ABSTRACT

ACHEAMPONG, CASSANDRA DIXON. Worldviews, Mental Health, Career Values, and Academic Success of Medical Students at a Southeastern Medical School. (Under the direction of Sylvia C. Nassar-McMillan).

A review of research and literature on student development in medical education has documented the presence of differences in the medical school experiences of underrepresented minority medical students (URMs) (Black/African American, Hispanic/Latino(a), and Native American/American Indian) and non-underrepresented minority medical students (non-URMs) (White/Caucasian). Moreover, some authors from the fields of counseling, psychology, and medical education have suggested that cultural worldviews may account for some of these differences and that worldviews may be related to medical students' psychological, career, and academic development in medical school.

In an effort to investigate the possible relationship between worldviews and medical students' development, the following research questions were examined in this descriptive, exploratory study:

1.   Is there a difference in worldviews for URMs and non-URMs?

2.   Is there a difference in mental health status for URMs and non-URMs?

3.   Is there a difference in Primary Care Medicine career values for URMs and non-URMs?

4.   Is there a relationship between worldviews and mental health in the sample?

      a. What is the presence and strength of the relationship for URMs?

      b. What is the presence and strength of the relationship for non-URMs?

5.   Is there a relationship between worldviews and Primary Care Medicine career

values in the sample?

      a. What is the presence and strength of the relationship for URMs?

      b. What is the presence and strength of the relationship for non-URMs?

6.   Is there a difference in worldviews between academically successful participants in the sample and those participants experiencing academic difficulty?

      a. What is the difference in worldviews between academically successful URMs and URMs experiencing academic difficulty?

      b. What is the difference in worldviews between academically successful non-URMs and non-URMs experiencing academic difficulty?

A convenience sample of 19 (24.40%) URM and 59 (75.60%) non-URM students at Brody School of Medicine volunteered to participate in this study and completed the following instruments: *Belief Systems Analysis Scale* (Montgomery et al., 1990); *Brief Symptom Inventory* (Derogatis, 1993), *Physician Values in Practice Scale* (Hartung et al., 2005), and a demographic survey form. Descriptive statistics, two-tailed independent sample *t* tests, Mann Whitney *U* Tests, and correlation analyses were calculated for the data of the 78 participants.

Career values in Primary Care Medicine were found to be significantly higher for URMs indicating that Brody URMs have stronger preference for careers in Primary Care Medicine than do Brody non-URMs. Worldviews and career values in Primary Care Medicine were found to be negatively correlated for non-URMs suggesting that one score increases for Brody non-URMs as the other increases. No significant difference was found in the worldviews or mental health status of Brody URMs as compared to non-URMs and

there was no significant relationship between worldviews and career values of Brody URMs; small sample size and characteristics may possibly account for this lack of significance. Descriptive statistics were calculated to examine differences in worldviews of URMs and non-URMs experiencing academic success and academic difficulty.

Worldviews, Mental Health, Career Values, and Academic Success of Medical Students
at a Southeastern Medical School

by
Cassandra Dixon Acheampong

A dissertation submitted to the Graduate Faculty of
North Carolina State University
in partial fulfillment of the
requirements for the degree of
Doctor of Philosophy

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APPROVED BY:

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DEDICATION

To my beloved husband, Victor K.B. Acheampong. I did not know that my journey to

Ghana, West Africa in 2006 to experience the culture of my ancestors would also be a

journey to begin a new life with you. Thank you for being a devoted husband, for your

constant prayers and support, and for daily showing to me the real meaning of true love. You

have provided me with strength to finish this task and I dedicate this work to you. I am

indeed blessed to be your wife.

BIOGRAPHY

CASSANDRA DIXON ACHEAMPONG

EDUCATIONAL BACKGROUND

Doctor of Philosophy in Counselor Education with minor in Psychology, North Carolina State University, Raleigh, NC, (CACREP accredited program), May 2009

>   Dissertation Study: *Worldviews, Mental Health, Career Values, and Academic Success of Medical Students at a Southeastern Medical School*

>   Dissertation Committee: Dr. Sylvia-Nassar-McMillan (chair), Dr. Stanley Baker, Dr. Craig Brookins, Dr. Marc Grimmett

>   Thesis Equivalency Project*: Enhancing College Survival and Success Skills of African American and Hispanic Middle School Boys Enrolled in the Junior Medicine Explorers Program*

Master of Arts in Counselor Education with concentration in School Counseling, East Carolina University, Greenville, NC, December 1996

Bachelor of Arts in English Education, University of North Carolina at Chapel Hill, Chapel Hill, NC, May 1991

Honors High School Diploma, Ayden-Grifton High School, Ayden, NC, June 1987

International Study, Counseling, & Research

Doctoral Counseling Intern, NCSU Ghana West Africa Humanities Summer 2006 Study Abroad Program, May-June 2006
>   Supervised service learning and qualitative research experiences of American undergraduate students in Accra, Ghana studying abroad at the University of Ghana-Legon concerning *Origins of the West African Foster Child Phenomenon* and in conjunction with faculty at Lafayette College, University of Ghana-Legon and North Carolina State University. Also provided individual and group counseling to support students' academic learning and study abroad experiences.

Graduate Student Participant, NCSU Ghana West Africa Spring Break Study Abroad Program, March 2006

Internship
Doctoral Intern, North Carolina State University Counseling Lab, North Carolina State University, Raleigh, NC, January-April 2005

Graduate Scholarships & Awards

NCSU Africana Studies Study Abroad Scholarship, 2006
University of North Carolina Campus Academic Scholarship, 2004-2006

SCHOOL, COLLEGE, AND COMMUNITY COUNSELING EXPERIENCE

Licensed Professional Counselor, Genesis Counseling Services, Ayden, NC, 2009-present

Counselor, Academic Support and Enrichment Center, Brody School of Medicine at East Carolina University, Greenville, NC, January 2007-present

Middle School Counselor, Brogden Middle School, Dudley, NC, 2006-2007

Outpatient Clinical Therapist, Therapeutic Connections, Inc., Raleigh, NC, 2005-2007

Counselor, House of Esther Residential Maternity Home, Ayden, NC, 2001-present

High School Drop-Out Prevention Counselor, Ayden-Grifton High School, Ayden, NC, 2004-2006

Mentor and Group Facilitator, Sister to Sister Program, Brogden Middle School, Dudley, NC, 2006

Counselor, Greene County Alternative School, Snow Hill, NC, 2006

Patient Representative, Pitt County Memorial Hospital-University Health Systems of Eastern Carolina, Greenville, NC, 2001-2004

Middle School Counselor, Savannah Middle School, Grifton, NC, 1998-1991

Community Crisis Outreach Counselor, Hope After Hurricane Floyd, Pitt County Mental Health Center, Greenville NC, 2001

High School Counselor, Kinston High School, Kinston, NC, 1994-1998

TEACHING EXPERIENCE

Guest Lecturer, Brody School of Medicine, Department of Psychiatric Medicine, Greenville, NC, 2009

Workshop Facilitator, Brody School of Medicine Department of Family Medicine, Greenville, NC, 2008

Workshop Facilitator, Brody School of Medicine Department of Child and Adolescent Psychiatry, Greenville, NC, 2008

Learning Skills Instructor, Summer Program for Future Doctors, Brody School of Medicine, Greenville, NC, 2007-2009

Graduate Teaching Assistant, NCSU Department of Counselor Education, *Theories and Techniques of Counseling,* North Carolina State University, Raleigh, NC, 2005

Customer Service Training Facilitator, Office of Quality, Pitt County Memorial Hospital-University Health Systems of Eastern Carolina Greenville, NC, 2003-2004

High School English and African American History Teacher, New Bern High School, New Bern, NC, 1991-1994

PROFESSIONAL LICENSURE AND CERTIFICATION
North Carolina Licensed Professional Counselor #5085
National Certified Counselor #211769
North Carolina School Counselor (Grades K-12)
North Carolina High School English Teacher (Grades 9-12)

PROFESSIONAL HONORS AND MEMBERSHIPS
Chi Sigma Iota Academic and Professional Counseling Honor Society
American Counseling Association
North Carolina Counseling Association
North Carolina Career Development Association
Association of Counselor Education and Supervision

PROFESSIONAL HONORS/AWARDS/SPECIAL ACTIVITIES
East Carolina University Chancellor's Leadership Academy, 2008

The Junior Medicine Explorers: A Health Careers Mentoring Program for Minority Middle School Boys, Southern Region of the National Association of Minority Medical Educators, 2007 ($3,000 grant)

PRESENTATIONS AND PAPERS
Acheampong, C. (2008, May). *The College Survival and Success Skills Scales.* Workshop. Presented at the 2008 North Carolina Future Leaders in Health Conference, Greenville, NC.

Acheampong, C. (2007, November). *Help! I'm on the Pre-Med Track.* Workshop presented at the Student National Medical Association Region IV Fall 2007 Conference, Greenville NC.

Dixon, C. (2006, February). *Counseling rural at-risk children for wellness with the creative arts*. Workshop presented at the annual North Carolina Counseling Association Annual Conference, Durham, NC.

Dixon, C. (2005). *No parent left behind: Increasing empowerment and school involvement of parents of at-risk school youth.* Unpublished manuscript.

VOLUNTEER EXPERIENCE

Program Administrator, The House of Esther Residential Maternity Home, Ayden, NC, 2001-present

Adolescent Group Facilitator, New Beginnings Healthcare, Inc., Raleigh, NC, 2006

Summer Camp Youth Counselor, Community Creative Arts Youth Camp, Ayden, NC, 2005

Volunteer, Sterling House Assisted Living Center, Greenville, NC, 2001-present

Volunteer, Pitt County Memorial Hospital-University Health Systems of Eastern Carolina, Greenville, NC, 1999-2000

Member, Board of Directors, Parents for Public Schools of Pitt County, Greenville, NC, 1999

Member, Pitt County Habitat for Humanity, Greenville, NC, 1999

RESEARCH INTERESTS

School success, career development, and mental health of minority, socially disadvantaged, or at-risk students; school counseling; cross cultural issues in counseling; mental health of African Americans; medical education; counseling issues related to the African Diaspora

ACKNOWLEDGMENTS

First, I would like to thank God for His grace, mercy, goodness, and kindness that daily sustain me. I would have never dared to attempt to enroll in a doctoral program had I not sensed His urging within me to do so. It is only because I live, move, and have my being in Him that I have been able to find supernatural strength to stay the course and complete this project. Moreover, I am humbled that He chose me to be a helper for humanity.

I want to thank my PhD advisor and dissertation committee chairperson, Dr. Sylvia Nassar-McMillan. Thank you for your encouragement and confidence in me. Chatting with you in your office has often been a refuge from difficult storms that I have had to weather over the past few years. I have found strength in your words and I have learned to develop new ways of thinking about issues and challenges. You have been a source of constant inspiration and you have positively impacted my personal and professional development in countless ways. I will be forever grateful to you for the support and guidance that you have provided to me as a doctoral student.

To each member of my dissertation committee: Dr. Stanley Baker, thank you for helping me to develop my counseling research skills and for the grace and integrity with which you represent the counseling profession; Dr. Marc Grimmett, thank you for your support and your authenticity; Dr. Craig Brookins, thank you for taking me on the journey to Ghana, West Africa that has changed my life, for being there in Ghana with me on my wedding day, for challenging me to broaden my western worldviews, and for allowing me to experience the wonders of life and culture beyond the borders of the United States.

I would like to thank my parents, Joyce Dixon and Kermit Dixon. Thank you Mama and Daddy for all that you invested in me as a child, for daring me to be different than others, for your steadfast love, and for being there for me at every stage of my life. I love you very much and I hope that I have made you proud.

Thank you to my brother and sisters: Terry Dixon, Kristy Blount, and Pamela Rosber. Each of you has encouraged me in your own unique way and I am grateful. As your oldest sister, I hope that I have paved the way for you to make your own personal marks in life.

To Christopher and Caleb Dixon, I hope that my completion of this project will motivate you to know God and to find and embrace His purpose for your life. Much good has been invested in you and much good is certainly required of you.

To Cassee Acheampong, you were growing in my tummy as I completed this project. I can not help but believe that one day you will also make your mark on the world as a world-renowned counselor, researcher, scientist, or physician. Whatever, you choose to do with your life, do is as unto the Lord, and do it well.

To all of my uncles, aunts, cousins, nieces, nephews, and other relatives, thank you for your love and support. I hope that you will view this accomplishment, not as something that belongs to me, but as something that belongs to all of us.

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Thank you to all of my former teachers at Ayden Elementary School, Ayden Middle School, and Ayden-Grifton High School and to my former professors at UNC-Chapel Hill, East Carolina University, and North Carolina State University who cultivated within me a love for learning and who pushed me to the level of academic excellence. I also want to thank my childhood Sunday School teachers at Mount Olive Missionary Baptist Church who taught me as a young girl that the fear of God is the beginning of true knowledge.

Thank you to the students, parents, teachers, staff, counselors, clinicians, and administrators that I have worked with over the years in: Craven County Schools, Lenoir County Schools, Greene County Schools, Wayne County Schools, Pitt County Schools, and at Brody School of Medicine. You all have inspired me. Thank you to Dr. Virginia Hardy, the staff in the Academic Support and Enrichment Center at Brody School of Medicine, and to Brody School of Medicine for supporting my research.

To Dr. Kevin Gross, my statistical consultant at the East Carolina University Center for Faculty Excellence, thank you for your faithfulness in assisting me and for being

available each time that I needed you. I could not have completed this project without your help.

To Dr. Stephanie Lanier, my former professor at East Carolina University and friend, you were the one that suggested that I apply to a PhD Counselor Education program and you assured me that I could do it. Had you not suggested it, I would never have thought I could do it. You have given me so much of your time, confidence, and assistance and I am grateful. I pray that God will multiply back to you all that you have invested in me.

To Dr. Theresa Edwards, thank you for not only being a professor, mentor, and my surrogate Mom in Ghana but also for being a friend. You have been an inspiration to me. I have missed your presence over the last year while attempting to seclude myself to complete this project and I am looking forward to enjoying the company of your presence again soon.

Thank you to the special friends I have made while completing my doctoral studies at North Carolina State University: Arline, Brett, Ken, Jeannie, Millie, Angie, Shandua, and Niambi. Thank you for being such a special part of my life. Our coming to know each other was not coincidental. You were all divinely sent into my life and I appreciate each of you.

I would also like to honor the memory of my grandmother, Mrs. Irene Mewborn Smith, who passed away during my first year as a PhD student. I am what I am, in large part, because of what my Grandmother invested in me as her oldest granddaughter. Her faith in God, simplicity, tenacity, leadership, resiliency, value for education, boldness, ability to fearlessly "tell it like it is," and determination to survive and thrive in the harshest of life's circumstances were a few of her GRAND qualities that make her one of the most outstanding women that I have ever known. I am grateful for the time God allowed me to have with her

on earth and will always endeavor to be the type of woman, mother, leader, and Christian servant that I observed her to be. I know that she is a part of that great cloud of witnesses who watch me daily and urge me on as I endeavor to run the race that has been set for me.

To anyone else that I may have forgotten to personally mention, thank you for what you have shared in my life. I am forever grateful to you.

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CHAPTER 1

This chapter provides the background for the study with a statement of the problem to be examined, rationale of the study, discussion of worldview and the mental health of medical students, differences between underrepresented minority medical students (URMs) (Black/African American, Hispanic/Latino(a), and Native American/American Indian) and non-underrepresented minority medical students (non-URMs) (White/European American and Asian), as well as a historical background of the Brody School of Medicine at East Carolina University. Additionally, research questions are presented along with definitions of important terms.

Statement of the Problem

Increased patient satisfaction, enhanced patient-physician relationships, and improved overall quality of care provided by health organizations are believed to be among the benefits of a diverse physician workforce (AAMC, 2002, 2006). However, diversity in the current physician workforce remains significantly low compared to the increasing diversity of patients in need of medical care. Approximately 25.00% of the US population is Black/African American, Hispanic/Latino(a), or Native American/American Indian; whereas, only 6.00% of practicing physicians are from these minority groups (AAMC, 2006). Medical schools, in particular, are viewed as key suppliers of diverse physicians to help meet the growing needs of healthcare organizations. The disproportionately small number of URMs matriculating to and graduating from US medical schools has generated national interest in increasing diversity in medical education. In 2007, URMs made up only 15.96% of the 17, 759 medical school matriculants compared to 62.61% of their non-URM, White

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matriculating peers (AAMC, 2007). Of the 16,139 US allopathic medical school graduates in 2007, 14.34% were URM and 63.86% were non-URM and White (AAMC, 2007). Some have suggested that inadequate academic preparation for medical school, underexposure to career opportunities in medicine, and lack of minority physician role models contribute to the underrepresentation of URMs in medical school as well as to the challenges encountered by some URMs in predominantly White medical school settings (Gonzalez & Stoll, 2002; Webb, 2000). Pipeline initiatives, postbaccalaureate education, and academic partnerships between medical schools and educational institutions have been implemented to enhance the academic preparation and career interests of potential URM medical school candidates (Butler, Thomson, Morrissey, Miller, & Smith, 1991; Frazier & Hodgetts, 1991; Grumbach & Chen, 2006; Kornitzer, Ronan, & Rifkin, 2005; Slater & Iler, 1991). Whereas, national attention appears directed at increasing the numbers of URMs entering medical school, significantly less attention has been directed at examining factors that may contribute to their success and development in medical school and how these may differ from their non-URM peers.

<div align="center">Rationale of the Study</div>

The purpose of this study is to examine worldviews, mental health, career values and academic success of URMs as compared to non-URMs currently attending Brody School of Medicine at East Carolina University. Although existing research has identified differences in cultural values, psychosocial stressors, career preferences, and academic success among URMs and non-URMs, virtually no studies have examined worldviews among medical students to determine if worldviews may be related to aspects of students' development in

medical school. This study is important in that it seeks to add to the currently limited knowledge on the psychological, career, and academic development of medical students.

This quantitative research study is descriptive in design and exploratory in nature. Heppner, Kivlighan, and Wampold (1999) indicate that "reliable and accurate description of research phenomenon is first needed before more rigorous scientific measurement of psychological phenomenon can occur" (p. 201). Since no existing studies have investigated worldviews, mental health, career values and academic success of Brody students, the aim of this exploratory study is to describe these variables as they specifically relate to Brody students with the hope that more rigorous investigation of these variables can occur in the future. Research outcomes may indicate a need for counseling interventions which enable Brody students to better manage psychological distress, enhance current recruitment efforts aimed at increasing the supply of Primary Care Medicine physicians, enable counselors and faculty to conduct early identification of new medical students who may be predisposed to experiencing academic difficulty, and improve institutional efforts aimed at achieving diversity in medical education.

Worldview and the Mental Health of Medical Students

Worldview is considered to be a key determinant of not only cultural values, but also overall mental health. (Fine, Schwebel, & Myers, 1985; Jackson & Sears, 1992; Myers et al., 1991). Moreover, it appears that the demands of medical school can exacerbate mental health issues in medical students which pre-existed before students actually began their medical education. A number of studies have been conducted on the mental health of medical students. Depression, anxiety, social withdrawal, and low self-esteem are some of the issues

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that have been documented among students at all levels of medical education (Camp, Hollingsworth, Zaccaro, Cariaga-Lo, & Richards, 1994; Dyrbye, Thomas, & Shanafelt, 2006; Strayhorn & Frierson, 1989; Pyskoty, Richman, & Flaherty, 1990). Although psychological research and literature suggest that worldviews can influence an individual's psychological well-being, no studies appear to have examined if students' worldviews may be related to the stress levels of medical students. An understanding of how medical students' worldviews are related to their mental health status would allow counselors who work with medical students to facilitate interventions that assist students increasing stress resistance.

Differences between URMs and Non-URMs

The rigorous demands of medical school present a number of academic and psychosocial challenges for both URMs and non-URMs. Financial worries, academic pressures, frequent exposure to sick and dying patients, strained relationships with family and significant others, and overall social adjustment to the culture of medicine are a few of the many stressors that medical students must successfully manage (Dyrbye, Thomas, & Shanafelt, 2005). However, a number of differences have also been noted in the medical school experiences of URMs and non-URMs.

Some differences in career preferences appear to exist between URMs and non-URMs with URMs being more likely to choose careers in underserved patient areas and less likely to choose careers in academic medicine or medical specialty areas (AAMC, 2006; Reede, 2003). A survey of all medical students graduating from US medical schools in 2004 revealed that 51.00% of Black/African American, 41.00% of Native American/American Indian, and 33.00% of Hispanic/Latino(a) medical students reported intentions to practice

medicine in underserved areas containing large ethnic minority patient populations as well as high rates of poverty and physician shortages compared to only 18.40% of graduating White students (AAMC, 2004). Little research exists to explain if cultural worldviews may account for differences in career preferences among medical students.

Some career assessments and interventions currently used to assist medical students may not take into account the role that cultural worldviews may play in students' career decision making. Glaxo Wellcome's Pathway Evaluation Program for Medical Professionals (1999) and the Association of American Medical College's Careers in Medicine (CiM; AAMC, 2006) program are two career development programs used to assist medical students with career decision making. Other career assessments commonly used with medical students include: The Medical Specialty Preference Inventory (MSPI; Zimny & Senturia, 1973), Medical Career Development Inventory (MCDI; Savickas, Super, & Thomspon, 1983), Myers-Brigg Type Indicator (MBTI; Myers, 1962; Myers & McCaulley, 1985), and the Physician Values in Practice Scale (PVIPS; Hartung, Taber, & Richard, 2005). Only one assessment, the PVIPS, attempts to measure the values that influence medical students' career decision-making and to direct students towards medical specialty areas that match their expressed career values. However, the values measured by the PVIPS are specific to the practice of medicine and it is not clear if these values are related to students' cultural values and assumptions.

The role of culture seems to have been largely ignored as a factor influencing the career development of medical students. Little research has examined if medical students' career preferences are related to their cultural worldviews and cultural considerations appear

to be missing from career assessments. Understanding the role of culture in the career development of medical students would allow counselors and medical school faculty to conduct more holistic assessment of medical students' career concerns and to develop career interventions which enhance the possibility of increased career satisfaction for students in their careers as future physicians.

In addition to differences in career preferences, it appears that differences exist in the academic progress of URMs and non-URMs. Underrepresentation in medical school and higher rates of academic failure and attrition are more common among URMs than non-URMs (AAMC, 2006; AAMC, 2006; Alvarado, 1996; Girotti, 1990; Kassebaum & Szenas, 1994; Liddell & Koritas, 2004; McManus, Richards, Winder & Sprotson, 1996; Mrtek, Syftesad, Foley, & Sandlow, 1996; NCIOM, 2007; Saavedra, 1994; Strayhorn & Frierson, 1989; Tekian, 1998; Woolf, Haq, McManus, Highman, & Dacre, 2007). Researchers have noted significant disparities in academic performance between URMs and non-URMs (McManus, Richards, Winder & Sprotson, 1996; Strayhorn & Frierson, 1989; Liddell & Koritas, 2004; Woolf, Haq, McManus, Highman, & Dacre, 2007). Compared to their non-URM peers, URMs are five times more likely to fail the United States Medical Licensing Examination (USMLE) Step 1, two times more likely to withdraw or be dismissed from medical school, and less likely to graduate or complete medical school in four years (AAMC, 2002; Kassebaum & Szenas, 1994; Tekian, Mrtek, Syftestad, Foley, & Sandlow, 1996; Tekian, 1998).

It is important to note that medical students considered in good academic standing are usually those who are able to advance from one year of medical school to the next.

Moreover, students' academic success during the first two years of medical school is measured primarily by performance on standardized or objective examinations. First year medical students must earn passing scores on all coursework in order to continue to the second year of medical school. Second year medical students must earn passing scores in all second year courses as well as a passing score on the USMLE Step 1 exam in order to be promoted to the third year of medical school. Third and fourth year students must earn passing scores on examinations including the USMLE Step 2, clerkship examinations, as well as satisfactory scores on evaluations of clinical performance. Academic interventions such as intensive remediation and academic counseling are often used to assist students who fail coursework or examinations.

The psychological and educational research and literature suggest that worldviews can influence career behavior and student academic success (Sanchez, 2000). Moreover, several authors have suggested that some URMs may possess worldviews which differ from those of non-URMs, that may possibly conflict with the professional values of medical education, and that may result in increased psychological and academic distress for URMs.

For example, university counselors in one study conducted qualitative interviews with URMs in California to assess students' perceptions of the medical school environment (Rodolfa, Chavoor, & Velasquez, 1995). The researchers discovered that certain assumptions implicit in the medical school environment directly conflicted with cultural values of URMs resulting in increased emotional and academic stress for the students. According the study, URMs often value professional and personal cooperation, emotional attachments to patients, and stronger allegiance to family relationships than professional

career responsibilities in medicine. The researchers indicate that these values may often conflict with the professional values and assumptions which guide medical education and that are more closely aligned with Eurocentric values of individualism, competition, objectivity, and which emphasize high allegiance to the practice of medicine. No research exists which has examined if worldviews differ among groups of medical students experiencing academic success in medical school as compared to those experiencing academic difficulty. An understanding of how worldviews may be related to students' academic success in medical school may allow counselors and medical school faculty to develop procedures for early identification of new medical students who may be predisposed to increased academic distress and implement early academic support services to assist these students.

<div align="center">Historical Background of the Brody School of Medicine</div>

The North Carolina General Assembly established the East Carolina University School of Medicine in 1975. Located in Greenville, NC, the state supported medical school is one of four medical schools in the state and also the smallest. The tripartite mission of the medical school is: to educate Primary Care Medicine physicians, increase access to careers in medicine for minority and disadvantaged students, and improve healthcare delivery to the residents of eastern North Carolina. Although part of its expressed mission is to increase the supply of ethnic minority physicians in North Carolina, it appears that no research studies have been conducted at the medical school to determine factors that may be related to the success and development of URMs or how these may possibly differ for URMs and non-URMs.

Recently re-named the Brody School of Medicine after the Brody family of Kinston and Greenville, the medical school annually enrolls approximately 72 North Carolina residents. Beginning in the Fall of 2009, the medical school will increase its annual enrollment from 72 to 80 with an annual enrollment of 120 students expected in the coming years. Brody is an allopathic medical school which offers a four-year medical curriculum to matriculating students. The curriculum for first and second year medical students includes daily coursework in basic clinical sciences such as: Anatomy, Embryology, Physiology, Genetics, Biochemistry, Histology, Pharmacology, Microbiology, Immunology, Neuroscience, and Psychopathology. Additionally, they also complete coursework in Medical Ethics and Doctoring. Learning activities for first and second year medical students occur primarily in large group didactic lectures with some small group activities and occasional patient contact. Third and fourth year medical students complete most of their training by participating in medical clerkships and clinical rotations which typically occur outside of the medical school at various locations.

For the past 25 years, nearly 30.00% of Brody's graduates have chosen to practice medicine in eastern North Carolina and almost 50.00% have chosen to practice Primary Care Medicine. In the Brody graduating class of 2008, 66.00% of graduates chose to enter Primary Care Medicine. Brody is also home to nearly 325 physician faculty members and other healthcare providers, numerous outpatient clinics, and a counseling center that serves nearly 800 allied health science students in addition to medical students and resident physicians.

Brody has distinguished itself on both state and national levels as a center of academic excellence in the training of physicians. Traditionally, the school has been a leader in the enrollment of URMs among the 43 predominantly White medical schools in the southern United States. The medical school has been noted for graduating the second highest percentage of Black/African American medical students in the United States, excluding the nation's three historically black medical schools (AAMC, 2007). Additionally, the medical school has been nationally recognized for graduating the nation's second highest percentage of Native American/American Indian medical students and for having the sixth best Primary Care Medicine and ninth best Rural Medicine program among medical schools in the US (AAMC, 2004; U.S. News & World Report, 2007).

Research Questions

1. Is there a difference in worldviews for URMs and non-URMs?

2. Is there a difference in mental health status for URMs and non-URMs?

3. Is there a difference in Primary Care Medicine career values for URMs and non-URMs?

4. Is there a relationship between worldviews and mental health in the sample?

    a. What is the presence and strength of the relationship for URMs?

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6.   Is there a difference in worldviews between academically successful

participants in the sample and those participants experiencing academic

difficulty?

a. What is the difference in worldviews between academically successful

URMs and URMs experiencing academic difficulty?

b. What is the difference in worldviews between academically successful non-

URMs and non-URMs experiencing academic difficulty?

Definitions of Terms

The following terms will be utilized throughout this study:

- Academic success - a medical student's current academic progress in medical

  school. Participants in this study considered to be experiencing academic

  success are those currently completing coursework with the cohort of medical

  students that they entered medical school. Students considered to be

  experiencing academic difficulty are those who are not on track with the

  cohort of students they entered medical school with or who have had to repeat

  coursework or examinations causing them to be a year or more behind their

  original cohort in academic standing.

- Afrocentric - values which emphasize spirituality, intrinsic self-worth,

  subjective knowing, and oneness with humanity; these values stand

  juxtaposed to a Eurocentric worldview and contribute to an optimal

  worldview (Myers, 1988).

- Career values - refers to the meaning and importance that medical students possess about various aspects of their future careers as physicians (Hartung et al., 2005).

- Conceptual system - "the philosophical assumptions and principles that the structure the way one views the world"; used synonymously with worldview. (Myers et al., 1991, p.56).

- Eurocentric - values emphasizing individualism, extrinsic self-worth, and objective reality and which represent a suboptimal worldview; philosophical assumptions believed to contrast with those considered Afrocentric and optimal (Myers, 1988).

- Mental health - the degree of recently experienced psychological distress as evidenced by: Somatization, Obsessive-Compulsive Tendencies, Interpersonal Sensitivity, Depression, Anxiety, Hostility, Phobic Anxiety, Paranoid Ideation, and Psychoticism (Derogatis & Spencer, 1985).

- Non-URMs – refers to non-underrepresented minority medical students; medical students who are of White/Caucasian or Asian descent. Asian students are considered as non-URM because, although their numbers in the actual US population are small, their numbers in medical school are significantly larger (AAMC, 2003).

- Optimal worldview - based on primarily Afrocentric values of collectivism, self-knowledge, spirituality, and subjective knowing; contributes to a healthy, holistic sense of self and others (Myers, 1988).

- Pipeline - refers to the supply of potential URMs identified at the public school or university level and that receive premedical enrichment experiences provided by medical schools and other educational institutions.

- Primary Care Medicine – medical specialty areas including: Family Medicine, Internal Medicine, Pediatrics, Medicine-Pediatrics, and Obstetrics/Gynecology.

- Suboptimal worldview - a belief system based primarily on Eurocentric values; this contrasts with an optimal worldview and is believed to contribute to a fragmented view of self and others (Myers, 1988).

- URMs - underrepresented minority medical students; refers to "those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population" (AAMC, 2003). This includes Black/African American, Hispanic/Latino(a), and Native American/American Indian medical students.

- Worldview - refers to an individual's philosophical assumptions, values, and principles upon which interpretation of self and others is based and which influences thinking and behavior (Montgomery, Fine, & Myers, 1990); the degree to which an individual possesses a suboptimal or optimal belief system (Montgomery et. al, 1990).

CHAPTER 2

LITERATURE REVIEW

This chapter presents a review of relevant literature concerning the variables to be examined in this study. First, the construct of worldview and its relationship to counseling and development are discussed. Second, assumptions about the relationship between worldviews and medical student success are explained. Third, a review of literature on the medical school experiences of URMs and non-URMs is presented. Fourth, a brief discussion is presented on the mental health of URMs and non-URMs. Fifth, current interventions used to facilitate the career development of students in medical school are examined as well as a brief history of URMs in medical education. Sixth, a review and critique of Optimal Theory Applied to Identity Development (OTAID) and the Ecological Model of Career Development (EMCD) are offered. Finally, this chapter closes with a synthesis of research and literature.

The Role of Worldview in Counseling and Development

Sue (1978) defined worldview as "the way in which people perceive their relationship to nature, institutions, other people, and things" and as a "psychological orientation in life that can determine how we think, behave, make decisions, and define our events" (p.458). His discussion on the influences of culture and life experiences on worldviews and the resulting effects on the therapeutic relationship between therapist and clients emphasizes the critical role of worldview in the counseling relationship. Since 1978, the concept of worldview has been frequently discussed in the counseling and psychological literature (Ibrahim, 1991; Ibrahim et al., 2001; Ibrahim & Kahn, 1987; Lyddon & Adamson, 1992; Montgomery et al., 1990; Myers, 1984,1988; Myers et al., 1991; Pederson, 1987; Sue & Sue,

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2008; Williams, 2003). Assessment of client worldviews can assist counselors in not only understanding diverse clients but also in identifying culturally appropriate counseling interventions as well as bridging cultural gaps between counselor and client (Ibrahim, 1991).

Worldviews often vary among individuals and it seems that this may be a result of varying cultural traditions and experiences that exist among various people groups. As Ibrahim notes, "different cultural contexts lead to the formation of unique worldviews, beliefs, values, assumptions, modes of social conduct, behavior, and expectations among individuals" (1991, p.116). It also appears that significant differences in worldviews have been found among various racial and ethnic groups such as European Americans and African Americans (Baldwin & Hopkins, 1990; Ibrahim, 1991). Some have further noted the specific impact of worldviews on certain aspects of individual behavior and development such as: career choice and behavior, student success, health-promoting behaviors, values orientation, leadership development, communication style, therapist orientation, and therapy outcomes (Fouad and Bingham, 1995; Fuertes, Mueller, Chauhan, Walker, & Ladany, 2002; Gomez et al., 2001; Juntunen et al., 2001; Lee, 2008).

Although numerous authors have discussed the construct of worldview and its implications for counseling and development, it appears that Myers et al. (1991) have further expanded the notion of worldview by explaining it to be a significant influence of an individual's overall mental health. These authors argue that oppressive environments attempt to socialize individuals into a worldview that is faulty, creating within them a sense of self and a view of others that is unstable, insecure, and ultimately unhealthy. Optimal Theory Applied to Identity Development (OTAID; Myers et al., 1991) is the theoretical model

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developed by these authors which describes the influence of worldview on the development of an individual's self-concept, relationship to others, and mental health.

Although various others have discussed the variations in worldviews among different people groups and the impact of worldviews on individual development, no studies appear to have examined worldviews among groups of medical students and whether or not medical students' worldviews may influence aspects of their development and medical training. An understanding of the various worldviews and cultural assumptions that students bring with them into the medical school environment would allow for enhanced academic support and counseling services to facilitate students' psychological, career, and academic development during medical school.

<center>Worldviews and Medical Student Success</center>

Some authors suggest that worldviews can influence student learning and development in academic settings and that this, in particular, may explain some of the academic challenges noted to exist for some ethnic minority students in predominantly White academic settings. It has been further noted that minority students with worldviews most similar to the philosophical assumptions of the educational system in which they participate often have less difficulty with achieving success than those whose worldviews are different (Anderson, 1988; Dunn & Griggs, 1995; Sanchez, 2000). Moreover, some authors have mentioned that cultural worldviews are related to ethnic minority students' success in the predominantly white medical school setting.

For example, Alvord (2000), a Native American physician, notes that worldviews of Native American medical students can conflict with the values and expectations of medical

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education causing psychological and academic challenges for Native American physicians-in-training. The author notes a number of unique Native American cultural perspectives that can lead to academic distress and adjustment issues for Native American medical students including: spiritual connections to communities of origin, beliefs about the impoliteness of appearing competitive and asking frequent questions in the medical setting, taboos prohibiting the touching and dissection of cadavers, differences in communication style, and perspectives of health and healing which differ from Western medical perspectives (Alvord, 2000). Alvord suggests that the ability of Native American medical students to experience academic success is determined by their ability to successfully manage conflicts between their cultural values and the values of medical education.

Bedolla (2000) notes that Mexican American worldviews include a high regard for cooperation and that having the opportunity to experience cooperative learning activities in medical school is necessary for the success of Mexican Americans attending medical school. Soto-Greene and Martinez (2000) discuss that struggles associated with maintaining cultural values and beliefs in the medical education setting, previous negative educational experiences, and balancing family commitments with the career demands of medicine often create unique challenges for Puerto Rican medical students. Additionally, the authors note that disorientation, poor self-image, and impediments to academic success can occur when Puerto Rican medical students are unable to overcome these challenges.

Webb, Smith, Hawkins, Jr., and Hill (2000) discuss how cultural worldviews can influence the academic success of minority medical students. Writing to advise African

American medical students about the academic challenges that can occur in the predominantly White medical education setting the authors explain:

> Sometimes, you may struggle with the "Eurocentric" view (achievement
>
> in individual pursuits) versus the "Afrocentric" view (meeting the needs
>
> of the group). You may even question your choice of career,
>
> wondering if those in your ethnic group belong in medicine. On the other
>
> hand, your values might be more closely aligned with mainstream views,
>
> especially in terms of time and activity …. this dilemma adds extra stress to
>
> the already stressful academic environment and could be one of the factors
>
> that leads to diminished academic performance in school. (2000, p.145)

Although various authors have written about the possible connections between minority students' worldviews and their academic success in predominantly White academic settings, no studies have attempted to assess if worldviews differ among groups of medical students experiencing academic success in and those experiencing academic difficulty. Such an exploratory inquiry seems precursory to validating assumptions about the relationship between ethnic minority students' worldviews and their success in medical school as well as exploring whether or not worldviews may be related to the success of medical students in general.

The Medical School Experiences of URMs and Non-URMs

It appears that URMs and non-URMs share some similarities as well as differences in their medical school experiences and these have been discussed in the research and literature on medical student development. Strayhorn and Frierson (1989) examined differences in

perceptions of the medical school environment, academic performance, and well-being between African American and White American medical students at the University of North Carolina at Chapel Hill School of Medicine from 1982 to 1985. Perceived social support, coping styles, and personality attributes were assessed among the students as possible mediators of stress in the medical school environment. African American medical students indicated more stress in the medical school environment due to their minority status as well as more personal, family, and financial problems. Researchers note that both African American and European American medical students' perceptions of the academic environment were related to perceptions about their well-being.

A phenomenological study was conducted by Brown (2006) to examine African American medical students in a predominantly White American osteopathic school of medicine. Interviews, document reviews, and observations were used to analyze the experiences of five African American medical students. Findings revealed that participants acknowledged the experience of stress in the medical school environment due to cultural adjustment, dealing with negative perceptions by faculty, and having to serve as representative of their race. Furthermore, the researcher indicates that participants expressed that they believed that these perceptions of the medical school environment affected their academic and psychosocial development. Results suggest that some African American medical students may experience challenges with academic adjustment to medical school environments perceived as culturally different, academically demanding, and socially alienating.

Some studies have examined differences between URMs and non-URMs while others have focused on issues within specific groups of URMs. Alvarado (1996) examined psychosocial variables as predictors of medical school performance for 369 URM and non-URM medical students at the University of Chicago College of Medicine. The author discusses cognitive variables as poor predictors of minority student performance in medical school and posits that psychosocial variables may serve as more useful predictors of student performance. Cultural orientations were assessed for the URMs and non-URMs. Two main cultural orientations were assessed by the author: the self-orientation (focus on goal orientation, self-reliance, problem solving, future time orientation, and high expectations) and the collectivity orientation (characterized by status orientation, group identity, and concealment of personal vulnerability). The author found that African American and Hispanic medical students increased their level of self-orientation during the four years of medical school while White American and Asian medical students decreased. African American, Hispanic, and Asian medical students were also found to decrease their collectivist orientation during medical school, while the level for White American students increased.

Buckley (1999) conducted a qualitative research study that appears to be the only one of its kind on American Indian and Alaskan Native medical students. The researcher used individual interviews with five female and four male participants to collect data. Participants expressed concerns about identity, community, family, academic challenges, the socialization process of medical school, balancing their cultural traditions with medical practice, and relationships with future patients. Participants in the study also expressed that they felt

conflict between their own personal and cultural beliefs and the beliefs of the medical profession but felt capable of managing the conflict. The researcher also notes that some participants admitted to constructing alternate psychological images of physicians more closely resembling themselves in order to cope with cultural differences in the medical school environment. Results of the study led to the development of a support program for American Indian and Alaskan Native medical students to assist with their adjustment to medical school.

Girotti (1990) investigated professionalization among URMs and non-URMs. Interviews and participant observations were conducted with twenty-five URMs and non-URMs to examine the aspects of their socialization into the physician role. Socializers (attending physicians and others responsible for evaluating their academic performance) interacting with the medical students and socialization methods were examined in the medical school environment. URM students in the study reported different socialization experiences than non-URMs in the study. Furthermore, URM students reported concerns about sensing the need to prove themselves professionally competent, feelings of integrity and pride that dictated behaviors different from those of the non-URMs, and lack of culturally relevant role models in the medical school setting.

Odom, Roberts, Johnson, and Cooper (2007) investigated obstacles and opportunities for professional success among ethnic minority medical students. Forty-three Black, Hispanic, and Asian/Pacific Islander medical students participated in the qualitative study. Focus groups were conducted with the students during 2002 and 2003 in the cities of Philadelphia, Kansas City, Baltimore, Miami, New York, and Los Angeles. Discussions

were audiotaped, transcribed, and reviewed for thematic patterns. Thematic analysis revealed that students perceived achieving financial security, quality of life, and professional and academic status as major obstacles in their professional development. Lack of financial aid and social support, challenges with standardized medical school examinations, racial discrimination, and self-imposed barriers were also mentioned by students to be obstacles to success. Psychosocial support systems, professional exposure, adequate financial aid, and personal qualities were perceived by students to be facilitators of professional development and success. The authors conclude that improved academic climate, greater cultural awareness, and increased attention to the development of minority medical students can be used to facilitate minority student success.

Campos-Outcalt, Rutala, Witzke, and Fulginiti (1994) compared the performance of 42 URMs and 368 non-URMs who graduated between 1987-1991 at the University of Arizona College of Medicine. These authors used undergraduate science, non-science, and overall grade point average (GPA); scores from the Medical College Admissions Test (MCAT); scores from the United States Medical Licensing Exam (USMLE) Step 1 and 2 examinations; evaluations from a mandatory family practice clerkship; and scores on a fourth year clinical examination to compare the academic performance of URMs and non-URMs. According to the researchers, URMs earned significantly lower GPA's, scored significantly lower on all standardized written examinations, and scored lower on the family practice clerkship final examinations than did non-URMs.

One researcher (Tekian, 1998) investigated cognitive factors and attrition rates concerning the academic performance of 104 URMs and 246 non-URMs attending the

University of Illinois College of Medicine between 1992 and 1993. Data were collected on the students' current academic status, GPA, MCAT score, number of attempts to pass the USMLE Steps 1 and 2 examinations, number of attempts to pass core clerkships, number of significant events (a student failing a standardized examination or receiving a failing grade on a clerkship performance evaluation or examination), and a cognitive index score assigned to each student by the medical school's admission committee. URMs showed significantly higher rates of attrition, significant events, and failure of standardized examinations and lower cognitive indices, MCAT scores, and GPAs than non-URMs.

Clearly, there appear to be some similarities and a number of significant differences in the medical school experiences of URMs and non-URMs. Academic disparities, sources of psychosocial stressors in medical school, and perceived stress related to ethnic minority status have been adequately discussed as some of the ways in which URMs and non-URMs differ with regard to their medical school experiences. However, a less than adequate discussion exists about the cultural values that students bring with them into the medical education setting and how these values may be related to student development in medical school. An investigation of medical student's worldviews in relation to their mental health, career values and academic success may help medical school faculty to develop and better diversify interventions that increase the psychological well-being, career satisfaction, and academic success of all medical students.

<div align="center">The Mental Health of Medical Students</div>

Matriculation into medical school can exacerbate mental health issues in new medical students which pre-existed before students actually began medical school. It appears that the

adjustment to the medical school environment may be a significant source of mental distress among some beginning medical students. Academic expectations, examinations, geographic relocation, and social adjustment as well as financial worries are reportedly among the specific sources of mental distress for new medical students (Kidson & Hornblow, 1982; Linn & Zeppa, 1984; Rappaport, 1993; Rosenthal, Rosenthal, & Edwards, 1990; Silver & Glicken, 1990; Stewart, Lam, Betson, Wong, & Wong, 1999; Supe, 1998; Wear, 2002; Wolf, Faucett, Randall, & Balson, 1988). Dyrby et al. (2005) suggest that medical schools must improve efforts to promote not only the psychological well-being of medical students, but also their emotional, spiritual, and physical health.

Research on the mental health status of URMs is limited, but some differences have been noted in their psychological well-being as compared to non-URMs. It appears that perceived racism in the medical school environment negatively influences the self-esteem of some URMs causing mental distress and impaired academic performance (Geertsma, 1977).

Several other studies suggest differences in the mental health issues of URMs and non-URMs. Pyskoty, Richman, and Flaherty (1990) examined mental health in 184 African American, Hispanic, and White American medical students through use of a self-report questionnaire. Researchers assessed social support, self-concept, anxiety, hostility, alcohol use, and perceptions of medical school stressors. A number of differences were noted among the groups. African American and Hispanic students showed higher levels of self-esteem than did the White American students. White American students showed the highest levels of anxiety. African American medical students scored lowest on all measures of alcohol consumption; whereas, Hispanic students showed more elevated levels. Hispanic students

were found to receive the greatest social support over the first year of medical school, whereas, African American and White American students showed significant decreases in overall social support. African American students showed increased hostility during the course of their medical education, while White American students showed decreases in anxiety.

A multicenter research study conducted on minority and nonminority medical students at three US medical schools found significant differences between the mental health status of minority and nonminority medical students (Dyrbye et al., 2006). Minority medical students in the study had higher degrees of burnout and fatigue and overall lower quality of life than their nonminority peers. Parenting responsibilities and more frequent attendance of medical school outside their home state were noted to be additional stressors for URMs.

It is clear from the literature that high levels of mental distress are common among both URMs and non-URMs, that medical students' internal perceptions and physical experiences during medical education are often stress-inducing, and that the academic demands of medical school can exacerbate pre-existing tendencies for mental distress in medical students. However, no studies have examined if worldviews of medical students may be related to their mental health status. This seems to be a potentially fruitful area of research as several authors have suggested that worldviews are directly related to individual mental health and psychological well-being. An investigation of the relationship between medical students' worldviews and mental health could lead to results which initiate the implementation of counseling services to better assist medical students' with alleviating

symptoms of psychological distress and developing more healthy perceptions of self and others.

<center>Career Development of Medical Students</center>

Most of the research and literature on the career development of medical students has examined factors related to the choice of medical specialty. Studies by several researchers have noted the influence of gender, lifestyle preferences, family and marital relationships, and clinical experiences on medical students' career choice (Bland & Isaacs, 2002; Deckert, et.al, 1991; Dobie, et.al, 1997; Dorsey, et. al, 2003; Kassebaum & Szenas, 1994; Lambert & Holmboe, 2005). Because their academic performance and scores on objective and standardized examinations in medical school help to determine career options following medical school, much emphasis is placed on helping to facilitate medical students' choice of medical specialty. Understanding the factors related to medical students' choice of medical specialty is also viewed as a strategy to enable medical schools to increase the numbers of physicians currently working in areas of medicine experiencing physician shortages. Career interventions for medical students often involve helping students to gain knowledge about different medical specialty areas, how to enhance their academic credentials to increase competitiveness for residency programs, and how to decide which specialty areas best match their personal interests.

Some differences have been noted regarding the career choices of URMs and non-URMs. Statistics indicate that URMs are more likely to choose careers in Primary Care Medicine and underserved patient areas such as Family Medicine, Internal Medicine, Pediatrics, and Obstetrics/Gynecology (AAMC, 2006; Reede, 2003). A survey of all medical

students graduating from US medical schools in 2004 revealed that 51.00% of Black, 41.00% of Native American, and 33.00% of Hispanic medical students reported intentions to practice medicine in underserved areas containing high rates of poverty and physician shortages compared to only 18.40% of graduating White students (AAMC, 2004). Compared to non-URMs, significantly fewer numbers of URMs pursue careers in medical research and administration (AAMC, 2006). Consequently, ethnic minorities constitute approximately 4.00% of medical school faculty (AAMC, 2006). Differences in medical specialty choice and career preferences may suggest that some URMs possess a different set of values that guide their career decision making than their non-URM peers. No research has investigated if medical students' cultural worldviews are related to their career preferences in medicine.

Career assessments designed to assist medical students with their unique career decision making processes are limited. Two career development programs are currently used in some US medical schools to assist students with career development, Glaxo Wellcome's Pathway Evaluation Program for Medical Professionals (1999) and the Association of American Medical College's Careers in Medicine (CiM; AAMC, 2006). Both programs appear to be based largely on the traditional trait-factor theory of career development (Parsons, 1909) and recommend possible career areas to medical students based on matching of students' expressed interests, skills, needs, and personalities. However, an ecological perspective of career counseling suggests that these programs may not adequately address contextual variables such as cultural values on the career development of culturally diverse medical students (Cook, O'Brien, & Heppner, 2002).

Several instruments are used to conduct career assessment with medical students such as the Medical Specialty Preference Inventory (MSPI; Zimny & Senturia, 1973), Medical Career Development Inventory (MCDI; Savickas, et. al, 1983), and Myers-Brigg Type Indicator (MBTI; Myers, 1962; Myers & McCaulley, 1985), but it is not clear if these assessments account for the influence of cultural variables such as worldviews on medical students' career choice.

One recently developed career assessment, the PVIPS (Hartung et al., 2005), claims to assist medical students with the process of career decision making by helping to clarify student values in relation to the practice of medicine. The instrument measures students' preferences for the following six career values in medicine: Prestige, Service, Autonomy, Lifestyle, Management, and Scholarly Pursuits. Students' scores on the six individual subscales are calculated, compared, and used to help students clarify their career values in medicine and to guide students in considering specific areas of medicine that would be most rewarding to them. For example, a student with a highest score on the Autonomy subscale may be advised to consider careers in Pathology or Radiology that would allow more time for working alone rather than with others. Similarly, a student scoring highest on the Prestige subscale would be advised to consider a career in Surgery, Trauma, Pediatric Cardiology, or an area of medicine that would provide opportunities for receiving prestige as a physician. No research has examined if medical students' cultural worldviews are related to their career preferences indicated on the PVIPS.

The developers of the PVIPS suggest that a high score on the Service subscale of the PVIPS indicates that a student's greatest preference may most likely be in the area of

Primary Care Medicine. Moreover, various authors have suggested that worldviews influence career choice and behavior. An investigation of the relationship between worldviews and career values of Brody students on the Service subscale of the PVIPS would yield knowledge about the relationship between these variables among Brody students. Moreover, this information may assist Brody faculty in understanding the specific worldviews that influence students' decisions to enter Primary Care Medicine and assist recruitment efforts aimed at identifying students with interest in Primary Care Medicine.

History of Underrepresented Minority Medical Students in Medical Education

In the 1960's, only about 500 ethnic minority medical students were annually matriculating in US medical schools; moreover, nearly 75% of these students attended medical school at two African American medical schools, Howard University School of Medicine and Meharry Medical College School of Medicine (The American Medical Student Association Foundation, 1996).

During the 1960's increased attention was directed to making medical education more accessible to ethnic minority students since most medical schools were not willing to admit minority students. However, by 1964 the total number of ethnic minority students matriculating in medical school had increased to 2% with an increase to over 8% by 1971 (AAMC, 2002). Some authors have noted that although the number of minority medical students significantly increased during the 1960's and early 1970's, discrimination and barriers to their development and success remained common in many medical schools.

In response to growing concerns about the numbers of URMs in medical schools and civil rights efforts to increase URM enrollment in nonminority medical schools, the AAMC

initiated a campaign to increase the enrollment of URMs to represent 12% of enrollment at US medical schools by 1975 and with an ensuing promise to provide financial loan assistance to matriculating URMs (AAMC, 2002). However, by the mid-1970's, the total number of URMs enrolled in medical schools had increased to about 9% instead of the desired goal of 12%.

During the mid 1990's, efforts to increase the enrollment of URMs was affected by a number of court cases in Texas, Louisiana, Mississippi, and California which eliminated affirmative action on the basis of so-called reverse discrimination against nonminority students and banned racial and ethnic preferences in college admissions (Wallace & Lesher, 1995). In 1991, the AAMC implemented a plan known as Project 3000 by 2000 with the goal to increase the number of minority students enrolling in medical school from 1,485 annually to 3000 by the year 2000 (AAMC, 1992; Ready, 2001). The proposed plan attempted to address the insufficiency of previous affirmative action efforts to increase student diversity in medical education. Project 3000 failed to meet its overall goal, but some have indicated that it has successfully promoted the idea of an educational pipeline, encouraged medical schools to re-evaluate the recruitment and admission policies regarding minority students, and emphasized the need for improving the cultural climate in medical schools.

Since the 1990's and despite the numerous efforts to make medical education more accessible to URMs, the numbers of URMs matriculating in US medical schools remains significantly low compared to non-URMs (AAMC, 2006). During the 2003-2004 academic year, URMs made up just 13.8% of medical school matriculants compared to 62.1% of their

non-URM matriculating peers (AAMC, 2005). Of the 15,821 medical school graduates in 2004, 64% were non-URM and 13.5% were URM (AAMC, 2005).

A review of the literature on the historical data on URMs and their entry into US medical schools suggest that although exemplary efforts have been made to increase their enrollment in medical schools, significantly less attention has been directed at understanding some of the specific variables which may affect their medical school experiences. Data on the academic, professional, and cultural challenges of URMs during their medical training certainly suggest the need for further examination of their development in medical school. No studies to date have examined cultural worldviews, mental health, career values and academic success of URMs as compared to their non-URM peers. Moreover, an examination of these variables may assist medical school faculty in developing a more holistic perspective of the factors which contribute to the success and performance of URMs in medical school.

Some authors are beginning to acknowledge the need for predominantly White medical schools to consider if the values and worldviews embedded in their institutional cultures negatively impact the success and development of URMs who may possess different worldviews. Smedley, Butler, & Bristow (2004) suggest a number of educational strategies to be implemented by medical schools and other health professions educational institutions (HPEIs) for the purpose of increasing the matriculation and retention of enrolled URMs. The recommendations include:

The need to assess and improve, where necessary, the institutional climate for diversity [within the individual academic environments of medical schools and

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HPEIs as well as] the perceptions, attitudes, and values that define their institutions

[and how these may be] seen from the perspectives of individual students of

different racial or ethnic backgrounds (p. 13).

Are the worldviews and values of medicine, a profession historically dominated by White

American males, in direct conflict with the cultural values and worldviews of URMs? Could

this be a source of psychological and academic distress for some URMs and a reason for

disparities in their academic performance? Although this exploratory study lacks the

capability to rigorously examine these questions, it does endeavor to describe the worldviews

of URM and non-URM physicians-in-training so that medical school faculty may begin

serious deliberations in response to these questions.

Theoretical Underpinnings

The purpose of this study is to examine worldviews, mental health, career values, and

academic success in a sample of URM and non-URMs at Brody School of Medicine.

OTAID and EMCD serve as the theoretical underpinnings for the study. These theoretical

models are discussed next.

Review of Optimal Theory Applied to Identity Development

Assumptions of the OTAID model are founded on tenets of optimal theory. This

theory posits that there are two opposing conceptual systems (suboptimal and optimal)

through which individuals view the world (Myers, 1984, 1988). Within the suboptimal and

optimal belief systems exist contrasting assumptions about spiritual and physical existence,

self-validation, the nature of knowledge, and one's view of humanity.

Measures of worldview, as indicated by the BSAS are assumed to exist along a continuum that ranges from suboptimal to optimal interpretations of self and others. Interpersonal valuing, de-emphasis on appearance, integration of opposites, satisfaction based on that which is nonmaterial, and optimism are specific dimensions of a suboptimal or optimal worldview. Additionally, a suboptimal worldview is considered to be a conceptual system based primarily on Eurocentric values of individualism, extrinsic worth, and objective reality. In contrast, optimal worldview is believed to be based on primarily Afrocentric values of spirituality, intrinsic self-worth, and oneness with humanity (Myers, 1988).

In the suboptimal system, life is viewed as a materialistic endeavor "with the primary task being to demonstrate one's ability to acquire significant amounts of material resources" (Myers, 1988, p.10). Optimal theory attributes the sense of competition and materialism that is so pervasive in western culture to be a product of the suboptimal worldview. As a result of the emphasis that is often placed on the acquisition of resources, resources are viewed as limited. Consequently, aggressiveness and competition are utilized to secure limited resources. Optimal theory posits that the high value placed on material resource acquisition not only spurs aggressiveness, competition, and greed but also influences how people come to view themselves and each other.

Sense of self worth in the suboptimal system is negatively influenced by materialism. Not only is self worth negatively impacted, but "inner peace and personal satisfaction are diminished" as well (Myers, 1988, p.10). This diminished sense of self occurs within the suboptimal system as individuals attempt to find inner satisfaction through the acquisition of material possessions. Optimal theory posits that although one may be able to acquire a vast

amount of material resources, these do not guarantee personal happiness or contentment. In the suboptimal system the emphasis on materialism is linked to a preference for the external, rather, than internal or spiritual dimensions of reality.

Within the suboptimal system, highest regard is placed on what can be externally observed, evaluated or experienced rather than what can be internally or spiritually known (Myers, 1988). In the suboptimal system, external qualities are often perceived as yielding a competitive edge in society or used as evaluative criteria by which people are judged as superior or inferior. Knowledge is viewed as primarily objective and usually consisting of a single reality. Myers (1981) indicates that this emphasis on external reality negatively influences cognitions by generating a dichotomous form of logic.

Interpersonally, the very nature of relationships is affected by the suboptimal system. As opposed to an emphasis on social networks of individuals with a shared sense of collective identity, bilateral relationships between individuals are more highly preferred. Optimal theory argues that the intrapersonal and interpersonal effects of a suboptimal system include: separation of spiritual from physical reality, rejection of spirituality as the primary aspect of reality, an insecure sense of self, alienation, individualism, competition, social domination and oppression (Myers, 1984). Although faulty and oppressive, the suboptimal system contains some value in that it serves as a directional guide for illuminating the path to a more optimal conceptual system (Myers, 1988). These assumptions in the suboptimal system stand in contrast to the more healthy perspectives of self and others that exist in the optimal system.

The optimal conceptual system posits that spirit and matter, together, represent not only a single reality but also the discovery of everlasting life (Myers et al., 1991). Not only are spiritual and material reality viewed as inseparable, but spirit is believed to be manifest in every aspect of existence and, thus, everything is thought to be an expression of spirit. Self-knowledge, instead of materialism, is viewed as the most important life task and is believed to occur as one is able to understand self through the enhancement of spiritual awareness. Spiritual reality is viewed as more optimal and stable than external reality. As Myers (1988) indicates:

> Within this paradigm normalcy assumes health and well-being. To be normal is to see oneself and the world as manifestations of infinite spirit. Beginning with one's conception of self as never separate from infinite spirit, one's worth is intrinsic in being. One's purpose is being becomes that of bringing more knowledge of one's nature as infinite spirit into awareness. (p.23)

Within the optimal worldview an individual is able to recognize self as a spiritual, transcendent being not limited by cultural confines or perceptions imposed by others. Knowledge is presumed to be transcendent and, therefore, not always externally measurable or immediately observable since it is linked to spirit. In the optimal conceptual system, "knowledge processes are not dichotomous but rather diunital and seek to unite and synthesize seemingly contrasting perspectives" (Myers, 1988, p.12). Instead of an emphasis on a single reality, the acquisition of knowledge is viewed as a subjective experience yielding multiple possibilities of equally valid conclusions.

The optimal self is viewed as infinite and collective instead of individualized. As Myers indicates, self is extended to include "all of the ancestors, the yet unborn, all of nature, and the entire community" (1988, p.12). The optimal system facilitates a sense of self that is multidimensional instead of individualized and fragmented, extended through collective networks, and intrinsically rather than extrinsically validated. This view of self is considered more optimal in that it influences personal actions that are more purposeful and guided by holism, spiritualism, a collective sense of self, and the realization that life is infinite and unlimited. Interpersonal and interdependent relationships are highly esteemed yielding more healthy perspectives of self in relation to others. Moreover, all life processes are perceived as interrelated and supported by both human and spiritual networks. Myers (1991) indicates that it is along this continuum from suboptimal to optimal conceptualization that healthy identity development occurs. Optimal theory suggests that an individual moves from the suboptimal or segmented worldview to a view of self that is more optimal, spirit-based and holistic through self-knowledge and enhancement of spiritual awareness.

In the OTAID model, development is described as occurring in six phases: absence of conscious awareness, individuation, dissonance, immersion, internalization, integration, and transformation (Myers et al., 1991).

Phase 0: Absence of Conscious Awareness

The consciously absent individual is one who is at an early stage of identity development and unable to make evaluations about self and the environment.

Phase 1: Individuation

At the level of individuation, an individual possesses some beginning sense of identity but one typically defined by the actions and opinions of others rather than the individual. Particularly noteworthy about individuals at this stage is that the external environment serves as the major reinforcer of self-concept and although individuals are able to comprehend and respond to messages from the environment, they lack the ability to understand the aspects of self that are devalued by the external environment. Thus, they are often not aware of any view of self other than what the environment conveys to them.

Phase 2: Dissonance

Individuals move from individuation to dissonance as they begin to seriously consider definitions and assumptions regarding self. Some level of tension and conflict occur as individuals become aware of what appears to them as conflicting interpretations of self from the internal and external environments. Consequently, a variety of cognitive and emotional coping responses may potentially emerge as individuals consider how to manage the conflicting views of self. Often at the stage of dissonance, individuals develop a heightened sense of awareness about the aspect of self least validated by the external environment. This often causes individuals to immerse themselves in the company of others viewed to be similar to them.

Phase 3: Immersion

Immersion occurs as individuals attempt to seek out and identify most closely with others that they view as possessing similar qualities. Oftentimes, these sought after individuals are others who are perceived as also experiencing similar conflict with the

external environment. The devalued sense of self becomes immersed with others as it seeks approval, validation, and a sense of belonging within a community of other devalued selves. Although the devalued sense of self may experience some positive outcomes in connecting with similar others, some negative opinions and attitudes toward the dominant group are also possible at this stage. Whereas the beginning phase of immersion is characterized by the individual developing an awareness of the devalued aspects of self, an individual in the latter phase of immersion has begun to reconcile the devalued self through the process of internalization.

Phase 4: Internalization

Individuals who reach the stage of internalization not only feel more comfortable with their sense of self, but often may possess a greater acceptance for those in the external environment who may not validate their unique sense of self.   Because self has become internalized, the individual possess a greater awareness of the internal self and relies less on the external environment for self-validation.

Phase 5: Integration

Through the process of integration, the sense of self is not only internalized but expanded as the individual is able to develop an integrated view of self into the larger world. As a result, the integrated self becomes relevant and manifests in relationships and opinions of others. The changing view of self is also accompanied by changing assumptions about the world. Thus, individuals begin to understand the relationship between personal assumptions and oppression and also begin to understand how their conceptual systems are both influenced by and influence their interactions with others.

Phase 6: Transformation

Evidenced by a holistic sense of self, an understanding and appreciation for the interconnectedness of both spiritual and material networks as well as personal heritage and the culture of humanity at large, the transformed self is one that is redefined, empowered, and spiritually discerning. The universe is perceived as orderly and integrated and all forms of life are accepted. The transformed individual is then able to view negative experiences as opportunities for positive growth and development and reality is defined by spiritual awareness than physical circumstances.

A number of considerations can be made when conducting an appraisal of theoretical models. For the purposes of this paper, criteria from one main source will be used to evaluate the two models previously mentioned. In a previous doctoral counseling course, the instructor shared guidelines for analyzing theoretical models as a part of class lecture notes (Dr. Sylvia Nassar-McMillan, personal communication, January 2005). The guidelines shared will be used to review OTAID and EMCD. According to the guidelines, a proper appraisal of theory should include a review of its particular definitions, axioms, postulates, constructs and variables. Formal elements of the theory should then be evaluated in terms of the logical and internal consistency of statements, presence of contradiction, empirical measurability, parsimony, and integration of previous research. Thus, it is within these suggested guidelines that the theoretical models will be evaluated.

It is the opinion of this author that OTAID satisfies much of the criteria for a good theory; moreover, some limitations are also evident in the model. Logically speaking, most of the theoretical assumptions upon which OTAID is based seem clear, understandable, and

internally consistent. For example, Myers explains the process of optimal identity development as occurring across a continuum of six developmental phases. The six phases with their unique psychological processes are clearly understood to occur at various points throughout the continuum with the processes in one understandably serving as a psychological catalyst for those in the next. Each successive phase logically seems to become more optimal and less suboptimal. Concepts and ideas such as "optimal" and "suboptimal" that are initially abstract seem well defined in the model. However, some of the terms used to discuss elements of spiritual reality such as "spirit" and "energy" are somewhat unclear. This may be due to the challenge of articulating extrasensory processes as well as the varying interpretations of spiritual concepts that exist in research and literature. Not only does the model demonstrate adequate internal consistency, but it also seems void of theoretical contradictions.

Empirically speaking, the OTAID model also seems to possess significant strengths. The model certainly has demonstrated itself to be testable as some of its concepts have been both quantitatively and qualitatively evaluated by researchers in a number of settings with participants that include: African Americans; Native Americans; Asians; American university and nonuniversity females; South African females; gay, lesbian, and bisexual individuals; Jewish individuals; Latinos; disabled persons; and those socioeconomically disadvantaged (Highlen, Jecmen, & Speight, 1991; Reynolds, 1989, 1991; Sawyer, 2004). Furthermore, outcomes of these research studies also seem to lend support to the model's theoretical constructs. The *Belief Systems Analysis Scale* (BSA; Montgomery et al., 1990) is the instrument used to assess suboptimal and optimal beliefs systems. Psychometric analysis

of the instrument has been conducted with White American college students and African American college students and suggest significant validity in its constructs as well as differing worldviews between the two groups (Montgomery et al., 1990; Brookins, 1994).

Moreover, the model clearly integrates significant relevant research concepts from personality theory (Erickson, 1968; Jung, 1953), transpersonal psychology (Vaughan, 1986), faith and spiritual development theory (Elkins, Hedstrom, Hughes, Leaf & Saunders, 1988; Fowler, 1981), multicultural psychology, and racial identity theory. Afrocentric and Christian as well as Native American, feminist, and Eastern philosophical traditions have also influenced the development of the model.

Although it contains a significant amount of logical and empirical consistency, a few limitations are also apparent. First, no studies have examined the model's applicability to groups of medical students. Second, whereas the tenets of optimal theory have been applied to individuals in the context of assessing worldviews, this author could find no evidence of studies that have examined whether or not the model's assumptions can be applied to individuals in the context of career choices or behaviors. Third, the model presents the course of optimal identity development as occurring in a series of six phases. These appear in some sense as being somewhat linear, predictable, and sequentially ordered. It is possible that this may not describe the actual course of identity development for some individuals. The process of optimal identity development for some individuals may in fact not be predictable. Myers (1991) seems to have considered this possible limitation as she admits that:

The process of development occurs in a predictable sequence, but the amount of

time individuals spend in a given phase may vary widely because of factors such

as the zeitgeist or environmental press. Individuals may move or not move

through all of the phases. The OTAID model is neither a linear model nor

a categorical one. Rather, OTAID is conceptualized as an expanding spiral.

The beginning of the identity development process is similar to the end of the

identity process. (p.58)

Overall, the model seems to meet most of the evaluative criteria, both logically and

empirically, for a sound theoretical framework. Moreover, its cultural assumptions seem to

suggest much potential for use with URMs and non-URMs in terms of identifying the nature

of their belief systems and explaining how these beliefs influence mental health, career

preferences and academic success of students completing medical education.

<center>Ecological Model of Career Development</center>

Based on Bronfennbrenner's (1979) assumptions about the nature of person-

environment interactions, the Ecological Model of Career Development (EMCD; Cook,

Heppner, & O'Brien, 2002) is a newly emerging model of career development. Though

development of the theory is currently underway, some of the model's assumptions have

been briefly introduced and discussed in career research and literature and are presented here.

EMCD views career behavior as a function of the person and the environment (Cook

et al., 2002). Like Ecological Systems Theory (EST; Bronfenbrenner, 1979), the model

supports Bronfenbrenner's assumptions about the four dynamic ecological subsystems which

work together to facilitate development. The interactive and interdependent relationship

between individuals and these ecological subsystems is also acknowledged. EMCD offers a broad perspective of career development encompassing a number of significant individual and systemic variables that influence career behavior.

Due to the interdependent and interactive nature of ecological subsystems, EMCD suggests that career assessments can be made about the functioning of subsystems in clients' lives to determine where specific interventions are needed to enhance career development (Cook, O'Brien, & Heppner, 2004). Whether at the microsystem, mesosystem, exosystem, or macrosystem level developmental interventions can be made with individuals or groups within the systems affecting them to optimize person-environment interactions.

For example, a number of microsystem specific strategies are suggested to assist clients with experiencing more satisfying and positive interactions in the work environment such as: development of interpersonal and coping skills, healthy cognitions, identifying strengths, career exploration, or career mentoring (Cook et al., 2002). The model also suggests that counselors intervene by directly affecting decision making and leadership structures within work environments that influence employees. Helping clients manage work-life roles, negotiate salary requirements, make decisions about traditional and nontraditional career choices, and addressing workplace culture practices are specific interventions which can help maximize development in clients' macrosystems. Cook et al. posit that career counselors must assume a variety of "diverse methodologies" to assist client with enhancing ecological functioning (2002, p. 295).

EMCD seems to embrace a more integrated and holistic view of career development. Work roles and other life roles of the career client are viewed as equally important and as

needing to be integrated instead of alienated. Relationships and social networks both in and outside of the work place are valued and assumed vital for healthy development. Work itself is also viewed as a relational task. This assumption stands in contrast to a number of career theories that emphasize individualism and autonomy.

The role of meaning making in the process of career development is also an important tenet of EMCD. Clients' interpretation of events both in and out of the workplace are thought of as having the potential to hinder or promote career development. As Cook et al. (2004) indicate:

> In career counseling, changes in clients' meaning-making processes are often crucial to resolution of the career dilemma. Clients evaluate or attach relative significance to various pieces of information about themselves and job opportunities. Finally, clients decide what is worth doing for fun, financial reward, or perhaps a more transcendent purpose in the context of their lives over time. (p.226)

The model posits that these meaning making processes are influenced by a number of contextual variables in clients' ecosystems and believed to assist clients in generating a number of personal assumptions about the meaning of their work activities.

The tenets of EMCD, although undergoing development, seem to lend themselves to the blending of a number of counseling theoretical frameworks including Holland's (1997) Vocational Theory, cognitive-behavioral techniques, feminist therapy, existential therapy, social cognitive career theory, multicultural counseling and others. Though based on tenets of EST, most of its beginning assumptions to date have been articulated mainly in the context

of career development of women and in particular, minority women. Clearly, the model is still in its early infancy stage and much remains to be articulated before extensive evaluations can be made concerning its internal consistency, testability, parsimony, valid theoretical basis, and potential for applicability to various populations.

With its emphasis on person-environment interaction, the multiple contextual influences that affect career development, holistic view of work, and meaning making in the career development process EMCD certainly seems to hold much promise for providing a more contextual perspective of career development concerning women and other minority groups in the workplace. Two major limitations seem readily apparent in the developing model. First, expansion of the theory is needed to clarify the model's tenets. Though the model is founded on tenets of EST, it is not clear if the model holds assumptions that may differ in some way from EST. Second, most of its assumptions have been articulated in the context of women in the workplace and minority women more specifically. It is not clear if assumptions have been considered in the context of other individuals.

Clearly, more empirical support is needed to validate EMCD's assumptions. An overall analysis of this model reveals that it seems to be useful for generating a more holistic conceptualization of individual career needs. EMCD acknowledges influences on career development not typically acknowledged by some career theories such as: culture, worldview, workplace oppression, inseparability of life roles from career roles, culturally appropriate career assessment, and other individual and systemic influences on career behaviors. EMCD seems useful for generating a more holistic perspective of medical

students' career development, especially in the context of understanding how worldviews influences career choices in medicine.

Synthesis

This chapter presented a summary of relevant literature on the role of worldview in counseling and development as well as assumptions regarding the relationship between worldviews and student success in medical school. Reported differences in the medical school experiences of URMs and non-URMs were discussed. Some of the mental health issues of medical students were presented to indicate a need for further examination of underlying factors contributing to frequent stress in medical students. A discussion concerning the career development of medical students was offered. Reportedly different career patterns among URMs and non-URMs, limited career assessments, and lack of attention to the role of culture as a contributing factor to the career choice and behavior of medical students clearly indicate a need to for medical schools to better understand cultural variables that influence medical students' career preferences. Historical data were presented to reveal some of the complex, interacting social influences affecting the entry of URM students alongside non-URMs in US medical schools. These data reveal that significantly more emphasis has been placed on increasing the numbers of URMs in medical school while significantly less attention has been given to examining the specific variables influencing their success in medical school. A review of the literature along with assumptions of OTAID and EMCD clearly suggest that further examination of worldviews, mental health, career values, and academic success of URMs and non-URMs might yield study outcomes which

may lead to the implementation of student interventions which may enhance the

psychological, career, and academic development of medical students.

CHAPTER 3

METHOD

The purpose of this exploratory study was to examine worldviews, mental health, career values, and academic success of URMs and non-URMs students attending Brody School of Medicine. Although, existing research has identified possible differences in cultural perspectives, psychosocial stressors, career preferences, and academic success among URMs and non-URMs, no studies have examined differences in medical students' cultural worldviews and whether worldviews may be related to student development in medical school. Using a quantitative, descriptive approach this study was an attempt to describe the different worldviews that exist among Brody URMs and non-URMs and how these worldviews may affect students' development in medical school. Literature discussing the role of worldview in human development along with assumptions of optimal theory suggest that worldviews may be related to the mental health, career values, and academic success of medical students. This chapter presents a description of the sample participants, instrumentation, and procedures for data collection and analysis.

Participants

A convenience sample of currently enrolled first and second year Brody medical students was obtained via recruitment letters and visits to speak with groups of students during early Fall semester class meetings. Participants were required to be first or second year medical students currently enrolled at the medical school. The final sample of participants for this study consisted of 78 medical students, 19 (24.40%) were URMs and 59 (75.60%) were non-URMs. In keeping with the AAMC's definitions of URMs and non-

URMs, URM participants in this study were considered to be those who self-identified as being Black /African American, Hispanic/Latino(a), and American Indian/Native American while non-URMs were considered to be those who self-identified as being White/Caucasian.

Participants received, reviewed, and completed the following documents: (a) recruitment letter (see Appendix A), (b) informational letter (see Appendix B), (c) consent forms (see Appendix C), (d) instructions for completion of survey questionnaires (see Appendix D), (e) *Belief Systems Analysis Scale (BSAS)* (Montgomery et al., 1990); see Appendix E), (f) *Brief Symptom Inventory (BSI)* (Derogatis, 1993), (g) *Physician Values in Practice Scale (PVIPS)* (Hartung et al., 2005); see Appendix F), and (h) demographic survey form (see Appendix G).

Instrumentation

Demographic Survey

A confidential demographic survey developed and used to collect demographic data from participants. The form was adapted from a demographic questionnaire originally used by a researcher who conducted a recent study on Brody medical students (Hardy, 2002). Data collected by the multiple-choice instrument was used primarily to determine the presence of demographic trends within the sample that related to students' worldviews, mental health, career values, and academic success.

Participants provided personal data regarding 21 demographic variables; however, only 10 of these were examined since they were considered to be most relevant to the study's research questions. Although the remaining variables were considered important, they will not be discussed in relation to the study. Data on variables regarding race/ethnicity,

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academic classification, undergraduate institution attendance, home community, and proposed medical specialty choice along with participants' perceptions of psychological wellness and work values were collected and examined.

Academic Success Questions

Two questions were developed and used to assess academic success among URM and non-URM participants. The questions were included on the confidential demographic survey. The two questions were: (a) "What is your current academic classification?" (b) "What is the total number of semesters that you have been in medical school, including the current semester?" The questions take into account that academic success in medical school is largely determined by a student's ability to advance from one year of the medical school curriculum to the next year. Participants who identified as being on track with their cohort of medical school classmates were considered as "having academic success." Those who identified themselves as not being on track with their original cohort were considered as "having academic difficulty." For example, a second year medical student who identified as being in the third semester of medical school was considered as "having academic success." A first year medical student who identified as being in the third semester of medical school was considered as "having academic difficulty." Participants' responses to both questions on the demographic survey form were interpreted as either a "yes, having academic success" or "no, having academic difficulty" response. The questions are included on the confidential demographic survey form in Appendix G.

Belief Systems Analysis Scale (BSAS)

The BSAS (Montgomery et al., 1990) is used to measure an optimal, Afrocentric worldview based on the assumptions of optimal theory (Myers, 1988). Although the instrument measures Afrocentric beliefs, the developers of the BSAS claim that it is useful for cross cultural assessment of worldviews since, "the optimal Afrocentric belief system is not unique to African Americans and its tenets may be held by all individuals, as all people are African if one goes back far enough into their ancestry" (Montgomery et al., 1990, p.43).

The BSAS is a 31-item questionnaire which consists of a 5 point Likert-type scale (1= *completely agree*, 2= *mostly agree*, 3= *neither agree nor disagree,* 4= *mostly disagree*, and 5= *completely disagree*). Some items are scored in a positive direction and others in a negative direction. The BSAS measures the following five dimensions of an Afrocentric worldview: (a) Interpersonal Valuing, (b) De-emphasis on Appearance, (c) Integration of Opposites, (d) Non-material Based Satisfaction, and (e) Optimism. An example of an item on the BSAS is, "If I had more money, my life would be more satisfying."

The sum of the responses can be computed and divided by the number of items in each subscale to obtain a separate score for each of the five subscales. Additionally, all items can be summed to generate a single score. Overall scale scores on the BSAS can range from 32-160 with higher scores indicating a more optimal, Afrocentric worldview and lower scores denoting a worldview that is more suboptimal and less Afrocentric. The overall scale score was used in this study as a measure of optimal worldview.

With a Cronbach's alpha of .80 and test-retest reliability of .63 (1 week apart) the instrument's developers report adequate internal consistency for the BSAS. Brookins (1994)

also provides evidence of high overall reliability for the scale but cautions that use of the overall scale score may be a more reliable measure of optimal worldview than the individual subscale scores. Myers et al., (1995) also reported evidence of construct validity for the BSAS. Jones (1996) notes that the BSAS is one of a few existing measures of worldview and that the instrument provides a more comprehensive measure of constructs related to worldview than other worldview assessments. The BSAS is included in the *Handbook of Tests and Measurements for Black Populations.*

Brief Symptom Inventory (BSI)

The second instrument, the BSI (Derogatis, 1993), was developed from the Symptom Checklist (SCL-90-R; Derogatis, 1975) and is a brief self-report questionnaire which measures recent symptoms of psychological distress. The BSI has 53 items, nine primary dimensions, and three global indices of psychological distress. Items on the BSI are rated on a 5 point scale of distress ranging from 0 (*not at all*) to 4 (*extremely*). Rankings characterize the intensity of psychological distress during the past seven days. A sample question from the BSI is "How much were you distressed by feeling lonely during the past 7 days?" The nine primary psychological symptoms that are measured include: (a) Somatization, (b) Obsessive-Compulsive Tendencies, (c) Interpersonal Sensitivity, (d) Depression, (e) Anxiety, (f) Hostility, (g) Phobic Anxiety, (h) Paranoid Ideation, and (i) Psychoticism. The three global indices measured by the BSI are: (a) General Severity Index (GSI), (b) Positive Symptoms Distress Index (PSDI), and (c) Positive Symptom Total (PST).

Although the developer reports adequate test-retest reliability for the three global indices which range from .87 to .90., the GSI is indicated to be the single best indicator of

psychological stress level. Since it "combines information about the number of symptoms and the intensity of distress," the GSI was used in this study as an overall measure of psychological distress (Derogatis, 1975, p. 34). GSI raw scores are converted into T scores and T scores of 63 and above are considered to be positive cases of psychological distress. This means that GSI raw scores between 0.56-0.59 are considered to be cases of positive psychological distress for adult, nonpatient males and 0.76-0.88 for adult, nonpatient females The developer reports high internal consistency for each of the scales ranging from .71 to .85 and test-retest reliability estimates ranging from .68 to .91. Several authors report adequate content validity for the BSI (Conoley & Kramer, 1989; Derogatis, 1993; Derogatis, Rickles, & Rock, 1976). The BSI is copyrighted and available through Pearson Assessments. Copies of the BSI were purchased for use with participants in this study.

Physician Values in Practice Scale (PVIPS)

The third instrument that was used is the PVIPS (Hartung et al., 2005). The PVIPS is used to measure core career values of medical students and physicians specific to the practice of medicine in the following six dimensions: (a) Prestige, (b) Service, (c) Autonomy, (d) Lifestyle, (e) Management, and (f) Scholarly Pursuits. Containing 60 items scored on a Likert-type scale ranging from 1 (*strongly disagree*) to 5 (*strongly agree),* each item is preceded by the stem "In my medical practice it will be important that I …" followed by a statement. Scores for each of the six dimensions are calculated by summing item ratings in each individual subscale and then dividing by the number of items in each subscale. The dimension or dimensions with the highest score represent what the medical student or physician considers most important or most valuable in their medical career. Areas in which

individuals score lowest indicate values viewed to be less important. Scores in the six individual subscales which range from 1.00 to 2.40 are considered low career value, 2.50-3.40 medium career value, and 3.50 to 5.00 high career value. For each dimension, scores are considered in terms of how they relate to particular areas of medicine.

The instrument's developers report moderate to high internal consistency reliability estimates for the six dimensions which range from .77 to .88 as well as evidence of content and construct validity. However, little normative data exist to indicate the instrument's usefulness with ethnic minority medical students and physicians. Scores were only calculated for the Service subscale of the PVIPS and compared for URM and non-URM participants in this study. Dr. Paul Hartung of the Northeastern Ohio Universities College of Medicine was contacted via email and granted permission for the PVIPS to be used in this research study (personal communication, March 25, 2008).

As recommended by Dr. Craig Brookins (personal communication, January 30, 2008), the administration of surveys was pilot tested with several adult family members and friends at home in a simulated data collection session to ensure that the time allotted for completion of documents was sufficient for participants. Additionally, a statistician was consulted to determine if counterbalancing of the four surveys was necessary to minimize possible research fatigue for participants; counterbalancing was not recommended (Dr. Kevin Gross, personal communication, July 15, 2008).

Procedure

Data Collection

After securing approval from the University Medical Center Institutional Review Board and North Carolina State University Institutional Review Board, a copy of the recruitment letter was placed in the student mailbox of each first and second year medical student. Instead of mailing recruitment letters to the home addresses of first and second year medical students, letters were placed in students' mailboxes at the medical school since it was discovered that home addresses for many students were not accurate due to frequent relocation. Letters of research approval from the University Medical Center Institutional Review Board and North Carolina State University Institutional Review Board are included in Appendix H and Appendix I.

A second follow-up contact was made in person with students during scheduled class meetings in the early Fall semester to emphasize the voluntary nature of the study, to answer student questions about the recruitment letters, and to explain what participants could expect at data collection sessions. Students were informed that they needed to attend a data collection session expected to last almost one hour at the medical school if they desired to participate in the study. Students were informed of the dates, times, and locations of data collection sessions at the class meetings.

As a third follow-up contact with students, a second copy of the recruitment letter was placed in students' mailboxes at the medical school. A fourth follow-up contact was made with students during a repeated visit to first and second year students' classrooms to explain

the recruitment letter, answer student questions, and announce the dates, times, and locations of data collection sessions.

Data were collected intermittently at the medical school during the early Fall semester over a period of three weeks. To accommodate the busy schedules of students who were participating in frequent lectures throughout the day, data collection sessions were scheduled during student lunch breaks at the medical school when students were not participating in lectures.

At the data collection session, participants received Packet A containing: (1) an informational letter to describe the research study and (2) consent form. The consent form provided participants with contact information regarding the researcher as well as information about the purpose of study, potential risks and benefits of the study, confidentiality, compensation for participants, and procedures for termination. After participants reviewed the informational letter, they were asked to read and sign the consent form to indicate their willingness to voluntarily participate in the study. Participants were allowed to ask any questions about the consent form or research procedures. Completed consent forms were collected and kept separate from survey questionnaires.

Packet B was distributed to each participant containing: (1) written instructions for completing the four surveys; (2) BSAS; (3) BSI; (4) PVIPS; and (5) confidential demographic survey on the bottom. Each Packet B contained a three digit code randomly assigned to assist in determining the number of participants who completed survey packets in each data collection session. Since participants did not write names on the surveys, the three

digit code also preserved the anonymity of participants' responses. Next, participants were

asked to read the instructions for completion of the surveys.

Participants returned completed survey packets at the conclusion of each data

collection session. Each Packet B was collected and kept separate from consent forms.

Information about counseling resources was provided to participants at the end of each

scheduled data collection session. Although participants did not receive financial

compensation, complimentary lunch and beverages were provided to participants at the end

of each scheduled data collection session as a courtesy for participation. Data were stored

and locked in a confidential file at the medical school in the Academic Support and

Enrichment Center in Brody 2N-64.

Pre-Data Analysis

Data were analyzed using the Software Package for Social Science 16.0 (SPSS). The

software is a statistical program used primarily to analyze research data of various types. A

statistical consultant, Dr. Kevin Gross, was consulted on several occasions and offered

suggestions and demonstrations as to how to set up and enter data into the software program.

Each column in the SPSS software program was labeled to represent each item on the

four survey questionnaires. For example, the 31 individual items on the BSAS were entered

into columns labeled as *bsas1*, *bsas2, bsas3*, etc. The 53 items on the BSI were entered in

columns labeled as *bsi1*, *bsi2*, *bsi3*, etc. The 10 items on the Service subscale of the PVIPS

were entered into columns labeled as *pvips1*, *pvips2*, *pvips3*, etc. Items on the demographic

survey form were entered into columns labeled as *ds1*, *ds2*, *ds3*, *ds4*, etc. In SPSS, a total of

115 labeled columns were used to enter each of the variables on the BSAS, BSI, PVIPS, and demographic survey.

Each participant's individual responses to the variables in each of the 115 columns were entered into separate rows; 103 rows were used to enter the responses of each participant. Over a period of approximately two weeks, survey data were entered for each participant into SPSS. Data entry was checked for accuracy with the help of an office assistant.

A total of 103 medical students voluntarily attended data collection sessions and completed survey packets during the data collection period which lasted approximately three weeks. The total number of participants who volunteered for the study also represented 67.32% of the total first and second year student population at Brody.

Six of the 103 participants who volunteered for this study indicated their race/ethnicity as: "Asian and European American," "Multiethnic," "Hispanic and European American," "Middle Eastern," "Iranian," and "White and Pakistani." One participant did not identify a race/ethnicity. Thirteen more participants identified their race/ethnicity as Asian. Data on these 20 participants were excluded from analysis since the research questions in the present study focused on URMs who were Black/African American, Hispanic /Latino(a), and Native American/American Indian and non-URMs who were White /Caucasian. The deletion of data on these 20 participants left a remaining sample of 83 participants. Data on 5 more participants were deleted due to incomplete or missing responses on survey questionnaires, yielding a final total of 78 participants, which was 50.99 % of the total first and second year medical student population at Brody. Thus, the final sample of participants

for this study consisted of 78 medical students, 19 (24.40%) were URMs and 59 (75.60%) were non-URMs. Among the 19 URM participants, 14 (73.70%) were Black/African American, 3 (15.80%) were Hispanic/Latino(a), and 2 (10.50%) were American Indian/Native American. Among URMs, there were 12 (63.20%) first year medical students and 7 (36.80%) participants that were second year medical students. Of the 59 non-URM participants, all 59 (100.00%) identified as White/Caucasian and 38 (64.40%) were first year medical students while 21 (35.60%) were second year medical students.

Heppner, Kivlighan, and Wampold (1999) recommend that sample adequacy be checked as a prerequisite to data analysis. In this study, sample adequacy was checked to ensure that the proportion of URMs and non-URMs in the participant pool was comparable to the proportion of URMs and non-URMs in the general student population at Brody. The final sample included 78 participants, 59 (75.60%) of these were non-URM and 19 (24.40%) of these were URM. The demographics of the study sample were discovered to be somewhat similar to the current URM and non-URM demographic make-up of the student population at Brody School of Medicine. Currently, 293 medical students are enrolled at the school and of this number, 53 (18.08%) are URM and 207 (70.65%) are White/Caucasian non-URMs. Dr. Kevin Gross, statistician, recommended that the sample size of participants was adequate for this study (personal communication, September 9, 2008). Table 1 reports the demographics of the participants.

Table 1

Selected Demographic Variables of URM and Non-URM Participants

	URM		Non-URM	
Variables	N	%	N	%
Race/ethnicity				
Black/African American	14	73.70%	--	--
Hispanic/Latino(a)	3	15.80%	--	--
American Indian/Native American	2	10.50%	--	--
White or Caucasian	--	--	59	100.00%
Academic classification				
First year medical student	12	63.20%	38	64.40%
Second year medical student	7	36.80%	21	35.60%
Attended a public undergraduate institution				
Yes	15	78.90%	46	78.00%
No	4	21.10%	13	22.00%
Attended a private undergraduate institution				
Yes	5	26.30%	14	23.70%
No	14	73.70%	45	76.30%

Table 1 (continued).

Variables	URM		Non-URM	
	N	%	N	%
Reported home town or city				
Metro area	7	36.80%	18	30.50%
Non-metro area	12	63.20%	41	69.50%
Worldviews and values of the medical school match my own				
Strongly agree	4	21.00%	13	22.00%
Moderately agree	8	42.10%	10	16.90%
Agree	3	15.80%	25	42.40%
Strongly disagree	0	.00%	1	1.70%
Moderately disagree	3	15.80%	3	5.10%
Disagree	1	5.30%	7	11.90%
My psychological wellness is influenced by my personal values				
Strongly agree	12	63.10%	31	52.50%
Moderately agree	1	5.30%	7	11.90%
Agree	6	31.60%	20	33.90%
Strongly disagree	0	.00%	1	1.70%
Moderately disagree	0	.00%	0	.00%
Disagree	0	.00%	0	.00%

Table 1 (continued).

Variables	URM			Non-URM	
	N	%		N	%
My work values are influenced by my personal values					
Strongly agree	12	63.10%		38	64.40%
Moderately agree	3	15.80%		7	11.90%
Agree	4	21.00%		12	20.30%
Strongly disagree	0	.00%		1	1.70%
Moderately disagree	0	.00%		1	1.70%
Disagree	0	.00%		0	.00%
Proposed medical specialty choice					
Family Medicine	4	21.00%		9	15.25%
Internal Medicine	6	31.50%		9	15.25%
Medicine/Pediatrics	4	21.00%		6	10.17%
Medicine/Psychiatry	0	.00%		1	1.70%
Obstetrics/Gynecology	1	5.30%		5	8.47%
Pediatrics	3	15.80%		5	8.47%
Psychiatry	0	.00%		1	1.70%
Surgery	0	.00%		11	18.64%

Table 1 (continued).

Variables	URM		Non-URM	
	N	%	N	%
Other	1	5.30%	11	18.64%
Undecided	0	.00%	1	1.70%

Note. Dashes indicate the specific race/ethnicity was not included in the overall group; *N*=19 for URM; *N*=59 for Non-URM; metro area = population >100,000 and non-metro area = population < 100,000; some participants may have attended both public and private undergraduate institutions.

Scale Reliability Analysis

Scale reliability analyses were conducted using Cronbach's alpha and item-total analysis to measure internal consistency within each of the three survey questionnaires. Cronbach's alpha is frequently used as a test of reliability to determine the degree to which all of the items in a scale are measuring the same construct and provides a reliability coefficient to indicate total scale reliability. Cronk (2004) indicates that reliability coefficients close to 1.00 represent very good internal consistency while those close to 0 represent poor internal consistency. Analysis for the 31 items on the BSAS revealed a Cronbach's alpha of .78 indicating adequate internal consistency.

Item-total analysis also indicates the degree of internal consistency within a scale by providing a correlation measure for each item in a scale. Correlations greater than .70 are

most desirable and those which are less than .30 or negative are considered weak and it is recommended that they be deleted from the scale (Cronk, 2004).

Item-total analysis for the individual items on the BSAS ranged from .30 to .61; however, two questions on the scale had negative correlations. Question 14 had a correlation of -.04 and question 31 had a correlation of -.11, both indicating extremely poor internal consistency. Question 14 was "Pain is the opposite of love: In other words, an act of love cannot cause pain." Question 31 was "There are some people in my past whom I believe I should never forget." These two questions were deleted from the scale leaving 29 items and this resulted in an adjusted Cronbach's alpha of .79.

Reliability analysis for the BSI revealed a Cronbach's alpha of .94 indicating high internal consistency; item-total analysis revealed appropriate correlations for each item in the scale which ranged from .42 to .81. Cronbach's alpha for the third scale, the Service subscale of the PVIPS, was .84 indicating fairly high internal consistency and individual scale items had appropriate correlations which ranged from .36 to .73.

Data Analysis

This study used a quantitative descriptive research design to examine worldviews, mental health, career values, and academic success of URMs and non-URMs at Brody School of Medicine. The construct of worldview was measured by the BSAS which measured overall level of optimal worldview as indicated by optimal theory. The BSI was used to assess the construct of mental health and to obtain a measure of overall individual psychological distress. The PVIPS was used to measure career values in Primary Care Medicine on the Service subscale. Questions about academic status on the demographic

survey form were used to assess students' academic success. Collectively, these instruments were used to examine worldviews, mental health, career values, and academic success of Brody URMs and non-URMs.

Data were entered into SPSS for scoring and analysis. With the help of a statistician, a scoring scheme was entered into SPSS for the BSAS, BSI, and PVIPS and the software program computed a total score for each participant on each of the three assessments. Inferential and descriptive statistics were calculated including: two-tailed independent-sample *t* tests, Mann-Whitney *U* Tests, Pearson Product-Moment Correlation Coefficient, Spearman *Rho* Correlation Coefficient, as well as frequency distributions, means, standard deviations, medians, and ranges.

Agresti and Finley (1997) note that adjustments to significance level are needed to guard against inflation of Type I error risks in studies where multiple comparisons of the same means are conducted. A Type I error is an error made when a researcher rejects the null hypothesis and concludes that a significant difference exists between variables when no significant difference actually exists. Multiple comparisons of the same means increase the probability that a statistically significant result will be found. The authors further explain that the adjusted significance level should reflect the amount of risk that a researcher can afford to take in making a Type I error. Moreover, they indicate that exploratory research studies similar to the present study may require a moderate, rather, than conservative adjustment of the significance level. On the recommendation of Agresti and Finley (1997), the significance level in this study was moderately lowered. An alpha level of .03 was set in order to determine significance of results. This alpha level is slightly lower than the

traditional alpha level (p=.05) and was chosen to minimize the possibility of Type I errors resulting from the multiple analyses being performed in this study. The inferential and descriptive statistics previously mentioned were used to examine the research questions and hypotheses.

Research Questions and Hypotheses

The following procedures were used to compare data for each of the research questions and hypotheses:

Research Questions

1.   *Is there a difference in worldviews for URMs and non-URMs?*

A two-tailed independent-samples t test was used to compare the mean scores of both groups. The research hypothesis was that there is a significant difference in worldviews for URMs and non-URMs.

2.   *Is there a difference in mental health status for URMs and non-URMs?*

A Mann-Whitney U Test was used to compare the mean scores of both groups. The research hypothesis was that there is a significant difference in mental health status for URMs and non-URMs.

3.   *Is there a difference in Primary Care Medicine career values for URMs and*

   non-URMs?

A two-tailed independent-samples t test was used to compare the mean scores of both groups. The research hypothesis was that there is a significant difference in Primary Care Medicine career values for URMs and non-URMs.

4.   *Is there a relationship between worldviews and mental health in the sample?*

a. *What is the presence and strength of the relationship for URMs*?

A Spearman *Rho* Correlation Coefficient was used to analyze the presence of the relationship between the two variables. The strength of the relationship between worldviews and mental health was determined by squaring the correlation coefficient. The Spearman's correlation reflected the degree of linear relationship between worldviews and mental health. The results ranged from -1.00 to +1.00 with +1.00 indicating a perfect positive linear relationship between the variables. The research hypothesis was that there is a relationship between worldviews and mental health for URMs.

b. *What is the presence and strength of the relationship for non-URMs*?

Spearman *Rho* Correlation Coefficient was used to examine the presence of the relationship between the two variables. The strength of the relationship between worldviews and mental health was determined by squaring the correlation coefficient. The Spearman's correlation reflected the degree of linear relationship between worldviews and mental health. The results ranged from -1.00 to +1.00 with +1.00 indicating a perfect positive linear relationship between the variables. The research hypothesis was that there is a significant relationship between worldviews and mental health for non-URMs.

5.   *Is there a relationship between worldviews and Primary Care Medicine career values in the sample?*

a. *What is the presence and strength of the relationship for URMs*?

Pearson Product-Moment Correlation Coefficient was used to examine the presence of the relationship between the two variables. The strength of the relationship between worldviews and Primary Care Medicine career values was determined by squaring the correlation coefficient. The Pearson's correlation reflected the degree of linear relationship between worldviews and Primary Care Medicine career values. The results ranged from -1.00 to +1.00 with +1.00 indicating a perfect positive linear relationship between the variables. The research hypothesis was that there is a significant relationship between worldviews and Primary Care Medicine career values for URMs.

b. *What is the presence and strength of the relationship for non-URMs*?

Pearson Product-Moment Correlation Coefficient was used to examine the presence of the relationship between the two variables. The strength of the relationship between worldviews and Primary Care Medicine career values was determined by squaring the correlation coefficient. The Pearson's correlation reflected the degree of linear relationship between worldviews and Primary Care Medicine career values. The results ranged from -1.00 to +1.00 with +1.00 indicating a perfect positive linear relationship between the variables. The research hypothesis was that there is a significant relationship between worldviews and Primary Care Medicine career values for non-URMs.

6.   *Is there a difference in worldviews between academically successful*

participants in the sample and those participants experiencing academic

difficulty?

a. *What is the difference in worldviews for academically successful URMs and*

those URMs experiencing academic difficulty?

Descriptive statistics were calculated including: frequency distributions, means,

standard deviations, medians, and ranges. The research hypothesis was that there is a

significant difference in worldviews between the two groups.

b. *What is the difference in worldviews for academically successful non-*

URMs and those non-URMs experiencing academic difficulty?

Descriptive statistics were calculated including: frequency distributions, means,

standard deviations, medians, and ranges. The research hypothesis was that there is a

significant difference in worldviews between the two groups.

CHAPTER 4

RESULTS

This chapter includes the results of the data analysis procedures. Results for each of

the six research questions are presented. Tables are utilized to summarize inferential and

descriptive statistics as well as significant findings of the data.

In this quantitative descriptive study a multi-step data analysis procedure was

conducted which included the following steps: organization of data, scoring of survey

questionnaires, elimination of incomplete or invalid data, compilation of descriptive statistics

as well as calculations of two-tailed independent sample t tests, Mann Whitney U Tests, and

correlation analyses.

Findings of Research Questions

Research Question 1

Is there a difference in worldviews for URMs and non-URMs?

The hypothesis was that there is a significant difference in worldviews for URMs and

non-URMs. This hypothesis was not supported. Certain assumptions were checked to see if

the two-tailed independent-samples t test could be performed to examine the question and

hypothesis. An independent-samples t test is a parametric analysis that can be used to

compare the means of two independent samples. In addition to sample independence, normal

distribution of data and equal variance between groups on the dependent variable are other

assumptions that must be met to conduct the independent-samples t test. Cronk (2006) and

Huck (2004) suggest that since the participants in this study were grouped into two samples

according to race/ethnicity, the two samples could be considered independent of each other.

Distribution of scores was checked with histogram analysis and revealed a visual graphic of a normal distribution. Dr. Kevin Gross, statistician, recommended conducting scale calculations of skewness and kurtosis coefficients as an additional measure to confirm the accuracy of histogram data (personal communication, September 23, 2008). Skewness is a measure of a distribution's symmetry. Kurtosis is a measure of whether the data are peaked or flat relative to a normal distribution. Data sets with high kurtosis tend to have a distinct peak near the mean, decline rather rapidly, and have heavy tails. Huck (2004) notes that skewness coefficients between -1.00 and +1.00 and kurtosis coefficients between -1.00 and +2.00 confirm the presence of a normal distribution. Additionally, Huck explains that skewness coefficients outside the range of -1.00 and +1.00 and kurtosis coefficients outside the range of -1.00 and +2.00 signify the presence of a non-normal distribution. In this study, skewness and kurtosis coefficients were calculated to be .10 and -.31 respectively, both indicating a normal distribution.

Since the t test assumes an equality of means, Levene's Test for Equality of Variances was calculated to assess the variance between the two samples on the dependent variable. A Levene's significance level that is greater than .05 indicates that the two variances are approximately equal and that the assumption of equality of means has been met. However, when the Levene's Test yields a significance level that is less than .05, this indicates that the variances are heterogeneous which violates a key assumption of the t test. In the case of a Levene's significance level that is less than .05, Huck (2004) recommends that a special version of the t test be calculated to protect against violations of the equal variance assumption . Furthermore, SPSS is programmed to automatically compute two

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versions of the *t* test for Levene's Test values that yield significance levels greater than .05 and for those that are less than .05. For this question, Levene's Test for Equality of Variances indicated a significance level .03 and *t* test values were used which did not assume equal variance.

Results of the independent-samples *t* test indicated no significant difference in the worldview scores of URMs and non-URMs ($t(47.96) = -1.16$, $p > .03$). With a *t* value of -1.16, 47.96 degrees of freedom, and a significance level of .25, the test indicated that the mean worldview score of URM participants, 74.32, ($SD = 8.20$) was not significantly different from the mean worldview score of non-URM participants which was 77.24 ($SD = 12.76$). The mean difference between the two groups was -2.92. Descriptive statistics for the mean worldview scores for each group are listed in Table 2 and results of the independent-samples *t* test are listed in Table 3.

Table 2

Descriptive Statistics for URM and Non-URM Mean Worldview Scores

	N	Mean	Median	Std. Dev	Range
URM	19	74.32	77.00	8.20	34.00
Non-URM	59	77.24	76.00	12.76	53.00

Note. *N*=19 for URM; *N*=59 for Non-URM.

Table 3

Results of Independent Samples Test for Mean Worldview Scores of URMs and Non-URMs

Levene's Test for Equality of Variances		*t* test for Equality of Means			
Sig		t	df	Sig. (2-tailed)	Mean Difference
.03		-1.16	47.96	.25	-2.92

Research Question 2

Is there a difference in mental health status for URMs and non-URMs?

The hypothesis was that there is a significant difference in the mental health status of URMs and non-URMs. This hypothesis was not supported. Assumptions were checked to determine if the two-tailed independent-samples *t* test could be performed to examine the question and hypothesis. Histogram analysis of data revealed a positively skewed distribution of scores. To confirm the positively skewed distribution displayed in the histogram, calculations of skewness and kurtosis coefficients were performed. Calculation of the skewness coefficient for the distribution yielded a value of 2.74 and the kurtosis coefficient yielded a value of 10.34, both of which were outside of the recommended range for a normal distribution.

As a result of the positively skewed distribution of scores, the Mann-Whitney *U* Test was used as a nonparametric alternative to examine difference in the mean mental health scores for URMs and non-URMs. When the normality assumption is questionable concerning

a distribution, the Mann-Whitney *U* Test is recommended to be used as the nonparametric

equivalent of the independent-samples *t* test to compare means of two independent samples.

The Mann- Whitney *U* Test does not require a normal distribution of scores and uses

rankings of sample data to compute the means of the ranks. A significant Mann-Whitney *U*

Test indicates that two samples are different. As Huck (2004) explains:

> A sum of ranks is calculated for each sample to produce a *U* value….from the *U*
>
> value, a *p*-value can be obtained to indicate how likely it is under the null hypothesis
>
> to have two samples that differ as much or more than do the ones in the study …
>
> small values of *p* mean that the null hypothesis is unlikely to be true. (p. 499)

In this study, results of the Mann-Whitney analysis did not show a significant

difference in the mental health status of URMs and non-URMs ($U = 481.00$, $p > .03$). URMs

averaged a place of 43.68. Non-URM participants averaged a place of 38.15. Descriptive

statistics of URM and non-URM mental health scores by rank are listed in Table 4. Results

of the Mann-Whitney *U* Test are listed in Table 5.

Table 4

Descriptive Statistics for URM and Non-URM Mental Health Scores by Rank

	N	Mean Rank	Sum of Ranks
URM	19	43.68	830.00
Non-URM	59	38.15	2251.00

Note. *N*= 19 for URM and *N*=59 for Non-URM.

Table 5

Results of Mann-Whitney U Test for Mental Health Scores of URMs and Non-URMs

Mann-Whitney U	Z	Asymp. Sig (2-tailed)
481.00	-.93	.35

Research Question 3

Is there a difference in Primary Care Medicine career values for URMs and non-URMs?

The research hypothesis was that there is a significant difference in the Primary Care Medicine career values of URMs and non-URMs. Results did support the hypothesis. Assumptions were checked to see if the two-tailed independent-samples t test could be performed to examine the question and hypothesis. First, normal distribution of scores was checked with histogram analysis and calculations of skewness and kurtosis coefficients. Histogram analysis revealed the presence of a normal distribution. The skewness and kurtosis coefficients were calculated to be -.79 and 1.77 respectively, both confirming a normal distribution. Levene's Test for Equality of Variances was calculated to assess the variance between the two samples. The test revealed a significance level of .43 indicating that the assumption of equal variance was met.

Results of the independent-samples t test indicated a significant difference ($t(76) = 3.06$, $p < .03$) in the mean scores of URMs and non-URMs. With a t value of 3.06, 76 degrees of freedom, and a significance level of .00 the test indicated that the mean score of URMs was 4.15 ($SD = .47$) and significantly higher than the mean score of non-URMs which

was 3.69 (*SD* = .60). The mean difference between the two groups was 4.61. Descriptive

statistics for the mean Service subscale scores are listed in Table 6 and results of the

independent-samples *t* test comparing group means on the Service subscale are listed in

Table 7.

Table 6

Descriptive Statistics for URM and Non-URM Mean PVIPS Service Subscale Scores

	N	Mean	Median	Std. Dev	Range
URM	19	4.15	4.10	.47	1.60
Non-URM	59	3.69	3.80	.60	3.00

Note. N= 19 for URM and *N*=59 for Non-URM.

Table 7

Results of Independent Samples Test for Mean PVIPS Service Subscale Scores of URMs and Non-URMs

Levene's Test for Equality of Variances	*t* test for Equality of Means				
Sig	t	df	Sig. (2-tailed)	Mean Difference	
.43	3.06	76	.00	4.61	

Research Question 4a

  Is there a relationship between worldviews and mental health in the sample? What is the presence and strength of the relationship for URMs?

  The research hypothesis was that there is a significant relationship between worldviews and mental health for URMs; however, results did not support the hypothesis. A Spearman *Rho* Correlation Coefficient was calculated to measure the relationship between URM participants' worldview score and mental health score. Spearman *Rho* was used to examine this research question since analysis of mental health scores on the BSI revealed a histogram with a positively skewed distribution as previously mentioned. A nonparametric statistical analysis used to determine the relationship between two variables, Spearman *Rho* is recommended as an alternative to the Pearson Product-Moment Correlation Coefficient when variable data are not normally distributed. Correlations close to 0 represent a weak relationship and scores close to +1.00. or -1.00 represent a strong relationship. Cronk (2004) further indicates that "… correlations greater than .70 are considered strong… correlations less than 0.30 are considered weak …. and correlations between .30 and .70 are considered moderate" (p. 44) .

  Calculation of the Spearman *Rho* Correlation Coefficient revealed a weak positive correlation that was not significant ($r(17) = .25, \ p > .03$). The correlation between URM worldviews and mental health for this study was $r = .25$ with a *p*-value of .31. For URMs, it appears that worldview may not be significantly related to mental health status.

  The coefficient of determination (R^2) was calculated to assess the amount of shared variation between the two variables. This value was calculated by squaring the correlation

coefficient of .25 which yielded a value of 6.25. This means that only 6.25% of the variation is explained by the relationship between the variables. Therefore, the strength of the correlation between URM worldviews and mental health can be considered extremely weak, since 93.75% of the variance does not depend on the variables. Table 8 presents the Spearman *Rho* analysis for the variables.

Table 8

Results of Spearman Rho Correlation between URM Worldview and Mental Health Scores

	Worldview	Mental Health
Worldview	1.000	.25
Sig. (2-tailed)		.31
N	19	19
Mental Health	.25	1.000
Sig. (2-tailed)	.31	
N	19	19

Research Question 4b

  Is there a relationship between worldviews and mental health in the sample? What is the presence and strength of the relationship for non-URMs?

  The hypothesis was that there is a significant relationship between worldviews and mental health for non-URMs. Results did not support the hypothesis. Due to a positively skewed distribution of mental health scores, a Spearman *Rho* Correlation Coefficient was calculated to examine the relationship between the two variables for non-URM participants. An extremely weak positive correlation that was not significant was found ($r(57) = .13$, $p > .03$). The correlation between worldviews and mental health for this study was $r = .13$ with a *p*-value of .32. It appears that worldviews may not be significantly related to mental health status for non-URMs.

  The coefficient of determination (R^2) was also calculated to assess the amount of shared variation between the two variables. This value was obtained by squaring the correlation coefficient of .13 which yielded a value of 1.69. This means that only 1.69% of the variation is explained by the relationship between the variables. Therefore, the strength of the correlation between URM worldviews and mental health can be considered extremely weak, since 98.31% of the variance does not depend on the variables. Table 9 presents the Spearman *Rho* analysis for the variables.

Table 9

Results of Spearman Rho Correlation between Non-URM Worldview and Mental Health Scores

	Worldview	Mental Health
Worldview	1.000	.13
Sig. (2-tailed)		.32
N	59	59
Mental Health	.13	1.000
Sig. (2-tailed)	.32	
N	59	59

Research Question 5a

Is there a relationship between worldviews and Primary Care Medicine career values in the sample? What is the presence and strength of the relationship for URMs?

The hypothesis was that there is a significant relationship between worldviews and Primary Care Medicine career values for URMs. Results did not support the hypothesis. The Pearson Product-Moment Correlation Coefficient was calculated to examine the relationship between URM students' mean worldview score and mean score on the Service subscale of the PVIPS. Pearson Product-Moment Correlation indicates the degree of linear relationship between two variables, ranging from +1.00 to -1.00. A correlation of +1.00

indicates a perfect positive linear relationship between two variables. A correlation of -1.00

means that there is a perfect negative linear relationship between variables; whereas, a

correlation of 0 means that there is no linear relationship between the two variables.

In this study, the correlation coefficient calculated indicated an extremely weak

negative correlation that was not significant ($r(17) = -.19$, $p > .03$). The correlation between

URM worldviews and career values in Primary Care Medicine for this study was $r = -.19$

with a p-value of .44. The results suggested that worldview many not be significantly

related to career values on the Service subscale of the PVIPS for URMs.

The coefficient of determination (R^2) was also calculated to assess the amount of

shared variation between URM worldviews and career values on the Service subscale. This

number was obtained by squaring the correlation coefficient of -.19 which yielded a value of

3.61. This calculation showed that only a small percentage of variation, 3.61%, is explained

by this relationship. Therefore, the strength of the correlation between URM worldviews and

career values on the Service subscale is extremely weak, since 96.39% of the variance does

not depend on either worldviews or career values on the Service subscale. The correlation is

presented in Table 10.

Table 10

Results of Pearson Product-Moment Correlation between URM Worldview and PVIPS
Subscale Scores

	Worldview	Service Subscale of PVIPS
Worldview	1.000	-.19
Sig. (2-tailed)		.44
N	19	19
Service Subscale of PVIPS	-.19	1.000
Sig. (2-tailed)	.44	
N	19	19

Research Question 5b

     Is there a relationship between worldviews and Primary Care Medicine career values
in the sample? What is the presence and strength of the relationship for non-URMs?

     The hypothesis was that there is a significant relationship between worldviews and

Primary Care Medicine career values of non-URMs. Results did support the hypothesis. A

Pearson Product-Moment Correlation Coefficient was calculated to examine the relationship

between the two variables. The correlation coefficient that was calculated indicated a weak

negative correlation that was significant ($r(57) = -.39$, $p < .03$). Additionally, there is a

significant correlation between the two variables at an alpha level of .01. The correlation

between non-URM worldviews and career values in Primary Care Medicine for this study was $r = -.39$ with a p-value of .00. This negative correlation suggests that when one score increases, the other decreases for non-URMs.

The coefficient of determination (R^2) was also calculated to assess the amount of shared variation between non-URM worldviews and career values on the Service subscale. This value was obtained by squaring the correlation coefficient of -.39 which yielded a value of 15.21. This value indicates that 15.21% of the shared variation between the two variables is explained by this relationship. Therefore, the strength of the correlation between non-URM worldviews and career values on the service subscale can be considered weak since 84.79% of the variance does not depend on either worldviews or career values. Correlation data are presented in Table 11.

Table 11

Pearson Product-Moment Correlation between Non-URM Worldview and PVIPS Service
Subscale Scores

	Worldview	Service Subscale of PVIPS
Worldview	1.000	-.39*
Sig. (2-tailed)		.00
N	59	59
Service Subscale of PVIPS	-.39	1.000
Sig. (2-tailed)	.00	
N	59	59

* Correlation is significant at the .01 level (2 tailed).

Research Question 6a

 Is there a difference in worldviews between academically successful URM

participants in the sample and those URMs experiencing academic difficulty?

 The hypothesis was that there is a difference in worldviews for academically

successful URMs and URMs experiencing academic difficulty. Due to sample size, results

did not provide support for the hypothesis. Descriptive statistics including mean, median,

standard deviation, and range were calculated to examine worldview scores of academically

successful URMs and URMs experiencing academic difficulty.

Cross tabs analyses in SPSS revealed that 6 URM participants in the overall research sample of 19 URMs met the research criteria for "having academic success" and 2 URM participants met the criteria for consideration as "having academic difficulty." URMs experiencing academic success in this study were considered to be Black/African American, Hispanic/Latino(a), and Native American/American Indian participants currently completing coursework with the cohort of medical students that they entered medical school. URMs considered to have experienced past academic difficulty or to be currently experiencing academic difficulty were those Black/African American, Hispanic/Latino(a), Native American/American Indian participants who were are not on track with the original cohort of students they entered medical school with and who have had to repeat coursework or examinations causing them to be a semester or more behind their original cohort in academic standing.

For this research question, it is important to note that responses of 11 URMs were removed from the original sample of 19 URMs, yielding a total of 6 academically successfully URMs and 2 URMs experiencing academic difficulty. Data on the 11 URMs were removed since it was deemed that these 11 students did not meet the criteria for being academically successful or the criteria for experiencing academically difficulty. These 11 participants were new medical students beginning the first weeks of medical school at the time of data collection. The remaining 8 participants were all URM students who had attended the medical school for at least one semester prior to data collection. Frequency distributions for selected demographic variables of URMs with academic success and academic difficulty are presented in Table 12.

Table 12

Selected Demographic Variables for URM Participants by Level of Academic Success or Difficulty

Variables	URM with academic success		URM with academic difficulty	
	N	%	N	%
Race/Ethnicity				
Black/African American	4	66.70%	2	100.00%
Hispanic/Latino(a)	2	33.30%	0	0.00%
Academic classification				
First year medical student	0	.00%	1	50.00%
Second year medical student	6	100.00%	1	50.00%
Reported home town or city				
Metro area	2	33.30%	1	50.00%
Non-metro area	4	66.70%	1	50.00%
Attended a public undergraduate institution				
Yes	5	83.30%%	1	50.00%
No	1	16.70%	1	50.00%

Table 12 (continued).

Variables	URM with academic success		URM with academic difficulty	
	N	%	N	%
Attended a private undergraduate institution				
Yes	1	16.70%	2	100.00%
No	5	83.30%	0	.00%
Worldviews and values of the medical school match my own				
Strongly agree	1	16.70%	0	.00%
Moderately agree	3	50 .00%	1	50.00%
Agree	1	16.70%	0	.00%
Strongly disagree	0	.00%	0	.00%
Moderately disagree	0	.00%	1	50.00
Disagree	1	16.70%	0	.00%
My ethnicity has had an adverse effect on my medical education				
Strongly agree	0	.00%	0	.00%
Moderately agree	1	16.70%	0	.00%
Agree	0	.00%	0	.00%
Strongly disagree	3	50.00%	0	.00%
Moderately disagree	0	.00%	0	.00%

Table 12 (continued).

Selected Demographic Variables for URM Participants by Level of Academic Success or Difficulty

	URM with academic success		URM with academic difficulty	
Variables	N	%	N	%
Disagree	2	33.30%	2	100 .00

Note. *n*=6 for URM with academic success; *n*=2 for URM with academic difficulty.

SPSS was used to calculate the mean worldview score for URMs with academic success. The mean worldview score was 74.67 (*Mdn=76.00, SD=8.20, R=16.00*) It is noteworthy to mention that this group had four more participants than the URM with academic difficulty group.

The mean worldview score for URMs with academic difficulty was 74.50 (*Mdn=74.00, SD=* 4.95, *R=7.00*) and just .17 points lower than the mean score for URMs with academic success. This group had two less participants than the URM group with academic success. Descriptive statistics for the mean worldview scores are listed in Table 13.

Table 13

Descriptive Statistics for URM Worldview Scores by Level of Academic Success or Academic Difficulty

Variables	N	Mean	Median	Std. Dev	Range
URM with academic success	6	74.67	76.00	8.20	16.00
URM with academic difficulty	2	74.50	74.00	4.95	7.00

Note. *n*=6 for URM with academic success; *n*=2 for URM with academic difficulty.

Research Question 6b

 Is there a difference in worldviews between academically successful non-URM participants in the sample and those non-URMs experiencing academic difficulty?

 The hypothesis was that there is a difference in worldviews for academically successful non-URMs and those non-URMs experiencing academic difficulty. However, results did not provide evidence to support the hypothesis. Descriptive statistics were calculated for the mean worldview scores for academically successful non-URMs and non-URMs experiencing academic difficulty. Additionally, some demographic variables and group responses to questions regarding worldviews on the demographic survey were examined for possible differences.

 Non-URMs experiencing academic success in this study were considered as White/Caucasian medical students currently completing coursework with the original cohort of medical students that they entered medical school. Non-URMs considered to have experienced past academic difficulty or to be currently experiencing academic difficulty were

those White/Caucasian medical students who are not on track with the cohort of students they entered medical school with and who have had to repeat coursework or examinations causing them to be a year or more behind their original cohort in academic standing.

For this research question, it is important to note that the responses of 38 non-URMs were removed from the original sample of 59 non-URM participants yielding a total of 20 academically successfully non-URMs and one non-URM experiencing academic difficulty. Data on the 38 non-URMs were removed since it was deemed that these 38 students did not meet the criteria for being academically successful or the criteria for experiencing academically difficulty; all 38 were new medical students beginning their first weeks as new medical students at the time of data collection. The remaining 21 non-URM participants (20 academically successful non-URMs and one non-URM experiencing academic difficulty) were all students who had attended the medical school for at least one semester or more prior to data collection. Frequency distributions for selected demographic variables of non-URMs with academic success and academic difficulty are presented in Table 14.

Table 14

Selected Demographic Variables for Non-URM Participants by Level of Academic Success or Difficulty

Variables	Non-URM with academic success		Non-URM with academic difficulty	
	N	%	N	%
Race/ethnicity				
White/Caucasian	20	100.00%	1	100.00%
Academic classification				
First year medical student	0	.00%	0	.00%
Second year medical student	20	100.00%	1	100.00%
Reported home town or city				
Metro area	7	35.00%	0	.00%
Non-metro area	13	65.00%	1	100.00%
Attended a public undergraduate institution				
Yes	16	80.00%	1	100.00%
No	4	20.00%	0	00.00%

Table 14 (continued).

Selected Demographic Variables for Non-URM Participants by Level of Academic Success or Difficulty

	Non-URM with academic success		Non-URM with academic difficulty	
Variables	N	%	N	%
Attended a private undergraduate institution				
Yes	6	30.00%	0	00.00%
No	14	70.00%	1	100.00%
Worldviews and values of the medical school match my own				
Strongly agree	1	5.00%	0	.00%
Moderately agree	1	5.00%	0	.00%
Agree	12	60.00%	1	100.00%
Strongly disagree	1	5.00%	0	.00%
Moderately disagree	2	10.00%	0	.00%
Disagree	3	15.00%	0	.00%
My ethnicity has had an adverse effect on my medical education				
Strongly agree	0	.00%	0	.00%
Moderately agree	1	5.00%	0	.00%

Table 14 (continued).

Selected Demographic Variables for Non-URM Participants by Level of Academic Success or Difficulty

	Non-URM with academic success		Non-URM with academic difficulty	
Variables	N	%	N	%
Agree	0	.00%	0	.00%
Strongly disagree	6	30.00%	1	100.00%
Moderately disagree	2	10.00%	0	.00%
Disagree	11	55.00%	0	.00%

Note. *n*=20 for Non-URM with academic success; *n*=1 for Non-URM with academic difficulty; some participants may have attended both public and private undergraduate institutions.

SPSS was used to calculate the mean worldview score for non-URMs with academic success. The mean worldview score was 76.90 (*Mdn=74.00, SD*=14.34, *R*=49.00). It is noteworthy to mention that the non-URM group with academic success had 19 more participants than did the non-URM with academic difficulty group which had only one participant. The mean worldview score for non-URMs with academic success appears to be only slightly higher than the score of the non-URM with academic difficulty.

The worldview score for the one non-URM participant with academic difficulty was 73.00, just 3.90 points lower than the mean score of non-URMs with academic success which

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was 76.90. The non-URMs with academic success had a group that consisted of 19 more

participants than did the group of non-URMs with academic difficulty which had only one

participant. Descriptive statistics for the worldview scores of non-URM participants are

listed in Table 15.

Table 15

Descriptive Statistics for Non-URM Worldview Scores by Level of Academic Success or
Academic Difficulty

	N	Mean	Median	Std. Dev	Range
Non-URM with academic success	20	76.90	74.00	14.34	49.00
Non-URM with academic difficulty	1	73.00	73.00	.00	.00

Note. *n*=20 for Non-URM with academic success; *n*=1 for Non-URM with academic

difficulty.

Summary

This chapter included the results of the data analysis procedures which examined the

worldviews, mental health, career values, and academic success for the sample of 78

participants. Compilation of descriptive statistics as well as calculations of two-tailed

independent sample *t* tests, Mann Whitney *U* Tests, and correlation analyses were used to

examine the six research questions and hypotheses in this study. Differences in worldviews,

mental health, and Primary Care Medicine career values were examined for the 19 URMs

and 59 non-URMs. Relationships between worldviews and mental health and worldviews

and Primary Care Medicine career values were examined. Finally, differences in worldviews were examined for URM and non-URM participants experiencing academic success and difficulty.   Next, chapter 5 will present a discussion of the findings from this study, its implications, limitations, and recommendations for future practice and research.

CHAPTER 5

DISCUSSION

The present exploratory study examined worldviews, mental health, career values, and academic success of URM and non-URM medical students attending Brody School of Medicine through a quantitative descriptive research design. Specifically, the purpose was to examine differences in worldviews, mental health, and Primary Care Medicine career values among these students and to determine if worldviews are related to medical students' mental health and Primary Care Medicine career values. Reported differences in cultural values, medical school experiences, and career patterns that have been documented among URMs and non-URMs have suggested that examination of these variables could be a preliminary step to understanding how to better facilitate students' psychological, career, and academic success in medical school.

The sample participants who volunteered for this study included 78 first and second year medical students attending Brody School of Medicine, 19 (24.40%) of these were URMs and 59 (75.60%) of these were non-URMs. Participants completed the BSAS, BSI, PVIPS, as well as a demographic survey. The four survey questionnaires were used to examine students' worldviews, mental health status, career values, and academic success.

Specifically, the study sought to answer the following research questions:

1. Is there a difference in worldviews for URMs and non-URMs?

2. Is there a difference in mental health status for URMs and non-URMs?

3. Is there a difference in Primary Care Medicine career values for URMs and non-URMs?

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4.   Is there a relationship between worldviews and mental health in the sample?

What is the strength of the relationship?

a. What is the presence and strength of the relationship for URMs?

b. What is the presence and strength of the relationship for non-URMs?

5.   Is there a relationship between worldviews and Primary Care Medicine career

values in the sample? What is the strength of the relationship?

a. What is the presence and strength of the relationship for URMs?

b. What is the presence and strength of the relationship for non-URMs?

6.   Is there a difference in worldviews between academically successful

participants in the sample and those participants experiencing academic

difficulty?

a. What is the difference in worldviews between academically successful

URMs and URMs experiencing academic difficulty?

b. What is the difference in worldviews between academically successful non-

URMs and those non-URMs experiencing academic difficulty?

This chapter presents a discussion of the research findings. Additionally, the

limitations of the research and an evaluation of its importance for future practice and research

are discussed.

<div align="center">Summary of Research Findings</div>

Research Question 1

The purpose of this question was to determine if a difference existed in the

worldviews of Brody URMs and non-URMs. Due to the lack of studies which have

quantitatively examined worldviews among medical students and the suggestions by some medical educators of possible differences in cultural perspectives among ethnically diverse medical students, this question was deemed to be an important one. However, results did not support the research hypothesis. Results of the independent-samples *t* test that was conducted indicated no significant difference in the mean worldview scores of URMs and non-URMs.

It was expected that there would be a significant difference in worldviews for URM and non-URM participants based on existing research and literature on worldviews. Some authors have suggested that worldviews are culturally determined and that different cultural contexts contribute to the formation of different worldviews among various ethnic, racial, and gender groups (Ibrahim, 1991). For example, Ibrahim notes that "different cultural contexts lead to the formation of unique worldviews, beliefs, values, assumptions, modes of social conduct, behavior, and expectations among individuals" (1991, p.116). Furthermore, empirical studies have documented differences in worldviews between Black/African American and White university students with Black/African American students espousing a more Afrocentric worldview and White students possessing a worldview considered to be significantly more Eurocentric (Baldwin & Hopkins, 1990; Obasi, Flores, James-Myers, 2007).

Additionally, some researchers and medical educators have specifically noted that the unique cultural worldviews of some URMs in the predominantly white medical school are less Eurocentric than those of White medical students (Alvord, 2000; Bedolla, 2000; Buckley, 1999; Saavedra, 1994; Soto-Greene & Martinez, 2000; Webb, Smith, Hawkins, Jr.,

Hill, 2000). Therefore, it was assumed that worldviews of URM participants in this study would be significantly more Afrocentric while those of non-URM participants would be more Eurocentric.

With no significant difference found between the worldviews of URMs and non-URMs, results of this study seem not to support some of the current assumptions in the literature on worldviews. On the contrary, results imply that it may be possible for individuals with varying racial/ethnic classifications or possibly different cultural perspectives to share similar worldviews and philosophical assumptions and that worldviews among ethnically diverse individuals may differ by variables other than ethnicity.

Most of the existing discussion and studies on worldviews in the psychological research and literature appear to be outdated with most having been conducted in the 1980's or 1990's. Clearly, new studies are needed to assess worldviews among various populations within society including medical students in order to expand knowledge and give adequate attention to the construct of worldview, a construct that has been identified by some scholars as precursory to the process of effective counseling and one believed to influence every aspect of an individual's development.

It is possible that research and literature on worldviews has overemphasized the presence of intergroup differences in worldviews based on race and ethnicity and less emphasized the need to understand intragroup differences based on variables other than race and ethnicity such as socioeconomic status, community of origin, or career choice. With most of the participants in this study describing their home community areas as being non-metropolitan areas, it is interesting to consider if URM and non-URM participants' similar

experiences in these communities prior to medical school may account for similarities in their cultural worldviews or if future physicians in general possess a set of worldviews more similar to those of other future physicians and less like those in society who are non-physicians, regardless of race or ethnicity.

A different worldview measure other than the BSAS which was used in this study and analyses which control the effects of confounding variables may be needed in future studies to more accurately measure possible differences in worldviews among Brody URMs and non-URMs. It is possible that the BSAS may not adequately measure some of the cultural perspectives of URM students which are relevant to their medical education. For example, although the BSAS measures Interpersonal Valuing, De-emphasis on Appearance, Integration of Opposites, Non-material Based Satisfaction, and Optimism as specific dimensions of worldview, it may not be appropriate for adequately measuring worldview perspectives regarding spiritual values, communication and learning styles, work-life balance, and community of origin issues that have been noted as being salient to some URMs in the medical school setting. Clearly, a worldview measure other than the BSAS which could more accurately measure the cultural assumptions of URMs and non-URMs as they relate to medical education would yield greater insights about the cultural perspectives of URMs and non-URMs.

It appears that Brody URMs and non-URMs may be more homogenous in terms of their beliefs, assumptions, and values than minority and non-minority university students compared in previous studies which have examined worldviews (Baldwin & Hopkins, 1991; Obasi, Flores, & James-Myers, 2007). The worldviews of URM and non-URM participants

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in this study appear significantly less optimal and more Eurocentric than that found in previous studies which have used the BSAS to examine worldviews among college students. For example, a mean worldview score of 104.71 (*SD*=13.05) was reported for the 140 White undergraduate psychology majors who participated in the original validation study of the BSAS (Montgomery, Fine, & Myers, 1990). Similarly, Brookins (1994) noted a mean worldview score of 108.69 (*SD*=10.34) among 171 African American college students who completed the BSAS. Additionally, Hatter and Ottens (1998) report a worldview score of 106.86 (*SD*= 12.69) for 100 African American undergraduate business majors. It appears that the mean worldview for both URMs and non-URMs in this study may be considered in the range of moderately Non-Afrocentric to Mixed Mainstream.

Another interesting, but unexpected, finding was that the mean worldview score for non-URMs in this study was actually higher than the score for URMs by 2.92 points. It appears that White medical students, as a group, had a worldview that can be considered slightly more Afrocentric and optimal than that of Black/African American, Hispanic /Latino(a), and Native American/American Indian medical students. Clearly, these results contrast with previous research studies which have suggested that some ethnic minority students have a cultural worldview that is significantly more Afrocentric while White students have a worldview that is significantly more Eurocentric (Baldwin & Hopkins, 1991; Obasi, Flores, & James-Myers, 2007). Although existing studies of the BSAS have primarily examined worldviews for Blacks/African American and White university students, future studies should be expanded to investigate differences in worldviews among segments

of the population other than university students, within various ethnic groups, and by variables other than race and ethnicity.

Results may have been influenced by the decision to use the total scale score on the BSAS as an overall measure of worldview instead of the five subscale scores that can be obtained for the five dimensions of the BSAS.   In addition to providing an overall measure of worldview, the following five dimensions of an Afrocentric worldview are measured by the BSAS with an individual subscale score provided for each: (a) Interpersonal Valuing, (b) De-emphasis on Appearance, (c) Integration of Opposites, (d) Non-material Based Satisfaction, and (e) Optimism. Although no significant difference was found in the mean worldview score for URMs and non-URMs, it is possible that differences could exist between Brody URMs and non-URMs within any of the five dimensions of the BSAS. Future studies should investigate possible worldview differences among URMs and non-URMs within the five dimensions of the BSAS.

Scale reliability issues with the BSAS and the exploratory nature of this study emphasize the need to interpret results with caution. A larger sample size of URMs and non-URMs is clearly needed for future studies. It appears that results are inconsistent with the research and literature on cultural worldviews and additional investigation is clearly needed to determine if current assumptions regarding cultural worldviews are applicable to groups of ethnically diverse medical students at Brody.

Research Question 2

Several authors have suggested that the level of stress experienced in medical school may be higher for some URMs than for non-URMs but few studies have attempted to

quantitatively measure this assumption. The purpose of this question was to test the assumption by measuring stress levels in Brody URM and non-URMs.   The hypothesis was that there would be a significant difference in the stress levels of URM and non-URM participants. However, results of the Mann-Whitney analysis did not support the hypothesis and indicated that no significant difference existed in the mental health status of URMs and non-URMs.

It was expected that there would be a significant difference in the mental health status of URMs and non-URMs due to research and literature on URMs attending predominantly white medical schools. Several authors have offered evidence that some URMs experience additional psychosocial stressors in the predominantly white medical school setting due to perceptions about their status as ethnic minorities, financial worries, and lack of ethnic minority role models (Alvord, 2000; Bedolla, 2000; Buckley, 1999; Saavedra, 1994; Soto-Greene & Martinez, 2000; Webb, Smith, Hawkins, Jr., Hill, 2000). Contrary to what was expected, there was no significant difference in the psychological distress levels of Brody URMs and non-URMs. The mean BSI score for URMs was .39 (*Mdn* =.35, *SD* =.22, *R* =.89) while for non-URMs it was .42 (*Mdn* =.27, *SD* =.42, *R* = 2.43).

Results may have been affected by use of the Global Severity Index (GSI) on the BSI as a measure of overall psychological distress among participants instead of subscale scores. In addition to the GSI, nine primary psychological dimensions are also measured by the BSI and include: (a) Somatization, (b) Obsessive-Compulsive Tendencies, (c) Interpersonal Sensitivity, (d) Depression, (e) Anxiety, (f) Hostility, (g) Phobic Anxiety, (h) Paranoid Ideation, and (i) Psychoticism. This study did not examine differences between URMs and

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non-URMs on the nine psychological dimensions of the BSI. An examination of differences between URMs and non-URMS on the individual psychological dimensions of the BSI could be an area of fruitful research.

Research on medical student stress indicates that mental health for medical students deteriorates throughout the course of medical school (Clark & Zeldow, 1988; Guthrie, Black, Shaw, Hamilton, Creed, & Tomenson, 1995; Guthrie, Black, Bagalkote, Shaw, Campbell, & Creed, 1998; Mosley, Perrin, Neral, Dubbert, Grothues, & Pinto, 1994; Moffat, McConnachie, Ross, & Morrison, 2004; Rosal, Ockene, Ockene, Barrett, Ma, & Hebert, 1997). Whereas, the mental health status of Brody URMs and non-URMs does not appear to be significantly different during the first two years of medical school, it is interesting to consider if significant differences in mental health status appear for Brody URM and non-URM students in the latter medical school years. Longitudinal research studies on Brody students along with a larger sample of participants could be used to conduct a more accurate assessment of differences in mental health status for Brody URMs and non-URMs throughout the course of medical school.

Research Question 3

The purpose of this question was to examine if a difference in Primary Care Medicine career values existed for Brody URMs and non-URMs. Although Brody School of Medicine emphasizes the recruitment and training of Primary Care Medicine physicians, no formal research studies have been conducted at the medical school to assess if differences in Primary Care Medicine career preferences exist for URMs and non-URMs. Based on previous research and personal observations of the different career decision making patterns of Brody

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URM and non-URM students, it was hypothesized that there would be a significant difference in the Primary Care Medicine career values of URMs and non-URMs. As expected, the independent-samples *t* test which was conducted did provide support for the research hypothesis.

Some authors have commented that more frequent access to ethnic minority patients, opportunities for service-oriented care, lack of physician role models in non-Primary Care Medicine areas, and professional pressures to provide care to minority patients may be among the factors which account for URMs' higher interest in Primary Care Medicine (AAMC, 2004; AAMC, 2006; Grizzard, 2002; Reede, 2003). It is possible that these and other factors may also account for the higher Primary Care Medicine career preferences of Brody URMs and future research studies would be useful for more thoroughly examining these. Due to its institutional mission aimed at increasing the supply of Primary Care Medicine physicians in North Carolina, future research studies at Brody which further examine the nature of Primary Care Medicine career preferences among Brody URMs and non-URMs seem necessary to guide the implementation of career interventions aimed at helping to enhance Brody students' career interests and career preparation in Primary Care Medicine throughout the course of medical school.

Additionally, it is interesting to note that scores on the PVIPS Service subscale for both URM and non-URM participants in this study are considered to demonstrate overall "high" value for Primary Care Medicine career values. This may be a result of Brody's commitment to enrolling and training medical students which have special interest in the area

of Primary Care Medicine. As the PVIPS is a recently developed instrument, future research is needed to further examine its validity for groups of Brody URMs and non-URMs.

Research Question 4a

The purpose of this question was to examine if there was a significant relationship between the worldviews and mental health of Brody URMs. The hypothesis was that there would be a relationship between the two variables and was based on assumptions in the psychological literature that individual mental health status is related to individual worldview and that certain worldviews can produce more positive mental health outcomes (Fine, Schwebel, & Myers, 1985; Jackson & Sears, 1992). No research to date has examined if these assumptions can be applied specifically to medical students. Results of the Spearman *Rho* analysis that was conducted to examine the question revealed an extremely weak relationship that was not significant between URM worldviews and mental health and, therefore, did not provide support for the hypothesis. It appears that there is no significant relationship between worldview and mental health status of Brody URMs.

Due to assumptions in the psychological literature about the relationship between worldviews and mental health, it was assumed that there would be a significant relationship between the two variables for Brody URMs. Fine, Schwebel, and Myers (1985) mention that "a worldview that is positive and affirming of self and one's relationship to the world has the potential to serve as a resource for stress resistance" (p.185). Myers (1988) also notes that "the worldview one adheres to determines the way one perceives, thinks, feels, and experiences the world" (p.5). Based on these assumptions, it was expected that higher, more Afrocentric and optimal worldview scores on the BSAS would be related to lower scores on

the BSI and that lower, more Eurocentric and suboptimal scores on the BSAS would be related to higher scores and psychological stress as indicated on the BSI.

Results of this study are inconsistent with the psychological research and literature on worldviews and stress coping and need to be further examined. It is possible that results may have been influenced by small sample size. A much larger sample of participants would have yielded greater statistical power and, possibly, different results. Use of a different worldview measure which accurately measures the perspectives of medical students should also be considered for future studies. Few worldview measures exist, and the existing few clearly appear to be measuring different domains of philosophical assumptions and values. The Global Severity Index (GSI) on the BSI was used in this study to assess overall mental health among participants. However, this study did not examine the relationship between worldviews and symptoms of nine specific mental health disorders, also indicated on the BSI. An investigation of the relationship between worldviews and specific mental health disorders could also be an area of fruitful research.

Research Question 4b

The purpose of this question was to examine if there was a significant relationship between the worldviews and mental health of Brody non-URMs. Specifically, it was hypothesized that higher, more Afrocentric and optimal worldview scores on the BSAS would be related to lower scores and less psychological stress indicated on the BSI. As with URMs in this study, the Spearman *Rho* analysis that was conducted did not provide support for the research hypothesis.

The hypothesis was based on psychological research and literature which suggests that individual stress levels are influenced by individual worldviews. More specifically, a suboptimal, Eurocentric worldview has been noted to negatively impact mental health; whereas, an optimal or Afrocentric worldview has been noted to contribute to positive mental health. Myers (1988, p.10) indicates that a suboptimal, Eurocentric worldview diminishes "inner peace and personal satisfaction." Several authors have also offered evidence that an optimal, Afrocentric worldview is related to positive mental health (Baldwin& Bell, 1985; Gibson, 1984). Therefore, it was expected that non-URM participants' worldview scores would be significantly related to their mental health status.

Results are clearly inconsistent with research and literature and need to be further examined. Given the amount of evidence that supports the presence of a relationship between worldview and mental health, it is highly likely that such a relationship may actually exist between the variables among medical students. What could be missing is a valid, reliable worldview measure that is appropriate for use with medical students. This seems likely when considering that few worldview instruments exist and most worldview studies appear to have mainly focused on populations of university undergraduate students. Additionally, whereas no significant relationship appears to exist between overall worldview and mental health for non-URMs; it is interesting to consider if a relationship may exist between the participants scores on the individual dimensions of the BSAS and symptoms of individual mental health disorders. Future studies could investigate these possible relationships. A larger sample size should also be used in future studies to more accurately examine the relationship between the variables for non-URMs.

Research Question 5a

The purpose of this research question was to examine whether or not cultural worldviews of URMs are related to their career values in Primary Care Medicine. Since worldviews are assumed to influence all aspects of individual thinking, beliefs, values, and behaviors, it was hypothesized that there would be a significant relationship between the variables. In this study, the Pearson Product-Moment Correlation Coefficient that was calculated indicated an extremely weak negative correlation that was not significant and results did not provide support for the hypothesis.

With no previous research having examined medical students' career preferences in relation to their worldviews and the lack of career assessments for medical students which consider the influence of culture on career-decision making, this question was believed to be an important one. Specifically, it was expected that career values in Primary Care Medicine on the Service subscale of the PVIPS would increase for URMs as worldview scores on the BSAS increased. This also seemed to be a likely research outcome since Afrocentric values of spirituality, intrinsic worth, oneness with humanity, and nonmaterial satisfaction seem more consistent with Primary Care Medicine values related to service-oriented patient care.

The negative correlation between the variables suggests an interesting relationship between worldviews and Primary Care Medicine career values for URMs. It appears that as worldview scores become higher, more optimal and increasingly Afrocentric, career value in Primary Care Medicine decreases for URMs; similarly, interest in Primary Care Medicine possibly increases as worldviews become increasingly suboptimal and Eurocentric. Future research studies should further examine this negative correlation as it seems unusual that

Afrocentric cultural values can increase as value for service-oriented patient care decreases. In contrast, literature on Afrocentric values suggests that an individual with certain Afrocentric values might be more satisfied with the service-oriented values of Primary Care Medicine.

Small sample size may have influenced results and the study should be replicated with a larger sample of Brody URMs. Given the literature on the influence of worldviews on decision-making and development, it is highly likely that relationship may actually exist between URM worldviews and career values in Primary Care Medicine and that a much larger sample of URM participants could provide evidence to support this relationship. Additionally, it would be interesting to examine the relationship between the variables among the sub-groups of Brody URMS including: Black/African American, Hispanic/Latino(a), and Native American/American Indian medical students. Examining the role of culture in the career development of diverse medical students is a promising area of future research and would allow counselors and medical school faculty to conduct more holistic assessment of medical students' career concerns and to develop career interventions which enhance the possibility of increased career satisfaction for students in their careers as future physicians.

Research Question 5b

The purpose of this research question was to examine whether or not cultural worldviews of non-URMs are related to their career values in Primary Care Medicine. It was hypothesized that there would be a significant relationship between non-URM worldviews scores and career values on the Service subscale of the PVIPS. As expected, results of the

Pearson Product-Moment Correlation indicated a weak negative correlation between the variables at an alpha level of .01 and provided evidence for accepting the research hypothesis. Results, although weak, seem consistent with implications in the psychological and career literature regarding the relationship between individual worldviews and individual career choice.

Similar to URMs, the negative correlation suggests that as worldview becomes more Afrocentric and optimal, career interest in Primary Care Medicine also decreases for non-URMs. The negative correlation warrants further investigation to determine why higher levels of Afrocentric values of intrinsic worth, oneness with humanity, and emphasis on nonmaterial satisfaction may possibly be related to lower career interest in service-oriented patient care among Brody non-URMs. Future studies with Brody students could also examine the additional subscales of the PVIPS for possible relationships between worldviews and other aspects of career values in medicine. Results of this students should be considered exploratory and need to be validated by larger samples of Brody students.

Research Question 6a

The research hypothesis was that there would be a significant difference in worldviews of academically successful URMs and URMs experiencing academic difficulty; however, results did not provide adequate support for the hypothesis. The hypothesis was based on literature which has suggested that medical student's worldviews may be linked to their academic success in medical school.

Several authors from the field of medical education have suggested that differences in cultural worldviews are responsible for some of the academic and psychological challenges

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that occur for some URMs in predominantly white medical school settings (Webb, Smith, Hawkins, Jr., and Hill, 2000). Literature suggests that some URMs with cultural worldviews that are dissimilar to the Eurocentric values embedded in the medical education setting can experience psychological stress which can, in turn, lead to academic challenges. Thus, it was expected that URMs with academic success would indicate more Eurocentric and suboptimal worldviews and that URMs with academic difficulty would indicate higher and more Afrocentric and optimal worldviews. Contrary to what was expected, it appears that URMs with academic success had a worldview score that was very similar and only slightly more optimal than that of URMs with academic difficulty.

Interestingly, the highest individual worldview score for both samples was 78.00 and was received by one participant from the URM with academic success group and also one participant from the URM with academic difficulty group. The lowest individual worldview score was a 62.00 and was received by a participant in the URM with academic success group. Based on similarities between the means and medians, scores appear to be similar for URMs with academic success and URMs with academic difficulty.

It also appears that 5 of the 6 URMs with academic success (83.40%) and 1 of the 2 URMs with academic difficulty (50.00%) expressed that they believe that the worldviews and values of Brody School of Medicine match their own. Apparently, a considerable majority of these URM students believe that that there is no major conflict between their cultural values as URM students and those of the medical school culture at Brody. This also is quite different from what has been previously reported about some URMs attending predominantly white medical schools.

It is important to note that these results are primarily exploratory and descriptive and larger sample size, a different worldview measure, and consideration of more objective criteria (i.e. grade point averages, course averages, standardized exam scores) contributing to participants' level of academic success and difficulty in medical school are needed to more thoroughly examine worldviews and academic performance of medical students.

Research Question 6b

The research hypothesis was that there would be a significant difference in the worldviews of academically successful non-URMs and non-URMs experiencing academic difficulty. Due to small sample size, results did not provide adequate support for the hypothesis. Based on assumptions in the literature about the psychological and academic distress that can occur for some minority students in the medical setting whose cultural worldviews contrast with the more Eurocentric values of the medical school setting, it was believed that these assumptions might also hold true for Brody non-URM students. Specifically, it was expected that non-URM participants experiencing academic success would have worldviews that were more Eurocentric and suboptimal. Additionally, it was assumed that non-URM students experiencing academic difficulty would be those with worldviews that were more Afrocentric, optimal, and less similar than some of the Eurocentric values that are considered by some to be embedded in the medical school setting. Non-URMs with academic success did appear to have a worldview, as a group, that was slightly higher and more optimal than the non-URM participant with academic difficulty.

Additionally, 14 (70.00%) of the non-URMs with academic success and the 1 non-URM with academic difficulty (100.00%) indicated that they believed that the worldviews

and values of the medical school matched their own. Similar to URM students, the majority of non-URM participants also seemed not to feel that there was conflict between their personal worldviews and the values of Brody. Results are exploratory, descriptive and should be interpreted with caution. Larger sample size, an alternate worldview measure, and consideration of additional criteria which contribute to students' academic success in medical school are needed in future studies to more adequately investigate claims in the medical student literature about the relationship between medical students' worldviews and academic success.

Study Limitations

As with any research study, this exploratory study has several limitations that must be taken into consideration when interpreting results. Due to sample size and characteristics, results of this study may not be applicable to students in other medical schools. The variables examined in this study were primarily investigated for the purpose of describing their occurrence specifically among Brody students. When compared to most US medical schools, Brody School of Medicine is clearly atypical in terms of its location, size, student diversity, emphasis on Primary Care Medicine, and admittance of only North Carolina residents. Clearly, participants in this study may not be representative of the general medical student population throughout North Carolina or the United States.

Small sample size may have also contributed to low statistical power which could have significantly influenced the results of analyses. Results of analyses indicating no significant differences between groups and no significant relationships between variables might indicate otherwise with a much larger and more diverse sample of medical students.

Convenience sampling was used which may have introduced participant bias and uncontrolled variables in the study which may have affected results.

Although all participants in this study were Brody medical students, most of the participants were actually first year medical students beginning the first weeks of their medical education. In the URM student group, 12 (63.20%) of the participants were first year medical students and the non-URM group consisted of 38 (64.40%) first year medical students. The responses indicated by most of the first year medical school participants in this study may not be an accurate representation of the perspectives of the general student population at Brody. Including a larger sample of second, third, and fourth year medical students in the participant pool might have yielded significantly different study results due to developmental differences among participants. The influence of gender on the variables of interest in the study was also not a focus in this study but should be considered in future studies.

It is important to note that several t tests and correlation analyses were performed in this study to compare mean scores which may have increased the probability of making a Type I error. The significance level was lowered moderately, rather than conservatively, in order to partly minimize possible errors, but errors may have still been possible. Lack of significant results may also be a result of Type II errors. Correlation analyses performed lacked the capability to explain the causal relationships between variables of interest.

Data were collected through participants' self-reported responses to questions on four survey questionnaires. It is possible that some participants may have provided inaccurate or distorted responses in an effort to provide responses believed to be most desired.

Scale reliability analysis of the BSAS prior to actual data analysis revealed that two questions on the scale indicated low internal consistency among participants. These two questions had to be deleted from the scale. This may have influenced study results and may suggest a need for the BSAS to be further examined for applicability to medical students.

The Likert-type scale used on the demographic survey form may have influenced participant responses. Typically, a Likert-type scale provides a range of responses for participants to choose from which are listed in a logical order that often ranges from strongly disagree to strongly agree or vice versa. The possible responses listed on the demographic form used in this study did not follow the sequence of possible responses used on the BSAS, BSI, and PVIPS and could have caused confusion for the participants.

The interpretation of academic success as explained in this study should also be interpreted with caution. Academic success, in this study, was defined as a medical student's ability to move successfully from one year of the medical school curriculum to the next with the original cohort of students that they entered medical school with. Participants in this study considered to be experiencing academic difficulty were medical students who were a year or more behind their original coursework due to having to repeat coursework.

Use of more specific, objective criteria such as: participant grade point averages, examination scores, or individual course averages may help to provide more clear and accurate definitions of academic success and difficulty. A more clear definition of academic difficulty may also be needed to more accurately account for situations where a medical student may be a year or more behind his or her original cohort due to matters of personal choice (i.e. voluntary withdrawal from school, personal illness) rather than academic failure.

It is acknowledged that participants described in this study as "having academic success" could also be considered as "having academic difficulty" by other interpretations. Also, students described in this study as "having academic difficulty" could also be considered as "having academic success" in a different sense. It is likely that most medical students experience periods of both academic success and academic difficulty during their medical education.

Implications for Practice

This study offers several important implications with regard to counseling Brody medical students. Results indicated that Brody URMs expressed significantly higher preference for careers in Primary Care Medicine than did non-URMs. While this immediately suggests that Brody faculty should continue to work towards enhancing the career exploration, interests, and preparation of URMs specifically in the area of Primary Care Medicine, it may also be an indication that adequate attention may need to be directed to addressing the underrepresentation of URMs in other areas of medical specialty areas. Flores and Heppner (2002) caution career counselors about the tendency of some racial and ethnic minorities to make career choices based on career stereotypes and to exclude career choices due to lack of career exposure or beliefs about the inability to penetrate career barriers. Career counseling interventions with Brody URMs should include assessments which help URM students to determine if their expressed in Primary Care Medicine is due to students' actual career interest in Primary Care Medicine or due to students' compromising desired career choices perceived as unattainable.

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Borges (2007) also notes that use of career assessments to assist medical students with matching career interests to desired work environments may, in fact, be an inadequate attempt to facilitate students' career development since "… interests are not detectable if interests are not there" (p.352). Instead of an emphasis on helping students with identifying interests in medicine, Borges suggests that medical students may benefit more from learning to "… create interests" (p. 352). Although Brody School of Medicine emphasizes the training of Primary Care Medicine physicians in North Carolina, the solution to the larger national issue of minority physician underrepresentation in most areas of the physician workforce will likely require Brody faculty and counselors to assist more URM students with creating career interests in other non-Primary Care areas of medicine.

It could be that counseling interventions which assist Brody students with identifying, clarifying, and integrating personal values into their life and work roles could potentially assist students with managing psychological stress, negotiating conflict, and establishing a sense of vocational identity. In this study, 100.00% of URM participants expressed that they felt their personal values influence their psychological wellness and work values as physicians-in-training. Among non-URM participants, 98.31% indicated that they believe their personal values affect their psychological wellness and 96.60% indicated that they believed their personal values influence their work values.

Recommendations for Future Research

This study also offers a few important implications with regard to future research of Brody medical students. First, although this study found a significant but weak negative correlation between the worldviews and career values of non-URM students, causation could

not be determined. Further research is needed to examine factors which may contribute to the negative relationship between the two variables. A larger sample of Brody non-URM students including third and fourth year medical students is also needed to more adequately validate the findings in this study.

Second, further research is warranted to examine worldviews of Brody medical students. Studies of the BSAS should be expanded to determine if the instrument is applicable to groups of medical students. While, differences in worldviews of Brody URM and non-URM students did not appear to exist on the basis of ethnicity in this study, it is possible that worldviews among Brody students may differ by variables other than ethnicity such as community of origin, education, or gender and future research should examine these variables. A qualitative research approach may be more useful in further examining worldviews of medical students. Such an approach may yield deeper insights about the unique meanings that Brody medical students may attribute to their social realities that were not able to be discovered through the exclusively quantitative measures that were used in this study.

Third, differences in worldviews among Brody URMs and non-URMs with academic success and difficulty should be further examined with larger samples of Brody URMs and non-URMs. This has the potential to improve the quality of current academic support services provided to students to ensure their success in medical school. Since some medical educators have suggested a relationship between medical students' cultural worldviews and academic success in medical school, this seems to be an area of research deserving more serious attention in medical education. As Brody School of Medicine and medical schools

throughout the US continue to seek to expand their student populations and the physician workforce through recruitment and retention of more ethnic minority, historically disadvantaged, and nontraditional medical students, understanding the cultural perspectives and realities of diverse medical students seems to be a first step toward improving the cultural climate for success of these students in medical education.

Fourth, the URM participant group in this study consisted of students of various ethnicities including: Black/African American, Hispanic/Latino(a), and Native American/American Indian. It is important to note that there is great variation between ethnic groups as well as within ethnic groups. To adequately describe the diverse perspectives and experiences of Brody URMs, future research studies should give attention to the differences within and among these ethnic groups and with larger samples of URM students.

Fifth, the research and literature seem to offer conflicting claims about the nature of worldviews. Some authors have reported that cultural worldviews can serve as an effective coping mechanism for successfully managing psychological distress among ethnic minority populations while others have suggested that cultural worldviews for ethnic minorities in certain dominant culture settings such as medical education can be a source of conflict which results in personal distress. Future studies are necessary to clarify assumptions about worldviews as it seems unclear how cultural worldviews can simultaneously serve as a psychological buffer and also as psychological stressor.

Conclusion

The purpose of this exploratory study was to examine worldviews, mental health, career values and academic success of URMs as compared to non-URMs currently attending Brody School of Medicine at East Carolina University. The sample participants who volunteered for this study included 78 first and second year medical students attending Brody School of Medicine, 19 (24.40%) of these were URMs and 59 (75.60%) of these were non-URMs. Participants completed the BSAS, BSI, PVIPS, as well as a demographic survey. The four survey questionnaires were used to examine students' worldviews, mental health status, career values, and academic success.

Although existing research has identified differences in cultural values, psychosocial stressors, career preferences, and academic success among URMs and non-URMs, virtually no studies have examined worldviews among medical students to determine if worldviews may be related to aspects of students' development in medical school. Specifically, the aim of the study was to investigate the variables in an effort to describe their occurrence among Brody students and to determine if worldviews are related to the mental health, career values and academic success of Brody students.

This exploratory study found evidence to support two of the research hypotheses. As was expected, it appears that Brody URMs have significantly higher career value for Primary Care Medicine than Brody non-URMs. Second, a weak, correlation that was negative and significant was found between worldview and Primary Care Medicine career values for Brody non-URMs. In addition to support for these two research hypotheses, some additional

observations were noted about the unique sample of URM and non-URM participants in this study.

Although the limited research and literature on URM and non-URM medical students indicate vast differences in the medical school experiences and cultural perspectives of minority and non-minority medical students, URM and non-URM participants in this study indicated more similarities than differences regarding the variables of interest. Clearly, there appears to be more homogeneity than heterogeneity among Brody URM and non-URM students with regard to students' values and beliefs, psychological wellness, career values, and demographic characteristics. Both URMs and non-URMs indicated a worldview that can be considered in the range of moderately Non-Afrocentric to Mixed Mainstream; neither URMs nor non-URMs appear to be highly Afrocentric or Eurocentric in terms of their worldviews and personal values. No significant difference appeared to exist in the mental health status of URMs and non-URMs. Both URMs and non-URMs expressed high career value for Primary Care Medicine.

Demographically speaking, both groups appeared quite similar and this was also unexpected. The majority of URMs and non-URMs attended public undergraduate institutions, described their home town areas as communities with populations less than 100,000, and indicated that they felt a close match between the worldviews and values of Brody and their own personal worldviews and values. Most URMs and non-URMs expressed a belief that their psychological wellness and work values were influenced by their personal values. Most URM participants experiencing academic success and also those who have experienced some academic difficulty indicated that they believe their personal ethnicity has

not negatively affected their medical education at Brody. Similarly, the majority of non-URM students experiencing academic success as well as those who have experienced some academic difficulty stated that their personal ethnicity has not negatively affected their medical education. Most of the variable data collected on the sample of Brody URM and non-URM participants in this exploratory, descriptive study stand in contrast to those reported in the psychological and medical education research and literature. Counselors and faculty at Brody should continue to investigate these variables in an effort to more accurately describe the unique perspectives of Brody medical students to ensure the continued delivery of academic support and counseling services that ensure students' personal and academic success in medical school and career satisfaction as practicing physicians.

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APPENDICES

APPENDIX A

Recruitment Letter

July 31, 2008

Dear Brody School of Medicine Classes of 2011 and 2012:

I am writing to request your assistance with my dissertation study entitled, "Worldviews, Mental Health, Career Values, and Academic Success of Medical Students at a Southeastern Medical School." This study will examine cultural views, stress, career values, and academic success of first and second year medical students enrolled at Brody School of Medicine. This study is being conducted as a partial requirement for my completion of the Doctor of Philosophy in Counselor Education at North Carolina State University.

This study may contribute to a better understanding of what is needed to enhance the academic success, career development, and psychological well-being of diverse medical students and may also suggest how academic and personal counseling services for medical students can be improved at Brody.

If you agree to participate in this study, you will need to attend a data collection session at Brody School of Medicine that will take approximately one hour. At the session, you will be asked to sign a consent form and respond to questions on four (4) brief surveys. The questions on the surveys will ask you to respond to statements about your personal values, levels of personal stress you have recently experienced, career preferences in medicine, academic progress, and personal background. You will not be asked to write your name on any of the surveys and your responses will be completely anonymous.

I will contact you again in person during your Fall 2008 Class Orientation meetings on August 11-12, 2008. At the meetings, you will have a chance to ask me questions about the details of this letter and the nature of this study. At that time, I will also inform you of the dates, times, and location of data collection sessions to be held at Brody between August-October 2008. Sessions will be scheduled from 12:30-1:30pm on various weekdays, afternoons, early evenings and at other times outside of scheduled lectures that will accommodate your busy schedules.

Participation in this study is entirely voluntary and you may withdraw consent and terminate participation at any time without any negative consequence. The risks associated with this study are minimal. If you would like additional information about this study or if you would like to discuss any discomforts you may experience, please contact Cassandra Dixon Acheampong at (252)-744-2500, (252)-258-4312, or via email at acheampongc@ecu.edu in the Academic Support and Enrichment Center, Brody 2N-64.

This research study has been approved by the University and Medical Center Institutional Review Board which serves as the IRB of record for East Carolina University and Pitt County Memorial Hospital.

Sincerely,
Cassandra D. Acheampong, MEd, LPC
Counselor

APPENDIX B

Informational Letter

Dear Participant:

This letter provides you with information about the research study you have volunteered to participate in, "Worldviews, Mental Health, Career Values, and Academic Success of Medical Students at a Southeastern Medical School."

This study will examine cultural views, symptoms of stress, career values, and academic success of first and second year medical students enrolled at Brody School of Medicine. This study is being conducted by Cassandra Dixon Acheampong, Academic Counselor in the Academic Support and Enrichment Center at Brody School of Medicine and doctoral candidate in Counselor Education at North Carolina State University. The study is being conducted as a partial requirement for my completion of the Doctor of Philosophy in Counselor Education at North Carolina State University. This study is being conducted at Brody School of Medicine from July-October 2008.

Your participation in this study is entirely voluntary. As a volunteer participant in the study, you will need to review the details of this informational letter, read and sign a consent form, and respond to questions on four (4) brief surveys. The questions on the surveys will ask you to respond to statements about your personal values, levels of personal stress you have recently experienced, career preferences in medicine, academic progress, and personal background. You will not be asked to write your name on any of the surveys and your responses will be completely anonymous. Completion of the consent form and surveys will take approximately one hour.

You may withdraw consent and terminate participation in this study now or at any time without any negative consequence. The risks associated with this study are minimal. If you would like additional information about this study, have questions about the details of this letter or if you would like to discuss any discomforts you may experience, you may let me know now or at any time in the future by contacting me, Cassandra Dixon Acheampong, at (252)-744-2500, (252)-258-4312, or via email at acheampongc@ecu.edu in the Academic Support and Enrichment Center, Brody 2N-64.

This research study has been approved by the University and Medical Center Institutional Review Board which serves as the IRB of record for East Carolina University and Pitt County Memorial Hospital. Thank you for your cooperation in this study.

Sincerely,

Cassandra D. Acheampong, MEd, LPC
Counselor

APPENDIX C

Consent Document

Title of Research Study: Worldviews, Mental Health, Career Values, and Academic Success of
Medical Students at a Southeastern Medical School
Principal Investigator: Cassandra Dixon Acheampong
Institution: Brody School of Medicine at East Carolina University
Address: 2N-64 Brody Medical Sciences Building 600 Moye Boulevard Greenville, NC 27834
Telephone #: 252-744-2500

PURPOSE AND PROCEDURES

The purpose of this research study is to examine worldviews, mental health, career values, and
academic success of first and second year medical students at Brody School of Medicine. The study is
being completed by the Principal Investigator, Cassandra Dixon Acheampong who is an Academic
Counselor in the Academic Support and Enrichment Center at Brody School of Medicine and
doctoral candidate in Counselor Education at North Carolina State University. This study is being
conducted as a partial requirement for her completion of the Doctor of Philosophy in Counselor
Education.

As a participant, you will need to attend a one hour data collection session at Brody School of
Medicine between August-October 2008. At the session, you will receive two packets. One packet
will contain an informational letter explaining the purpose and nature of the study along with a
consent form to read and sign. The second packet will contain instructions for completing four brief
surveys and the four surveys to complete. The questions on the surveys will ask you to respond to
statements about your personal values, levels of personal stress you have recently experienced, career
preferences in medicine, academic progress, and personal background. There are no right or wrong
answers to responses that you indicate on the surveys. I am only interested in how groups of medical
students respond.

POTENTIAL RISKS AND DISCOMFORTS

This study poses minimal psychological risks to you as a participant. You may find the following
risks or discomforts from participating in this study: some questions that you respond to on the four
surveys could cause some mild discomfort or stress as you think about your responses to the
questions. This could include excessive worry. Should symptoms become disturbing to you, please
contact one of the clinicians in the Academic Support and Enrichment Center in Brody 2N-64 or at
744-2500 immediately.

POTENTIAL BENEFITS

There may be no direct, personal benefit from your participation in this study but the knowledge
received may be of value to humanity. Indirect benefit may be expected. Faculty at Brody School of
Medicine who teach and advise medical students may be able to use study results to better understand

the diverse needs and perspectives of students and to enhance psychological, career, and academic interventions that will assist Brody medical students in becoming successful future physicians.

SUBJECT PRIVACY AND CONFIDENTIALITY OF RECORDS

Your privacy and confidentiality as a participant will be maintained in this study. You will not be asked to write your name on any of the four surveys that you complete and your responses will be completely anonymous. A personal ID number will be assigned to you by the Principal Investigator for use on the surveys. The consent forms that you sign will be collected by the Principal Investigator and kept separate from the four surveys that you complete so that completed surveys can not be linked to your personal identity. At the conclusion of the data collection session, the Principal Investigator will collect, store, and locked data in a confidential file in the Academic Support and Enrichment Center at Brody School of Medicine. The file will only be accessible by the Principal Investigator, the Brody School of Medicine Faculty Sponsor for the Principal Investigator, and the PhD advisor for the Principal Investigator unless you give written permission to do otherwise. No reference will be made in oral or written reports which could link your personal identity to this study.

COSTS OF PARTICIPATION & COMPENSATION

By participating in this research study, you will not incur any costs and you will not receive any monetary compensation for your participation in this study.

VOLUNTARY PARTICIPATION

Participating in this study is voluntary. If you decide not to be in this study after it has already started, you may stop at any time without losing benefits that you should normally receive. You may stop at any time you choose without penalty.

PERSONS TO CONTACT WITH QUESTIONS

The investigator will be available to answer any questions concerning this research, now or in the future. You may contact the investigator, Cassandra Dixon Acheampong, at phone number 252-744-2500 (days) or 252-258-4312 (nights and weekends). If you have questions about your rights as a research subject, you may call the Chair of the University and Medical Center Institutional Review Board at phone number 252-744-2914 (days). If you would like to report objections to this research study, you may call the ECU Director of Research Compliance at phone number 252-328-9473.

CONFLICTS OF INTEREST

No funding is associated with this study. Neither the research site, nor Cassandra Dixon Acheampong will receive any financial benefit based on the results of this study.

CONSENT TO PARTICIPATE

Title of research study: Worldviews, Mental Health, Career Values, and Academic Success of
Medical Students at a Southeastern Medical School

I have read all of the above information, asked questions and have received satisfactory answers in
areas I did not understand. (A copy of this signed and dated consent form will be given to the person
signing this form as the participant or as the participant's authorized representative.)

_____

Participant's Name **(PRINT)**   **Signature**   **Date**
Time

If applicable:

_____

Guardian's Name **(PRINT)**   **Signature**   **Date**
Time

PERSON ADMINISTERING CONSENT: I have conducted the consent process and orally reviewed
the contents of the consent document. I believe the participant understands the research.

_____

Person Obtaining consent **(PRINT)**   **Signature**   **Date**

_____

Principal Investigator's **(PRINT)**   **Signature**   **Date**

APPENDIX D

Instructions for Participant Completion of Surveys

This packet contains four brief surveys for you to complete. Do not write your name on any of the surveys. Your packet of surveys has been assigned an ID number listed on the cover sheet of this packet to ensure that your responses remain anonymous. Please read the directions for each survey carefully. Also, be sure to read each statement or question on each survey carefully. Using a no.2 pencil, mark only one answer as the specific survey indicates. The surveys require you to either place an (X) by or circle the one, most appropriate response for each question. You may mark your answers on the surveys. Please do not write your name on any of the surveys. Again, your responses are anonymous. There are no right or wrong answers, I am only interested in how groups of medical students respond. When you complete the surveys, please return them to the Principal Investigator along with the packet cover sheet and these instructions. Thank you for your participation in this study.

APPENDIX E

Belief Systems Analysis Scale

Instructions: Please read each question carefully. Place an (X) by the one, most appropriate response to each statement. Do not write your name on this form or on any of the following questionnaires. Your responses are anonymous.

1. The more important consideration when looking for a job is not the money offered, but the people I would be working with.

   ☐ Completely agree
   ☐ Mostly agree
   ☐ Neither agree nor disagree
   ☐ Mostly disagree
   ☐ Completely disagree

2. English should be the only national language. If one wants to live in this country, one should learn to speak the language; bilingualism is unimportant.

   ☐ Completely agree
   ☐ Mostly agree
   ☐ Neither agree nor disagree
   ☐ Mostly disagree
   ☐ Completely disagree

3. If I could make a choice, I would prefer to lead a wealthy, exciting life as opposed to one that is peaceful and productive in terms of helping other people.

   ☐ Completely agree
   ☐ Mostly agree
   ☐ Neither agree nor disagree
   ☐ Mostly disagree
   ☐ Completely disagree

4. In order to know what's really going on you need to look at the scientific data rather than the individual's personal experience.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

5. Working at a job with meaning and purpose is more important than the money received from a job.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

6. Winning the lottery would solve all of my problems.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

7. This country would be better off if we restricted immigration to a very select few.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

8. Welfare is a mistake: individuals must learn to help themselves.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

9. When I meet acquaintances on the street, I note the type of clothes they are wearing and compare them to mine.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

10. Race or nationality reveals more about an individual than he/she may realize.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

11. More than anything else, I am most convinced by another's opinion if he/she has the statistics to back it up.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

12. When I encountered new acquaintances at meetings or work-related activities, I note the type of clothes they are wearing and am impressed if they are "dressed for success."

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

13. When someone challenges my beliefs, I am eager to set him/her straight.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

14. Pain is the opposite of love: In other words, an act of love cannot cause pain.

  - ☐ Completely agree
  - ☐ Mostly agree
  - ☐ Neither agree nor disagree
  - ☐ Mostly disagree
  - ☐ Completely disagree

15. If a "friend" were to betray my confidence and tell some other people a secret of mine, the best way for him/her to learn a lesson is for me to do the same thing to him/her when I get a chance.

  - ☐ Completely agree
  - ☐ Mostly agree
  - ☐ Neither agree nor disagree
  - ☐ Mostly disagree
  - ☐ Completely disagree

16. If my opinion of my uncle has always been different than everyone else's, then I must be perceiving him wrong.

  - ☐ Completely agree
  - ☐ Mostly agree
  - ☐ Neither agree nor disagree
  - ☐ Mostly disagree
  - ☐ Completely disagree

17. It is easy for me to see how the entire human race is really part of my extended family.

  - ☐ Completely agree
  - ☐ Mostly agree
  - ☐ Neither agree nor disagree
  - ☐ Mostly disagree
  - ☐ Completely disagree

18. When considering all the difficulties of life, I have trouble seeing any meaning or order to it.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

19. I find myself worrying a lot about circumstances in my life.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

20. If I just had more money, my life would be more satisfying.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

21. If I were better looking, my relationships with others would be more satisfying.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

22. I feel badly when I see friends from high school who now have better cars, clothes, or homes than I do.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

23. Sometimes when I am good and do my best, I still suffer; this is an indication that good does not necessarily triumph over evil.

   ☐ Completely agree
   ☐ Mostly agree
   ☐ Neither agree nor disagree
   ☐ Mostly disagree
   ☐ Completely disagree

24. Although I have a favorite kind of music I listen to, I can usually get into and enjoy most kinds of music.

   ☐ Completely agree
   ☐ Mostly agree
   ☐ Neither agree nor disagree
   ☐ Mostly disagree
   ☐ Completely disagree

25. When I am confused or unclear about myself or the world about me, I try to push these concerns out of my mind and go on with my life as usual.

   ☐ Completely agree
   ☐ Mostly agree
   ☐ Neither agree nor disagree
   ☐ Mostly disagree
   ☐ Completely disagree

26. Past philosophers like St. Augustine and Descartes are less relevant today than they were 100 years ago before the modern age.

   ☐ Completely agree
   ☐ Mostly agree
   ☐ Neither agree nor disagree
   ☐ Mostly disagree
   ☐ Completely disagree

27. Despite my religious preferences (e.g., Jewish, Muslim, Catholic, etc.), I still believe there are teachings from different religions that are valid.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

28. I am uneasy and bothered by my responsibilities at work and at home.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

29. I can remain calm and peaceful even when my boss blames me for another's mistakes.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

30. If I were president, I would invest more money to develop social programs and less money in high tech development.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

31. There are some people in my past whom I believe I should never forget.

☐ Completely agree
☐ Mostly agree
☐ Neither agree nor disagree
☐ Mostly disagree
☐ Completely disagree

Physician Values In Practice Scale

© Paul J. Hartung, Ph.D. & Mark L. Savickas, Ph.D.
Department of Behavioral Sciences
Northeastern Ohio Universities College of Medicine

Directions

This questionnaire contains statements of values medical students consider important in their future careers as physicians (practicing medicine, caring for patients, and working within the current health-care system). Some statements you might agree with very strongly, whereas others you may not. Read each statement carefully and circle the number that tells how much you agree or disagree with each statement using the following scale:

   1 means "Strongly Disagree" (SD)
   2 means "Disagree" (D)
   3 means "Neutral" (N)
   4 means "Agree" (A)
   5 means "Strongly Agree" (SA)

Tell how you *do* feel about the importance of these statements, not how you think you *should* feel.

Scale	Item numbers	Raw score range	Your raw score (sum of your item ratings for each scale)	Your standard score (your raw score divided by number of items in scale; may range from 1-5)
Prestige	1, 7, 13, 19, 24, 28, 31, 34, 36, 38	10 - 50		
Service	2, 8, 14, 20, 25, 29, 32, 35, 37, 55	9 - 45		
Autonomy	3, 9, 15, 21, 26, 30, 33, 42, 45, 59	7 - 35		
Lifestyle	4, 10, 16, 22, 39, 43, 46, 47, 48, 51	4 – 20		
Management	5, 11, 17, 23, 27, 41, 44, 52, 56, 58	5 – 25		
Scholarly Pursuits	6, 12, 18, 40, 49, 50, 53, 54, 57, 60	3 – 15		

In my medical practice, it will be important that I…

		SD	D	N	A	SA
1.	be recognized as the best physician in my group.	1	2	3	4	5
2.	serve on community boards.	1	2	3	4	5
3.	enjoy a prosperous lifestyle.	1	2	3	4	5
4.	work a predictable number of hours.	1	2	3	4	5
5.	assume a management role.	1	2	3	4	5
6.	work as a physician scientist.	1	2	3	4	5
7.	be known as a physician's physician.	1	2	3	4	5
8.	consult with community agencies.	1	2	3	4	5
9.	control clinical decision making.	1	2	3	4	5
10.	follow a work schedule that is predictable and stable.	1	2	3	4	5
11.	have significant administrative responsibility.	1	2	3	4	5
12.	work in academic medicine.	1	2	3	4	5
13.	concentrate on a highly specialized area of treatment/care.	1	2	3	4	5
14.	speak to local organizations such as educational and religious groups.	1	2	3	4	5
15.	attend to the economic aspects of my work.	1	2	3	4	5
16.	keep my call schedule to a minimum.	1	2	3	4	5
17.	supervise a large staff of people.	1	2	3	4	5
18.	engage in research activities.	1	2	3	4	5
19.	obtain recognition for excellence from the local medical society.	1	2	3	4	5
20.	provide indigent care.	1	2	3	4	5
21.	work at my own pace and in my own way.	1	2	3	4	5
22.	minimize the number of demands made on my time.	1	2	3	4	5
23.	oversee a large staff of health-care providers.	1	2	3	4	5
24.	obtain the perks that go along with my position.	1	2	3	4	5
25.	help shape public policy about health issues.	1	2	3	4	5
26.	do my work the way I want to do it.	1	2	3	4	5
27.	supervise the work of other physicians.	1	2	3	4	5
28.	work in a prestigious specialty area of medicine.	1	2	3	4	5

		SD	D	N	A	SA
29.	involve myself in the lives of my patients.	1	2	3	4	5
30.	perform my work creatively.	1	2	3	4	5
31.	achieve high social status.	1	2	3	4	5
32.	innovate new ways of doing things.	1	2	3	4	5
33.	determine my own approach to medical care.	1	2	3	4	5
34.	work in a specialty area that is highly esteemed in medicine.	1	2	3	4	5
35.	share my expertise and talents with public health agencies.	1	2	3	4	5
36.	make financial gains/earn a lot of money.	1	2	3	4	5
37.	volunteer in community groups.	1	2	3	4	5
38.	accomplish more than my peers.	1	2	3	4	5
39.	have time for leisure.	1	2	3	4	5
40.	conduct independent research.	1	2	3	4	5
41.	direct the work of others.	1	2	3	4	5
42.	do what I think is right.	1	2	3	4	5
43.	enjoy life outside of work.	1	2	3	4	5
44.	evaluate the work performance of others.	1	2	3	4	5
45.	have a high level of autonomy.	1	2	3	4	5
46.	have time for family and friends.	1	2	3	4	5
47.	keep a flexible work schedule.	1	2	3	4	5
48.	keep my stress level as low as possible.	1	2	3	4	5
49.	publish papers in scientific journals.	1	2	3	4	5
50.	pursue scholarly research and writing.	1	2	3	4	5
51.	regulate the amount of time I work.	1	2	3	4	5
52.	serve as chief of a hospital staff.	1	2	3	4	5
53.	serve on a medical school faculty.	1	2	3	4	5
54.	serve on editorial boards of scientific journals.	1	2	3	4	5
55.	serve the local community.	1	2	3	4	5
56.	supervise a health care team.	1	2	3	4	5
57.	teach in a medical school.	1	2	3	4	5
58.	work as an administrator in a hospital, academic, or office-based setting.	1	2	3	4	5
59.	work independently.	1	2	3	4	5
60.	write grants for research projects.	1	2	3	4	5

APPENDIX G

Confidential Demographic Survey

Instructions: This questionnaire will provide useful information about you as a participant in this study. This information will be used for statistical purposes only. Please do not write your name on this survey. Your responses are anonymous. Thank you for your cooperation in this study.

1. Please place an (X) in the one box which describes your current academic classification.

	M1	M2
Semester 1		
Semester 2		

Questions #2-11 ask about your academic and personal background. Please circle the one, best response for each question or statement.

2. Regardless of which box you indicated in question number 1 above, what is the total number of semesters that you have been in medical school (including current semester)?
   A. 2
   B. 3
   C. 4
   D. 5
   E. 6

3. Race/ethnicity
   A. Asian American
   B. Black or African American
   C. Native American or American Indian
   D. Hispanic/Latino(a)
   E. White/Caucasian
   F. Other _____

4. Marital status
   A. Single
   B. Married

5. What was the highest level of education that your father completed?
    A. Elementary school
    B. Middle school
    C. High school
    D. Two year college or technical school
    E. Bachelor's Degree or four year college
    F. Master's degree
    G. Doctorate degree

6. What was the highest level of education that your mother completed?
    A. Elementary school
    B. Middle school
    C. High school
    D. Two year college or technical school
    E. Bachelor's degree or four year college
    F. Master's degree
    G. Doctorate degree

7. Did you attend a historically black college/university (HBCU) for your undergraduate training?
    A. Yes
    B. No

8. Did you attend a predominantly White college/university for your undergraduate training?
    A. Yes
    B. No

9. Did you attend a public or state supported undergraduate institution?
    A. Yes
    B. No

10. Did you attend a private undergraduate institution?
    A. Yes
    B. No

11. Your home town or home city is a
    A. Metro area > 100,000 people
    B. Non-Metro area <100, 000 people

Questions #12-21 refer to your experiences in medical school. Please circle the one, best response to each statement or question.

12. I have experienced racial or ethnic discrimination during my medical education.
    A. Strongly agree
    B. Moderately agree
    C. Agree
    D. Strongly disagree
    E. Moderately disagree
    F. Disagree

13. My ethnicity has had an adverse affect on my medical education.
    A. Strongly agree
    B. Moderately agree
    C. Agree
    D. Strongly disagree
    E. Moderately disagree
    F. Disagree

14. My choice of medical specialty is influenced by my ethnicity.
    A. Strongly agree
    B. Moderately agree
    C. Agree
    D. Strongly disagree
    E. Moderately disagree
    F. Disagree

15. There are a sufficient number of positive, ethnically diverse role models within the medical school.
    A. Strongly agree
    B. Moderately agree
    C. Agree
    D. Strongly disagree
    E. Moderately disagree
    F. Disagree

16. The worldviews and values of the medical school closely match my own personal worldviews and values.
    A. Strongly agree
    B. Moderately agree
    C. Agree
    D. Strongly disagree
    E. Moderately disagree
    F. Disagree
    G.

17. My psychological well-being is influenced by my personal values.
    A. Strongly agree
    B. Moderately agree
    C. Agree
    D. Strongly disagree
    E. Moderately disagree
    F. Disagree

18. My work values are influenced by my personal values.
    A. Strongly agree
    B. Moderately agree
    C. Agree
    D. Strongly disagree
    E. Moderately disagree
    F. Disagree

19. The medical school offers various programs that adequately address and support the needs and concerns of its ethnically diverse students.
    A. Strongly agree
    B. Moderately agree
    C. Agree
    D. Strongly disagree
    E. Moderately disagree
    F. Disagree

20. The medical school offers a sufficient number of career related programs to adequately support the career development needs of its medical students.
    A. Strongly agree
    B. Moderately agree
    C. Agree
    D. Strongly disagree
    E. Moderately disagree
    F. Disagree

21. What is your proposed primary specialty choice?
    A. Family Medicine
    B. Internal Medicine
    C. Medicine/Pediatrics
    D. Medicine/Psychiatry
    E. Obstetrics/Gynecology
    F. Pediatrics
    G. Psychiatry
    H. Surgery
    I. Other

Thank you for your participation in this study. If you would like to receive individual or small group counseling after this study, please contact Cassandra Acheampong in the Brody School of Medicine's Academic Support and Enrichment Center at 252-744-2500, by email at acheampongc@ecu.edu, or by visiting Brody 2N-64 Monday-Friday from 8:00am-5:00pm.

APPENDIX H

UMCIRB Approval Letter

University and Medical Center Institutional Review Board
East Carolina University
Ed Warren Life Sciences Building • 600 Moye Boulevard • LSB 104 • Greenville, NC 27834
Office **252-744-2914** • Fax **252-744-2284** • www.ecu.edu/irb
Chair and Director of Biomedical IRB: L. Wiley Nifong, MD
Chair and Director of Behavioral and Social Science IRB: Susan L. McCammon, PhD

TO: Cassandra Dixon Acheampong, Academic Support & Enrichment Center, BSOM, ECU—Brody 2N-64

FROM: UMCIRB

DATE: July 31, 2008

RE: Exempt Category Research Study

TITLE: "Worldviews, Mental Health, Career Values, and Academic Success of Medical Students at a Southeastern Medical School"

UMCIRB # 08-0463

This research study has undergone expedited review on 7.30.08. This research study meets the criteria for an exempt status because it is a research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey procedures, interview procedures or observation of public behavior, unless: information obtained is recorded in such a manner that human subjects can be identified, directly or through identifiers linked to the subjects and any disclosure of the human subjects' responses outside the research could reasonably place the subjects at risk of criminal or civil liability or be damaging to the subjects' financial standing, employability, or reputation.

Dr. S. McCammon deemed this **unfunded** study **no more than minimal risk.** This research study does not require any additional interaction with the UMCIRB unless there are changes in this study because the changes may impact the level of review required.

The following items were reviewed:
- Internal Processing Form (dated 7.8.08)
- Letter to Brody School of Medicine Classes of 2011 & 2012 (dated 7.31.08)
- Letter to Participants
- Informed Consent (dated 7.8.08)
- COI Disclosure Form (dated 7.8.08)
- The Belief System Analysis Scale
- Brief Symptom Inventory
- Physician Values in Practice Scale
- Confidential Demographic Survey

Dr. S. McCammon does not have a potential for conflict of interest on this study.

The UMCIRB applies 45 CFR 46, Subparts A-D, to all research reviewed by the UMCIRB regardless of the funding source. 21 CFR 50 and 21 CFR 56 are applied to all research studies under the Food and Drug Administration regulation. The UMCIRB follows applicable International Conference on Harmonisation Good Clinical Practice guidelines.

IRB00000705 East Carolina U IRB #1 (Biomedical) IORG0000418
IRB00003781 East Carolina U IRB #2 (Behavioral/SS) IORG0000418
IRB00004171 East Carolina U IRB #3 (Prisoner) IORG0000418
IRB00004973 East Carolina U IRB #4 (Behavioral/SS Summer) IORG0000418
Version 3-5-07

UMCIRB # 08-0463
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APPENDIX I

North Carolina State University IRB Approval Letter

North Carolina State University is a land-grant university and a constituent institution of The University of North Carolina

Office of Research and Graduate Studies

NC STATE UNIVERSITY

Sponsored Programs and
Regulatory Compliance
Campus Box 7514
2701 Sullivan Drive
Raleigh, NC 27695-7514

919.515.7200
919.515.7721 (fax)

From: Joseph Rabiega, IRB Coordinator
North Carolina State University
Institutional Review Board

Date: August 19, 2008

Project Title: Worldviews, Mental Health, Career Values, and Academic Success of Medical Students at a Southeastern Medical School

IRB#: 314-08-8

Dear Cassandra:

The research proposal named above has received administrative review and has been approved as exempt from the policy as outlined in the Code of Federal Regulations (Exemption: 46.101.b.2). Provided that the only participation of the subjects is as described in the proposal narrative, this project is exempt from further review.

NOTE:

1. This committee complies with requirements found in Title 45 part 46 of The Code of Federal Regulations. For NCSU projects, the Assurance Number is: FWA00003429.
2. Any changes to the research must be submitted and approved by the IRB prior to implementation.
3. If any unanticipated problems occur, they must be reported to the IRB office within 5 business days.

Please provide a copy of this letter to your faculty advisor.

Sincerely,

Joseph Rabiega
NCSU IRB