)
c) Receiving therapy from a social worker	1 n=20	3.40	.60	
	3 n= 25	3.64	.70	
d) Receiving therapy from a psychiatrist	1 n= 20	4.30	.92	
	3 n= 25	4.48	.59	
e) Receiving therapy from a psychologist	1 n= 20	4.30	.57	
	3 n= 25	4.48	.59	
f) Talking to family member/s	1 n= 20	4.25	.44	
	3 n= 24	4.13	.54	(n=1, 4%)
g) Talking to friends	1 n= 19	4.11	.57	(n=1, 5%)
	3 n= 24	4.00	.51	(n=1, 4%)
h) Talking to clergy/ minister/ priest	1 n= 19	3.95	.40	(n=1, 5%)
	3 n= 24	4.00	.59	(n=1, 4%)



Key: 0-Don't Know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't
				Know
i) Accessing an Internet web site that gives information about his problem	1 n= 20	3.40	.82	
	3 n= 25	3.48	.71	
j) Reading a book that gives information about his problem	1 n= 20	3.60	.68	
	3 n= 24	3.75	.68	
*k) Calling a telephone hotline	1 n= 19	3.74	.45	
	3 n= 25	3.32	.63	
l) Taking homeopathic remedies	1 n= 16	3.00	.82	(n=3; 15.8%)
	3 n= 23	3.13	.69	(n=2; 8.0%)
m) Becoming more physically active (walking, playing sports, exercising)	1 n= 19	4.47	.51	(n=1; 5.0%)
	3 n= 25	4.24	.44	
n) Attending classes on relaxation, yoga, meditation, or stress management	1 n= 20	4.25	.44	
	3 n= 24	4.42	.50	(n=1; 4.0%)
o) Reading about people with similar problems and how they have dealt with them	1 n= 19	4.00	.33	(n=1; 5.0%)
	3 n= 25	4.00	.65	
p) Eliminating all alcoholic beverages	1 n= 19	3.47	.77	(n=1; 5.0%)
	3 n= 23	3.87	.81	(n=1; 4.2%)
q) Receiving Electroconvulsive Therapy (ECT)	1 n= 14	1.64	.63	(n=6; 30.0%)
	3 n= 23	2.61	.78	(n=2; 8.0%)

Key: 0-Don't Know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't
				Know
*r) Having an occasionally alcoholic drink to relax	1 n= 20	2.90	.97	
	3 n= 24	2.92	.65	(n=1; 4.0%)
s) Eating a special diet/ avoiding certain foods	1 n= 18	3.50	.71	(n=1; 5.3%)
	3 n= 24	3.46	.51	(n=1; 4.0%)
t) Receiving hypnosis	1 n= 13	3.15	.69	(n=7; 35.0%)
	3 n= 22	3.27	.55	(n=3; 12.0%)

*Vignette 2*: detailed a male who was exhibiting symptoms of “major depression.” Significant statistical differences between first- and third-year medical students were found in items 11k, 11q, 12c, and 14c. The first three items required medical students to rate the helpfulness of “calling a telephone hotline,” “receiving Electroconvulsive Therapy (ECT),” and “taking antianxiety medication (i.e., Xanax)” for the male described in the “major depression” vignette. The remaining item requested the students to rate the degree to which they agreed or disagreed with the following statement: “People with a problem like John’s can be dangerous to themselves or others” (Table 14).

First-year medical students rated “calling a telephone hotline” (item 11k) to be “less helpful” ( $M = 3.14$ ;  $SD = .83$ ) to the male exhibiting symptoms of “major depression” as compared to third-year students ( $M = 3.74$ ;  $SD = .54$ ) ( $t = 2.89$ ;  $p < .006$ ). Approximately 8% of each class responded “don’t know” to this item (Table 14).

“Electroconvulsive Therapy (ECT)” (item 11q) was regarded as “more helpful” by third-year medical students ( $M = 3.5$ ;  $SD = .74$ ) than first-year medical students ( $M = 2.57$ ;  $SD = 1.02$ ) for the male with symptoms of “major depression” ( $t = 3.17$ ;  $p < .003$ ). Further review determined that 52% of third-year students viewed ECT as helpful for “major depression.” Within the group of first-year medical students, 41.7% answered “don’t know” to this item, while 12% of third-year medical students answered in that manner. The high standard deviation is reflective of a great amount of variability in the responses of first-year medical students (Table 14).

Table 14: Item 11 (Vignette 2) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various interventions when applied to the male “major depression” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
11a) Seeing a typical family GP or doctor	1 n= 23	3.83	.49	(n= 1; 4.2%)
	3 n= 25	4.04	.54	
b) Receiving therapy from a licensed professional counselor	1 n= 24	4.38	.49	
	3 n= 25	4.36	.64	
c) Receiving therapy from a social worker	1 n= 23	3.74	.81	(n= 1; 4.2%)
	3 n= 23	3.43	.59	(n= 2; 8.0%)
d) Receiving therapy from a psychiatrist	1 n= 24	4.58	.50	
	3 n= 25	4.64	.49	
e) Receiving therapy from a psychologist	1 n= 23	4.65	.57	
	3 n= 25	4.36	.64	
f) Talking to family member/s	1 n= 23	4.22	.52	
	3 n= 25	4.24	.66	
g) Talking to friends	1 n= 24	4.17	.38	
	3 n= 25	4.16	.69	
h) Talking to clergy/ minister/ priest	1 n= 22	4.09	.43	(n= 2; 8.3%)
	3 n= 24	4.17	.56	

Key: 0-Don't Know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't
				Know
i) Accessing an Internet web site that gives information about his problem	1 n= 22	2.82	.80	(n= 2; 8.3%)
	3 n= 23	3.22	.90	(n= 2; 8.0%)
j) Reading a book that gives information about his problem	1 n= 22	3.45	.67	(n= 2; 8.3%)
	3 n= 24	3.54	.72	(n= 1; 4.0%)
*k) Calling a telephone hotline	1 n= 22	3.14	.83	(n= 2; 8.3%)
	3 n= 23	3.74	.54	(n= 2; 8.0%)
l) Taking homeopathic remedies	1 n= 17	3.06	.66	(n=7;29.2%)
	3 n= 22	2.91	.68	(n=3;12.0%)
m) Becoming more physically active (walking, playing sports, exercising)	1 n= 24	4.17	.56	
	3 n= 25	4.20	.50	
n) Attending classes on relaxation, yoga, meditation, or stress management	1 n= 24	4.00	.29	
	3 n= 25	4.08	.49	
o) Reading about people with similar problems and how they have dealt with them	1 n= 24	3.96	.62	
	3 n= 25	4.00	.41	
p) Eliminating all alcoholic beverages	1 n= 22	3.64	.66	(n= 2; 8.3%)
	3 n= 25	4.04	.84	
*q) Receiving Electroconvulsive Therapy (ECT)	1 n= 14	2.57	1.02	(n=10;41.7%)
	3 n= 22	3.50	.74	(n= 3;12.0%)

Key: 0-Don't Know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't
				Know
r) Having an occasionally alcoholic drink to relax	1 n= 21	2.48	.75 (n= 3; 2.5%)	
	3 n= 25	2.68	.75	
s) Eating a special diet/ avoiding certain foods	1 n = 18	3.50	.62 (n= 6; 25.0%)	
	3 n = 25	3.48	.65	
t) Receiving hypnosis	1 n= 17	3.18	.73 (n= 7; 29.2%)	
	3 n = 23	3.17	.58 (n= 2; 8.0%)	

“Antianxiety medications (i.e., Xanax)” (item 12c) were considered to be “more helpful” by first-year medical students ( $M = 4.0$ ;  $SD = .73$ ) than by third-year medical students ( $M = 3.38$ ;  $SD = .71$ ) for the male individual who was described as exhibiting symptoms of “major depression” ( $t = 2.88$ ;  $p < .006$ ). A greater percentage of first-year (16.7%) medical students answered “don’t know” to this item than did third-year (4%) medical students. Slightly more than one-third of third-year medical students perceived antianxiety medications to be “neither helpful nor harmful” in this particular case (Table 15).

Table 15: Item 12 (Vignette 2) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the male ‘major depression’ vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
12a) Taking Vitamins	1 n= 19	3.68	.58	(n=4;17.4%)
	3 n= 25	3.68	.63	
b) Taking antidepressant medications (i.e., Celexa)	1 n= 21	4.10	.54	(n= 3;12.5%)
	3 n= 24	4.21	.41	(n= 1; 4.0%)
*c) Taking antianxiety medication (i.e., Xanax)	1 n= 20	4.00	.73	(n= 4;16.7%)
	3 n= 24	3.38	.71	(n= 1; 4.0%)
d) Taking antipsychotic medication (i.e., Risperdal)	1 n= 19	2.89	.94	(n= 5; 0.8%)
	3 n= 24	2.70	.75	(n= 1; 4.0%)
e) Attending a support group	1 n= 23	4.00	.80	(n= 1; 4.2%)
	3 n= 25	4.36	.49	
f) Taking sleeping pills	1 n= 20	2.55	1.05	(n= 4;16.7%)
	3 n= 25	2.48	.92	
g) Taking antibiotics	1 n= 20	2.45	.83	(n= 4;16.7%)
	3 n= 25	2.40	.82	



When requested to rate the degree of agreement or disagreement to the statement, “People with a problem like John’s can be dangerous to themselves or others,” (item 14c) third-year students ( $M = 4.24$ ;  $SD = .44$ ) more “strongly agreed” than did first-year medical students ( $M = 3.96$ ;  $SD = .46$ ). Results of these findings were found to be statistically significant ( $t = 2.20$ ;  $p < .034$ ). No students refrained from answering this item (Table 16).

Table 16: Item 14 (Vignette 2) *Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the male "major depression" vignette*

Key: 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Agree

Measure	Year	Mean	SD
14a) People with a problem like John's	1 n= 24	2.08	.65
usually get better on their own	3 n= 25	2.08	.76
b) A problem like John's is a sign of	1 n= 24	1.46	.59
personal weakness	3 n= 25	1.72	.79
*c) People with a problem like John's			
can be dangerous to themselves	1 n= 24	3.96	.46
or others	3 n= 25	4.24	.44
d) If I had a problem like John's, I	1 n= 24	1.86	.61
would not tell anyone	3 n= 25	2.20	.87
e) I would not employ someone if I	1 n= 24	2.50	.83
knew they had a problem like John's	3 n= 25	2.56	.87
f) I would not be friends with someone if	1 n= 24	1.50	.51
I knew they had a problem like John's	3 n= 25	1.80	.65
g) People with a problem like John's will			
be discriminated against by others in	1 n= 24	3.58	.93
the community	3 n= 25	3.24	1.09

*Vignette 3*: illustrated a male who was demonstrating symptoms of “schizophrenia.” Significant statistical differences were observed in items 11q, 12d, 14c, and 14f. The first two items inquired about the survey participant’s rate of helpfulness of “receiving Electroconvulsive Therapy (ECT),” and “taking antipsychotic medications (i.e., Risperdal).” The last two items inquired about personal beliefs regarding mental disorders. Students were required to indicate how strongly they agreed or disagreed to the following statements: “People with a problem like John’s can be dangerous to themselves or others,” and “I would not be friends with someone if I knew they had a problem like John’s.”

“Electroconvulsive Therapy (ECT)” (item 11q) was perceived to be more helpful by third-year medical students ( $M = 3.60$ ;  $SD = .88$ ) than by first-year medical students ( $M = 2.87$ ;  $SD = .99$ ) for the individual described in *Vignette 3*. This difference was significant ( $t = 2.31$ ;  $p < .03$ ). Approximately one-third of each class viewed ECT as “neither harmful nor helpful.” About one-third of first-year medical students replied “don’t know” to this particular item, while nearly 50% of third-year medical students perceived ECT to be “helpful to very helpful” to the male in this vignette who was exhibiting symptoms of “schizophrenia” (Table 17).

Table 17: Item 11 (Vignette 3) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various interventions when applied to the male “schizophrenia” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know	
				n	%
11a) Seeing a typical family GP or doctor	1	3.76	.70	21	
	3	3.87	.46	23	
b) Receiving therapy from a licensed professional counselor	1	4.19	.68	21	
	3	4.00	.67	23	
c) Receiving therapy from a social worker	1	4.05	.74	21	
	3	3.83	.65	23	
d) Receiving therapy from a psychiatrist	1	4.76	.44	21	
	3	4.83	.39	23	
e) Receiving therapy from a psychologist	1	4.33	.73	21	
	3	4.28	.72	21	
f) Talking to family member/s	1	3.90	.83	21	
	3	3.61	.78	23	(n= 1; 4.5%)
g) Talking to friends	1	3.86	.85	21	
	3	3.48	.75	21	
h) Talking to clergy/ minister/ priest	1	3.71	.85	21	
	3	3.64	.58	22	(n= 1; 4.3%)

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't
				Know
i) Accessing an Internet web site that gives information about his problem	1 n= 21	2.95	.97	
	3 n= 21	3.00	1.00	(n= 2; 8.7%)
j) Reading a book that gives information about his problem	1 n= 21	3.43	.93	
	3 n= 21	3.48	.87	(n= 2; 8.7%)
k) Calling a telephone hotline	1 n= 21	3.19	.87	
	3 n= 21	3.43	.75	(n= 2; 8.7%)
l) Taking homeopathic remedies	1 n= 20	2.80	.77	(n= 1; 4.8%)
	3 n= 22	2.86	.89	
m) Becoming more physically active (walking, playing sports, exercising)	1 n= 20	3.35	.59	(n= 1; 4.8%)
	3 n= 22	3.59	.59	(n= 1; 4.3%)
n) Attending classes on relaxation, yoga,	1 n= 19	3.58	.61	(n= 2; 9.5%)
	3 n= 22	3.36	.49	(n= 1; 4.3%)
o) Reading about people with similar problems and how they have dealt with them	1 n= 21	3.76	.70	
	3 n= 23	3.87	.34	
p) Eliminating all alcoholic beverages	1 n= 20	3.55	.69	
	3 n= 22	3.95	.84	(n= 1; 4.3%)
*q) Receiving Electroconvulsive Therapy (ECT)	1 n= 15	2.87	.99	(n=6; 28.6%)
	3 n= 20	3.60	.88	(n=3; 13.0%)

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't
				Know
r) Having an occasionally alcoholic drink to relax	1 n= 19	2.63	.83	(n= 2; 9.5%)
	3 n= 22	2.41	.73	(n= 1; 4.3%)
s) Eating a special diet/ avoiding certain foods	1 n= 18	3.28	.57	(n= 3; 14.3%)
	3 n= 23	3.30	.47	
t) Receiving hypnosis	1 n= 15	3.47	.64	
	3 n= 19	3.32	.48	

Antipsychotic medications (i.e., Risperdal)” (item 12d) were viewed as being “more helpful” to the male individual who demonstrated symptoms of “schizophrenia” by third-year medical students ( $M = 4.72$ ;  $SD = .46$ ) than first-year medical students ( $M = 4.24$ ;  $SD = .62$ ). This difference was significant ( $t = 2.94$ ;  $p < .005$ ). More than two-thirds of third-year medical students rated “antipsychotic medication” as “very helpful,” whereas only one-third of first-year medical students assessed them to be “very helpful.” The response “don’t know” was given by 4.3% of third-year medical students (Table 18).

Table 18: Item 12 (Vignette 3) *Mean ratings, Standard Deviation, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the male “schizophrenia” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
12a) Taking Vitamins	1 n= 17	3.53	.62	(n= 4; 19%)
	3 n= 21	3.38	.50	(n= 2; 8.7%)
b) Taking antidepressant medications (i.e., Celexa)	1 n= 16	3.75	.93	(n=5; 23.8%)
	3 n= 20	3.50	.51	(n= 3;13%)
c) Taking antianxiety medication (i.e., Xanax)	1 n= 20	3.80	.77	(n= 1; 4.8%)
	3 n= 20	3.80	.52	(n= 3; 13%)
*d) Taking antipsychotic medication (i.e., Risperdal)	1 n= 21	4.24	.62	
	3 n= 22	4.73	.46	(n= 1; 4.3%)
e) Attending a support group	1 n= 20	4.20	.52	(n= 1; 4.8%)
	3 n= 23	4.26	.54	
f) Taking sleeping pills	1 n= 18	2.94	.80	(n= 3;14.3%)
	3 n= 22	2.64	.85	(n= 1; 4.3%)
g) Taking antibiotics	1 n= 18	2.83	.71	(n= 1;14.3%)
	3 n= 22	2.45	.67	(n= 1; 4.3%)



Third-year medical students more “strongly agreed” ( $M = 4.22$ ;  $SD = .74$ ) with the statement “People with a problem like John’s can be dangerous to themselves and others” (item 14c) than did first-year medical students ( $M = 3.62$ ;  $SD = 1.07$ ). This finding was statistically significant ( $t = 2.18$ ;  $p < .04$ ). Further review indicated that approximately one-third of third-year medical students “strongly agreed” with the statement regarding John, while only 9.5% of first-year medical students “strongly agreed” with the statement. A considerable amount of variability was noted in the responses of first-year medical students (Table 19).

With regard to the statement, “I would not be friends with someone if I knew they had a problem like John’s,” (item 14f) first-year medical students ( $M = 1.70$ ;  $SD = .66$ ) “more strongly disagreed” than did third-year medical students ( $M = 2.30$ ;  $SD = 1.02$ ). This was found to be statistically significant ( $t = 2.27$ ;  $p < .03$ ). Third-year medical students responded to this item with more variability than did first-year medical students. Further investigation found that 17% of third-year medical students “strongly disagreed” with the statement regarding friendship, while 40% of first-year medical students “strongly disagreed” with the statement. All third-year medical students responded to this item, while one first-year medical student left this item unanswered (Table 19).

Table 19: Item 14 (Vignette 3) *Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the male "schizophrenia" vignette*

Key: 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Agree

Measure	Year		Mean	SD
14a) People with a problem like John's usually get better on their own	1	n= 21	1.57	.60
	3	n= 23	1.61	.58
b) A problem like John's is a sign of personal weakness	1	n= 21	1.57	.98
	3	n= 23	1.39	.50
*c) People with a problem like John's can be dangerous to themselves or others	1	n= 21	3.62	1.07
	3	n= 23	4.22	.74
d) If I had a problem like John's, I would not tell anyone	1	n= 20	2.05	.76
	3	n= 23	2.52	1.04
e) I would not employ someone if I knew they had a problem like John's	1	n= 20	2.50	1.10
	3	n= 23	3.00	1.00
*f) I would not be friends with someone if I knew they had a problem like John's	1	n= 20	1.70	.66
	3	n= 23	2.30	1.02
g) People with a problem like John's will be discriminated against by others in the community	1	n= 20	3.80	1.20
	3	n= 23	4.35	.57

*Vignette 4*: described a male who was experiencing symptoms of “stress.” Five areas of statistically significant differences were detected in items 11b, 12b, 12g, 13, and 14c. The first three items solicited information about the helpfulness of various treatments to the male described in the vignette. These included “receiving therapy from a licensed professional counselor,” “taking antidepressant medication (i.e., Celexa),” and “taking antibiotics.” Item 13 asked the participant’s opinion about “the likely result if John did not receive any professional help.” The final item requested medical students to indicate how strongly they agreed or disagreed with the statement “People with a problem like John’s can be dangerous to themselves or others.”

“Receiving therapy from a licensed professional counselor” (item 11b) was considered to be more helpful by first-year medical students ( $M = 4.29$ ;  $SD = .72$ ) than third-year medical students ( $M = 3.67$ ;  $SD = .92$ ) for the male individual who was described as experiencing symptoms of “stress.” This finding was significant ( $t = 2.50$ ;  $p < .02$ ). An appreciable number of both first- and third-year medical students rated “receiving therapy from a licensed professional counselor” as very helpful (first year, 42.9%; third year, 54.2%), however, an additional 42.9% of first-year medical students rated this treatment as very helpful for the individual in the male “stress” vignette (Table 20).

Table 20: Item 11 (Vignette 4) *Mean ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding the helpfulness of various interventions when applied to the male “stress” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t
				Know
11a) Seeing a typical family GP or doctor	1 n= 21	4.12	.57	
	3 n= 22	3.82	.80	(n= 2; 8.3%)
*b) Receiving therapy from a licensed professional counselor	1 n= 21	4.29	.72	
	3 n= 24	3.67	.92	
c) Receiving therapy from a social worker	1 n= 20	3.35	.67	(n= 1; 4.8%)
	3 n= 23	3.17	.65	(n= 1; 4.2%)
d) Receiving therapy from a psychiatrist	1 n= 21	3.77	.83	
	3 n= 24	3.46	.93	
e) Receiving therapy from a psychologist	1 n= 21	3.96	.80	
	3 n= 24	3.70	.86	
f) Talking to family member/s	1 n= 21	4.76	.44	
	3 n= 24	4.46	.72	
g) Talking to friends	1 n= 21	4.67	.48	
	3 n= 24	4.33	.64	
h) Talking to clergy/ minister/ priest	1 n= 20	4.10	.64	
	3 n= 23	4.09	.79	(n= 1; 4.2%)

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't
				Know
i) Accessing an Internet web site that gives information about his problem	1 n= 20	3.20	1.06	
	3 n= 24	3.54	.84	
j) Reading a book that gives information about his problem	1 n= 20	3.70	.57	(n=1; 4.8%)
	3 n= 24	3.79	.59	
k) Calling a telephone hotline	1 n= 18	3.11	.83	(n= 2;10.0%)
	3 n= 22	3.36	.66	(n=2; 8.3%)
l) Taking homeopathic remedies	1 n= 21	3.33	.58	
	3 n= 22	2.95	.84	(n= 2; 8.3%)
m) Becoming more physically active (walking, playing sports, exercising)	1 n= 21	4.29	.56	
	3 n= 24	4.25	.61	
n) Attending classes on relaxation, yoga, meditation, or stress management	1 n= 21	4.29	.56	
	3 n= 24	4.21	.93	
o) Reading about people with similar problems and how they have dealt with them	1 n= 21	3.95	.67	
	3 n= 24	3.92	.72	
p) Eliminating all alcoholic beverages	1 n= 21	3.29	.64	
	3 n= 22	3.18	.96	(n= 2; 8.3%)
q) Receiving Electroconvulsive Therapy (ECT)	1 n= 19	2.05	1.08	(n= 2; 9.5%)
	3 n= 24	2.17	.64	

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't
				Know
r) Having an occasionally alcoholic drink to relax	1 n= 21	3.00	.63	
	3 n= 23	3.17	.83	(n= 1; 4.2%)
s) Eating a special diet/ avoiding certain foods	1 n= 20	3.45	.60	(n= 1; 4.8%)
	3 n= 23	3.78	.74	(n= 1; 4.2%)
t) Receiving hypnosis	1 n= 19	2.89	.74	(n= 2; 9.5%)
	3 n= 20	2.95	.76	(n= 4; 6.7%)

“Taking antidepressant medication (i.e., Celexa)” (item 12b) was viewed less favorably by first-year medical students ( $M = 2.35$ ;  $SD = .93$ ) than by third-year medical students ( $M = 2.96$ ;  $SD = .77$ ) for treatment of the individual in the male “stress” vignette. Findings were significant ( $t = 2.34$ ;  $p < .024$ ). First-year students assessed antidepressant medication as harmful (47.6%), while third-year students judged them to be neither harmful nor helpful (41.7%). Approximately the same percentage of students in each class responded “don’t know” to this item (4.8% - first year; 4.2% - third year).

“Taking antibiotics” (item 12g) was deemed “more harmful” by first-year medical students ( $M = 1.66$ ;  $SD = .86$ ) than by third-year medical students ( $M = 2.29$ ;  $SD = .75$ ) for treating the individual in the male “stress” vignette. The differences were significant ( $t = 2.61$ ;  $p < .012$ ). Additional evaluation found that more than 50% of first-year medical students rated antibiotics as “very harmful,” while nearly 50% of third-year students rated them to be “neither” harmful nor helpful for the treatment of stress (Table 21).

Table 21: Item 12 (Vignette 4) *Mean ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the male “stress” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
12a) Taking Vitamins	1 n= 21	3.62	.50	
	3 n= 24	3.54	.66	
*b) Taking antidepressant medications (i.e., Celexa)	1 n= 20	2.35	.93	(n= 1; 4.8%)
	3 n= 23	2.96	.77	(n= 1; 4.2%)
c) Taking antianxiety medication (i.e., Xanax)	1 n= 20	2.80	1.20	(n= 1; 4.8%)
	3 n= 23	3.04	.77	(n= 1; 4.2%)
d) Taking antipsychotic medication (i.e., Risperdal)	1 n= 21	1.86	1.01	
	3 n= 24	2.38	.82	
e) Attending a support group	1 n= 20	3.95	.39	
	3 n= 24	3.75	.74	
f) Taking sleeping pills	1 n= 21	2.48	.87	
	3 n= 23	2.74	.75	(n= 1; 4.2%)
*g) Taking antibiotics	1 n= 21	1.66	.86	
	3 n= 24	2.29	.75	



Table 22 indicates that, for item 13, first-year students were less positive ( $M = 2.05$ ;  $SD = 1.10$ ) than third-year students ( $M = 2.88$ ;  $SD = 1.09$ ) when assessing the “likely result if John did not receive any professional help” ( $t = 2.15$ ;  $p < .04$ ). First- and third-year medical students showed high variability in their responses to this item. Looking at the results of this item more closely, the mode indicated that first-year medical students (38.1%) perceived that if “John” did not receive professional help for his symptoms of “stress” that “his problem would get worse.” Conversely, the mode of third-year medical students showed that 37.5% took the position that “John” would “experience a full recovery, but problems would probably recur.”

Table 22: Item 13 (Vignette 4) *Mean ratings and Standard Deviations of medical students' beliefs about the likely result if the individual in the male "stress" vignette did not receive professional help*

Key: 0- Don't know

- 1- Her problems would get worse
- 2- No improvement in her problems
- 3- Partial recovery
- 4- Full recovery/ but problems would probably recur
- 5- Full recovery with no relapse

Measure	Year	Mean	SD	Don't
				Know
Prognosis without professional help	1 n= 20	2.05	1.10	(n= 1; 4.8%)
	3 n= 24	2.88	1.39	

First-year students “agreed more strongly” ( $M = 3.62$ ;  $SD = .67$ ) to the statement, “People with a problem like John’s can be dangerous to themselves or others,” (item 14c) than did third-year students ( $M = 2.96$ ;  $SD = .98$ ). These findings were statistically significant ( $t = 2.60$ ;  $p < .013$ ). Additional review indicated that more third-year medical students “disagreed and strongly disagreed” (39.1%) with the statement than did first-year medical students (4.8%). One third-year student refrained from answering this item (Table 23).

Table 23: Item 14 (Vignette 4) *Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the male "stress" vignette*

Key: 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Agree

Measure	Year	Mean	SD
14a) People with a problem like John's	1 n= 21	2.57	.75
usually get better on their own	3 n= 24	2.86	1.15
b) A problem like John's is a sign of	1 n= 21	1.33	.58
personal weakness	3 n= 24	1.66	.76
*c) People with a problem like John's can	1 n= 21	3.62	.67
be dangerous to themselves or others	3 n= 23	2.96	.98
d) If I had a problem like John's, I	1 n= 21	1.95	.74
would not tell anyone	3 n= 23	2.22	1.04
e) I would not employ someone if I	1 n= 21	1.81	.60
knew they had a problem like John's	3 n= 23	1.96	.77
f) I would not be friends with someone if	1 n= 21	1.38	.59
I knew they had a problem like John's	3 n= 24	1.63	.82
g) People with a problem like John's will			
be discriminated against by others in	1 n= 21	2.33	1.15
the community	3 n= 24	2.38	1.01

*Vignette 5*: portrayed a female who was encountering symptoms of “generalized anxiety disorder.” Statistically significant differences were discovered in items 11o, 12a, 12g, and 14e. The first three items requested the participant to rate the helpfulness of various treatments to the female portrayed in the vignette. These treatments included, “reading about people with similar problems and how they have dealt with them,” “taking vitamins,” and “taking antibiotics.” The last item elicited medical students to specify how strongly they agreed or disagreed with the statement, “I would not employ someone if I knew they had a problem like Susan’s.”

“Reading about people with similar problems” (item 11o) was determined to be “less helpful” by first-year medical students ( $M = 3.79$ ;  $SD = .71$ ) than by third-year medical students. ( $M = 4.22$ ;  $SD = .52$ ) for the individual depicted in the female “generalized anxiety vignette” ( $t = 2.25$ ;  $p < .03$ ). Of the third-year medical students who responded to this item, 91.7% perceived “reading about people with similar problems” to be “helpful” to “very helpful” for the female in this vignette. Fewer first-year medical students (70%) rated this strategy as “helpful” to “very helpful” (Table 24).

Table 24: Item 11 (Vignette 5) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding the helpfulness of various interventions when applied to the female “generalized anxiety disorder” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t
				Know
11a) Seeing a typical family GP or doctor	1 n= 20	3.96	.69	
	3 n= 24	4.04	.55	
b) Receiving therapy from a licensed professional counselor	1 n= 20	4.50	.51	
	3 n= 24	4.46	.51	
c) Receiving therapy from a social worker	1 n= 20	3.35	.59	
	3 n= 24	3.33	.56	
d) Receiving therapy from a psychiatrist	1 n= 20	4.10	.91	
	3 n= 24	4.42	.72	
e) Receiving therapy from a psychologist	1 n= 20	4.35	.75	
	3 n= 24	4.50	.59	
f) Talking to family member/s	1 n= 20	4.20	.70	
	3 n= 24	4.17	.64	
g) Talking to friends	1 n= 20	4.20	.70	
	3 n= 24	4.21	.59	
h) Talking to clergy/ minister/ priest	1 n= 19	4.11	.57	(n= 1; 5%)
	3 n= 24	3.96	.55	

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't Know
i) Accessing an Internet web site that gives information about her problem	1 n= 19	3.32	.89	(n= 1; 5%)
	3 n= 24	3.00	1.14	
j) Reading a book that gives information about her problem	1 n= 20	3.40	.99	
	3 n= 23	3.65	.71	(n= 1; 4.2%)
k) Calling a telephone hotline	1 n= 19	3.32	.95	(n= 1; 5.0%)
	3 n= 22	3.18	.85	(n= 2; 8.3%)
l) Taking homeopathic remedies	1 n= 19	3.32	.67	(n= 1; 5.0%)
	3 n= 22	2.95	.79	(n= 2; 8.3%)
m) Becoming more physically active (walking, playing sports, exercising)	1 n= 20	4.30	.92	
	3 n= 23	4.30	.70	(n= 1; 4.2%)
n) Attending classes on relaxation, yoga, meditation, or stress management	1 n= 20	4.10	.45	
	3 n= 23	4.35	.49	(n= 1; 4.2%)
*o) Reading about people with similar problems and how they have dealt with them	1 n= 19	3.79	.71	(n= 1; 5.0%)
	3 n= 23	4.22	.52	(n= 1; 4.2%)
p) Eliminating all alcoholic beverages	1 n= 19	3.58	.51	
	3 n= 23	3.70	.63	(n= 1; 4.2%)
q) Receiving Electroconvulsive Therapy (ECT)	1 n= 14	2.07	1.00	(n= 5; 26.3%)
	3 n= 23	2.43	.73	(n= 1; 4.2%)

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't
				Know
r) Having an occasionally alcoholic drink to relax	1 n= 19	2.84	.96	
	3 n= 24	2.75	.74	
s) Eating a special diet/ avoiding certain foods	1 n= 18	3.89	.58 (n = 2;10.0%)	
	3 n= 24	3.54	.78	
t) Receiving hypnosis	1 n= 16	2.69	1.01 (n= 4; 10.0%)	
	3 n= 20	3.20	.52 (n= 4; 6.7%)	



“Taking vitamins” (item 12a) was viewed more favorably by first-year medical students ( $M = 3.95$ ;  $SD = .62$ ) and less favorably by third-year medical students ( $M = 3.48$ ;  $SD = .67$ ) with respect to the female “generalized anxiety disorder” vignette ( $t = 2.34$ ;  $p < .024$ ). First-year medical students (60%) regarded “taking vitamins” as “helpful,” whereas third-year medical students viewed this intervention as “neither” helpful nor harmful. “Don’t know” was the response of 5% of first-year medical students and 4.2% of third-year medical students.

“Taking antibiotics” (item 12g) was appraised as being more “harmful” by third-year medical students ( $M = 2.20$ ;  $SD = .66$ ) than by first-year medical students ( $M = 2.84$ ;  $SD = .76$ ) ( $t = 2.92$ ;  $p < .006$ ). First-year medical students (55%) viewed antibiotics as “neither” helpful nor harmful, however, 66.7% of third-year students perceived them to be “very harmful to harmful.” One first-year student responded “don’t know” to this particular item (Table 25).

Table 25: Item 12 (Vignette 5) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the female “generalized anxiety disorder” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
*12a) Taking Vitamins	1 n= 19	3.95	.62	(n= 1; 5%)
	3 n= 23	3.48	.67	(n= 1; 4.2%)
b) Taking antidepressant medications (i.e., Celexa)	1 n= 17	3.06	.90	(n= 3; 15%)
	3 n= 22	3.32	.95	(n= 2; 8.3%)
c) Taking antianxiety medication (i.e., Xanax)	1 n= 18	3.78	.94	(n= 2; 10%)
	3 n= 24	3.96	.81	
d) Taking antipsychotic medication (i.e., Risperdal)	1 n= 17	2.65	1.00	(n= 3; 15%)
	3 n= 23	2.30	.88	(n= 1; 4.2%)
e) Attending a support group	1 n= 20	4.10	.55	
	3 n= 24	4.25	.53	
f) Taking sleeping pills	1 n= 19	2.63	1.12	(n= 1; 5%)
	3 n= 24	2.33	.87	
*g) Taking antibiotics	1 n= 19	2.84	.76	(n= 1; 5%)
	3 n= 24	2.20	.66	

Third-year medical students “disagreed more strongly” to the statement, “I would not employ someone if I knew they had a problem like Susan’s” (item 14e) ( $M = 2.00$ ;  $SD = .98$ ) than did first-year students ( $M = 2.75$ ;  $SD = 1.16$ ) ( $t = 2.32$ ;  $p < .03$ ). More variability was detected in the responses of third year medical students than first-year medical students. Many third-year students “strongly disagreed” (37.5%) or “disagreed” (33.3%) with the above statement, while fewer first-year students “strongly disagreed” (15%) or “disagreed” (30%). One-fourth of first-year students agreed with the statement regarding not employing someone who had a problem like Susan’s (Table 26).

Table 26: Item 14 (Vignette 5) *Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the female "generalized anxiety disorder" vignette*

Key: 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Agree

Measure	Year	Mean	SD
14a) People with a problem like Susan's usually get better on their own	1 n= 20	1.95	.51
	3 n= 23	2.17	.49
b) A problem like Susan's is a sign of personal weakness	1 n= 20	1.80	.95
	3 n= 24	1.92	.88
c) People with a problem like Susan's can be dangerous to themselves or others	1 n= 20	3.60	.99
	3 n= 24	3.54	.78
d) If I had a problem like Susan's, I would not tell anyone	1 n= 20	1.95	.83
	3 n= 24	1.88	.90
*e) I would not employ someone if I knew they had a problem like Susan's	1 n= 20	2.75	1.16
	3 n= 24	2.00	.98
f) I would not be friends with someone if I knew they had a problem like Susan's	1 n= 20	2.05	.94
	3 n= 24	1.58	.65
g) People with a problem like Susan's will be discriminated against by others in the community	1 n= 20	3.40	.94
	3 n= 24	3.13	1.03

*Vignette 6*: depicted a female presenting with symptoms of “major depression.” Statistically significant differences were uncovered in items 11c, and 11q. These items inquired about the medical students’ opinions regarding the helpfulness of various interventions to the female described in the vignette. These interventions included, “receiving therapy from a social worker,” and receiving Electroconvulsive Therapy (ECT).”

“Receiving therapy from a social worker” (item 11c) was regarded as “more helpful” by third-year medical students ( $M = 3.66$ ;  $SD = .58$ ) than first-year medical students ( $M = 3.22$ ;  $SD = .81$ ) as a treatment option for the individual portrayed in the female “major depression” vignette. This finding was statistically significant ( $t = 2.00$ ;  $p < .05$ ), and also showed that 54.5% of third-year medical students perceived “receiving therapy from a social worker” as “helpful,” while only 22.7% of first-year medical students engaged the same viewpoint. Four first-year medical students (18.2%), and one third-year student (4.5%) answered “don’t know” to this item.

First-year medical students ( $M = 1.91$ ;  $SD = .83$ ) appraised “Electroconvulsive Therapy (ECT)” (11q) more negatively than did third-year medical students ( $M = 3.16$ ;  $SD = .83$ ) for the treatment of the individual described in the female “major depression” vignette ( $t = 3.96$ ;  $p < .001$ ). A third of third-year medical students (31.8%) viewed ECT as “helpful,” while 40.9% considered it to be “neither” helpful nor harmful. First-year students (36.4%) considered ECT to be “harmful” to “very harmful.” One-half of first-year medical students (50%) and 13.6% of third-year medical students responded “don’t know” to this item (Table 27).

Table 27: Item 11 (Vignette 6) *Mean ratings, Standard Deviation, and Percentages of “don’t know” responses of medical students regarding the helpfulness of various interventions when applied to the female “major depression” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
11a) Seeing a typical family GP or doctor	1 n= 21	4.00	.55	(n= 1; 4.5%)
	3 n= 22	4.04	.38	
b) Receiving therapy from a licensed professional counselor	1 n= 22	4.45	.51	
	3 n= 21	4.48	.51	
*c) Receiving therapy from a social worker	1 n= 18	3.22	.81	(n= 4; 18.2%)
	3 n= 21	3.66	.58	(n= 1; 4.5%)
d) Receiving therapy from a psychiatrist	1 n= 22	4.59	.50	
	3 n= 22	4.54	.60	
e) Receiving therapy from a psychologist	1 n= 20	4.40	.60	
	3 n= 22	4.50	.51	
f) Talking to family member/s	1 n= 22	4.18	.66	
	3 n= 22	4.17	.47	
g) Talking to friends	1 n= 22	4.18	.66	
	3 n= 22	4.09	.43	
h) Talking to clergy/ minister/ priest	1 n= 22	4.05	.84	
	3 n= 21	3.95	.59	

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't Know
i) Accessing an Internet web site that gives information about her problem	1 n= 21	3.14	.91	(n= 1; 4.5%)
	3 n= 19	3.32	1.00	(n= 3; 13.6%)
j) Reading a book that gives information about her problem	1 n= 22	3.50	.74	
	3 n= 22	3.68	.72	
k) Calling a telephone hotline	1 n= 19	3.42	.77	(n= 3; 3.6%)
	3 n= 19	3.53	.90	(n= 3; 13.6%)
l) Taking homeopathic remedies	1 n= 18	2.89	.96	(n= 4; 18.2%)
	3 n= 19	3.11	.81	(n= 3; 13.6%)
m) Becoming more physically active (walking, playing sports, exercising)	1 n= 22	4.18	.59	
	3 n= 22	4.27	.46	
n) Attending classes on relaxation, yoga, meditation, or stress management	1 n= 22	4.00	.62	
	3 n= 22	4.18	.50	
o) Reading about people with similar problems and how they have dealt with them	1 n= 22	3.91	.81	
	3 n= 20	4.15	.49	(n= 1; 4.8%)
p) Eliminating all alcoholic beverages	1 n= 21	3.86	.73	(n= 1; 4.5%)
	3 n= 21	3.95	.74	(n= 1; 4.5%)
*q) Receiving Electroconvulsive Therapy (ECT)	1 n= 11	1.91	.83	(n=11; 50%)
	3 n= 19	3.16	.83	(n= 3; 13.6%)

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't Know
r) Having an occasionally alcoholic drink to relax	1 n= 19	2.74	.99	(n=2; 9.5%)
	3 n= 21	2.52	.75	(n= 1; 4.5%)
s) Eating a special diet/ avoiding certain foods	1 n= 17	3.53	.51	(n= 5; 22.7%)
	3 n= 21	3.57	.87	(n= 1; 4.5%)
t) Receiving hypnosis	1 n= 12	3.08	.51	(n=10; 5.5%)
	3 n= 19	3.42	.61	(n=3; 13.6%)



*Vignette 7*: described a female who displayed symptoms of “schizophrenia.”

Statistically significant differences were revealed in items 11, 12c, 12d, 13, and 14c. The first three items required medical students to provide their opinions regarding the helpfulness of various treatments to the female depicted in the vignette. These treatments were, “taking homeopathic remedies,” “taking antianxiety medication (i.e., Xanax), and “taking antipsychotic medications (i.e., Risperdal). Item 13 requested the participant to indicate “the likely result if Susan did not receive any professional help.” The concluding item solicited a rating about how strongly first- and third-year medical students agreed or disagreed with the statement, “People with a problem like Susan’s can be dangerous to themselves and others.”

“Taking homeopathic remedies” (11) was determined to be more “helpful” by first-year medical students ( $M = 3.20$ ;  $SD = .83$ ) than by third-year medical ( $M = 2.71$ ;  $SD = .64$ ) students when considering the helpfulness of various treatments for the individual described in the female “schizophrenia” vignette ( $t = 2.09$ ;  $p < .04$ ). Medical students in both classes (13% - first year; 8.7% - third year) answered “don’t know” to this item. One third-year student refrained from answering this item as can be seen in Table 28.

Table 28: Item 11 (Vignette 7) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding the helpfulness of various interventions when applied to the female “schizophrenia” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know	
				Percentage	n
11a) Seeing a typical family GP or doctor	1 n= 22	3.95	.72		
	3 n= 23	3.74	.81		
b) Receiving therapy from a licensed professional counselor	1 n= 23	4.26	.62		
	3 n= 23	4.35	.65		
c) Receiving therapy from a social worker	1 n= 23	3.87	.55		
	3 n= 23	3.52	.85		
d) Receiving therapy from a psychiatrist	1 n= 23	4.74	.45		
	3 n= 23	4.65	.65		
e) Receiving therapy from a psychologist	1 n= 23	4.35	.65		
	3 n= 23	4.35	.65		
f) Talking to family member/s	1 n= 21	3.57	.98	(n= 2; 8.7%)	
	3 n= 23	3.30	1.06		
g) Talking to friends	1 n= 22	3.64	.95	(n= 2; 4.3%)	
	3 n= 23	3.43	.84		
h) Talking to clergy/ minister/ priest	1 n= 21	3.42	.87	(n= 2; 8.7%)	
	3 n= 22	3.55	.67	(n= 1; 4.3%)	

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't Know
i) Accessing an Internet web site that gives information about her problem	1 n= 22	3.00	.76	(n= 1; 4.3%)
	3 n= 22	2.81	1.10	(n= 1; 4.3%)
j) Reading a book that gives information about her problem	1 n= 21	3.38	.67	(n= 2; 8.7%)
	3 n= 22	3.27	.83	(n= 1; 4.3%)
k) Calling a telephone hotline	1 n= 20	3.05	.60	(n= 3; 13.0%)
	3 n= 22	2.73	.94	(n= 1; 4.3%)
*l) Taking homeopathic remedies	1 n= 20	3.20	.83	(n= 3; 13.0%)
	3 n= 21	2.71	.64	(n= 2; 8.7%)
m) Becoming more physically active (walking, playing sports, exercising)	1 n= 21	3.86	.57	(n= 2; 8.7%)
	3 n= 22	3.73	.46	(n= 1; 4.3%)
n) Attending classes on relaxation, yoga, meditation, or stress management	1 n= 22	3.86	.64	
	3 n= 21	3.52	.60	(n= 3; 12.5%)
o) Reading about people with similar problems and how they have dealt with them	1 n= 23	3.78	.74	
	3 n= 24	3.66	.76	
p) Eliminating all alcoholic beverages	1 n= 21	3.76	.62	(n= 2; 8.7%)
	3 n= 23	3.91	.79	(n= 1; 4.2%)
q) Receiving Electroconvulsive Therapy (ECT)	1 n= 17	2.82	1.07	(n= 6; 26.1%)
	3 n= 21	3.43	.87	(n= 3; 12.5%)

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't Know
r) Having an occasionally alcoholic drink to relax	1 n= 20	2.40	.94	(n= 3; 13.0%)
	3 n= 23	2.39	.84	(n= 1; 4.2%)
s) Eating a special diet/ avoiding certain foods	1 n= 19	3.37	.60	(n= 4; 17.4%)
	3 n= 21	3.33	.48	(n= 3; 12.5%)
t) Receiving hypnosis	1 n= 15	2.87	.83	(n= 8; 34.8%)
	3 n= 21	3.29	.46	(n= 3; 12.5%)

“Taking antianxiety medication (i.e., Xanax)” (item 12c) was considered to be more positive by first-year medical students ( $M = 3.85$ ;  $SD = .49$ ) than by third-year medical students ( $M = 3.43$ ;  $SD = .60$ ) in treating the individual in the female “schizophrenia” vignette ( $t = 2.46$ ;  $p < .02$ ). The majority of first-year medical students (78.3%) perceived “antianxiety medication” to be “helpful,” while 41.7% of third-year medical students shared this view. Another 41.7% of third-year students considered antianxiety medication to be “neither” helpful nor harmful for the individual in the vignette. Students in both classes answered “don’t know” to this item at approximately the same rate (13% - first year, 12.5% - third year).

Item 12d, “Taking antipsychotic medication (i.e., Risperdal)”, was also viewed differently by both first- and third-year medical students for the female in the schizophrenia vignette. Third-year medical students looked more favorably upon this treatment ( $M = 4.54$ ;  $SD = .66$ ) than did first-year medical students ( $M = 3.95$ ;  $SD = .51$ ) for the treatment of “schizophrenia” as described in the female “schizophrenia” vignette ( $t = 3.28$ ;  $p < .002$ ). Third-year medical students (62.5%) took the position that “taking antipsychotic medication” would be “very helpful.” First-year medical students (65.2%) perceived antipsychotic medication as “helpful,” while 13% replied “don’t know,” and another 13% responded “neither” helpful nor harmful (Table 29).

Table 29: Item 12 (Vignette 7) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the female “schizophrenia” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
12a) Taking Vitamins	1 n= 20	3.30	.47	(n= 3; 13.0%)
	3 n= 21	3.23	.44	(n= 3; 12.5%)
b) Taking antidepressant medications (i.e., Celexa)	1 n= 20	3.35	.67	(n= 3; 13.0%)
	3 n= 23	3.43	.59	(n= 4; 4.2%)
*c) Taking antianxiety medication (i.e., Xanax)	1 n= 20	3.85	.49	(n= 3; 13.0%)
	3 n= 21	3.43	.60	(n= 3; 12.5%)
*d) Taking antipsychotic medication (i.e., Risperdal)	1 n= 20	3.95	.51	(n= 3; 13.0%)
	3 n= 24	4.54	.66	
e) Attending a support group	1 n= 20	4.05	.60	(n= 2; 9.1%)
	3 n= 23	4.30	.47	(n= 1; 4.2%)
f) Taking sleeping pills	1 n= 20	2.60	.82	(n= 3; 13.0%)
	3 n= 22	2.55	1.10	(n= 2; 8.3%)
g) Taking antibiotics	1 n= 20	2.80	.62	(n= 3; 13.0%)
	3 n= 24	2.54	.72	

As can be seen in Table 30, third-year medical students ( $M = 1.10$ ;  $SD = .30$ ) countered with a more negative prognosis than did first-year medical students ( $M = 1.43$ ;  $SD = .51$ ) to item 13 that asked the question “What would be the likely result if Susan did not receive any professional help?” ( $t = 2.59$ ;  $p < .013$ ). First-year students (40.9%) determined that if the individual in the female “schizophrenia” vignette did not receive professional help there would be “no improvement,” however, third-year medical students (85.4%) discerned that this individual would “get worse” in the absence of professional intervention (Table 30).

Table 30: Item 13 (Vignette 7) *Mean Ratings and Standard Deviations of medical students' beliefs about the likely result if the individual in the female "schizophrenia" vignette did not receive professional help*

Key: 0- Don't know

1- Her problems would get worse

2- No improvement in her problems

3- Partial recovery

4- Full recovery/ but problems would probably recur

5- Full recovery with no relapse

Measure	Year	Mean	SD	Don't
				Know
Prognosis without professional help	1 n= 21	1.43	.51	(n= 1; 4.5%)
	3 n= 21	1.10	.30	(n= 1; 4.5%)



Third-year medical students more “strongly agreed” ( $M = 4.46$ ;  $SD = .66$ ) with the statement, “People with a problem like Susan’s can be dangerous to themselves or others” (item 14c) than did first-year medical students ( $M = 3.88$ ;  $SD = .87$  when applied to the individual in the female “schizophrenia” vignette ( $t = 2.63$ ;  $p < .01$ ). More than half of the third-year medical students who assessed this vignette (54.2%) “strongly agreed” with the aforementioned statement, while less than one-quarter of first-year medical students (21.7%) concurred (Table 31).

Table 31: Item 14 (Vignette 7) *Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the female "schizophrenia" vignette*

Key: 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Agree

Measure	Year	Mean	SD
14a) People with a problem like Susan's	1 n= 23	1.48	.51
usually get better on their own	3 n= 24	1.42	.58
b) A problem like Susan's is a sign of	1 n= 23	1.48	.95
personal weakness	3 n= 24	1.50	.72
*c) People with a problem like Susan's can	1 n= 23	3.88	.87
be dangerous to themselves or others	3 n= 24	4.46	.66
d) If I had a problem like Susan's, I	1 n= 23	2.13	1.01
would not tell anyone	3 n= 24	2.25	1.03
e) I would not employ someone if I	1 n= 23	3.00	1.04
knew they had a problem like Susan's	3 n= 24	3.21	1.18
f) I would not be friends with someone if	1 n= 23	1.96	.71
I knew they had a problem like Susan's	3 n= 24	1.92	.83
g) People with a problem like Susan's			
will be discriminated against by others	1 n= 23	4.26	.86
in the community	3 n= 24	4.04	.55

*Vignette 8*: illustrated a female who was exhibiting physical symptoms of “stress.” Statistically significant differences were observed in items 11p, 11q, 12b, and 13. The first three items inquired about medical students’ opinions regarding the helpfulness of various treatments to the female described in the vignette. These included “eliminating all alcoholic beverages,” “receiving Electroconvulsive Therapy (ECT),” and “taking antidepressant medication (i.e., Celexa). The final item explored the participants’ beliefs regarding the prognosis of the female illustrated in the vignette if she did not receive professional help.

“Eliminating all alcoholic beverages” (item 11p) was viewed as being more “helpful” by third-year medical students ( $M = 3.63$ ;  $SD = .77$ ) than by first-year medical students ( $M = 3.10$ ;  $SD = .54$ ) for the female presenting with symptoms of “stress” ( $t = 2.63$ ;  $p < .012$ ). Third-year medical students (44%) reasoned that eliminating all alcoholic beverages for the individual in the female “stress” vignette would be “helpful” or “very helpful” in contrast to 19% of first-year medical students who shared these perceptions. One third-year student answered “don’t know” to this item.

“Receiving Electroconvulsive Therapy (ECT)” (item 11q) was declared “more harmful” by first-year medical students ( $M = 1.47$ ;  $SD = .64$ ) than by third-year medical students ( $M = 2.17$ ;  $SD = .72$ ) when applied to the individual in the female “stress” vignette ( $t = 3.10$ ;  $p < .004$ ). Sixteen percent of third-year medical students viewed ECT as “very harmful” while 42.9% of first-year students evaluated ECT in that manner. “Don’t know” was the response of 28.6% of first-year medical students, and 8% of third-year medical students (Table 32).

Table 32: Item 11 (Vignette 8) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding the helpfulness of various interventions when applied to the female “stress” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
11a) Seeing a typical family GP or doctor	1 n= 21	4.00	.63	
	3 n= 25	3.84	.47	
b) Receiving therapy from a licensed professional counselor	1 n= 21	4.14	.65	
	3 n= 25	4.08	.57	
c) Receiving therapy from a social worker	1 n= 21	3.33	.48	
	3 n= 24	3.54	.51	
d) Receiving therapy from a psychiatrist	1 n= 21	3.81	.68	
	3 n= 24	3.83	.76	(n= 1; 4.0%)
e) Receiving therapy from a psychologist	1 n= 21	4.00	.55	
	3 n= 24	4.04	.69	(n= 1; 4.0%)
f) Talking to family member/s	1 n= 21	4.43	.68	(n= 2; 9.5%)
	3 n= 25	4.44	.65	(n= 2; 8.0%)
g) Talking to friends	1 n= 21	4.43	.60	
	3 n= 25	4.44	.58	
h) Talking to clergy/ minister/ priest	1 n= 20	3.95	.60	(n= 1; 4.8%)
	3 n= 24	4.17	.70	

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't Know
i) Accessing an Internet web site that gives information about her problem	1 n= 21	3.29	.85	(n= 1; 4.8%)
	3 n= 25	3.32	.90	
j) Reading a book that gives information about her problem	1 n= 20	3.70	.47	
	3 n= 25	3.56	.65	
k) Calling a telephone hotline	1 n= 19	3.11	.81	(n= 2; 9.5%)
	3 n= 24	3.25	.68	(n= 1; 4.0%)
l) Taking homeopathic remedies	1 n= 18	3.17	.51	(n= 3; 14.0%)
	3 n= 24	3.04	.75	(n= 1; 4.0%)
m) Becoming more physically active (walking, playing sports, exercising)	1 n= 20	4.05	.51	(n= 1; 4.8%)
	3 n= 24	4.20	.72	(n= 1; 4.0%)
n) Attending classes on relaxation, yoga, meditation, or stress management	1 n= 21	4.38	.50	
	3 n= 25	4.52	.59	(n= 1; 4.0%)
o) Reading about people with similar problems and how they have dealt with them	1 n= 20	3.95	.60	(n= 1; 4.8%)
	3 n= 25	3.92	.64	
*p) Eliminating all alcoholic beverages	1 n= 21	3.10	.54	
	3 n= 24	3.63	.77	(n= 1; 4.0%)
*q) Receiving Electroconvulsive Therapy (ECT)	1 n= 15	1.47	.64	(n= 6; 28.6%)
	3 n= 23	2.17	.72	

Key: 0- Don't know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don't Know
r) Having an occasionally alcoholic drink to relax	1 n= 20	3.30	.80	(n= 1; 4.8%)
	3 n= 25	3.24	.83	
s) Eating a special diet/ avoiding certain foods	1 n= 20	3.65	.49	(n= 1; 4.8%)
	3 n= 24	3.71	.62	
t) Receiving hypnosis	1 n= 15	2.87	.64	(n= 6; 28.6%)
	3 n= 23	2.96	.64	(n= 2; 8.0%)

“Taking antidepressant medication (i.e., Celexa)” (item 12b) was considered more “harmful” by first-year medical students ( $M = 2.44$ ;  $SD = .78$ ) than by third-year medical students ( $M = 2.92$ ;  $SD = .70$ ) for the female who displayed symptoms associated with “stress” ( $t = 2.09$ ;  $p < .043$ ). More than half of the first-year medical students (52.4%) perceived “taking antidepressant medication” as “very harmful” to “harmful” for the individual in the female “stress” vignette, while 52% of third-year medical students considered this medication to be “neither” harmful nor helpful. A few first-year medical students (14.3%) responded “don’t know” to this item (Table 33).

Table 33: Item 12 (Vignette 8) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the female “stress” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
12a) Taking Vitamins	1 n= 20	3.80	.52	(n= 1; 4.8%)
	3 n= 24	3.88	.74	(n= 1; 4.0%)
*b) Taking antidepressant medications (i.e., Celexa)	1 n= 18	2.44	.78	(n= 3; 14.3%)
	3 n= 25	2.92	.70	
c) Taking antianxiety medication (i.e., Xanax)	1 n= 18	2.61	.85	(n= 3; 14.3%)
	3 n= 24	2.96	.91	
d) Taking antipsychotic medication (i.e., Risperdal)	1 n= 17	2.12	.49	(n=4; 19.0%)
	3 n= 25	2.20	.71	
e) Attending a support group	1 n= 21	4.05	.50	
	3 n= 25	3.92	.81	
f) Taking sleeping pills	1 n= 21	2.33	1.02	
	3 n= 25	2.36	.76	
g) Taking antibiotics	1 n= 18	2.17	.62	(n=3; 14.3%)
	3 n= 25	2.00	.82	



First-year medical students expressed a “more negative” prognosis ( $M = 1.85$ ;  $SD = 1.09$ ) when responding to item 13 which requested a response to “the likely result if Susan did not receive any professional help” than did third-year medical students ( $M = 2.96$ ;  $SD = 1.27$ ) ( $t = 3.08$ ;  $p < .004$ ). The large standard deviation indicated a great deal of variability in the responses. A closer review revealed that more than one-half of the first-year medical students (55%) concluded that “her problem would get worse.” On the other hand, third-year medical students indicated a more positive prognosis and 40% concluded a “full recovery, but problems would probably recur.” One first-year student refrained from answering this item, while 4% of third-year medical students answered “don’t know” to this item (Table 34).

Table 34: Item 13 (Vignette 8) *Mean ratings and Standard Deviations of medical students' beliefs about the likely result if the individual in the female "stress" vignette did not receive professional help*

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Key: 0- Don't know

- 1- Her problems would get worse
- 2- No improvement in her problems
- 3- Partial recovery
- 4- Full recovery/ but problems would probably recur
- 5- Full recovery with no relapse

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Measure	Year	Mean	SD	Don't
				Know
Prognosis without professional help	1 n= 20	1.85	1.09	
	3 n= 24	2.96	1.27 (n= 1; 4.0%)	

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### *Agreement on Helpfulness of Treatments*

First- and third-year medical students agreed upon several areas of helpfulness to “John” and “Susan.” Some treatments were viewed as very helpful, while others were considered very harmful. Several were also perceived to be neither helpful nor harmful. Following are the findings.

*Vignette 1 (male, “generalized anxiety disorder”).* First- and third-year medical students agreed that the following interventions were “helpful to very helpful:” “Receiving therapy from a psychiatrist, psychologist, and licensed professional counselor; becoming more physically active,” and “attending classes on relaxation, yoga, meditation, or stress management” (Table 13, page 89)

The following were viewed as “helpful:” “Seeing a typical family doctor; talking to family members, friends, and clergy; reading about people with similar problems and how they have dealt with them; taking antianxiety medication; and attending a support group.” “Receiving therapy from a social worker” and “eliminating all alcoholic beverages” were rated between “neither” and “helpful.” However, the most common response in both cases was “neither” harmful nor helpful. “Accessing an Internet web site, and reading a book that gives information about his problem; taking vitamins, and taking antidepressant medication” were also evaluated between “neither” and “helpful.” Further review showed that most participants perceived these interventions to be “helpful.” Taking homeopathic remedies, receiving hypnosis, and having an occasional alcoholic drink to relax were considered to be “neither” harmful nor helpful (Table 13, page 89; and Table 35).

Taking “antibiotics,” was evaluated as “harmful,” while “taking antipsychotic medication and sleeping pills,” was perceived as “harmful” to “neither” harmful nor helpful. A closer look at these responses revealed that the highest number of third-year students perceived “taking antipsychotic medication” as “harmful,” while the greatest number of first-year students regarded them as “neither” harmful nor helpful. The most common response regarding “sleeping pills” indicated that first- and third-year students considered them to be “harmful” (Table 35).

Table 35: Item 12 (Vignette 1) *Mean Ratings, Standard Deviations, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the male “generalized anxiety disorder” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t
				Know
12a) Taking Vitamins	1 n= 18	3.78	.55	(n=2; 10.0%)
	3 n= 23	3.48	.51	(n=2; 8.0%)
b) Taking antidepressant medications (i.e., Celexa)	1 n= 17	3.53	.94	(n=3; 15.0%)
	3 n= 24	3.63	.65	(n=1; 4.0%)
c) Taking antianxiety medication (i.e., Xanax)	1 n= 17	4.06	.75	(n=3; 15.0%)
	3 n= 24	4.04	.55	(n=1; 4.0%)
d) Taking antipsychotic medication (i.e., Risperdal)	1 n= 16	2.50	.63	(n=4; 20.0%)
	3 n= 22	2.36	.49	(n=2; 8.3%)
e) Attending a support group	1 n= 19	4.11	.57	(n=1; 5.0%)
	3 n= 25	4.16	.47	
f) Taking sleeping pills	1 n= 17	2.47	1.12	(n=3; 14.0%)
	3 n= 22	2.41	.85	(n=3; 12.0%)
g) Taking antibiotics	1 n= 18	2.33	.84	(n=2; 10.0%)
	3 n= 23	2.00	.74	(n=2; 8.0%)

*Vignette 2 (male, "major depression")*. First- and third-year medical students agreed that, "Receiving therapy from a psychiatrist, psychologist, and licensed professional counselor was "helpful to very helpful" for the male who was exhibiting symptoms of major depression. The following were considered to be "helpful:" "Seeing a typical family doctor; talking to family members, friends, and clergy; becoming more physically active; attending classes on relaxation, yoga, meditation, or stress management; reading about people with similar problems and how they have dealt with them; eliminating all alcoholic beverages (Table 14); taking vitamins, taking antidepressant medication, and attending a support group" (Table 15).

"Reading a book that gives information about his problem" and "eating a special diet/avoiding certain foods" was regarded as "neither" to "helpful" by first- and third-year medical students. "Accessing an Internet website that gives information about his problem; taking homeopathic remedies; receiving hypnosis, and taking antipsychotic medication was considered to be "neither" harmful nor helpful. Further review of frequencies and percentages discovered that most first- and third-year students perceived that "receiving therapy from a social worker," "taking sleeping pills," "taking antibiotics" and "having an occasional alcoholic drink to relax" was "neither" harmful nor helpful (Table 14 and Table 15).

*Vignette 3 (male, "schizophrenia")*. First- and third-year medical students were in agreement with regard to various areas of helpfulness to the male described in this vignette. Both groups of participants agreed that "receiving therapy from a psychiatrist would be "very helpful." "Receiving therapy from a psychologist" received a mean just slightly above the helpful level, however, additional review showed that the most

common response of first-year students was “5” and that third-year students responded “4” and “5” equally. Consequently, one can perceive “receiving therapy from a psychologist” as “helpful” to “very helpful.” The following were considered “helpful:” “Seeing a typical family doctor;” “receiving therapy from a professional counselor, and social worker;” “talking to family members, friends, and clergy;” “reading about people with similar problems and how they have dealt with them” (Table 17), “taking antianxiety medication, and attending a support group” (Table 18).

The following interventions were regarded within the range of “neither” and “helpful:” “Becoming more physically active; attending classes on relaxation, yoga, meditation, or stress management; eliminating all alcoholic beverages, and taking antidepressant medications.”

“Accessing an Internet web site that gives information about his problem, calling a telephone hotline, taking homeopathic remedies, eating a special diet/ avoiding certain foods, and taking vitamins, sleeping pills, and antibiotics were all endorsed as being “neither” helpful nor harmful. “Having an occasional alcoholic drink to relax” was considered “harmful” to “neither” harmful nor helpful (Table 17 and Table 18).

*Vignette 4 (male, “stress”).* Students expressed agreement regarding various interventions for the male depicted in this vignette. They endorsed “talking to family members” as “very helpful,” and viewed the following as “helpful:” “Seeing a typical family doctor; receiving therapy from a psychiatrist or psychologist; talking to clergy; reading a book that gives information about his problem; reading about people with similar problems and how they have dealt with them; and attending a support group.” “Talking to friends; becoming more physically active; attending classes on relaxation,

yoga, meditation, or stress management were regarded as “helpful” to “very helpful” (Table 20).

Various other strategies were considered “neither” helpful nor harmful. These included “receiving therapy from a social worker, calling a telephone hotline, taking homeopathic remedies, eliminating all alcoholic beverages, having an occasional alcoholic drink to relax, receiving hypnosis, and taking antianxiety medication.” Three responses fell between the “neither and helpful,” range and consisted of “accessing an Internet website that gives information about his problem, eating a special diet/avoiding certain foods, and taking sleeping pills.” “Receiving Electroconvulsive Therapy (ECT), and taking antipsychotic medication was deemed “harmful” by both groups of students (Table 20 and Table 21).

*Vignette 5 (female, “generalized anxiety disorder”).* Students expressed agreement for various treatments when applied to the female portrayed in this vignette. They viewed “Receiving therapy from a psychiatrist, psychologist, or licensed professional counselor, and becoming more physically active” as “helpful to very helpful.” “Seeing a typical family doctor; talking to family members, friends, or clergy; attending classes on relaxation, yoga, meditation, or stress management (Table 24); taking antianxiety medication; and attending a support group” were perceived as “helpful” (Table 25).

“Accessing an Internet website or reading a book that gives information about her problem was rated as “neither.” “Eliminating all alcoholic beverages” was regarded as “neither to helpful (Table 24).” However, additional review of frequencies and



percentages revealed that the most common responses to all three fell within the “helpful” area.

“Receiving therapy from a social worker, calling a telephone hotline, taking homeopathic remedies, and receiving hypnosis” were perceived as “neither” helpful nor harmful (Table 24). Table 25 shows that “Taking antipsychotic medication” was also evaluated as “neither,” however, a closer review found that the most common response of the students was the “harmful”.

“Receiving Electroconvulsive Therapy, having an occasional alcoholic drink to relax, and taking sleeping pills” were regarded as “harmful to neither” harmful nor helpful. “Taking vitamins, and taking antidepressant medication was viewed as “neither to helpful” (Table 24 and Table 25).

*Vignette 6 (female, “major depression”).* Students showed agreement in recommending various areas of treatment to the female in this vignette, who was experiencing symptoms of “major depression.” Nearly all participants responded within the “helpful to very helpful” range with regard to “receiving help from a psychiatrist, psychologist, and licensed professional counselor; and becoming more physically active.” Many other interventions were considered “helpful” and included “seeing a typical family doctor; talking to family members, friends, and clergy; accessing an Internet website that gives information about her problem; attending classes on relaxation, yoga, meditation, or stress management; reading about people with similar problems and how they have dealt with them; eliminating all alcoholic beverages (Table 27), taking antidepressant medication, and attending a support group.

Three responses fell within the “neither to helpful” range, nevertheless, further exploration found that the most common response for these particular items was “4.” Therefore, the following treatments were interpreted as “helpful:” “Reading a book that gives information about her problem,” “calling a telephone hotline,” and “eating a special diet/avoiding certain foods” (Table 27).

The interventions that were perceived as “neither” helpful nor harmful were: “taking homeopathic remedies,” “receiving hypnosis,” “taking antianxiety medication” and “taking sleeping pills.” “Having an occasional alcoholic drink to relax, taking antibiotics, and taking antianxiety medication” was within the “harmful to neither” range (Table 27 and Table 36).

Table 36: Item 12 (Vignette 6) *Mean ratings, Standard Deviation, and Percentages of “don’t know” responses of medical students regarding helpfulness of various treatments including medication when applied to the female “major depression” vignette*

Key: 0- Don’t know, 1-Very Harmful, 2-Harmful, 3-Neither, 4-Helpful, 5-Very Helpful

Measure	Year	Mean	SD	Don’t Know
12a) Taking Vitamins	1 n= 18	3.56	.62	(n= 4; 18.2%)
	3 n= 20	3.70	.66	(n= 1; 4.5%)
b) Taking antidepressant medications (i.e., Celexa)	1 n= 22	4.09	.61	
	3 n= 22	4.14	.71	
c) Taking antianxiety medication (i.e., Xanax)	1 n= 18	3.28	.83	(n= 4; 18.2%)
	3 n= 22	3.00	.98	
d) Taking antipsychotic medication (i.e., Risperdal)	1 n= 16	2.93	.93	(n= 6; 27.3%)
	3 n= 21	2.62	.67	
e) Attending a support group	1 n= 22	4.18	.39	
	3 n= 22	4.18	.50	
f) Taking sleeping pills	1 n= 19	3.00	1.05	(n=3; 13.6%)
	3 n= 22	2.77	.92	
g) Taking antibiotics	1 n= 16	2.38	.89	(n= 6; 27.3%)
	3 n= 21	2.42	.60	(n= 1; 4.5%)

*Vignette 7 (female, "schizophrenia")*. Students were in agreement regarding the helpfulness of various interventions for the female in this vignette who was described as experiencing symptoms of schizophrenia. Both groups of participants agreed that "seeing a psychiatrist" would be "very helpful," and "receiving therapy from a psychologist" would be "helpful to very helpful." They also concurred that the following interventions would be "helpful:" "seeing a typical family doctor; receiving therapy from a licensed professional counselor or social worker; becoming more physically active, attending classes on relaxation, yoga, meditation, or stress management; reading about people with similar problems and how they have dealt with them; eliminating all alcoholic beverages, and attending a support group."

Most responses of participants fell within the "neither to helpful" range for "talking to family members, friends, and clergy; reading a book that gives information about her problem; and "taking antidepressant medication." Various interventions were determined to be "neither" helpful nor harmful and included, "accessing an Internet website that gives information about her problem, receiving Electroconvulsive Therapy, eating a special diet/avoiding certain foods, receiving hypnosis; taking vitamins; and taking antibiotics." "Calling a telephone hotline," "having an occasional alcoholic drink to relax," and "taking sleeping pills" were within the "harmful to neither" range (Table 28 and Table 29).

*Vignette 8 (female, "stress")*. Students exhibited agreement with regard to the helpfulness of various interventions to the female described as experiencing symptoms of "stress." They viewed "talking to family members and friends, and attending classes on relaxation, yoga, meditation, or stress management as "helpful to very helpful." Both

groups of medical students considered the following to be “helpful:” “Seeing a typical family doctor, receiving therapy from a psychiatrist, psychologist, or licensed professional counselor; talking to clergy; reading a book that gives information about her problem; becoming more physically active; reading about people with similar problems and how they have dealt with them; taking vitamins; and attending a support group” were all viewed as “helpful” (Table 32).

They considered “calling a telephone hotline, taking homeopathic remedies, having an occasional drink to relax, and receiving hypnosis” to be “neither” harmful nor helpful. “Taking antipsychotic medication, sleeping pills, and antibiotics” were considered “harmful” by the students (Table 32 and Table 33).

#### *Likely Outcome without Professional Help*

Students displayed comparable ratings with regard to the likely result if “John” or “Susan” did not receive any professional help for the symptoms they were experiencing. Following are the responses of both groups of medical students for five vignettes on which they agreed. Results found to possess statistically significant differences were Vignette 4, Vignette 7, and Vignette 8, and were reported earlier in this chapter. Those results can be found in Table 22, Table 30, and Table 34)

*Vignette 1:* This vignette describes a male who is demonstrating symptoms of “generalized anxiety disorder.” The mean of participant responses to “the likely result if John did not receive any professional help,” was 1.85 for first-year medical students and 1.46 for third-year medical students. Further review indicated that most first-year

medical students concluded that there would be “no improvement in his problem,” and the majority of third-year medical students determined that “his problem would get worse.”

*Vignette 2:* This vignette characterizes a male who is exhibiting symptoms of major depression. First- and third-year medical students concurred that if John did not receive professional help, “his problems would get worse.”

*Vignette 3:* Most students concluded that if “John,” who is exhibiting symptoms of “schizophrenia,” did not receive professional help, his “problems would get worse.”

*Vignette 5:* This vignette depicts a female who is demonstrating symptoms of “generalized anxiety disorder.” The responses to the item regarding the “likely result if Susan did not receive professional help,” fell between the “1” and “2” range. However, a closer look at the results showed that the greatest number of responses were registered at the “1,” meaning that “her problem would get worse.”

*Vignette 6:* Participants agreed that “The likely result if Susan did not receive any professional help” was that “her problems would get worse.” Susan is experiencing symptoms of major depression (Table 37).

Table 37: Item 13 (Vignettes 1, 2, 3, 5, 6) *Mean Ratings and Standard Deviations of medical students' beliefs about the likely results if the individuals described in the vignettes did not receive professional help*

Key: 0- Don't know

1- His/her problems would get worse

2- No improvement in his/her problems

3- Partial recovery

4- Full recovery/ but problems would probably recur

5- Full recovery with no relapse

Measure	Year	Mean	SD	Don't Know
<b>Vignette 1</b>				
Prognosis without professional help	1 n= 20	1.85	.75	
	3 n= 24	1.46	.59	
<b>Vignette 2</b>				
Prognosis without professional help	1 n= 23	1.35	.65	(n= 1, .25%)
	3 n= 23	1.35	.71	(n= 2, 8.0%)
<b>Vignette 3</b>				
Prognosis without professional help	1 n= 19	1.11	.32	(n= 1; 5%)
	3 n= 22	1.18	.39	
<b>Vignette 5</b>				
Prognosis without professional help	1 n= 20	1.45	.60	
	3 n= 24	1.75	.90	

Measure	Year		Mean	SD	Don't
					Know
Vignette 6					
Prognosis without professional help	1	n= 22	1.27	.70	
	3	n= 20	1.35	.81	(n=2; 9.1%)



*Personal Beliefs Regarding Stigma and Discrimination*

Both groups of medical students displayed agreements and differences in their responses throughout the survey. This final section measures stigma, which impacts the diagnoses and treatment of mental disorders along with help-seeking behavior. Seven variables evaluated participant stigma, measured participant attitude toward individuals with mental disorders, and assessed beliefs about discrimination in relationship to the individual depicted in each vignette. Means and standard deviations are reported for each of the eight vignettes, and are followed by an assessment of group differences to analyze and test Hypothesis 5.

*Vignette 1 (male, generalized anxiety disorder).* Results of the item regarding stigma showed that all medical students “strongly disagreed” to “disagreed” with the statements, “A problem like John’s is a sign of personal weakness,” “If I had a problem like John’s, I would not tell anyone,” and “I would not be friends with someone if I knew they had a problem like John’s.” They “disagreed” with the statement “People with a problem like John’s usually get better on their own.” Many medical students “agreed” while others “neither” agreed nor disagreed with the following statements, “People with a problem like John’s can be dangerous to themselves or others,” and “People with a problem like John’s will be discriminated against by others in the community.” Additional evaluation found that the majority of third-year medical students disagreed with the statement “I would not employ someone if I knew they had a problem like John’s.” On the other hand, first-year medical students showed more

diversity with frequencies almost equally distributed among “strongly disagree,” “disagree,” “neither,” and “agree” (Table 38).

Table 38: Item 14 (Vignette 1) *Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the male “generalized anxiety disorder” vignette*

Key: 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Disagree

Measure	Year	Mean	SD
14a) People with a problem like John's usually get better on their own	1 n= 20	1.95	.60
	3 n= 25	2.04	.54
b) A problem like John's is a sign of personal weakness	1 n= 20	1.80	1.20
	3 n= 25	1.48	.59
c) People with a problem like John's can be dangerous to themselves or others	1 n= 20	3.30	.98
	3 n= 24	3.33	.87
d) If I had a problem like John's, I would not tell anyone	1 n= 20	2.30	1.22
	3 n= 25	1.68	.75
e) I would not employ someone if I knew they had a problem like John's	1 n= 20	2.55	1.19
	3 n= 25	2.04	.84
f) I would not be friends with someone if I knew they had a problem like John's	1 n= 20	1.80	.89
	3 n= 25	1.72	.54
g) People with a problem like John's will be discriminated against by others in the community	1 n= 20	3.40	1.27
	3 n= 25	3.16	.80

*Vignette 2 (male, major depression).* “Within the area of mental health stigma, medical students “disagreed” to “strongly disagreed” with the statements, “A problem like John’s is a sign of personal weakness,” and “I would not be friends with someone if I knew they had a problem like John’s.” Both groups of participants also “disagreed” with the statement, “People with a problem like John’s usually get better on their own,” and “If I had a problem like John’s, I would not tell anyone.” Additional evaluation of frequencies and percentages indicated that most medical students “disagreed” with the statement, “I would not employ someone if I knew they had a problem like John’s,” and “agreed” with the statement “People with a problem like John’s will be discriminated against by others in the community” (Table 16).

*Vignette 3 (male, schizophrenia).* “Statements regarding mental health stigma showed that both groups of participants “disagreed” to “strongly disagreed” that “People with a problem like John’s usually get better on their own,” and “A problem like John’s is a sign of personal weakness.” They “disagreed” with the statement, “If I had a problem like John’s, I would not tell anyone.” Most medical students responded “disagree” to “neither” to the statement, “I would not employ someone if I knew they had a problem like John’s.” A review of frequencies and percentages showed that the most common responses to the final item regarding “discrimination by others in the community” ranged between “agree” and “strongly agree” (Table 19).

*Vignette 4 (male, stress).* Review of the responses to the stigma item indicated that students “disagreed” with the statements, “If I had a problem like John’s, I would not tell anyone,” and “I would not employ someone if I knew they had a problem like John’s.” Their replies ranged from “strongly disagree to disagree” when responding to

the statements, “A problem like John’s is a sign of personal weakness,” and “I would not be friends with someone if I knew they had a problem like John’s.” Responses to “People with a problem like John’s usually get better on their own,” and “People with a problem like John’s will be discriminated against by others in the community,” were within the “disagree to neither” range (Table 23).

*Vignette 5 (female, generalized anxiety disorder).* Students “disagreed” with the statements, “People with a problem like Susan’s usually get better on their own,” “A problem like Susan’s is a sign of personal weakness,” and “If I had a problem like Susan’s, I would not tell anyone.” Their responses fell within the “strongly disagree to disagree” range for the statement, “I would not be friends with someone if I knew they had a problem like Susan’s.”

The mean for the responses to the statement, “People with a problem like Susan’s can be dangerous to themselves or others” fell within the “neither to agree” range. Nevertheless, further exploration found that most of the participants agreed with the aforementioned statement. Responses to the statement, “People with a problem like Susan’s will be discriminated against by others in the community,” were within the “neither to agree” range (Table 26).

*Vignette 6 (female, major depression).* The responses related to stigma showed that both groups of medical students “disagreed” with the statements, “People with a problem like Susan’s usually get better on their own,” “If I had a problem like Susan’s, I would not tell anyone,” and “I would not employ someone if I knew they had a problem like Susan’s.” Responses ranged from “strongly disagree to disagree” for the

statements “A problem like Susan’s is a sign of personal weakness,” and “I would not employ someone if I knew they had a problem like Susan’s.”

Additional review of the frequencies and percentages for the statements, “People with a problem like Susan’s can be dangerous to themselves or others,” and “People with a problem like Susan’s will be discriminated against by others in the community,” found that most first- and third-year medical students fell into the “agree” category. Therefore, although the mean scores ranged from “agree to strongly agree” for the former, and “neither to agree” for the latter, both were interpreted as “agree” (Table 39).

Table 39: Item 14 (Vignette 6) *Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the female "major depression" vignette*

Key: 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Agree

Measure	Year	Mean	SD
14a) People with a problem like Susan's	1 n= 22	1.77	.75
usually get better on their own	3 n= 22	2.09	.68
b) A problem like Susan's is a sign of	1 n= 22	1.55	1.01
personal weakness	3 n= 22	1.59	.80
c) People with a problem like Susan's can	1 n= 22	4.32	.48
be dangerous to themselves or others	3 n= 22	4.14	.71
d) If I had a problem like Susan's, I	1 n= 22	2.00	1.02
would not tell anyone	3 n= 22	2.09	.43
e) I would not employ someone if I	1 n= 22	2.41	.91
knew they had a problem like Susan's	3 n= 22	2.41	.85
f) I would not be friends with someone if	1 n= 22	1.41	.50
I knew they had a problem like Susan's	3 n= 22	1.64	.66
g) People with a problem like Susan's will			
be discriminated against by others in	1 n= 22	3.50	.92
the community	3 n= 22	3.32	.78

*Vignette 7 (female, schizophrenia).* Responses to the statements regarding stigma showed that students “strongly disagreed to disagreed” with the statement, “People with a problem like Susan’s usually get better on their own” and “A problem like Susan’s is a sign of personal weakness.” Further review found that most participants “strongly disagreed” with the latter statement. They “disagreed” with the statement, “If I had a problem like Susan’s, I would not tell anyone.” Students “neither” agreed nor disagreed with the statements “I would not employ someone if I knew they had a problem like Susan’s,” and “I would not be friends with someone if I knew they had a problem like Susan’s.” They “agreed” that Susan will be discriminated against by others in the community (Table 31).

*Vignette 8 (female, stress).* The item measuring stigma with regard to the vignette depicting a female who was experiencing symptoms of stress, revealed that students responded within the “strongly disagree to disagree” range for the following: “A problem like Susan’s is a sign of personal weakness,” and “I would not be friends with someone if I knew they had a problem like Susan’s.” They “disagreed” with the following: “If I had a problem like Susan’s, I would not tell anyone;” “I would not employ someone if I knew they had a problem like Susan’s;” and “People with a problem like Susan’s will be discriminated against by others in the community.” Both groups of medical students “neither” agreed nor disagreed with the statements “People with a problem like Susan’s usually get better on their own,” and “People with a problem like Susan’s can be dangerous to themselves or others (Table 40).

Table 40: Item 14 (Vignette 8) *Mean Ratings and Standard Deviations of medical students' degrees of agreement and disagreement regarding beliefs about the female "stress" vignette*

Key: 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Agree

Measure	Year		Mean	SD
14a) People with a problem like Susan's	1	n= 21	2.81	.93
usually get better on their own	3	n= 25	3.00	.96
b) A problem like Susan's is a sign of	1	n= 21	1.71	.96
personal weakness	3	n= 25	1.72	.89
c) People with a problem like Susan's can	1	n= 21	3.05	1.02
be dangerous to themselves or others	3	n= 25	3.32	.99
d) If I had a problem like Susan's, I	1	n= 21	1.86	.57
would not tell anyone	3	n= 25	2.00	.76
e) I would not employ someone if I	1	n= 21	1.76	.44
knew they had a problem like Susan's	3	n= 25	1.96	.68
f) I would not be friends with someone if	1	n= 21	1.33	.48
I knew they had a problem like Susan's	3	n= 25	1.56	.58
g) People with a problem like Susan's will				
be discriminated against by others in	1	n= 21	2.05	.92
the community	3	n= 25	2.32	.75



*Data Analysis of Attitudes and Beliefs Regarding Mental Health Stigma for Evaluating Hypothesis 5*

Multi-Analysis of Variance (MANOVA) was conducted on first- and third-year multiple dependent variables to assess group differences across seven dependent variables that measured mental health stigma. Primary analysis of the two groups of medical students for all eight vignettes combined did not show any statistical significance. However, a few analyses did approach a statistical trend with items 14a ( $F = 2.54; p < .11$ ) and 14f ( $F = 2.49; p < .12$ ). For all vignettes combined, first-year medical students ( $M = 2.02; SD = .79$ ) had a tendency to “more strongly disagree,” as compared to third-year medical students ( $M = 2.16; SD = .89$ ) to the statement, “People with a problem like John’s (Susan’s) get better on their own.” Across all vignettes, first-year medical students ( $M = 1.64; SD = .71$ ) also “more strongly disagreed” than did third-year students ( $M = 1.76; SD = .75$ ) to the statement “I would not be friends with someone if I knew they had a problem like John’s (Susan’s),” (Table 41).

Table 41: Item 14 (Stigma and Discrimination). *Mean Ratings and Standard*

*Deviations of medical students' attitudes and beliefs about mental disorders  
for all vignettes combined*

Key: 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Agree

Measure	Year	Mean	SD
*14a) People with a problem like John's/ Susan's usually get better on their own	1 n= 171	2.02	.79
	3 n= 187	2.16	.89
b) A problem like John's/Susan's is a sign of personal weakness	1 n= 171	1.58	.91
	3 n= 187	1.64	.76
c) People with a problem like John's/ Susan's can be dangerous to themselves or others	1 n= 171	3.69	.89
	3 n= 187	3.77	.93
d) If I had a problem like John's/Susan's, I would not tell anyone	1 n= 171	2.01	.86
	3 n= 187	2.11	.89
e) I would not employ someone if I knew they had a problem like John's/Susan's	1 n= 171	2.42	1.00
	3 n= 187	2.39	1.01
* f) I would not be friends with someone if I knew they had a problem like John's/Susan's	1 n= 171	1.64	.71
	3 n= 187	1.76	.75
g) People with a problem like John's/ Susan's will be discriminated against by others in the community	1 n= 171	3.30	1.22
	3 n= 187	3.24	1.06

In addition, a secondary analysis was performed with a two-way MANOVA to detect gender effect. Two-way interactions were not significant. However, main effects of gender were significant and statistical significance was indicated for items 14b, 14d, 14e, and 14f. For all vignettes combined, female medical students ( $n = 191$ ) “more strongly disagreed,” when compared to male medical student participants ( $n = 163$ ) with the following statements: (14b) “A problem like John’s (Susan’s) is a sign of personal weakness” ( $F = 13.38$ ;  $p < .001$ ); (14d) “If I had a problem like John’s (Susan’s), I would not tell anyone” ( $F = 19.37$ ;  $p < .001$ ); (14e) “I would not employ someone if I knew they had a problem like John’s (Susan’s)” ( $F = 6.61$ ;  $p < .02$ ); and (14f) “I would not be friends with someone if I knew they had a problem like John’s (Susan’s)” ( $F = 7.36$ ;  $p < .007$ ). Means and standard deviations are reported in Table 42.

Table 42: Secondary analysis of Item 14 (Stigma and Discrimination) regarding gender effect. *Mean Ratings and Standard Deviations comparing female and male medical students' attitudes and beliefs about mental disorders*

Key: (Mean) 1-Strongly Disagree, 2-Disagree, 3-Neither, 4-Agree, 5-Strongly Agree

(Gender) Male medical students = 1

Female medical students = 2

Measure	Gender	Mean	SD
14b) A problem like John's/Susan's is a sign of personal weakness	1 n= 163	1.79	.89
	2 n= 191	1.45	.77
14d) If I had a problem like John's/Susan's, I would not tell anyone	1 n= 163	2.29	.93
	2 n= 191	1.87	.79
14e) I would not employ someone if I knew they had a problem like John's/Susan's	1 n= 163	2.54	1.06
	2 n= 191	2.28	.94
14f) I would not be friends with someone if I knew they had a problem like John's/ Susan's	1 n= 163	1.82	.81
	2 n= 191	1.60	.64

## Chapter 4

## Discussion

This chapter includes a discussion of the results, with the intention of enhancing interpretation, and increasing an understanding of the data presented. Prior to initiating the student survey, this study first explored the extent to which the vignettes accurately described “generalized anxiety disorder,” “major depression,” “schizophrenia,” and “stress.” Two of the vignettes were used in the original Jorm et al. (1997a) study. One of the original vignettes described an individual who was experiencing symptoms of major depression, and the other depicted an individual who was exhibiting symptoms of schizophrenia. Two additional vignettes were composed to illustrate generalized anxiety disorder and stress. Each vignette was presented in both male and female genders, resulting in a total of eight vignettes. Knowledgeable participants who are practicing psychologists, psychiatrists, counselors, social workers, and students pursuing a doctorate in clinical psychology were required to read each of the eight vignettes and select a diagnosis from a given menu. For the second phase of this study, first- and third-year medical students were given a survey that contained only one randomized vignette.

This study investigated the knowledge and beliefs about mental disorders of first- and third-year medical students, more specifically termed “mental health literacy.” This term was first used by Jorm et al. (1997a) in a study conducted in Australia, which assessed the ability of the general population to recognize mental disorders. Research on this topic is limited, and has primarily been established in countries outside the

United States. For this phase of the study, first- and third-year medical students were given a four-page packet that contained one randomized vignette and a 14-item survey. The survey requested demographic information, along with responses regarding knowledge, personal opinions, and beliefs about mental disorders. Student participants were surveyed at Philadelphia College of Osteopathic Medicine.

### *Discussion of the Research Hypotheses Testing*

Hypothesis 1: The inter-rater reliability of the diagnosis obtained by mental health experts reviewing the vignettes used in this study would be  $r = .75$ .

Inter-rater reliability was determined for all vignettes combined and yielded a Kuder Richardson Formula 20  $r = .95$ . Participants were asked to read and diagnose eight vignettes, four male and four female. The male and female generalized anxiety disorder vignettes were correctly diagnosed by 89% of the raters, the male and female major depression and the male and female schizophrenia vignettes by 100% of the raters, and the male stress vignette was correctly diagnosed by 65% of the raters. The female stress vignette was correctly identified by 63% of the raters. Inter-rater reliability yielded by the Kuder Richardson Formula 20 was high due to the agreement of diagnosis by the raters. However, the inter-rater statistical analysis may also have been high in that the raters agreed on incorrect diagnoses for Vignette 4 and Vignette 8.

The low diagnostic rate for the stress vignette may be because the participants in this phase of the study are employed in the mental health field and are accustomed to using only diagnostic codes that are accepted by insurance companies. If the code for

stress is documented, then the treatment rendered is not reimbursable. The title and nature of the study may also have created bias. The title of the study stated “mental disorders” and may have pre-disposed participants to consider only diagnoses of mental disorders and to exclude all diagnoses that were not DSM-IV-TR related.

The use of vignettes that describe individuals with symptoms of mental disorders appears to be a valid and reliable method of assessing mental health literacy. Several former studies have successfully used vignettes describing individuals with symptoms of major depression and schizophrenia to assess the mental health literacy of the public (Jorm et al., 1997a; Jorm et al., 1997b; Jorm et al., 1999; Lauber et al., 2003), psychiatrists and clinical psychologists (Jorm et al., 1997c; Jorm et al., 1999), and general practitioners (Jorm et al., 1997c; Jorm et al., 1999; Parker et al., 2001). Other studies used only one vignette that described an individual with symptoms of major depression to assess the mental health literacy of the public (Goldney et al., 2001), and individuals with depression (Goldney et al., 2002). Another study used one depression vignette to assess the mental health literacy of teens and younger adults ages 15 to 24 and older adults ages 65 to 74 (Fisher & Goldney, 2003). Chen et al. (2000), Parker et al. (1999, 2000), and Yeo et al. (2001) included a third vignette of “mania” with the vignettes of major depression and schizophrenia to assess the mental health literacy of psychiatrists and mental health professionals.

Hypothesis 2: Third year students would have a significantly greater number of accurate diagnoses of mental disorders than first-year medical students.

The data provide some support for this hypothesis. Although the findings are not statistically significant with regard to accurate diagnoses, they do suggest a statistical trend (i.e., an alpha level that falls between .05 and .1). In this study, third-year medical students generated a greater number of accurate diagnoses compared to first-year medical students after reading vignettes depicting a male or female who was exhibiting symptoms of 1) “generalized anxiety disorder,” 2) “major depression,” 3) “schizophrenia,” or 4) “stress.” Many first-year students who were unable to correctly diagnose the mental disorder described in a given vignette, nevertheless were able to recognize that the individual portrayed in the vignette had a “mental or emotional problem.”

Former studies assessing the mental health literacy of medical students, or studies using vignettes that describe generalized anxiety disorder and stress, are unavailable for comparison. To date, no studies were found that assessed the mental health literacy of medical students. Additionally, studies that used vignettes did not include generalized anxiety disorder or stress. However, in comparing the diagnostic results of this study with a study conducted by Parker et al. (1999), similar results were found. In that particular study, psychiatrists correctly diagnosed the depression vignette with 95% accuracy, and psychiatrically trained nurses with 82% accuracy. Generally trained nurses presented correct diagnoses with 72% accuracy, and other health professionals provided correct diagnoses with 86% accuracy. The diagnostic accuracy



of first- and third-year medical students ranged from 86% to 90% for the depression vignette.

In this present study, third-year medical students were better able to correctly diagnose the schizophrenia vignette than first-year medical students for both the male (61.9% - first year; 100% - third year) and female versions (52.2% - first year; 83.5% - third year) (Appendix D). In the Parker et al. (1999) study, all psychiatrists, psychiatrically trained nurses, generally trained nurses, and other health professionals correctly identified “schizophrenia” with 87% to 96% accuracy. Although first-year medical students did not accurately diagnose the individual in the vignette as exhibiting symptoms of schizophrenia, they did recognize the presence of a “psychiatric, mental, or emotional problem.”

Third-year medical students may have been able to more accurately diagnose mental disorders because of the contact they experienced during their psychiatric or family medicine rotations, or with individuals who have mental disorders. Lauber et al. (2003) found that individuals who have exposure to those who have a mental illness, in particular, depression, are better able to recognize depression as a disorder in others. First-year medical students may not have been able to identify the schizophrenia vignette due to lack of professional experiences and exposure to individuals who present with these symptoms, and lack of psychiatric education.

Schizophrenia affects only 1% of the population, whereas the prevalence of lifetime major depressive disorder is 16.2% (Kessler et al., 2003). Therefore, association with individuals who have major depression is much more likely than exposure to individuals who have schizophrenia. To date, no studies were found that

have used vignettes depicting generalized anxiety disorder, or stress, therefore, no comparisons to former studies are presented. This study further determined that these vignettes were a reliable methodology to measure mental health literacy in medical students.

Hypothesis 3. The male-gendered vignettes would be significantly underdiagnosed by first-verses third-year medical students.

This hypothesis was not supported. Results of the data analysis indicated that the only male vignette that could be considered “underdiagnosed” by first-year medical students was Vignette 1, which depicted a male exhibiting symptoms of generalized anxiety disorder. Male generalized anxiety disorder was correctly diagnosed by 80% of both groups of medical students, however, 15% of first-year medical students “underdiagnosed” the symptoms as “stress” (Appendix D). Male schizophrenia was correctly diagnosed by only 61.9% of first-year medical students; however, 28.5% of first-year medical students indicated the presence of a “psychiatric, mental, or emotional problem.” A small percentage of first-year medical students diagnosed this vignette as generalized anxiety disorder or split personality.

The vignette depicting a male who was experiencing symptoms of generalized anxiety disorder was correctly diagnosed by equal percentages of both groups of medical students. The diagnosis for the male who was exhibiting symptoms of major depression was correctly diagnosed by nearly equal numbers of first- and third-year medical students. These results were unlike those found by Yeo et al. (2001), who assessed the mental health literacy of generally trained and psychiatrically trained nurses. Results of that study indicated that when depression was misdiagnosed, it was

often labeled as “stress.” The vignette depicting symptoms of male stress in the present study was correctly diagnosed with almost equal frequencies by the students. Other researchers who assessed mental health literacy did not include this hypothesis in their studies, therefore, no comparisons to other studies can be made. Results of this study show that first- and third-year medical students appear to be capable of recognizing the differences between symptoms of “stress” and “adjustment disorder.” Furthermore, first- and third-year medical students appear to be able to accurately diagnose the presence of “stress” after reading a vignette describing a male experiencing symptoms of stress.

Hypothesis 4: The female-gendered vignette depicting stress would be significantly overdiagnosed as a mental disorder by first- versus third-year medical students.

Data collected in this study did not provide support for this hypothesis. The findings, instead, approached a statistical trend indicating that third-year medical students showed a stronger tendency to “overdiagnose,” as compared to first-year medical students. In fact, first-year medical students “underdiagnosed” the female in the vignette described as experiencing generalized anxiety disorder, rather than the one depicting symptoms of stress. The female in the generalized anxiety disorder vignette was diagnosed as experiencing stress by 25% of first-year medical students. However, 95% of first-year students correctly diagnosed “stress” for the female in the vignette exhibiting symptoms of stress. Conversely, 40% of third-year medical students overdiagnosed the female in the vignette who was demonstrating symptoms of stress as a mental disorder. These symptoms of stress were instead diagnosed as generalized anxiety disorder, adjustment disorder, and major depression (Appendix D).

The intent of this hypothesis was to demonstrate gender bias, due to the fact that many disorders appear to be more prevalent, or at least, are diagnosed more frequently in women rather than men (Spitzer et al, 1995; Borowsky et al., 2000). Spitzer et al. (1995) reported that mood and anxiety disorders are more prevalent in women than in men. The DSM-IV-TR conveys the fact that adolescent and adult females are twice as likely as adolescent and adult males to develop major depressive disorder. Moreover, the prevalence of depression in women is also well-known in the primary care area. Primary care physicians are more likely to recognize and provide treatment for women's mental health issues than for those presented by men (Borowsky et al., 2000).

Third-year medical students may have overdiagnosed the female described in the stress vignette because they may have learned during their psychiatric rotation that only mental disorders can be billed to insurance companies. A diagnosis of stress is not a "billable" diagnosis. Third-year medical students, rather than first-year medical students, may be exhibiting gender bias as explained in the aforementioned paragraph. Third-year medical students did identify the male in the stress vignette as "stress" with 83.1% accuracy. Nevertheless, 28% of third-year medical students identified the female, who was experiencing symptoms of stress as "adjustment disorder." An alternative explanation may be the fact that participants in this study are submerged in a field of study that focuses on diagnosing "medical conditions" rather than "mental disorders."

Students may have also been able to personally identify with some of the symptoms that were presented in the stress vignette. These symptoms include sleep difficulty, digestive upset, feeling irritable and pressured, and experiencing intermittent headaches. Students may have experienced these symptoms personally, and recognized

them as temporary stress rather than a mental disorder. The symptoms described in the vignette may have been particularly similar to those experienced by first-year medical students as they became engrossed in their first-year of medical school. This personal experience and ability to identify with the individual portrayed in the stress vignette may have led to a more accurate diagnosis of “stress” by first-year medical students. There were also more first-year female participants than first-year male participants, and perhaps they were reluctant to identify their same gender as experiencing a mental disorder. First-year students correctly diagnosed the female stress vignette with more accuracy than they did the male stress vignette. Contrary to the stated hypothesis, first-year medical students, who are predominately female, overdiagnosed the male-gendered stress vignette. However, this finding is not supported by statistical significance. These results might indicate that physician gender may well have an impact upon the diagnosis that a physician attributes to the symptoms that a patient exhibits.

Hypothesis 5: Third-year students would report significantly less mental health stigma with regard to mental disorders than first-year students.

MANOVA was used to assess group differences across seven dependent variables that appraised attitudes and beliefs about individuals who were described in vignettes as exhibiting symptoms of generalized anxiety disorder, major depression, schizophrenia, and stress. A primary analysis of the two groups of medical students for all eight vignettes combined, did not show significance, but did approach a statistical trend (i.e., an alpha value that falls between .10 and .15) with regard to two of the seven variables. First-year medical students “more strongly disagreed,” as compared to

third-year medical students to the statements, “People with a problem like John’s (Susan’s) get better on their own,” and “I would not be friend with someone if I knew they had a problem like John’s (Susan’s).” For all vignettes combined, neither first- nor third-year medical students indicated the presence of mental health stigma regarding mental disorders.

In addition, secondary analyses were performed with a two-way MANOVA to assess the effects of gender on the dependent variables. Statistical significance was indicated on four of the seven dependent variables. For all vignettes combined, first- and third-year female medical students who participated in this study “more strongly disagreed” with the following statements: “A problem like John’s (Susan’s) is a sign of personal weakness,” “If I had a problem like John’s (Susan’s), I would not tell anyone,” “I would not employ someone if I knew they had a problem like John’s (Susan’s),” and “I would not be friends with someone if I knew they had a problem like John’s (Susan’s).”

The fact that first- and third-year female medical students more strongly disagreed with their male counterparts could simply indicate that the females who participated in this study exude more compassion, are more nurturing, more open-minded, and are more comfortable sharing personal information. Furthermore, the female medical students may also have had more personal experience with mental disorders than men. Spitzer et al. (1995) reported that mood, anxiety, somatoform disorders, and co-morbidity are all more prevalent in women than in men. The female participants may have either experienced a mental disorder themselves or personally known someone who has.

First- and third-year female medical students did not interpret the presence of a mental disorder as a personal weakness, but instead may have viewed it as biologically oriented. Females tend to talk to friends about personal matters and to seek advice more than men, and may feel more comfortable sharing information about a personal mental disorder. They also appear to be more compassionate about employing someone who has or has had a mental disorder. Perhaps they possess more empathy because they, themselves, or someone they know experienced difficulty finding employment. These women seem to understand the importance of friendship and attest to that by noting that they would befriend someone even if they had a mental disorder.

*Additional Outcomes Regarding Mental Health Literacy*

This includes an analysis of the various areas of agreement and statistically significant differences of first- and third-year medical students' knowledge and beliefs about mental disorders. A summary is given for recommendations for professional help, beliefs about the helpfulness of interventions, prognosis of mental disorders if no professional help is obtained, and beliefs about stigma and discrimination. Participants disagreed on only 10% of the items presented in the survey when applied to the eight vignettes.

*Recommendations Regarding the Best Source of Help for Mental Disorders*

First- and third-year medical students showed agreement on almost all recommendations for the “best” source of professional help for the individuals described in the eight vignettes. First-year medical students endorsed a “psychiatrist” for the male and female generalized anxiety disorder vignettes, male and female depression vignettes, and the male and female schizophrenia vignettes. They considered “family and friends” as the best source of help for the male and female stress vignettes. Third-year medical students agreed with the first-year medical students on all vignettes, except the female generalized anxiety disorder, where third-year medical students recommended a “psychologist” as the “best” source of help. Although first- and third-year medical students agreed that a “psychiatrist” was the “best” source of help for the male in Vignette 3 who was experiencing symptoms of schizophrenia, the endorsement of third-year medical students was much stronger. More than twice as many third-year medical students recommended “seeing a psychiatrist” as the “best” source of help for the male in Vignette 3 as did first-year medical students.

*Statistically Significant Differences Regarding ECT, Medication, Prognosis, Discrimination, and Stigma*

The areas in which most statistically significant differences occurred were in the items regarding Electroconvulsive Therapy (ECT), medication, prognosis without professional help, and a stigma-related statement about danger to self and others.



*Electroconvulsive Therapy (ECT).* First- and third-year medical students differed on five of the eight vignettes with regard to Electroconvulsive Therapy. Third-year medical students regarded Electroconvulsive Therapy more “helpful” than first-year medical students for the male major depression vignette, and the male and female schizophrenia vignettes. Electroconvulsive therapy is a viable alternative to medication resistant depression (van den Broek et al., 2004), and individuals who have schizophrenia and do not respond to medication (Kho et al., 2004).

*Medication.* With regard to medication, first-year medical students viewed antidepressant medication as “harmful” for the male in the stress vignette, and within the “very harmful to harmful” range for the female stress vignette. First-year medical students considered antianxiety medication as “helpful” for the male major depression vignette and the female schizophrenia vignette. Third-year medical students took the approach that antidepressant medication is “neither” harmful nor helpful for the male and female depicted in the stress vignettes, for the male in the major depression vignette, or the female in the schizophrenia vignette.

Antipsychotic medication was deemed helpful by both groups of medical students for both the male and female depicted in the schizophrenia vignette, but was rated “more helpful” by third-year than first-year medical students. This may have been influenced by the low rate of correct diagnoses for both the male and female schizophrenia vignettes by first-year medical students. Students who did not recognize schizophrenia as the correct diagnosis for this vignette, would not be inclined to recognize antipsychotic medication as a helpful treatment.

Third-year medical students may have been able to more accurately diagnose schizophrenia because of exposure to individuals who exhibited symptoms of schizophrenia during their psychiatric rotation. Exposure to individuals who have depression influences recognition of this disorder in others (Lauber et al., 2003), and may generalize to other disorders, such as schizophrenia.

Antibiotics were considered more harmful for the male in the “stress” vignette, and less harmful for the female in the “generalized anxiety disorder” vignette by first-year medical students. Third-year medical students perceived treatment with antibiotics to be more harmful for both the “male stress vignette” and the “female generalized anxiety disorder vignette.”

*Prognosis without Professional Help.* Participants showed statistically significant differences on three vignette outcomes, with first-year medical students showing the more negative prognosis while third-year students expressed more accuracy. First-year medical students predicted that both the male and female in the “stress” vignettes would “probably get worse,” or that there would be “no improvement,” while third-year medical students expected both individuals to at least experience a “partial recovery.” Third-year medical students projected that the male in the schizophrenia vignette would probably “get worse.” First-year medical students predicted “no improvement.”

Stress is a normal part of life, however, individuals handle stress differently. Both groups of medical students may have responded with personal familiarity to the prognosis of the individual in the stress vignette. First-year medical students may have been experiencing current stress and feeling overwhelmed, or may have experienced an

exacerbation of stress, along with increased symptoms. Third-year medical students may have encountered stress that eventually dissipated. Therefore, both groups would have responded through subjective experience.

Symptoms of schizophrenia will increase without appropriate treatment. The greatest deterioration in schizophrenia occurs during the first few years of onset. Therefore, it is pertinent to obtain appropriate professional treatment early in the course of the illness to facilitate a more positive outcome. The longer the time span between the onset of psychosis and initiation of treatment, the longer it will take to reach remission (Mueser & McGurk, (2004). Third-year medical students may have been more capable of accurately predicting the prognosis of schizophrenia than first-year medical students because of their experiences during psychiatric rotation.

*Discrimination and Stigma.* The variable that showed the most conflicting responses concerned the individual described in the vignette being a danger to themselves or others. This disagreement was evident on four of the eight vignettes. Third-year medical students issued stronger agreement with the belief that “People with a problem like John’s (Susan’s) can be dangerous to themselves or others.” This belief was applied to the “male major depression vignette, and the male and female schizophrenia vignettes. Third-year medical students perceived the male in the stress vignette to be less dangerous than did first-year students.

The individuals depicted in these vignettes could be perceived as being a danger to themselves or others, especially in terms of suicide. Suicide is the eighth leading cause of death in the United States and is highly associated with major depression (Hoyert et al., 1999). There is a 10% to 15% risk of premature death due to suicide for

individuals who have schizophrenia (Amador et al, 1996). Some individuals who have schizophrenia may display outbursts of anger and unusual behavior, but are more at risk for being the victim of violence.

### *General Outcomes and Notable Findings*

An analysis of the student survey resulted in a variety of general outcomes and notable trends. These included opinions, beliefs, recommendations, and attitudes concerning therapeutic interventions, professional contact, stigma, and discrimination with regard to mental disorders. Overall, both groups of medical students rated “Receiving therapy from a psychiatrist” as “helpful” to “very helpful” for all vignettes except the “stress” vignettes for which “talking to family and friends” was rated more helpful than any other professional. “Seeing a psychiatrist” was deemed more helpful than other professionals for treating schizophrenia. “Receiving therapy from a licensed professional counselor” was rated “helpful to very helpful” for all vignettes, although statistically significant differences were noted for the male stress vignette. For the male stress vignette, first-year medical students rated “receiving therapy from a licensed professional counselor” as more helpful than did third-year medical students. In general, “receiving therapy from a psychologist” was viewed as “helpful to very helpful.” These findings were similar to those in former studies conducted by Parker et al. (2000, 2001) and Yeo et al. (2001). In the Parker et al. (2000, 2001) studies, psychiatrists were perceived as highly helpful for both depression and schizophrenia. In the Yeo et al.

(2001) study, psychiatrists were highly recommended for schizophrenia, but shared the same rating with other professionals for the treatment of depression.

“Seeing a family doctor or GP,” was viewed as “helpful” for the individuals described in all vignettes. Generally, “talking to family, friends, and clergy” was also considered “helpful,” although “talking to clergy” was not rated as high as “talking to family and friends” for the “stress” vignettes for this population of respondents. Overall, “receiving therapy from a social worker” was perceived as being less helpful than receiving therapy from other professionals. Third-year medical students identified “receiving therapy from a social worker” to be more helpful than did first-year medical students for the female described in the major depression vignette. Parker et al. (2001) found similar results in that general practitioners rated social workers as less helpful than other professionals. However, Yeo et al. (2001) found that nurses considered social workers to be helpful in the treatment of depression. Mental health professionals (Parker, 2000) deemed family doctors and general practitioners helpful for both depression and schizophrenia, and family and friends to be more helpful for individuals with depression than those with schizophrenia.

“Accessing an Internet website,” and reading a book to obtain information about a particular problem were viewed as “neither” helpful nor harmful. Calling a “telephone hotline, taking homeopathic remedies, eliminating all alcoholic beverages, having an occasional drink to relax, eating a special diet/avoiding certain foods, taking vitamins, and receiving hypnosis” were also rated as “neither” harmful nor helpful. “Increased physical activity, such as walking, playing sports, and exercising, along with attending classes on relaxation, yoga, meditation, or stress management,” were considered

“helpful” for all vignettes except schizophrenia. For the schizophrenia vignettes, both strategies were determined to be “neither” helpful nor harmful. “Reading about people with similar problems and how they have dealt with them,” and “attending a support group” were viewed as “helpful.” Parker (1999, 2000) reported similar results. In those studies mental health professionals viewed physical activity, reading about people with similar problems, and relaxation courses to be more helpful for individuals with depression than schizophrenia.

“Taking antidepressant medication” was perceived as being “helpful” for the male and female depicted in the major depression vignettes, “more harmful” to the male and female in the stress vignettes, and “neither” harmful nor helpful for the individuals in the generalized anxiety disorder and schizophrenia vignettes. There was less agreement with regard to antianxiety medications. However, approximately the same percentages of first- and third-year medical students agreed that “taking antianxiety medication” was “helpful” for both the male and female in the generalized anxiety disorder vignettes. “Antipsychotic medication” was determined to be most helpful for the male and female in the schizophrenia vignette, and more harmful to the individuals in the other vignettes. “Taking antibiotics” was considered generally “harmful,” while taking sleeping pills was regarded as “harmful to neither” for the individuals described in the vignettes. Antidepressant medication for depression and antipsychotic medication for schizophrenia were also viewed positively by health professionals in earlier studies by Jorm et al. (1997d) and Parker et al. (1999). The use of antibiotics was perceived to be harmful to neither for the treatment of depression and schizophrenia (Parker, 2000). Former mental health literacy studies used only vignettes

describing symptoms of depression and schizophrenia. Therefore, no information is available for comparisons of anxiety and stress.

Social workers appear to be “typecast,” and not well-respected in the field of mental health. Psychologists and licensed professional counselors seem to be held in higher regard. Medical students need to understand that there are excellent social workers in the mental health field who have received appropriate training and are very capable of diagnosing and treating mental disorders. Recognizing and utilizing the skills that the various professionals possess and working together as a team would be highly beneficial for patients.

#### *Educational Implications for Mental Health Training in Medical Schools*

The primary care physician plays an important role in the recognition and treatment of mental disorders. Approximately 90% of individuals who experience symptoms of depression and anxiety are treated in the primary care area (Shepherd, Cooper, Brown, & Kalton, 1996). However, physicians often detect the presence of a mental disorder in only 50% of these patients (Goldberg & Huxley, 1992). Many physicians also fail to recognize mood disorders in the elderly (Charney et al., 2003), or postpartum depression in women (Watt et al., 2002).

In order to assure proper treatment, physicians must understand comorbidity. Approximately 20% of patients who have a medical problem, also experience the presence of a mental disorder (Murray & Lopez, 1996). For example, depression has been found to co-exist in patients who have HIV, diabetes, coronary heart disease,

asthma, and pain. In addition, depression increases the perception of pain. Anxiety disorders are often comorbid with asthma, cardiovascular disease, and depression. Both anxiety and depression are frequently found in dermatology patients. Late-life mood disorders often remain unrecognized and, therefore, untreated. This may be due to the fact that many individuals believe that depression is synonymous with aging. Another factor may be that major depressive disorder affects memory, and may be mistaken for early signs of dementia.

Physician knowledge, beliefs, and attitudes also affect recognition of mental disorders, and may also be influenced by gender bias. Primary care physicians reported that they are more aware of depression in women than men, and are less likely to diagnose depression in men, even when they present with the same symptoms (Potts et al., 1991). The primary care physician may not be able to accurately assess and diagnose mental illness because of lack of training in mental health issues, and lack of assessment tools. Physician gender may also influence the diagnosis and treatment of mental disorders. If physicians are unable to recognize the presence of a mental disorder in their patients, they will also be unable to detect symptoms of depression or anxiety in themselves or family members.

Physicians must receive proper and sufficient training in order to recognize and properly treat mental disorders. It is important that medical schools incorporate into their curriculum additional mental health training to improve physicians understanding of comorbidity, gender bias, culture and ethnicity, mental health issues in men, mental health issues in the elderly, mental health stigma, and tools for assessing mental disorders. Mental health training will also help the primary care physician in knowing



when to seek assistance from, or recommend their patients to, mental health professionals. Patients must also receive mental health education in order to manage the disorder, prevent relapse, and avoid further decline. The primary care physician can become the facilitator in this very important process, but must receive appropriate training in order to do so.

### *Limitations of this Study*

There are several limitations to this study, including sample size, instrument, administration standardization, assessment conditions, education, gender of participants, and external validity. The total sample size of 364 medical students was adequate, however, this group consisted of two independent groups of medical students. One group consisted of 172 first-year medical students, and the other was made up of 192 third-year medical students. Every student in each group received one of eight vignettes to read and diagnose. Therefore, the number in each diagnostic category to be analyzed contained 20 to 25 students. Some groups were further decreased by participants who purposely or inadvertently left some answers blank. Even those who answered “don’t know” had an impact on the statistical analysis. The gender distribution in each class also differed. The first-year class of medical students contained more female students than did the third-year class.

The instrument itself may have created difficulty for some individuals to mark all responses as intended. Some participants may have erroneously circled a response above or below the Likert-type scale that corresponded to the particular item. Others

may have worked quickly and erroneously circled a response. Although the survey itself consisted of two pages, the packet also contained a demographic page and a vignette page. Placing the vignette on a separate page may also have been a drawback. Perhaps it would have been more feasible to have the vignette, the diagnostic item, and the “best” help item on the same page. With that arrangement, students would not have to refer to the former page when answering those items. Also, the survey could have been arranged differently, and would have been less cluttered. Unlike a doctor’s office, students did not have access to a DSM-IV-TR for diagnostic assistance.

Results could have also been influenced by the lack of standardization regarding administration of the survey, and a “loose protocol effect.” Students were not assessed under identical conditions. Third-year students were approached during small group classes of approximately 15 to 25 students. First-year students received their surveys during large group instruction in the auditorium, which contained more than 125 students. Some students were assessed during a break, and may have hurried to complete the survey, without completely focusing on the items. Others were given time to do so after a break, but may not have completed the survey before the lecture began. This may account for the number of blank responses, along with those that were answered “don’t know.” Students may also have been inundated with surveys administered throughout the year or even that day, and simply answered in a haphazard manner. In spite of the difficulties or distractions, it appeared that all medical students participating in this study approached the survey seriously and conscientiously.

It was assumed that third-year medical students would be more proficient at diagnosing mental disorders than first-year medical students, due to additional

educational exposure to psychiatry. Third-year students were purposely assessed after completing their psychiatric rotation. However, here, too, there is some discrepancy. Some third-year medical students were assessed immediately following this rotation, while others had completed it as many as six to seven months prior to participating in the survey. Baxter, Singh, Standen, and Duggan (2001) found that medical students exhibit a positive change in attitude with regard to mental illness after a psychiatric rotation, but that this change perishes within a year. Some students may not have taken this survey seriously, may have answered haphazardly, or may have participated only to appease the assessor or medical instructor. Nevertheless, as previously stated, students appeared to take the survey seriously, and participated willingly.

The results of this study may not generalize to other medical schools, or to other M.D. training programs. Some programs may or may not include segments on psychiatry and mental disorders. Others may have incorporated a more extensive program, or allowed for additional psychiatric educational opportunities.

#### *Recommendations for Future Research*

Mental health literacy has not been extensively researched, and the vast majority of studies have been conducted in countries, such as Australia, Singapore, Switzerland, and the United Kingdom. Additional research should ensue in this country to assess the mental health literacy of the public, and various professionals. Vignettes depicting various mental disorders appear to be a useful tool to use when assessing mental health literacy. Vignettes were used in this study to assess the mental health literacy of medical

students, and were used in former studies to assess the mental health literacy of the public, general practitioners, and various mental health professionals.

Vignettes depicting various mental disorders can also be used in future studies to assess the mental health literacy of individuals in various professions, age groups, genders, colleges, areas within the state, various areas of the country, various states, cultures, and ethnicities. Studies could compare the mental health literacy of students in medical schools, or evaluate the mental health literacy of students in law school, architecture, or those pursuing an electronics-oriented education. College students could be assessed by year of enrollment, or major. Gender effect should also be further studied, and should take into account the gender of the physician and the gender of the patient.

The mental health literacy of adolescents is another avenue that could be pursued. Still, another direction might be assessing individuals who have already been diagnosed with a mental disorder and are currently receiving mental health care, or even the families of these individuals. Assessing the mental health literacy of primary care physicians may result in a needs assessment and program planning. Specialists in the medical field might also be targeted, because mental disorders frequently appear in conjunction with physical diagnoses. Often, one influences the other. Individuals who experience depression, tend to feel pain, in general, with more intensity. The resulting information obtained from mental health literacy assessments could lead to a specific focus of educational enhancement. The opportunities are many.

This study has identified several deficits in the knowledge and beliefs of medical students. Although this study did not determine statistically significant results with

regard to the stated hypotheses, many other points of valuable information have been recognized. This study could demonstrate educational implications and possibly serve as a reference for educational direction and strategies in medical schools with regard to improving the mental health literacy of future general practitioners, those who intend to further specialize, and for enhancing the mental health literacy of current general practitioners. The mental health literacy assessment instrument that was used in this study could be used as an outcome measure for future PCOM classes or in other D.O./M.D. training programs.

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Appendix A

Inter-rater reliability packet: Includes  
demographic page and eight vignettes

*Please complete the following:*

1. Highest degree obtained \_\_\_\_\_

2. Which of the following best describes you...

- \_\_\_\_\_ Board Certified Psychiatrist
- \_\_\_\_\_ Licensed Psychologist
- \_\_\_\_\_ Licensed Professional Counselor
- \_\_\_\_\_ Licensed Social Worker
- \_\_\_\_\_ Non-licensed Psychologist
- \_\_\_\_\_ Non-licensed Social Worker
- \_\_\_\_\_ Psy. D. Student

3. Years of experience practicing with your current credential \_\_\_\_\_

4. Current year of enrollment as a Psy. D. student \_\_\_\_\_

**Vignette 1**

John is 32 years old, married, works full-time for a computer company, and is currently enrolled in classes at a local college. He complains of dizziness, heart palpitations, ringing ears, trembling, and sweating palms. Additional periodic symptoms include a sore throat, cough, or dry mouth and throat. Periods of extreme muscle tension, along with feelings of being “wound up” or “edgy” are also present. These symptoms often interfere with his concentration, and have been present more often than not for about the past 2 years. John constantly worries about failing his classes, completing projects at work in a timely manner, being able to please his parents and wife, and paying bills. He keeps a low profile at work, and also avoids going out with friends, meeting new people, and exercising at the gym.

**Given what you just read about John, which of the following would BEST describe what is wrong with John? (Choose one)**

- |                                                 |    |
|-------------------------------------------------|----|
| Adjustment Disorder .....                       | 1  |
| Attention Deficit/ Hyperactivity Disorder ..... | 2  |
| Cancer .....                                    | 3  |
| Generalized Anxiety Disorder .....              | 4  |
| Heart Attack .....                              | 5  |
| Major Depression .....                          | 6  |
| Panic disorder .....                            | 7  |
| Psychological/mental/emotional problems .....   | 8  |
| Schizophrenia .....                             | 9  |
| Split personality .....                         | 10 |
| Experiencing Stress .....                       | 11 |
| There is no problem.....                        | 12 |

**Vignette 2**

John is 32 years old. He has been feeling unusually sad and miserable for the last few weeks. Even though he is tired all the time, he has trouble sleeping nearly every night. John doesn't feel like eating and has lost weight. He can't keep his mind on his work and puts off making any decisions. Even day-to-day tasks seem too much for him. This has come to the attention of John's boss who is concerned about his low productivity. John feels he will never be happy again and believes his family would be better off without him. John has been so desperate, he has been thinking of ways to end his life.

**Given what you just read about John, which of the following would BEST describe what is wrong with John? (Choose one)**

- |                                                 |    |
|-------------------------------------------------|----|
| Adjustment Disorder .....                       | 1  |
| Attention Deficit/ Hyperactivity Disorder ..... | 2  |
| Cancer .....                                    | 3  |
| Generalized Anxiety Disorder .....              | 4  |
| Heart Attack .....                              | 5  |
| Major Depression .....                          | 6  |
| Panic disorder .....                            | 7  |
| Psychological/mental/emotional problems .....   | 8  |
| Schizophrenia .....                             | 9  |
| Split personality .....                         | 10 |
| Experiencing Stress .....                       | 11 |
| There is no problem.....                        | 12 |



**Vignette 3**

John is 32 years old, and has not worked for years. He wears the same clothing in all types of weather and has left his hair grow long and untidy. He is always alone, and is often seen sitting in the park talking to himself. At times, he stands and moves his hands as if communicating with someone in nearby trees. He rarely drinks alcohol. He speaks carefully using uncommon and sometimes made-up words. He is polite but avoids talking with other people. At times, he accuses salesclerks of giving information about him to other people. John has asked his landlord to put extra locks on his door and to remove the television set from his room. He says spies are trying to keep him under observation because he has secret information about international computer systems which control people through television transmitters. John's apartment is becoming increasingly dirty and filled with glass objects. John says he is using these "to receive messages from outer space."

**Given what you just read about John, which of the following would BEST describe what is wrong with John? (Choose one)**

- |                                                 |    |
|-------------------------------------------------|----|
| Adjustment Disorder .....                       | 1  |
| Attention Deficit/ Hyperactivity Disorder ..... | 2  |
| Cancer .....                                    | 3  |
| Generalized Anxiety Disorder .....              | 4  |
| Heart Attack .....                              | 5  |
| Major Depression .....                          | 6  |
| Panic disorder .....                            | 7  |
| Psychological/mental/emotional problems .....   | 8  |
| Schizophrenia .....                             | 9  |
| Split personality .....                         | 10 |
| Experiencing Stress .....                       | 11 |
| There is no problem .....                       | 12 |

**Vignette 4**

John is 32 years old, married, and has two children. For the past week, he has been experiencing sleep difficulties, and digestive upset. He recently changed jobs and, in order to arrive at work on time, must leave home one hour earlier than his previous job required. Furthermore, he arrives home one hour later than usual and, as a result, spends less time with his family. His job responsibilities have increased, and he often eats lunch at his desk. Nevertheless, John has not missed any days of work, has consistently arrived on time, completes his job-related tasks, manages to attend his children's soccer games, and continues to occasionally socialize on week-ends. Additionally, this past week he has been feeling irritable and pressured, and experiencing intermittent headaches.

**Given what you just read about John, which of the following would BEST describe what is wrong with John? (Choose one)**

- |                                                 |    |
|-------------------------------------------------|----|
| Adjustment Disorder .....                       | 1  |
| Attention Deficit/ Hyperactivity Disorder ..... | 2  |
| Cancer .....                                    | 3  |
| Generalized Anxiety Disorder .....              | 4  |
| Heart Attack .....                              | 5  |
| Major Depression .....                          | 6  |
| Panic disorder .....                            | 7  |
| Psychological/mental/emotional problems .....   | 8  |
| Schizophrenia .....                             | 9  |
| Split personality .....                         | 10 |
| Experiencing Stress .....                       | 11 |
| There is no problem .....                       | 12 |

**Vignette 5**

Susan is 32 years old, married, works full-time for a computer company, and is currently enrolled in classes at a local college. She complains of dizziness, heart palpitations, ringing ears, trembling, and sweating palms. Additional periodic symptoms include a sore throat, cough, or dry mouth and throat. Periods of extreme muscle tension, along with feelings of being “wound up” or “edgy” are also present. These symptoms often interfere with her concentration, and have been present more often than not for about the past 2 years. Susan constantly worries about failing her classes, completing projects at work in a timely manner, being able to please her parents and husband, and paying bills. She keeps a low profile at work, and also avoids social events, going out with friends, meeting new people, and exercising at the gym.

**Given what you just read about Susan, which of the following would BEST describe what is wrong with Susan? (Choose one)**

- |                                                 |    |
|-------------------------------------------------|----|
| Adjustment Disorder .....                       | 1  |
| Attention Deficit/ Hyperactivity Disorder ..... | 2  |
| Cancer .....                                    | 3  |
| Generalized Anxiety Disorder .....              | 4  |
| Heart Attack .....                              | 5  |
| Major Depression .....                          | 6  |
| Panic disorder .....                            | 7  |
| Psychological/mental/emotional problems .....   | 8  |
| Schizophrenia .....                             | 9  |
| Split personality .....                         | 10 |
| Experiencing Stress .....                       | 11 |
| There is no problem .....                       | 12 |

**Vignette 6**

Susan is 32 years old. She has been feeling unusually sad and miserable for the last few weeks. Even though she is tired all the time, she has trouble sleeping nearly every night. Susan doesn't feel like eating and has lost weight. She can't keep her mind on her work and puts off making any decisions. Even day-to-day tasks seem too much for her. This has come to the attention of Susan's boss who is concerned about her low productivity. Susan feels she will never be happy again and believes her family would be better off without her. Susan has been so desperate, she has been thinking of ways to end her life.

**Given what you just read about Susan, which of the following would BEST describe what is wrong with Susan?** *(Choose one)*

- |                                                 |    |
|-------------------------------------------------|----|
| Adjustment Disorder .....                       | 1  |
| Attention Deficit/ Hyperactivity Disorder ..... | 2  |
| Cancer .....                                    | 3  |
| Generalized Anxiety Disorder .....              | 4  |
| Heart Attack .....                              | 5  |
| Major Depression .....                          | 6  |
| Panic disorder .....                            | 7  |
| Psychological/mental/emotional problems .....   | 8  |
| Schizophrenia .....                             | 9  |
| Split personality .....                         | 10 |
| Experiencing stress .....                       | 11 |
| There is no problem .....                       | 12 |

**Vignette 7**

Susan is 32 years old, and has not worked for years. She wears the same clothing in all types of weather and has left her hair grow long and untidy. She is always alone, and is often seen sitting in the park talking to herself. At times, she stands and moves her hands as if communicating with someone in nearby trees. She rarely drinks alcohol. She speaks carefully using uncommon and sometimes made-up words. She is polite, but avoids talking with other people. At times, she accuses salesclerks of giving information about her to other people. Susan has asked her landlord to put extra locks on her door and to remove the television set from her room. She says spies are trying to keep her under observation because she has secret information about international computer systems which control people through television transmitters. Susan's apartment is becoming increasingly dirty and filled with glass objects. Susan says she is using these "to receive messages from outer space."

**Given what you just read about Susan, which of the following would BEST describe what is wrong with Susan? (Choose one)**

- |                                                 |    |
|-------------------------------------------------|----|
| Adjustment Disorder .....                       | 1  |
| Attention Deficit/ Hyperactivity Disorder ..... | 2  |
| Cancer .....                                    | 3  |
| Generalized Anxiety Disorder .....              | 4  |
| Heart Attack .....                              | 5  |
| Major Depression .....                          | 6  |
| Panic disorder .....                            | 7  |
| Psychological/mental/emotional problems .....   | 8  |
| Schizophrenia .....                             | 9  |
| Split personality .....                         | 10 |
| Experiencing Stress .....                       | 11 |
| There is no problem .....                       | 12 |

**Vignette 8**

Susan is 32 years old, married, and has two children. For the past week, she has been experiencing sleep difficulties, and digestive upset. She recently changed jobs and, in order to arrive at work on time, must leave home one hour earlier than her previous job required. Furthermore, she arrives home one hour later than usual and, as a result, spends less time with her family. Her job responsibilities have increased, and she often eats lunch at her desk. Nevertheless, Susan has not missed any days of work, has consistently arrived on time, completes her job-related tasks, manages to attend her children's soccer games, and continues to occasionally socialize on week-ends. Additionally, this past week she has been feeling irritable and pressured, and experiencing intermittent headaches.

**Given what you just read about Susan, which of the following would BEST describe what is wrong with Susan?** *(Choose one)*

- |                                                 |    |
|-------------------------------------------------|----|
| Adjustment Disorder .....                       | 1  |
| Attention Deficit/ Hyperactivity Disorder ..... | 2  |
| Cancer .....                                    | 3  |
| Generalized Anxiety Disorder .....              | 4  |
| Heart Attack .....                              | 5  |
| Major Depression .....                          | 6  |
| Panic disorder .....                            | 7  |
| Psychological/mental/emotional problems .....   | 8  |
| Schizophrenia .....                             | 9  |
| Split personality .....                         | 10 |
| Experiencing Stress .....                       | 11 |
| There is no problem .....                       | 12 |

Appendix B

- B1. Script for requesting participation in the inter-rater reliability phase of this study
- B2. Script for delivering instructions to Medical Students for participation in the Mental Health Literacy Student Survey phase of this study

**B1. Script Delivered to Prospective Participants of the Inter-rater Reliability Phase of this Study**

We would like you to participate in a research study titled “Assessing Mental Health Literacy of First- and third-year Medical Students: Knowledge and Beliefs about Mental Disorders.” Your participation in this portion of the study will help determine the reliability of the instrument that is being used and will take approximately 10 minutes to complete.

Your participation is completely voluntary and anonymous. Your name or other identifying information is not required, and you may discontinue at any time. However, we consider this study to be important and worthy of your time.

Please place the completed packet in the envelope and return it to (specific to location of individuals participating; e.g. a specific mailbox in the mail room)

If you have any questions, or wish to obtain information regarding the outcome of this study, please contact the Principal Investigator or Psy.D. Candidate:

Steven Godin, Ph.D., MPH, CHES, Principal Investigator  
Department of Psychology  
PCOM  
4190 City Avenue  
Philadelphia, PA 19131-1693

Patricia A. Cheslock, M.S., Responsible Investigator  
Psy.D. Candidate, Department of Psychology  
PCOM  
4190 City Avenue  
Philadelphia, PA 19131-1693



## B2. Script Delivered to Medical Students

We would like you to participate in a research study titled “Assessing Mental Health Literacy of First- and third-year Medical Students: Knowledge and Beliefs about Mental Disorders.” The purpose of this study is to identify strengths and weaknesses in medical students’ knowledge and beliefs regarding mental disorders. Participation in this study should take approximately 7 to 10 minutes, and you may mark your answers directly on the demographic page and the survey pages.

Your participation is completely voluntary and there is no penalty for refusing to participate. However, we consider this study to be important and worthy of your time. All information is strictly confidential. Your name or any other identifying information is not required.

Please drop your completed packet into the box located (location specific to each classroom).

If you have any questions, or wish to obtain information regarding the outcome of this study, please contact the Principal Investigator or Psy.D. Candidate:

Steven Godin, Ph.D., MPH, CHES, Principal Investigator  
Department of Psychology  
PCOM  
4190 City Avenue  
Philadelphia, PA 19131-1693

Patricia A. Cheslock, M.S., Responsible Investigator  
Psy.D. Candidate, Department of Psychology  
PCOM  
4190 City Avenue  
Philadelphia, PA 19131-1693

Appendix C

Mental Health Literacy Student Survey.

## DEMOGRAPHICS

## 1. What year of medical school are you currently enrolled in?

1<sup>st</sup>                      2<sup>nd</sup>                      3<sup>rd</sup>                      4<sup>th</sup>

## 2. Circle your age group?

21-30 ..... 1  
 31-40 ..... 2  
 41 + ..... 3

## 3. Gender

Male ..... 1  
 Female ..... 2

4. What was your *undergraduate* major?

Biology ..... 1  
 Psychology ..... 2  
 Other Behavioral Science..... 3  
 Other ..... 4

5. What was your undergraduate *minor*?

None ..... 1  
 Biology ..... 2  
 Psychology ..... 3  
 Other Behavioral Science ..... 4  
 Other ..... 5

6. Did you attend *graduate school* prior to coming to PCOM?

Yes ..... 1  
 No ..... 2

## 7. If you attended graduate school, what was your major?

Biology ..... 1  
 Psychology ..... 2  
 Bio-Medical Science ..... 3  
 Other Behavioral Science..... 4  
 Other ..... 5

## 8. If you have completed an elective rotation, what elective did you choose?

---

**Read the vignette on the following page and answer the questions that follow**

**9. Given what you just read about John, which of the following would BEST describe what is wrong with John? (Choose only one)**

- Adjustment Disorder ..... 1
- Attention Deficit/ Hyperactivity Disorder ..... 2
- Cancer ..... 3
- Generalized Anxiety Disorder ..... 4
- Heart Attack ..... 5
- Major Depression ..... 6
- Panic disorder ..... 7
- Psychological/mental/emotional problems ..... 8
- Schizophrenia ..... 9
- Split personality ..... 10
- Experiencing Stress ..... 11
- There is no problem ..... 12

**10. How do you think John could BEST be helped? (Choose only one)**

- Seeing a doctor (GP) ..... 1
- Seeing a psychologist..... 2
- Seeing a psychiatrist ..... 3
- Seeing a counselor ..... 4
- Taking prescription medication ..... 5
- Discussing his problems with family/friends ..... 6
- Seeking help from clergy ..... 7
- Exercising ..... 8
- He is not in need of help ..... 9

**11. Circle your opinion regarding the helpfulness of the following to John.**

	Don't Know	Very Harmful	Harmful	Neither	Helpful	Very Helpful
Seeing a typical family GP or doctor .....	0	1	2	3	4	5
Receiving therapy from a licensed professional counselor .....	0	1	2	3	4	5
Receiving therapy from a social worker .....	0	1	2	3	4	5
Receiving therapy from a psychiatrist .....	0	1	2	3	4	5
Receiving therapy from a psychologist ... ..	0	1	2	3	4	5
Talking to family member/s .....	0	1	2	3	4	5
Talking to friends .....	0	1	2	3	4	5
Talking to clergy/ minister/ priest .....	0	1	2	3	4	5
Accessing an internet web site that gives information about his problem .....	0	1	2	3	4	5
Reading a book that gives information5						
Calling a telephone hot line .....	0	1	2	3	4	5
Taking homeopathic remedies .....	0	1	2	3	4	5
Becoming more physically active (walking, playing sports, exercising).....	0	1	2	3	4	5

	Don't Know	Very Harmful	Harmful	Neither	Helpful	Very Helpful
Attending classes on relaxation, yoga, meditation, or stress management .....	0	1	2	3	4	5
Reading about people with similar problems and how they have dealt with them .....	0	1	2	3	4	5
Eliminating all alcoholic beverages .....	0	1	2	3	4	5
Receiving Electroconvulsive Therapy (ECT) .....	0	1	2	3	4	5
Having an occasional alcoholic drink to relax.....	0	1	2	3	4	5
Eating a special diet/ avoiding certain foods .....	0	1	2	3	4	5
Receiving Hypnosis .....	0	1	2	3	4	5

**12. Circle your opinion regarding the helpfulness of the following treatments for John's problems**

	Don't Know	Very Harmful	Harmful	Neither	Helpful	Very Helpful
Taking vitamins.....	0	1	2	3	4	5
Taking antidepressant medication (i.e., Celexa) .....	0	1	2	3	4	5
Taking anti-anxiety medication (i.e., Xanax) .....	0	1	2	3	4	5
Taking antipsychotic medication (i.e., Risperdal).....	0	1	2	3	4	5
Attending a support group .....	0	1	2	3	4	5
Taking sleeping pills .....	0	1	2	3	4	5
Taking antibiotics .....	0	1	2	3	4	5

**13. What would be the likely result if John did NOT receive any professional help?**

Don't Know	His problem would get worse	No improvement in his problem	Partial Recovery	Full Recovery/, but problems would probably re-occur	Full Recovery with no relapse
0	1	2	3	4	5

**14. Indicate how strongly you agree or disagree with each of the following statements.**

	Strongly Disagree	Disagree	Neither	Agree	Strongly Agree
People with a problem like John's usually get better on their own .....	1	2	3	4	5
A problem like John's is a sign of personal weakness .....	1	2	3	4	5
People with a problem like John's can be dangerous to themselves or others .....	1	2	3	4	5
If I had a problem like John's, I would not tell anyone .....	1	2	3	4	5
I would <u>not</u> employ someone if I knew they had a problem like John's .....	1	2	3	4	5
I would <u>not</u> be friends with someone if I knew they had a problem like John's.....	1	2	3	4	5
People with a problem like John's will be discriminated against by others in the community .....	1	2	3	4	5

Appendix D

Percentages of correct and incorrect diagnoses  
designated by first- and third-year medical students

Appendix D: Percentages of correct and incorrect diagnoses designated by first-and-third-year medical students.

Vignette	Year	N	Correct Diagnoses	Psych/Mental Emotional Problem	Stress	Panic Disorder	GAD	Split Personality	Heart Attack	Adjust. Disorder	Major Dep.	Schizo-phrenia	No Problem
1 Male GAD	1 3	20 25	80.0% 80.0%		15.0% 8.0%	5.0% 12.0%							
2 Male Major Dep.	1 3	24 25	87.5% 92.0%	12.5% 4.0%	4.0%								
3 Male Schizophrenia	1 3	21 23	61.9% 100.0%	28.5%			4.8%	4.8%					
4 Male Stress	1 3	21 24	81.0% 83.1%				9.5% 4.3%			9.5% 8.3%		4.3%	
5 Female GAD	1 3	20 24	60.0% 88.0%	10.0% 4.0%	25.0%	5.0% 4.0%			4.0%				
6 Female Major Dep.	1 3	22 22	95.0% 86.0%		9.0%					5.0% 5.0%			
7 Female Schizophrenia	1 3	23 24	52.2% 83.5%	43.5% 12.5%			4.3% 4.0%						
8 Female Stress	1 3	21 24	95.2% 60.0%				4.0%			4.8% 28.0%	4.0%		4.0%