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The Effect of Various Cognitive and Non-Cognitive Weighting Schemes on the Medical School Admissions Rates of Under Represented Minorities

Marlene Ballejos

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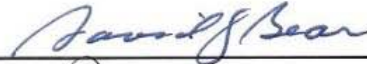
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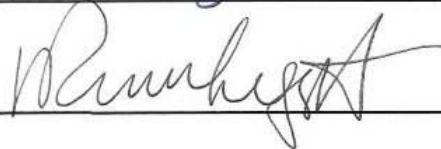
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**THE EFFECT OF VARIOUS COGNITIVE AND NON-COGNITIVE
WEIGHTING SCHEMES ON THE MEDICAL SCHOOL ADMISSIONS
RATES OF UNDER REPRESENTED MINORITIES**

BY

MARLENE BALLEJOS

B.S., Business Administration, College of Santa Fe, 1987
MPA, University of New Mexico, 2002

DISSERTATION

Submitted in Partial Fulfillment of the
Requirements for the Degree of

**Doctor of Philosophy
Educational Psychology**

The University of New Mexico
Albuquerque, New Mexico

December, 2010

Dedication

In memory of my beloved son, Luke, whom I love with all my heart. You taught me so much in your brief time on this earth and I will continue to strive to “Live life to the fullest” as you did, with each day being adventurous and cherished. You will continue to be my guardian angel and be with me in spirit in all that I do and accomplish. I am so blessed to have had such a wonderful, thoughtful and vibrant son. I love you Luke.

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To my loving son Brandon, it is for you that I continue to live each day to the fullest.

And finally, to my husband, Adam, your support, love, patience and compassion have been the greatest gift of all and I could have never done this without you!

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ABSTRACT

This study investigated the cognitive and non-cognitive weighting schemes of the medical school admissions process and the effect they had on the rate of under-represented minority applicants being accepted to medical school. Non-cognitive characteristics were explored to ascertain which subcategory was the best predictor in determining the final overall non-cognitive score and whether the gender and/or race and ethnicity background of the interviewer had an influence on subcategory scoring. The sub scores used to derive the final non-cognitive score were based on four content areas: background and diversity, suitability for a career in medicine, problem solving and letters of recommendation.

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Introduction

The US population demographics are shifting and by 2042 ethnic minority groups will make up approximately 50 percent of the population (US Census Bureau, 2008). This increasing diversity of the US population foreshadows the need to change the nature of health care to meet the needs of population changes.

According to the US Department of Health & Human Services (2003), “the percentage of total patient care hours physicians spend with patients from underrepresented minorities will increase from 31 percent to 40 percent.” This increase between the years 2000 and 2020 will subsequently lead to an increase in demographic-based health care disparities. The Agency for Healthcare Research and Quality (2010) has defined health care disparities as “the differences, or gaps, in care experienced by one population compared with another population (p.7).” For African American, Hispanic, and Native American populations, large disparities in health currently exist. Increasing AIDS cases, diabetic amputations and lack of prenatal care are among the largest disparities these populations face (US Department of Health & Human Services, 2009).

In the current debate on national health care reform, the health and welfare of the growing ethnic minority population have become a major concern given that ethnic minority citizens have greater health care disparities than non-majority US citizens (Smedley, Stith & Nelson, 2003; Zambrana, Molnar, Munoz, & Lopez, 2004; Coleman, Palmer & Winnick, 2008). In addition, those ethnic minorities located in rural and underserved areas face even greater health care disparities than their urban non-minority counterparts, which will have a direct impact on the future of our health care system (Coleman et al., 2008; US Department of Health & Human Services, 2009).

There is a complex array of factors necessary to address the changing demographics of the US health care consumer. One factor necessary to effect change in the quality of care available to minorities is the diversity of those providing the health care, in particular, physicians. By diversifying the workforce, health care professionals can help to combat health care disparities.

One very important facet of the diversification of the physician workforce begins with the admissions process to medical school. Medical schools educate and train the physicians of the future, and all physicians must first apply to, and be accepted by an accredited medical school in order to practice in the US. Hence, the medical school entering class, and the subsequent physician workforce, cannot be more diverse than the pool of applicants.

Most medical schools utilize a weighting scheme of both cognitive and non-cognitive factors to rank applicants applying to the MD program. A plethora of data related to cognitive psychometric assessment currently exists, however data related to non-cognitive psychometric properties and research findings regarding the medical school admissions process are often lacking (Kulatunga-Moruzi & Norman, 2002). Thus, further examination of the non-cognitive psychometric properties will provide an accurate reflection of the domains of greatest importance to the committee as well as the extent to which committee member's value different non-cognitive characteristics, which in turn will reflect the relative values of community, faculty and student interviewers (Reiter & Eva, 2005). A sound assessment and evaluation design reinforces educational decision making and can positively impact individual students as well as promote a more diverse physician workforce, which can better serve the diverse population.

This study investigated the cognitive and non-cognitive weighting schemes of the medical school admissions process and the hypothetical effect they would have on the rate of underrepresented minority applicants being accepted to medical school. Non-cognitive characteristics were explored to ascertain which subcategory was the best predictor in determining the final non-cognitive score and whether the gender and/or race and ethnicity status of the interviewer had an influence on the non-cognitive interview score. The sub scores used to derive the final non-cognitive score were based on four content areas: background and diversity, suitability for a career in medicine, problem solving and communication skills and letters of recommendation.

Literature Review

While African Americans and Hispanics are among the fastest growing populations in the US, they are also the most severely underrepresented in medicine, comprising a mere 6 percent of the US physician workforce (Association of American Medical Colleges [AAMC] Facts, 2006). In this study, the term “underrepresented minority,” or URM, is defined as racial and ethnic populations who are underrepresented in a designated health profession discipline relative to the percentage of that racial or ethnic group in the total population. This definition would include African American, American Indian or Alaska Native, Native Hawaiian or other Pacific Islander, Hispanic or Latino, and any Asian other than Chinese, Filipino, Japanese, Korean, Asian Indian, Thai, or Vietnamese/Southeast Asian (US Department of Health & Human Services, 2009). In the state of New Mexico, physicians from underrepresented minority groups account for approximately 13 percent of the Active Patient Care Physicians (The New Mexico Health Policy Commission, 2006). This figure exemplifies a significant health care workforce disparity because New Mexico is a minority-majority state with over 50 percent of the population comprised of underrepresented minorities.

Diversifying the physician work force will itself require a multifaceted approach. A call to action has been made to direct both energy and resources toward activities that produce outcomes that assure diversification in the US health workforce of the future (Coleman et al., 2008). Among the many benefits of a more diverse workforce are: 1) a broader array of individuals receiving care, 2) greater opportunities for race and language concordance between health care providers and their patients, 3) an increased level of trust between health care providers and their minority patients, and 4) an increased level of

advocacy on behalf of the underserved communities and minority populations (Saha & Shipman, 2006). Hence, a more diverse workforce will result in service patterns which will positively influence health outcomes and result in greater health service utilization.

Several national programs were previously initiated in an effort to increase the health care workforce for underrepresented minority groups. The “Project 3000 by 2000” was initiated to increase the number of URM students in medical school to a total of 3000 students by the Year 2000. The goal was to have 3000 underrepresented minority students matriculate annually into US medical schools to achieve parity based on the population of underrepresented minorities in the United States (Ready, 2001). The AAMC worked with the Kellogg and Robert Wood Johnson Foundations to create the Health Professions Partnership Initiative, which aimed to increase the collaboration between academic medical centers and educational institutions (kindergarten through college) that consisted of large student minority populations. This effort involved an increase of both academic support and exposure to health care professions and opportunities. In addition, the Minority Medical Education Program was implemented to assist with the preparation of pre-medical minority students for success in the medical school curriculum. According to Saha and Shipman (2006) the efforts of both national and federal programs at increasing the diversity of the physician workforce have been successful, yet progress has been slow.

Therefore, medical schools must seize the opportunity for correction and inclusion at the point of admission to medical school in order to address the challenges of health care disparities in local communities. New initiatives have recently been introduced to advance this cause.

The Liaison Committee on Medical Education [LCME] (2008) Standards for Accreditation is an example of one such initiative. This organization promotes an environment that fosters both diversity and inclusion of basic principles of culturally competent health care and serves as the accrediting body for US medical schools. Recently, there has been a significant change in the language of many of the mandates required by the LCME. The previous wording on the following mandates was recently changed from “should” to “must”.

1. **ED-21:** “The faculty and students *must* demonstrate an understanding of the manner in which people of diverse cultures and belief systems perceive health and illness and respond to various symptoms, diseases, and treatments” (LCME, 2008, p.13).

The LCME believes that aspiring future physicians will be best prepared to practice medicine and to provide effective care in a diverse society when they learn in an environment that supports diversity and inclusion (Coleman et al, 2008).

2. **MS-8:** “Each medical school *must* develop programs or partnerships aimed at broadening diversity among qualified applicants for medical school admissions” (LCME, 2008, p.21).

These policies and practices help to ensure the gender, racial, cultural, and economic diversity of medical students. The standard requires that each school’s student body exhibit diversity in the dimensions noted. The extent of diversity needed will depend on the school’s missions, goals, educational objectives, expectations of the community in which it operates, and its implied or explicit social contract at the local, state, and national levels.

3. **IS-16:** “Each medical school *must* have policies and practices to achieve appropriate diversity among its students, faculty, staff, and other members of the academic community and *must* engage in ongoing, systematic, and focused efforts to attract and retain students, faculty, staff, and others from demographically diverse backgrounds” (LCME, 2008, p.8).

Aspiring future physicians will be best prepared for medical practice in a diverse society if they learn in an environment characterized by, and supportive of, diversity and inclusion. Such an environment will facilitate physician training in:

- Basic principles of culturally competent health care.
- Recognition of health care disparities and the development of solutions to such burdens.
- Importance of meeting the health care needs of medically underserved populations.
- Development of core professional attributes, such as altruism and social accountability, needed to provide effective care in a multi-dimensionally diverse society.

Each school should articulate its expectations regarding diversity across its academic community in the context of local and national responsibilities, and regularly assess how well such expectations are being achieved. Schools should consider in their planning elements of diversity including, but not limited to, gender, racial, cultural and economic diversity. Schools should establish focused, significant, and sustained programs to recruit and retain suitably diverse students, faculty members, staff, and others (LCME, 2008, p.8).

The AAMC recently began a new initiative to develop, distribute, promote, and assess the impact of information and tools for use by medical schools in their efforts to create and sustain institutional diversity. The Holistic Admissions and Enhancing Diversity Project focuses on the application and admissions process with respect to the role that the medical school mission and goals have on outreach, recruitment, financial aid and retention efforts that support these diversity initiatives (Coleman et al., 2008). Further, this initiative will address the need to change the institutional culture in such a way that the conditions necessary for diversity to thrive will be fostered.

According to the AAMC (2007), the annual graduating medical student survey regarding career plans indicated that approximately one-fifth of all graduates planned to practice in underserved areas, including nearly 51 percent of African Americans, 41 percent of Native Americans, and 33 percent of Hispanic graduates. Conversely, only 18 percent of White graduates planned to practice in underserved areas. Minority patients experience greater satisfaction and are more likely to choose a physician of the same race or ethnic background (Saha & Shipman, 2006). These patient/physician relationships are also characterized by an increase in the level of trust and respect between the patient and the practitioner, as well as the likelihood of the patient recommending the physician to others. In order to ensure culturally competent care, physicians should be exposed to racial and ethnic diversity in medical school. This exposure to diversity helps to enrich cultural competence by challenging students' assumptions and perceived stereotypes while providing a greater understanding of their classmates' various life experiences and backgrounds.

Major legal and educational trends that impact institutional culture and policy have been evaluated in terms of their initiatives for achieving diversity. Key US Supreme Court

rulings have set the stage for examining the legality of using diversity considerations in the admissions process. In the *Regents of the University of California v. Bakke* (1978) case, the court ruled that the University of California – Davis School of Medicine’s “two-track” admissions policy was unlawful. The “two-track” policy allowed for the admissions committee to reserve a designated number of spots in the entering class for minority students. Nevertheless, the Supreme Court did acknowledge the educational benefits of diversity and the fact that they constitute a “compelling interest” for race to have limited consideration in the admissions process in higher education (Coleman et al., 2008).

In subsequent cases, the US Supreme Court ruling in the 2003 University of Michigan cases (*Grutter v. Bollinger* and *Gratz v. Bollinger*) upheld the legality of race-conscious admissions policies but within prescribed limits. The Court ruled that the educational benefits of diversity did constitute a “compelling interest.” The University of Michigan Law School was allowed to continue to consider applicants utilizing the Holistic Review, wherein race is one factor among many acknowledged. However, the University of Michigan undergraduate school did not use a Holistic Review process but awarded points to underrepresented minority students, which was not supported by the Court.

These cases served as a foundation for higher education institutions to develop admissions policies that promote the educational benefits of diversity. Accordingly, the AAMC has outlined some of the benefits that support this cause:

1. Improved teaching and learning through cross-racial understanding, breaking down racial stereotypes, fostering racial understanding, and promoting classroom discussion.

2. Enhanced civic values and American democracy via the student body composition, and reflection of full participation of all segments of society.
3. Preparation of students for the 21st Century workforce and global economy through exposure to diverse people, cultures, ideas and viewpoints.

Similarly, the College Board (2009) has also indicated that diversity experiences for college students are associated with “enhanced critical thinking skills, more involvement in community service and a greater likelihood for retention and graduation,” all categorized as an increase in learning outcomes. The College Board (2009) also concludes that in the event that the minority population continues at the same educational attainment and growth rates, the US will suffer as an economic leader in the global arena.

Furthermore, the New Mexico Higher Learning Commission (2009) has stated, “A diverse student-body promotes cross-racial understanding, creates a richer learning experience and better prepares our students to serve the communities of New Mexico.”

As medical schools continue to develop policies and ensure that they meet the guidelines and accreditation standards of local, state and federal mandates and laws, they must incorporate ways to help ensure that students from particular backgrounds are well represented in their medical schools.

Research has shown that not only do minority health care providers return to communities that they are familiar and comfortable with, but that they have a greater understanding of the unique health care issues of people of their own ethnic backgrounds and are keenly aware of the cultural nuances that play a role in the health of the community as well (Marley & Carman, 1999). Furthermore, health care providers are more likely to study health care issues related to people of their own racial and ethnic backgrounds, and are thus

better able to serve these populations by working toward viable solutions for their unique health issues. Therefore, when health care providers are of similar demographics to the population they are serving, the overall health of the community improves (Coleman et al., 2008).

According to the AAMC, the 2009 applicant pool had a slight increase in the number of applicants who applied to medical school: 42,269 up from 42,231. Despite the small increase in applicants as a whole, the percentage of underrepresented minority matriculants decreased slightly. Recent AAMC data indicated that Hispanic matriculants decreased from 1,416 to 1,412 and the American Indian matriculant numbers also dropped to 153 from 172 in 2008 (11%). The decrease in the number of both Hispanic and Native American applicants and matriculants will present challenges to traditional means of making admissions decisions.

Over the past 3 years, the University of New Mexico minority applicant pool has been on the decline and in 2009 comprised approximately 25.8 percent of total interviewed applicants. Additionally, many of these applicants had MCAT test scores and GPA's below the class average. This is also true at the national level: underrepresented minority applicants' MCAT test scores are lower than those of White applicants (AAMC 2009). Results from the AAMC Data Warehouse indicate that the total mean MCAT score for all examinees in 2009 was a 30.8 (out of 45 total points possible); nonetheless, the total mean score for URM test takers was significantly below the mean. Hispanics scored a total mean MCAT score of 27.3, African Americans scored a 26.1 and Native Americans scored a 27.1. Consequently, minority students and those from rural and underserved areas often have significant and persistent educational disparities compared with non-minority applicants and those from urban areas. Addressing these disparities requires schools to focus on the factors that have

the greatest impact on helping to alleviate the national health care crisis and ultimately improve the health of the nation (Steinecke, Beaudreau, Bletzinger, & Terrell, 2007).

Although performance on the MCAT correlates with the pass rate for the United States Medical Licensure Exam (USMLE) Step 1, it does not correlate with students' ability to perform well in the non-cognitive aspect of medicine related to patient interaction. Additionally, while the pre-admissions overall GPA are one of the best predictors for academic performance, they do not predict clinical performance (Salvatori, 2001).

Each school must closely review its mission statement to ensure that issues of race and ethnicity are considered in an effort to address the need for diversity at the point of medical school admissions. The Holistic Review process takes into account the LCME guidelines while helping admissions committees to consider a balance of both cognitive and non-cognitive criteria in the medical school admissions process. Because applicants are not judged solely on their cognitive scores (calculated based on MCAT score and GPA), minority applicants are better able to compete for a medical school position through the Holistic Review process. The non-cognitive characteristics of applicants are often compelling, and admissions committees face issues regarding how to measure these criteria.

The AAMC established a working group to examine the non-cognitive factors that are associated and inherent with being a good physician. As many as 87 characteristics have been mentioned in studies of personal qualities of applicants to medical school (Albanese, Snow, Skochelak, Huggett, & Farrell, 2003). Many universities use at least some of the following characteristics to identify interviewee qualities: maturity, achievement, overall judgment, motivation for medicine, ability, interpersonal skills, perseverance, self-confidence, rapport, friendliness, commitment to serve others, leadership potential,

familiarity with medical topics, and involvement in school activities and community activities (Albanese et al., 2003). The AAMC considered adding these factors to the MCAT exam at one point but determined that these factors would be difficult to assess by means of a standardized exam (Albanese et al., 2003). Consequently, if a school is able to determine the minimum threshold values for both the MCAT and GPA that function as predictors of success in both the medical school curriculum and the passing of the USMLE Step 1, they can then focus on the other non-cognitive criteria that help to determine who would make a good physician. The UNM School of Medicine is cognizant of the fact that high MCAT and GPA scores do not necessarily equate to being a good physician and have therefore been utilizing the Holistic Review process for many years.

According to Salvatori (2001), the purpose of the admissions process is to select, from a large pool of applicants, those that will successfully complete the medical school curriculum, serve the health care needs of our country and possess the characteristics and ethical values that are deemed essential in their respective fields.

Many medical school admissions committees struggle with the information obtained from the interview because it is used to make high-stakes admission decisions, and the information gathered is largely subjective and can be adjudicated differently from one committee member to the next (Kreiter, Yin, Solow, & Brennan, 2004). Nevertheless, most US medical schools utilize the medical school interview to assess applicants' non-cognitive qualities, and admission committees give substantial weight to these qualities in the selection of applicants (Albanese et al., 2003). Utilizing the Holistic Review process, medical schools attempt to balance both the cognitive and the non-cognitive criteria of each applicant in order to best select applicants who will be successful in the medical school curriculum as well as

make excellent, compassionate physicians. Factors such as altruism, compassion, empathy and motivation for medicine are best assessed utilizing the non-cognitive portion of the medical school application process (i.e. interviews, letters of recommendation, clinical and volunteer experiences, etc.). Albanese et al. (2003) stated that the interview has been one of the primary methods for assessing qualities in the admissions process and provides opportunities for information gathering, decision making, verification, and recruitment.

While it is acknowledged that the assessment of non-cognitive characteristics is an extremely important component in the medical school admissions process, there are many challenges when institutions attempt to measure these personal qualities and characteristics. The UNM SOM experience is congruent with national findings that the admissions process should include assessment of both the cognitive and non-cognitive skills and abilities of applicants (Salvatori, 2001). The AAMC Non-Cognitive Working Group recommended that seven personal qualities be incorporated into the MCAT to provide objective measures: compassion, coping capabilities, decision making, inter-professional relations, realistic self-appraisal, sensitivity in interpersonal relations and staying power - physical and motivational (Albanese et al., 2003). Currently there are no measures of sufficient quality to warrant use in this setting, yet they at least provide a foundation for personal qualities that are desirable in the medical field. In addition, they recommend that medical schools, at a minimum, should use a nationally defined set of qualities as a basis for their institution's assessment of non-cognitive criteria.

Motivation for this Study

Accordingly, the UNM SOM has incorporated most of these qualities into the assessment of non-cognitive criteria in the interview phase of the admissions process. The

UNM SOM uses the interview to gather difficult-to-obtain, non-academic information about the applicant. This important process provides a first-hand look at an applicant's presentation and handling of issues, depth of thought, and exploration of such personal qualities as insight and service orientation. UNM SOM also considers the medical school interview imperative to the overall assessment of an applicant's ability to serve the health care needs of New Mexico. In fact, the interviewers are blinded to the cognitive portion of the application in order to provide an unbiased assessment of the applicant strictly based on the non-cognitive criteria of the interview process.

The UNM SOM has established a set of academic thresholds for application that consist of a minimum composite MCAT score of 22 and a minimum cumulative grade point average (GPA) of 3.0. These thresholds were established by examining several years of data collected by the SOM Program Evaluation and Research (PEAR), which showed that applicants who meet these thresholds have a high probability of successfully completing the medical school curriculum and passing the USMLE Step 1 on their first attempt. By using these thresholds to establish academic competency, the Committee on Admissions is able to focus on the other factors that make for a good physician. The interviewer reviews the applicant's personal statement, letters of recommendation, and clinical, research and volunteer experience prior to the interview. Upon completion of the interview, they must complete an interview evaluation which consists of four sections: background and diversity, interest and suitability for a career in medicine, problem solving and communication skills and letters of recommendation. The interviewer then provides the applicant with a final non-cognitive score which ranges from 2-4 (4 = truly exceptional, admit rolling admissions and 2 = poor, should not reapply). The review score range is from 2.00 to 4.00 in 0.25 increments.

Interviewers are free to enter a final non-cognitive score based on their interpretation of the four sections of criteria. The cognitive score is calculated by the computer and carries a weight of 50 percent of the final score. The GPA and MCAT scores are equally weighted at 25 percent for the total cognitive score of 50 percent. The GPA is also weighted to provide an opportunity for applicants who had a difficult freshman year to still gain consideration based on a positive grade trend. The weighting system is the following: the GPA in the freshman year is weighted by a factor of 1; the GPA in the sophomore year is weighted by a factor of 2, and the GPA for all other years including undergraduate, non-degree, and graduate studies is weighted by a factor of 3.

As with most medical schools, the admissions process at the UNM SOM is time intensive and involves a considerable amount of effort on behalf of committee members. The Committee on Admissions is a complex and dynamic group of individuals who come together to select an entering class that represents the best and brightest, most talented and diverse individuals. These individuals have the greatest promise of addressing the unique health care issues of New Mexico and helping to alleviate the health care disparities in their local communities (Marley, et al. 1996; Saha, et al. 2006). The committee strives to incorporate and implement the mission of being committed to racial and ethnic diversity with special reference to the inclusion of students from groups that are underrepresented in medicine in New Mexico. By creating an environment in which many cultures are valued and represented, UNM administrators believe they are training medical students to tackle the health-care needs of the nation's increasingly diverse population.

Equity and inclusion efforts have been successful as a result of the strong mission statement, along with increased efforts to create a more diverse student and committee

composition. Consequently, the shift in representation on admissions committees has been promulgated on the paradigm that female and URM committee members will assist with achieving diversity in the medical school class. Achieving diversity has been a difficult task and often leads to contentious debate, with the expression of passion often being misinterpreted in the exchange of ideas. Many of the community physicians from underrepresented groups have a strong voice paired with a commitment to selecting students who will work in the “trenches” in their local communities. Each committee member brings their own ideas of the ideal applicant. The dialogue and debate that surrounds the discussion of each medical school applicant is often challenging for the committee as a whole. Understandably, some applicants elicit more discussion and debate than others. Although the algorithms used to calculate both the cognitive and the non-cognitive scores are reflective of the mission statement, the admissions committee members formulate subjective impressions of the overall “fit” of each applicant.

The weekly review and discussion allows committee members the opportunity to share with their colleagues any issues and concerns that they may have regarding individual applicants, as well as to provide insight into those that they interviewed. In fact, the medical school interview can be the deciding factor for someone not offered admission, despite good grades and MCAT scores. This deliberation provides a venue that encourages the active exchange of viewpoints and adds a dynamic quality to the admissions process. Thus, a group dynamic emerges as members interact with each other and deliberate about the applicants they are charged with evaluating (Elam, Stratton, Scott, Wilson & Lieher, 2001). Committee members advocate for certain applicants and are able to convey to other committee members the value that a particular applicant would add to the entering class. Applicant scores are

occasionally changed after the meeting based on the discussion. Committee members must rely on the expertise of the interviewers, who spend anywhere from 30 to 60 minutes with an applicant in order to determine their non-cognitive skill sets.

The constructs of background and diversity, interest and suitability for a career in medicine, problem solving and communication skills, and letters of recommendation have been standardized to provide a scale in which to reliably measure them across the board for every applicant. The interviewer takes into consideration whether the applicant is a member of an underrepresented minority in medicine as part of the Holistic Review process and overall weighting scheme. Minority students and those from rural and underserved areas often have significant and persistent educational disparities compared with majority applicants and those from urban areas. Thus, admissions committees consider the identification of non-cognitive constructs one of their highest responsibilities (Bardes, Dremer, Best, & Kienstag, 2008).

Although this process has served the UNM SOM well in the past and interviewers have usually provided the final non-cognitive score somewhere within the range of the 4 category scores, the school continues to strive toward higher levels of diversity and inclusion of those members of the applicant pool who come from diverse backgrounds. Accordingly, a close review of the UNM SOM Office of Admissions processes will inform both the Committee on Admissions and the larger Association of American of Medical Colleges community about the effects of cognitive and non-cognitive issues that impact URM students and their admissions status. Additionally, this data can serve as an instructional tool that can identify areas for change or improvement and influence institutional behavior.

The objective of this research was to explore and evaluate the impact of various weighting schemes of cognitive versus non-cognitive elements on the proportion of underrepresented minorities accepted into medical school. The results of this research provided the UNM School of Medicine MD Program a greater understanding of the admissions process and its effect on the admission of underrepresented minority students and assisted in addressing the unique health care needs of the State of New Mexico. The following research questions were addressed in this study:

1. Would applying different weights to the cognitive and non-cognitive scores increase the likelihood that a higher number of URM applicants would gain entry into medical school?
2. Which subcategory item in the non-cognitive scoring system is the best predictor in determining the final overall non-cognitive score?
3. Does the gender or racial/ethnic background of the interviewer have an influence on subcategory scoring, and the relative importance of that score in the overall score?
4. Do existing weights versus imposed weights of non-cognitive subcategories increase the likelihood that a higher number of URM applicants will gain entry into medical school?

Methods

This section provides a summary of the procedures and the methodology used in this study. First, the application and admissions processes for the UNM SOM are described in detail, including the application procedures and the data that are generated at each stage. Next, participants are described and the details regarding the instrumentation and data collection methods are provided. Finally, a description of the procedures and a review of the proposed data analysis methods are given.

UNM Application and Admissions Process

The University of New Mexico is a comprehensive, urban public university and only one of two flagship, research intensive universities in the United States federally designated as a Hispanic Serving Institution (The University of New Mexico, 2009). The state of New Mexico has 26 colleges and universities and UNM enrolls nearly half of New Mexico's baccalaureate students and is the state's exclusive provider of graduate training in medicine (UNM SOM, 2009). In the fall of 2006, the University of New Mexico was the first flagship university in the country to host a freshman class with a higher percentage of traditionally underrepresented students than white students. The University of New Mexico embraced the values of diversity and developed a new Office for Equity and Inclusion, which has begun to implement a formal Diversity Plan that focuses on the improvement of minority student achievement. Furthermore, the UNM SOM has operated the Office of Diversity, formerly the Office of Cultural and Ethnic Programs, for the past 15 years. According to the Hispanic Business Magazine (2009), the UNM SOM is currently ranked sixth in the nation in the field of medicine as a Hispanic Serving Institution. Additionally, the UNM SOM currently has the second-ranked program in the country for Rural Medicine and the tenth-ranked program in

Family Medicine, according to (US News and World Report, 2009). These rankings are due, in part, to the strong emphasis the SOM places on recruiting, admitting, and retaining students from Hispanic and Native American populations from around New Mexico who are from predominantly rural areas.

For the purposes of this study, underrepresented minorities were defined as those who were underrepresented in medicine in the State of New Mexico (i.e. African American, Native American and Hispanic populations). The effect of various weighting schemes of cognitive versus non-cognitive criteria on the acceptance rate of underrepresented minorities in medicine were utilized to examine the admissions process from an urban four-year institution located in the southwest region of the United States.

Accordingly, New Mexico is a minority-majority state and has an obligation to serve its unique health care needs. In doing so, the medical school is committed to accepting and matriculating students that are representative of the demographics of the State of New Mexico. According to the U.S. Census Bureau (2008), the demographics of the State of New Mexico are: 44.9% Hispanic, 9.7% Native American, 3% African American, 1.4% Asian and 41.7% White. New Mexico's minority population continues to have a rich, deep-rooted history in the local communities and in the state. However, the minority applicant pool continues to decline and provide less qualified candidates in the pipeline. Hence, the evaluation of non-cognitive characteristics in the application poses compelling issues that the admissions committee faces on a daily basis and how to measure these criteria often consume much of the weekly discussions. The exploration and assessment of the impact of various weighting schemes of cognitive and non-cognitive elements on the acceptance rate of

underrepresented minorities in medicine will provide a greater understanding of the admission process and assist in addressing the need to increase diversity in medical school.

The UNM SOM uses an admissions process that is not unlike that used at many medical schools across the nation (*see Figure 1 for The Admissions Process Flow Chart*). All applicants apply through the American Medical College Application Service (AMCAS), are screened for minimum requirements, complete a secondary application and are scheduled for medical school interviews.

The applicant is required to complete and submit an AMCAS application along with official transcripts from all undergraduate and graduate colleges and universities they have attended. AMCAS verifies that each course and grade is that which was entered into the AMCAS application, and then sends these verified applications to those medical schools designated by the applicant. The data that was collected on the AMCAS application is provided in Figure 2.

Once the UNM SOM receives the AMCAS application, the electronic version and the paper copy, the Office of Admissions places applicants into categories based on their residency status. The UNM SOM is a member of the Western Interstate Commission for Higher Education (WICHE). Therefore, secondary consideration is given to residents of participating states that at present have no medical schools (i.e., Montana and Wyoming). WICHE applicants must apply through the Early Decision Program and must also have at least the average MCAT/GPA as the previous year's entering class in order to receive consideration. Moreover, all non-resident applicants must have strong ties to the state of New Mexico and, if necessary, must go before the Residency Subcommittee for further

consideration. New Mexico residents are screened for minimum MCAT (≥ 22) and GPA (≥ 3.0) thresholds.

Once applicants have been pre-screened for residency, minimum MCAT/GPA thresholds, and premedical prerequisite coursework, they are eligible to receive a secondary application. The secondary application is available on-line and the applicant is provided with a username and a password. The secondary application materials include letters of recommendation, additional essay questions, a photo and fee. The applicant must complete and submit the secondary application along with a photo and a \$75.00 application fee directly to the Office of Admissions. Once the secondary application is submitted, the data becomes available to the Admissions staff and is incorporated into the SOM Pathway database. Data from the secondary application are integrated with the AMCAS application data and are available via a single intranet link.

At this point in the application process, applicants are scheduled for two separate interviews with two members of the Committee on Admissions. The interview is an important part of the evaluation process. It provides a first-hand look at an applicant's presentation and handling of issues, depth of thought, and exploration of such personal qualities as insight and service orientation. The interview also allows the interviewer the opportunity to assess the applicant's communication skills. It is a time to explore the applicant's past experiences and determine what has been learned and applied from these activities. Finally, and most importantly, the interview serves as an opportunity to recruit highly qualified students to the SOM.

Prior to each interview the committee member will have access to the applicant's AMCAS and secondary application materials. However, the cognitive criteria (i.e.

MCAT/GPA) will be concealed. The initial score provided by the interviewer will be strictly based on the non-cognitive criteria; the cognitive skills will be calculated by the computer.

The UNM SOM uses an “unstructured interview” as described by Kreiter et al., (2004), which, although guided by a set of specific topics, will be focused and directed differently depending on the interviewer and the interviewee.

In the event that the two committee member scores are discrepant by greater than 0.50 on a scale that ranges from 2 to 4 in quarter-point increments, the applicant may be granted a third interview. From 2007 – 2009 nine applicants were granted a third interview based on the discrepant interview scores provided by the interviewers (2007 = 0, 2008 = 4, and 2009 = 5). For the purposes of this study, these nine applicants were excluded from the data set.

The Committee on Admissions is a standing committee of the faculty of the UNM SOM, and is composed of SOM faculty members nominated by departmental chairs, volunteer faculty who serve as local community physicians and are nominated by either a member of the Committee on Admissions or other UNM SOM faculty members, and medical students elected by their peers. The Dean of the UNM SOM ultimately approves and appoints every member of the Committee on Admissions.

Each interviewer must provide an interview evaluation for each applicant that they interview. The interview evaluation addresses the non-cognitive characteristics of the applicant and the applicant is given a rating score that ranges from 2 – 4 in increments of 0.25. Once the two interviewers submit their evaluations, the applicant is ready to proceed to the next stage. The interview impressions are also integrated into the student file and are

included in the SOM Pathway database, which is the official secure intranet site used for processing applicants.

The Office of Admissions moves applicants who have completed the AMCAS application, secondary application and interviews to the “Review” stage. This allows all Committee on Admissions members to review 10-15 applicants on a weekly basis and have access to their entire application, including the computer-generated cognitive score. Each committee member enters a review score for each applicant in the “Review” stage. After completion of the interview process, interviewers’ evaluations are considered with all other application materials and presented to the Committee on Admissions for discussion. Applicants are deliberated over at the weekly meetings and committee members have an opportunity to change the applicant score, based on the discussion. Applicants are then moved to the “Reviewed” stage or the accepted “Rolling Admissions” stage and a new group of applicants are then reviewed, creating a weekly cycle of discussion and evaluation. Final decisions about admission are made by the committee acting as a whole.

Participants

The data for this study were drawn from the UNM SOM Office of Admissions Pathway database. The information in the Pathway data base was compiled utilizing a variety of sources:

1. The Association of American Medical Colleges (AAMC) American Medical College Application Service (AMCAS) application materials (<http://www.aamc.org/>)
2. The UNM SOM Online Secondary Application website where applicants go to complete a secondary application

3. The UNM SOM Admissions Committee Online Processing website for committee members to schedule, review and rank applicants
4. The UNM SOM Office of Admissions Pathway database website for posting Post Admissions Interviews, letters of recommendation and processing applications

This researcher submitted an application to the UNM Health Sciences Center Human Research Protections Office requesting expedited review and approval for use of research involving the collection and study of existing data. The data for these analyses were acquired directly from the UNM SOM Office of Admissions Pathway database and did not require any contact or interaction with the participants/applicants. Permission and authorization to use the data was granted by the UNM SOM Associate Dean for Admissions and was in compliance with local, state and federal privacy laws.

The study period covered three consecutive admission cycles, 2007 through 2009. A total of 2286 candidates applied to the UNM School of Medicine for the 2007 – 2009 applicant pool (2009 = 604, 2008 = 589, and 2007 = 1093). Applicants were pre-screened based on residency, minimum MCAT (≥ 22), minimum undergraduate GPA (≥ 3.0) and fulfillment of the prerequisite coursework. After pre-screening, 578 applicants completed a secondary application and interviewed for the 2007 - 2009 Entering Classes. Ninety-eight applicants were excluded from the study for one or more of the following reasons: 1) did not respond to race/ethnicity question (URM status was unknown), 2) missing non-cognitive subcategory score and 3) had fewer or more than two interviews. The interviewed applicant characteristics for racial and ethnic self-identifications are listed in Appendix 1.

Applicants who selected Hispanic, American Indian or Black, were categorized as Underrepresented Minorities (URM's) in this study. These populations were identified as

underrepresented in the Field of Medicine in the State of New Mexico and in accordance with the AAMC Guidelines, which state “Underrepresented in Medicine” means those racial and ethnic populations that are underrepresented in the medical profession relative to their numbers in the general population. Applicants who selected Non-Hispanic, Asian, Native Hawaiian or White are categorized as non-minorities in this study.

Table 1 disaggregates the number and percentage of applicants interviewed within various ethnic groups and gender categories. It should be emphasized that these data reflect self-descriptions taken from the AMCAS application.

Table 1

Demographic Characteristics of Interviewed Applicants for 2007 – 2009 Entering Class

	2007	2008	2009	Total
	N	N	N	N
	(%)	(%)	(%)	(%)
Gender				
Male	69	85	73	227
	(46)	(50)	(46)	(47)
Female	82	84	87	253
	(54)	(50)	(54)	(53)
Total	151	169	160	480
	(100)	(100)	(100)	(100)
Minority Status				
URM	45	51	48	144
	(30)	(30)	(30)	(30)

Table 1 Continued

	2007	2008	2009	Total
Hispanic	39 (26)	36 (21)	37 (23)	112 (23)
Native American	3 (2)	11 (7)	9 (6)	23 (5)
African American	3 (2)	4 (2)	2 (1)	9 (2)
Non-URM	106 (70)	118 (70)	112 (70)	336 (70)
White	87 (58)	103 (61)	98 (61)	288 (60)
Asian	19 (12)	15 (9)	14 (9)	48 (10)

Instrumentation

Members of the Committee on Admissions are responsible for the evaluation and ranking of non-cognitive strengths and weaknesses for each applicant. The cognitive criterion is calculated from the applicant's MCAT and undergraduate GPA (see Appendices 2 and 3). Non-cognitive traits were measured utilizing four different subcategories defined as important to success in medical school and beyond. The subcategories included Background/Diversity, Interest and Suitability for a Career in Medicine, Problem Solving, and Letters of Recommendation. The Background and Diversity criteria help to identify unique and interesting factors that have influenced an applicant's goals and preparation for medicine. Factors such as quality of early educational environment, socioeconomic status,

culture, race, ethnicity and life and work experiences all contribute to disparities that are reported from the applicant and student populations. The Interest and Suitability for a Career in Medicine criteria provides valuable insight into the depth and understanding of an applicant's role in the health professional field. Clinical and community volunteer experiences are essential factors in determining an applicant's familiarity with the unique health care needs and issues in New Mexico. The Problem Solving and Critical Reasoning Ability criteria allows the applicant to demonstrate their independent thinking process, which is essential to good decision-making skills necessary in the field of medicine. The Letters of Recommendation support the maturity, sense of self-reliance, integrity, ethics and social responsibility of the applicant. The Final Analysis of Non-Cognitive qualities allows the interviewer the flexibility to provide a score based on the first four non-cognitive categories without a standardized weighting scheme.

Each non-cognitive subcategory was rated by each interviewer based on the review score range provided in Appendix 4. Committee members only entered the non-cognitive score and the cognitive scores were derived based on the calculation described in Appendices 2 and 3. The final non-cognitive score was derived by an overall analysis of the non-cognitive qualities, as deemed important by each committee member. Thus, the final score was not an average of the four sub scores, but usually fell within the range of the four ranked sections. In instances where there was a marked discrepancy in interview impression ratings and/or narrative comments between the two interviewers, the committee may have requested that an applicant be invited back for an additional interview (3rd interview). In 90 percent of the 3rd interview cases, the first and second interviewer scores were discrepant by at least a 0.75 score difference.

An inter-rater reliability coefficient was calculated using the percent agreement between different ratings on the same group of applicants. This showed the rate at which scores given by the first and second interviewers were no more than a quarter point and a half of a point (0.25 and 0.50) apart.

The cut scores for the admit/not admit definition were determined by reviewing the applicants for the years 2007 – 2009 who received outright acceptance offers by March 15 of that application year. “Outright acceptance” is defined as those applicants who received acceptance letters as of March 15 and does not include applicants who were accepted from the alternate list. The number of outright acceptance offers fluctuated on an annual basis and was ultimately determined by the Committee on Admissions at the final meeting. The numbers of acceptances, beyond the 75-77 reserved spots, were as follows: 2009 = 12, 2008 = 11, and 2007 = 11.

For the purposes of defining admit/not admit scores, a cut score was necessary to distinguish what rank score determined acceptance for the three years of data. The cut score that determined who was admitted/not admitted outright on the initial accept list was determined by identifying the lowest possible admit score and the highest possible not admit score for each year based on the rank score. The cut scores utilized in the research were the following: 2009: greater than or equal to 3.40; 2008: greater than or equal to 3.52; 2007: greater than or equal to 3.41.

The review matrix report was utilized to determine the corresponding average rank score, which is ultimately derived from the entire committee’s scores (all scores added up/number of committee member votes = average score). The admit columns were identified as 1 = admit, 0 = not admit.

The Committee on Admissions reviews groups of 12-18 applicants on a weekly basis and provides rank scores for each applicant based on both their cognitive and non-cognitive skills. Applicants are further discussed at the weekly meetings and committee members have forty eight hours to change their rank score for any given applicant based on the discussion at the committee meeting. Applicants are then moved to a “Reviewed” stage until all of the applicants have gone before the committee and received rank scores. At the final committee meeting, applicants are presented in rank order and the first 75 applicants are offered acceptances (77 for the 2009 application year). The next rank ordered applicants comprise the alternate list (approximately 50 alternates) and the rest of the applicants are considered not admitted. The committee traditionally offers the next rank ordered (11-12 alternates) outright acceptances offers based on the presumption that at least that many applicants will either withdraw their acceptance or delay their matriculation for one year.

Procedure

Applicant Evaluation – Committee on Admissions members were responsible for both interviewing applicants (providing an interview evaluation) and reviewing applicant files (providing a ranking score) for each applicant. Committee members rated applicants’ non-cognitive skills based on information obtained through the AMCAS and secondary applications, the interview, and the letters of recommendation.

The data collection procedures included a spread sheet that contained the 2007- 2009 Applicant Pool of students who applied to the UNM SOM. The spreadsheet was de-identified with randomly generated numbers assigned to each applicant name. The data was recorded in such a manner that participants could not be identified. The information was stored in

accordance with all of the other confidential Office of Admissions data and in compliance with local, state and federal privacy laws.

The applicant data was incorporated into a spreadsheet that contained the following: de-identified ID number # (in lieu of applicant name), gender, race/ethnicity (self described by the applicant), composite MCAT score (UNM SOM considers the highest cumulative score), MCAT point score (Appendix 3), undergraduate GPA (UNM SOM utilizes a weighted GPA) and the GPA point score (Appendix 3).

The interviewer data were incorporated into the same spreadsheet and contained the following: de-identified ID number # (in lieu of interviewer initials), gender, race/ethnicity, interviewer sub scores on the non-cognitive sub categories (i.e. Background/Diversity, Interest and Suitability for a Career in Medicine, Problem Solving, Letters of Recommendation, Final Analysis of Non-Cognitive Qualities), and the final cognitive score.

Design

This study examined the effect of various weighting schemes of cognitive versus non-cognitive elements on the acceptance rates of URM's who applied to the UNM SOM MD Program. The SOM utilized a weighting metric of cognitive score = 50% and non-cognitive score = 50% to determine the applicants' final ranking score, which ultimately determined acceptance status.

Study 1 examined the research question: Would applying different weights to the cognitive and non-cognitive scores increase the likelihood that a higher number of URM applicants would gain entry into medical school? The data that were utilized in this study were the cognitive and non-cognitive scores for each applicant. The calculation of the scores used the averages for both interviewers. The chi-square analysis (test of proportions) with a

single degree of freedom was used to test the differences in proportions of URM's admitted under the various weighting schemes. The expected proportions for this analysis were derived from the 50% cognitive/50% non-cognitive weighting scheme that is currently being utilized. The observed proportions were derived from the other weighting schemes (i.e. 55/45, 60/40, 65/35). The Bonferroni adjustment, which is used in multiple comparison procedures, was used to calculate an adjusted probability of comparison-wise type I error from the desired probability of family wise type I error ($\alpha/3$ (number of tests being performed) $= .05/3 = .01666$).

Study 2 examined the research question: Which subcategory item in the non-cognitive scoring system was the best predictor in determining the final overall non-cognitive score? The four non-cognitive subcategories (Background/Diversity, Interest and Suitability for a Career in Medicine, Problem Solving, Letters of Recommendation) were utilized as the predictor variables and the final non-cognitive subcategory was the criterion variable in a multiple regression analysis. An interpretation of the standardized beta weights was provided based on the regression equation. The beta values showed how strongly each non-cognitive subcategory score influenced the final non-cognitive score and showed the strength of the relationship between each subcategory score and the final non-cognitive score. An inter-rater reliability coefficient was calculated based on the two interviewer scores for each subcategory item. The 0.25 agreement was utilized as the official rater agreement percent and a 0.50 agreement was also reported. Several multiple regression assumptions were evaluated to justify proper study design. The normality assumption was checked by visually inspecting data plots. Standardized residual plots were examined to evaluate the assumption of linearity (Pedhazur, 1997).

Study 3 examined the research question: Does the gender or racial/ethnic background of the interviewer have an influence on subcategory scoring, and the relative importance of that score in the overall score? One analysis was conducted utilizing gender as the criterion to compare the standardized beta weights for interactions. The analysis utilized the four non-cognitive subcategories (Background/Diversity, Interest and Suitability, Problem Solving, Letters of Recommendation) to determine if the gender of the interviewer had an impact on the weighting of the subcategories. Another analysis was conducted utilizing the same criterion on racial/ethnic background to compare those standardized beta weights for interactions.

In addition, a Pearson r was calculated between interviewer 1 predicted scores and interviewer 2 predicted scores to obtain a cross-validity coefficient. A high cross-validity coefficient would indicate the prediction equation was stable across the two groups of interviewers. The same multiple regression assumptions that were discussed in Study 2 were also utilized in this study.

Study 4 examined the research question: Do existing weights versus imposed weights of non-cognitive subcategories increase the likelihood that a higher number of URM applicants would gain entry into medical school? The analysis included the subcategories (Background/Diversity, Interest and Suitability, Problem Solving, Letters of Recommendation) and the final non-cognitive score. The chi-square analysis with a single degree of freedom was used. The Bonferroni adjustment was applied to protect against family wise error ($\alpha/3 = .05/3 = .01666$). This research question concerned the possible association between weighting schemes of the cognitive and non-cognitive scores for URM applicants and their admission rates. One possibility was that the current weighting scheme

allowed for 50 percent of the total interview score to be based on cognitive criteria and the other 50 percent of the total interview score to be based on non-cognitive criteria. The imposed weights included the following:

1. Equally calculated subcategory weights (averaging for final non-cognitive score)
2. Increasing a weight for any given subcategory. The Interest and Suitability weight was selected since it was the only one that was statistically significant when paired with all of the other non-cognitive weights.
3. Removal of the letter of recommendation weight. This was used due to concerns raised regarding the use of letters of recommendation as part of the admissions process (Salvatori, 2001).

Results

The demographics of the US population are continuously changing and becoming more diverse (US Census Bureau, 2008). In order to address the changing demographics of the population and the need for more diversity in the physician workforce (Coleman et al., 2008), a study evaluating the impact of various weighting schemes on the acceptance rate of underrepresented minorities in medicine provides insight into responding to these changes. The goal of the study was to gain a greater understanding of the UNM SOM MD Program admissions process and its effect on the numbers of underrepresented minority applicants admitted to medical school.

The first study addressed whether the application of different weighting schemes to the cognitive and non-cognitive scores would increase the number of URM applicants that were accepted. The weighting ratio of non-cognitive score to cognitive score was varied between 50/50 and 65/35 in increments of 5 points to determine the ratio where a statistically significant difference in admissions of URM's occurred. The null hypotheses were that the proportion of admitted URM's under the 55/45, 60/40 and 65/35 weighting schemes would be equal to the proportion of URM's admitted under the 50/50 weighting scheme (the two tailed null hypothesis). The null hypotheses for the 55/45 and 60/40 were not statistically significant and the 65/35 weighting scheme was statistically significant.

The first analysis that was conducted was the chi-square test of independence to test the proportion of admitted students who were URM's ($N=144$) in each weighting scheme against expected values from the 50/50 weighting scheme. The observed counts, percentages, and chi-square results are provided in Table 2.

Table 2***Cross-Tabulation of URM and Acceptance Decision by Weighting Scheme***

Weighting Scheme	Admissions Decision		Total	*Chi Square df = 1
	No	Yes		
	N	N	N	
	(Percentage)	(Percentage)		
	**			
50/50				
Non-URM	201	135	336	
	(66)	(76)		
URM	102	42	144	
	(34)	(24)		
Total	303	177	480	
	(100)	(100)		
55/45				
Non-URM	207	129	336	
	(68)	(73)		
URM	96	48	144	
	(32)	(27)		
Total	303	177	480	1.70, p= .20
	(100)	(100)		

Table 2 Continued

Weighting Scheme	Admissions Decision		Total	*Chi Square df = 1
	No	Yes		
	N	N	N	
	(Percentage) **	(Percentage)		
60/40				
Non-URM	201 (69)	135 (72)	336	
URM	92 (31)	52 (28)	144	
Total	293 (100)	187 (100)	480	3.40, p= .10
65/35				
Non-URM	200 (70)	136 (70)	336	
URM	87 (30)	57 (30)	144	
Total	287 (100)	193 (100)	480	***7.58, p= .00

*Chi square was computed based on the count (N)

** Percentages of admissions decision

***Statistically significant at $\alpha=.01667$

The Bonferroni adjustment ($.05/3 = .01666$) was applied to correct for family-wise error.

Only the 65/35 weighting scheme proved to be statistically significant for increasing the proportion of URM acceptances above the 50/50 weighting scheme ($\chi^2(1, N = 480) = 7.60$,

$p = .00$). As Table 2 illustrates, the URM acceptance rate change increased from 24 percent at the 50/50 weighting scheme to 30 percent at the 65/35 weighting scheme.

Although the increased number of URM acceptances was incremental at each stage of the weighting scheme, it was not statistically significant until it reached the 65/35 weighting scheme.

Additionally, descriptive statistics are provided in Table 3 examining the mean, standard deviation and minimum values for each of the weighting schemes as well as the number and percent of those admitted based on URM status and gender.

Table 3 data illustrate that the mean MCAT and GPA scores slightly decreased as the cognitive portion of the weighting scheme decreased. The table also identifies the minimum MCAT and GPA values for each weighting scheme, which remains at the minimum MCAT threshold of 22 and minimum GPA of 3.0. While the URM values are the same as provided in Table 2, the breakdown of the various racial/ethnic backgrounds are shown. Both the Hispanic and the Native American acceptance percentages increased at the 65/35 weighting scheme and the Asian and White acceptance percentages decreased. An important factor to note is that at all of these weighting schemes, the African American population is not represented; they were either excluded from this study due to one of the exclusion factors or they failed to meet the minimum MCAT and/or GPA thresholds.

Table 3*Frequency Statistics and Acceptance Decision by Weighting Scheme*

	50/50	55/45	60/40	65/35
	M (SD) (Min)	M (SD) (Min)	M (SD) (Min)	M (SD) (Min)
MCAT	30.7 (3.3) (23)	30.5 (3.4) (22)	30.0 (3.6) (22)	29.8 (3.7) (22)
GPA	3.75 (0.2) (3.04)	3.73 (.02) (3.04)	3.73 (.02) (3.04)	3.71 (0.2) (3.03)
Final Cognitive	3.7 (0.2) (3.00)	3.6 (0.3) (2.70)	3.6 (0.3) (2.63)	3.5 (0.3) (2.62)
Final Non-Cognitive	3.6 (0.2) (3.13)	3.6 (0.2) (3.13)	3.6 (0.2) (3.13)	3.7 (0.2) (3.25)
Final	3.6 (0.1) (3.40)	3.6 (0.1) (3.41)	3.6 (.01) (3.40)	3.6 (0.1) (3.41)

Table 3 Continued

	50/50	55/45	60/40	65/35
	# (%)	# (%)	# (%)	# (%)
URM Status	177 (100.0)	177 (100.0)	187 (100.0)	193 (100.0)
URM	42 (23.7)	48 (27.1)	52 (27.8)	57 (29.5)
Non-URM	135 (76.3)	129 (72.9)	135 (72.2)	136 (70.5)
Race/Ethnicity	177 (100.0)	177 (100.0)	187 (100.0)	193 (100.0)
Asian	17 (9.6)	17 (9.6)	18 (9.6)	16 (8.3)
Hispanic	36 (20.3)	42 (23.7)	45 (24.1)	49 (25.4)
Native American	6 (3.4)	6 (3.4)	7 (3.7)	8 (4.1)
White	118 (66.7)	112 (63.3)	117 (62.6)	120 (62.2)
Gender	177 (100.0)	177 (100.0)	187 (100.0)	193 (100.0)
Male	87 (49.2)	89 (50.3)	92 (49.2)	96 (49.7)
Female	90 (50.8)	88 (49.7)	95 (50.8)	97 (49.7)

M = Mean, (SD) = Standard Deviation, (Min) = Minimum

The main objective of this research question was to determine if increasing the non-cognitive percentages of the weighting scheme would result in an increased acceptance decision for URM's, which occurred at the 65/35 weighting scheme. These results required further analysis of the mean differences between URM's and Non-URM's on the Final, Final Non-Cognitive and Final Cognitive scores. T-tests and Cohen's *d* were conducted to explore these mean differences (see Table 4).

Table 4

URM Group Statistics by Final Scores

URM Status	Final Scores												
	Final					Final Cognitive				Final Non-Cognitive			
	N	M	SD	<i>t</i>	<i>D</i>	M	SD	<i>t</i>	<i>d</i>	M	SD	<i>t</i>	<i>d</i>
URM	144	3.29	.29			2.93	.52			3.64	.23		
Non URM	336	3.35	.29			3.26	.47			3.44	.27		
				-2.14*	-.20			-6.83*	.73			7.96*	-.63

* indicates statistical significance @ $p < .05$.

Final score, final non-cognitive and final cognitive scores all were statistically significantly different between URM's and Non-URM's. Specifically, URM's had larger final non-cognitive mean scores ($M = 3.64$, $SD = .23$) than Non-URM's ($M = 3.44$, $SD = .27$).

Conversely, Non-URM's had larger final cognitive mean scores ($M = 3.26$, $SD = .47$) than URM's ($M = 2.93$, $SD = .52$), which was expected, given the literature. Traditionally, Non-URM's have performed higher in the cognitive criteria than URM's. URM's have performed higher in the non-cognitive criteria due to the "distance traveled" element, which takes into account challenges, obstacles and hardships applicants have overcome. URM's tend to have a

greater likelihood of coming from a rural or underserved area, being a first generation college student, and experiencing educational and financial disadvantages.

Next, an examination of the role of various subcategories of the admissions questionnaire was carried out. A regression analysis was used to assess the relative contribution of each non-cognitive category to the final non-cognitive score. The null hypothesis was that all non-cognitive subcategory items contribute equally to an interviewer's judgment of the final non-cognitive score, specifically, that when ratings of letters of recommendation, interest and suitability, background and diversity, and problem solving are regressed on the final non-cognitive score, their beta weights would not be statistically significantly different.

The final non-cognitive score is an important part of this study because interviewers assign this score to each applicant they interview, while the final cognitive score is computed electronically. More importantly, the non-cognitive score and criteria encompass the Holistic Review process by selecting applicants who will succeed in both the medical school curriculum and in serving the health care needs of New Mexico as a physician. In order to further examine the criteria for using the non-cognitive score, a regression analysis was utilized.

One of the assumptions of a regression analysis is the reliability of the dependent variable, here, the final non-cognitive score and the independent variables, here, background/diversity, interest and suitability for a career in medicine, problem solving and letters of recommendation. The data that currently exist for this research is based upon Interviewer 1 and Interviewer 2 non-cognitive sub scores. Consequently, an inter rater reliability agreement index was calculated based on the two interviewer scores for each non-

cognitive subcategory item to check the proportion of time that interviewer 1 and interviewer 2 were in agreement. The extent to which the raters, or interviewers, were in agreement was based on a 0.25 score difference in agreement. The inter-rater reliability agreement indices were all fairly reliable (Interest & Suitability (IS) Difference = 72.2, Problem Solving (PS) Difference = 67.1, Background/Diversity (BD) Difference = 75.4, Letters of Recommendation (LR) Difference = 78.1).

At the 0.50 score difference in agreement, the results were also reliable (Difference IS = 92.0, PS Difference = 88.2, BD Difference = 93.3, LR Difference = 95.6 and met the assumption of reliability. As a result, disattenuation was not required.

A multiple regression analysis was conducted on averaged Interviewer 1 and Interviewer 2 data to explore which of the following subcategory items [Final Background/Diversity (FBD), Final Interest and Suitability (FIS), Final Problem Solving (FPS), and Final Letters of Recommendation (FLR)] was the best predictor in determining the Final Non-Cognitive Score (FNC) (Table 5).

The overarching relationship between final non-cognitive score and the four subcategory scores was statistically significant ($R^2 = .905$, $F = 1130.26$, $df = 4$, $p = .00$), with all four predictors accounting for 90 percent of the variance.

Table 5***Prediction of Multiple Regression Analysis for Variables Predicting Final Non-Cognitive******Score (N = 480)***

Variable	B	SE B	β
Constant	-0.131	0.055	
Final Background/Diversity	0.217	0.016	0.250
Final Interest/Suitability	0.390	0.023	0.420
Final Problem Solving	0.230	0.021	0.237
Final Letter of Recommendation	0.205	0.017	0.224

Note: $R^2 = .905$. * $p < .05$

The beta weights were tested against one another using the technique from (Aiken & West, 1991). This analysis evaluated significant differences in interviewer evaluations of the general importance of the four subcategory scoring criteria that were used to derive the final non-cognitive score. Although all four non-cognitive subcategories contributed in a statistically significant manner to the final non-cognitive score, the IS variable beta weight was almost double that of the other variables (IS = .420, BD = .250, PS = .237, LR = .224).

Additionally, a test of the difference in beta weights (Cohen, Cohen, Aiken & West, 2003), which compares FBD with FIS, FBD with FPS, FBD with FLR, FIS with FPS, FIS with FLR and FPS with FLR was conducted. Table 6 displays all of the final non-cognitive subcategory combinations and illustrates how the combinations of FBD/FIS, FIS/FPS, and FIS/FLR were statistically significant and FBD/FPS, FBD/FLR and FPS/FLR were not statistically significant. Hence, there is a pronounced difference in the importance the group

places on the individual categories, with the interest and suitability item having the greatest weight.

Table 6

Test of the Difference in Beta Weights

Variable	Difference in beta weights	p-value
FBD/FIS	-0.173	.000*
FBD/FPS	-0.013	0.620
FBD/FLR	0.013	0.602
FIS/FPS	0.160	.000*
FIS/FLR	0.185	.000*
FPS/FLR	0.026	0.384

* Statistically significant @ $p < .05$.
95% Confidence Interval for Difference

Consequently, the IS non-cognitive subcategory was statistically significant and higher in all cases when paired with the other non-cognitive subcategories individually. Thus, the holistic final non-cognitive score considerably incorporates the IS non-cognitive subcategory. The final non-cognitive domain criteria were further examined in study 3.

Next, an examination using a regression analysis was conducted to determine if the gender or racial/ethnic background of the committee member had an influence on scores of the non-cognitive subcategories

The null hypotheses were that the four non-cognitive subcategory items (background/diversity, interest and suitability, problem solving and letters of recommendation) were viewed as equally important in determining the final non-cognitive

score, regardless of the gender or racial/ethnic background of the interviewer (the two tailed null hypothesis).

The results shown in Table 7 illustrate the overall regression model where the four variables (background/diversity, interest and suitability, problem solving and letters of recommendation) were regressed on the centered final non-cognitive score. The centering of the final non-cognitive variable was conducted in accordance to the advice of Aiken & West (1991). All of the non-cognitive sub-categories were statistically significant according to the standardized coefficients, and Step 1 and 2 accounted for 86.1 percent of the variance. Step 2 of the regression model added the gender variable and Step 3 included the gender variable with the four interactions. The formulation for testing the differences of beta weights was employed using (Cohen, Cohen, West & Aiken, 2003).

Table 7

Interaction of Gender Variable as a Prediction of the Final Non-Cognitive Score (N = 480)

Variable	B	SE B	β
Step 1			
(Constant)	3.516	0.005	
Background and Diversity	0.220	0.017	0.255*
Interest and Suitability	0.328	0.023	0.367*
Problem Solving	0.306	0.022	0.345*
Letter of Recommendation	0.165	0.018	0.186*

Table 7 Continued

Variable	B	SE B	β
Step 2			
(Constant)	3.527	0.008	
Background and Diversity	0.220	0.017	0.255*
Interest and Suitability	0.330	0.023	0.369*
Problem Solving	0.302	0.022	0.341*
Letter of Recommendation	0.170	0.018	0.192*
Gender	-0.020	0.011	-0.032
Step 3			
(Constant)	3.526	0.008	
Background and Diversity	0.272	0.024	0.315*
Interest and Suitability	0.258	0.032	0.288*
Problem Solving	0.328	0.030	0.370*
Letter of Recommendation	0.181	0.023	0.204*
Gender	-0.020	0.011	-0.032
Gender * Background/Diversity	-0.099	0.034	-0.080*
Gender * Interest/Suitability	0.154	0.047	0.112*
Gender * Problem Solving	-0.051	0.043	-0.038
Gender * Letter of Recommendation	-0.034	0.037	-0.024

Note: $R^2 = .86$ for Step 1; $\Delta R^2 = .00$ for Step 2; $\Delta R^2 = .00$ for Step 3

*Statistically Significant @ $p < .05$.

The gender interaction was non-significant ($B = -.020$) which indicates that the male ($M = 3.506$) and female ($M = 3.526$) mean final non-cognitive scores were essentially the same. However, when the gender interaction was paired with the background/diversity variable, it

was statistically significant ($B = -.099$). This indicated that the relationship between background/diversity and final non-cognitive was weaker for females than for males. The gender interaction with the interest and suitability variable was also statistically significant ($B = .154$), indicating that the relationship between interest and suitability and the final non-cognitive score was stronger for females than males. Both the problem solving and letters of recommendation relationships with final non-cognitive were not statistically significant ($B = -.051$ and $B = -.034$) and were not different for males and females.

Additionally, a cross validity coefficient was calculated comparing the first interviewer with the second interviewer using Pedhazur (1997) to show this model was equally validated at interviewer 2 and provided another step of validation in the regression model. A strong positive correlation was found (.93), indicating a significant linear relationship between the two interviewers.

Similar to the gender interaction, this research question was to determine if the racial/ethnic background of the committee member had an influence on the prediction of the final non-cognitive score. The final non-cognitive score was also centered for these analyses.

The results shown in Table 8 illustrated the overall regression model where the four variables (background/diversity, interest and suitability, problem solving and letters of recommendation) were regressed on the centered final non-cognitive score, similar to Table 6. All of the non-cognitive sub-categories were statistically significant according to the standardized coefficients and Step 1 and 2 accounted for 86.0 percent of the variance. Step 2 of the regression model added the URM variable and Step 3 included the URM variable with the four interactions for testing the differences of beta weights.

Table 8*Interaction of URM Variable as a Prediction of the Final Non-Cognitive Score (N = 480)*

Variable	B	SE B	β
Step 1			
(Constant)	3.516	0.005	
Background and Diversity	0.220	0.017	0.255*
Interest and Suitability	0.328	0.023	0.367*
Problem Solving	0.306	0.022	0.345*
Letter of Recommendation	0.165	0.018	0.186*
Step 2			
(Constant)	3.512	0.006	
Background and Diversity	0.221	0.017	0.257*
Interest and Suitability	0.330	0.023	0.369*
Problem Solving	0.305	0.022	0.344*
Letter of Recommendation	0.165	0.018	0.187*
URM	0.023	0.015	0.026

Table 8 Continued

Variable	B	SE B	β
Step 3			
(Constant)	3.513	0.006	
Background and Diversity	0.203	0.019	0.235*
Interest and Suitability	0.327	0.025	0.365*
Problem Solving	0.297	0.024	0.335*
Letter of Recommendation	0.184	0.021	0.208*
URM	0.031	0.016	0.035*
URM * Background/Diversity	0.104	0.045	0.052*
URM * Interest/Suitability	0.067	0.067	0.029
URM * Problem Solving	0.012	0.056	0.006
URM * Letter of Recommendation	-0.096	0.043	-0.054

Note: $R^2 = .86$ for Step 1; $\Delta R^2 = .00$ for Step 2; $\Delta R^2 = .00$ for Step 3 * $p < .05$.

The URM interaction was significant ($B = .031$) which indicated that the URM mean is lower ($M = 3.513$) than the Non-URM ($M = 3.544$) mean. The URM interaction with the background/diversity variable was statistically significant ($B = .104$). This indicated that the relationship between background/diversity and final non-cognitive was stronger for URM's than for Non-URM's. The URM interaction with the letters of recommendation variable was also statistically significant at $-.096$, indicating that the relationship between letters of recommendation and final non-cognitive is weaker for URM's than Non-URM's. Both the problem solving and interest and suitability relationships with final non-cognitive were non-statistically significant and are not different for URM's and Non-URM's.

A cross validity coefficient was also calculated comparing the first interviewer with the second interviewer to show that this model was equally validated at the second interviewer. A strong positive correlation was found (.88), indicating a significant linear relationship between the two interviewers. Further consideration concerning the non-cognitive subcategories was further explored in the next study.

In the final phase of the study, further analysis was conducted to determine if any one non-cognitive subcategory item was more important in determining the final non-cognitive score. To accurately reflect the importance of the non-cognitive subcategory weights, a null hypothesis was formulated. The null hypotheses were that the proportion of admitted URM's who were under the 50/50 weighting scheme were equal to the proportion of URM's admitted under the manipulated weighting schemes of 1) equally calculated subcategory weights, 2) interest and suitability category weight increased and 3) removal of the letter of recommendation (the two tailed null hypothesis). The null hypotheses for the 1) equally calculated subcategory weights, 2) interest and suitability category weight increased and 3) removal of the letter of recommendation were not statistically significant.

The chi-square test of independence was used to test the proportion of admitted students who were URM's (N=144) in each manipulated weighting scheme against expected values from the 50/50 weighting scheme. The observed counts and percentages of each weighting scheme are provided in Table 9.

Table 9***Cross-tabulation of URM and Acceptance Decision by Manipulated Weighting Scheme***

Weighting Scheme	Admissions Decision		Total	*Chi Square df = 1
	No	Yes		
	N (percentages)	N (percentages)		
50/50				
Non-URM	201 (66)	135 (76)	336	
URM	102 (34)	42 (24)	144	
Total	303 (100)	177 (100)	480	
Equally Weighted				
Non-URM	207 (66)	129 (77)	336	
URM	105 (34)	39 (23)	144	
Total	312 (100)	168 (100)	480	0.7487, p= 0.3868
IS Preferred				
Non-URM	204 (66)	132 (76)	336	
URM	103 (34)	41 (24)	144	
Total	307 (100)	173 (100)	480	0.1449, p= 0.7034

Table 9 Continued

Weighting Scheme	Admissions Decision		Total	*Chi Square df = 1
	No	Yes		
	N (percentages)	N (percentages)		
Remove LR				
Non-URM	215 (67)	121 (75)	336	
URM	104 (33)	40 (25)	144	
Total	319 (100)	161 (100)	480	2.5613, p= 0.1095

Note: Critical Value @ .05 = 3.84

*Chi square was computed based on the count (N)

The Bonferroni adjustment ($.05/3 = .01666$) was applied to correct for family-wise error.

Three weighting schemes 1) equally calculated subcategory weights ($\chi^2(1, N = 480) = .7487$, $p = .3868$), 2) interest and suitability category weight increase ($\chi^2(1, N = 480) = .1449$, $p = .7034$) and 3) removal of the letter of recommendation ($\chi^2(1, N = 480) = 2.5613$, $p = .1095$) were tested against the 50 cognitive/50 non-cognitive weighting scheme that was currently utilized. None of the imposed weighting schemes proved to be statistically significant for increasing the proportion of URM acceptances above the 50/50 weighting scheme. As Table 9 illustrates, the URM acceptance rate change decreased from 42 percent at the 50/50 weighting scheme to 39, 40 and 41 percent at the equal, IS preferred and removal of letter of recommendation weighting schemes.

Although the decreased number of URM acceptances was incremental at each stage of the imposed weighting scheme, it was not statistically significant at any of the imposed

weighting schemes. Thus, changing the weighting scheme in an effort to yield the student diversity the school is seeking would be detrimental to this cause.

Discussion

As the trend toward diversifying the physician workforce continues to grow, all US and Canadian medical schools are now mandated to consider non-cognitive characteristics beyond academic or cognitive ability in the selection of applicants for medical school (LCME, 2008). Hence, scoring of the non-cognitive criteria for medical school admissions requires admissions committees to make judgments about the background, diversity, interest, suitability, problem solving skills and overall assessment of applicants for medical school.

Cognitive and non-cognitive weighting schemes of the medical school admissions process were investigated to determine the effect they had on the rate of underrepresented minority applicants being accepted to medical school. Non-cognitive characteristics were further explored to illustrate which subcategory items were the best predictors in determining the final non-cognitive score and whether the gender and/or race and ethnicity status of the interviewer had an influence on the non-cognitive interview score. The task of assessing these non-cognitive characteristics is critical to the admissions process and the analysis of the current weighting scheme was the first step in considering the role of non-cognitive characteristics in increasing the proportion of URM's in medical school.

Several analyses were conducted on changing the cognitive and non-cognitive weights as well as imposing various weights. Only one weighting scheme proved to be statistically significant above the 50/50 weighting scheme for improving the proportion of URM's admitted into medical school, the 65 Non-Cognitive/35 Cognitive weighting scheme. This analysis revealed that, although the cognitive portion of the weighting scheme was decreased to 35 percent of the total score, the minimum MCAT threshold of 22 and minimum GPA threshold of 3.0 were still adhered to. It appears that by increasing the weighting

scheme to the 65/35 ratio would increase the URM proportion of acceptances, and would increase the diversity of the entering class.

As discussed previously, an increase in URM's could significantly affect the workforce in rural and underserved areas of New Mexico and ultimately help to alleviate the health care disparities.

According to the AAMC Facts (2006), the African American and Hispanic populations are among the fastest growing and they are also the most severely underrepresented in medicine, and comprise an inadequate percent of the US physician workforce. Further, in a recent article by Grbic and Slapar (2010) "Seventy-five percent of African-American and 70 percent of Hispanic/Latino students maintained their intention to serve the underserved from the beginning to end of medical school, compared with 53 percent of Asian students and 58 percent of white students." Thus, the intention of URM's to serve the rapidly increasing underserved populations would address the UNM SOM goal of combating the health care crisis in the state.

An often competing goal to selecting a diverse class of students is to accept students with appropriate academic preparation, abilities and achievement who will be successful in the medical school curriculum and beyond. The Committee on Admissions has determined that applicants who have achieved the minimum MCAT and GPA threshold values are capable of successfully completing the medical school curriculum and passing USMLE Step 1 on their first attempt. However, this does not necessarily mean that there is no difference between the academic abilities of the 50/50 cohort in comparison to the 65/35 cohort. An applicant with an MCAT score of a 22 is not equivalent to an applicant with an MCAT score of 32 in terms of academic preparation, achievement, and abilities. Many of the students who

are unsuccessful in the medical school curriculum have had MCAT and GPA scores that were well below the UNM SOM averages.

Furthermore, academic preparation and performance play a key role in students' ability to be successful in the medical school curriculum. Meeting the minimum thresholds does not necessarily mean that the applicant is as academically competitive as the rest of the applicant pool. A rigorous study at the national level (Albanese et al., 2003) and data from the UNM SOM student cohort (UNM, 2009), support the use of the established UNM SOM thresholds in helping to move toward a 100 percent pass rate on the USMLE Step 1. The UNM SOM continues to monitor the correlation between MCAT scores and success in medical school so as not to overemphasize standardized tests in the admission process. However, to simply disregard these cognitive criteria would be detrimental to the process.

Another confounding factor is the perception of decreasing the cognitive scores to 35%, for the expressed purpose of increasing the number of URM students that gain entry into medical school, and the larger ramifications this would have on the Committee on Admissions, the medical school and the University community. An important consideration of the cognitive criterion is the reputation of an institution's academic program. All US and Canadian medical schools receive national ranking scores that are partially based on average MCAT and GPA scores in comparison to other medical schools (US News & World Report, 2009). One of UNM SOM's goals is to attract the best and the brightest students from the state of New Mexico who have the greatest likelihood of returning to the state and practicing medicine for underserved populations. Consequently, in order to attract the best and brightest students, the academic standards and reputation must afford competitive opportunities for students as they compete with other medical students throughout the country for residency

programs. In the event that UNM SOM decreased the cognitive portion of the rank score, more URM's would be admitted to medical school (Table 3). Although the minimum threshold values have been established, more students would have values closer to the minimum, thus decreasing the average scores. Although this would help the school to achieve a greater portion of URM's being accepted, it may affect the desirability of attending and matriculating at UNM. According to the Medical School Admissions Requirements (AAMC, 2010), other public medical schools in the surrounding states currently have average MCAT/GPA scores above UNM, and UNM is well below the 2009 national average MCAT composite score of 32 (Table 10).

Table 10 illustrates that although UNM accepts a class that resembles the national average, the class that matriculates is very different. The 65/35 weighting scheme averages reflect those that receive acceptances as of March 15. The averages for the matriculating class decrease as applicants withdraw from the UNM SOM and applicants are accepted from the alternate list. Thus, the reputation of UNM's academic program has an influence on where applicants with multiple acceptances choose to matriculate. Future research into the reasons students choose one medical school over another should further be examined.

Table 10***2009 Average MCAT and GPA Comparison Scores for Public Medical Schools in Surrounding Area***

State	Average Overall GPA	Average MCAT
Arizona	3.8	30
Colorado	3.8	32
Utah	3.8	30
Texas – El Paso	3.8	30
Texas – College Station	3.8	31
Texas – Lubbock	3.7	31
Texas – Galveston	3.8	31
Texas – Houston	3.8	33
Texas – San Antonio	3.7	32
Texas – Dallas	3.9	34
New Mexico 50/50 (Matriculated)	(3.6)	(29)
	*3.8	*31
New Mexico 65/35	3.7	30

*MCAT/GPA averages for students who received acceptances March 15.

Although the UNM SOM is making great strides in accepting one of the largest minority populations in the United States, there has also been an increase in the number of students who have had to repeat their first year of medical school. In addition, over the past several years, UNM SOM has had students who have dropped out of the medical school curriculum entirely due to academic difficulties. These students serve as sobering reminders that merely accepting URM's (many of them high-risk students) into medical school is not enough. Medical schools must ensure that these students are provided with sufficient resources to be successful in the medical school curriculum and beyond. Consequently, although the 65/35 weighting scheme does increase the percentage of URM admissions rate at a statistically significant level, that drastic decrease in the cognitive portion is not feasible at this time. A careful balance of both the cognitive and non-cognitive criteria must be maintained in order to foster success in the medical school curriculum and alleviate the health care needs in New Mexico.

These data provided further support for utilizing the holistic review process, which allows each school to decide for itself what diversity means and tailor its admissions process to the mission, goals and educational interests for each medical school. UNM SOM is a state funded medical school and has a special responsibility to the many diverse communities in New Mexico, via a social contract. Finding the balance between diversity and fairness is a key component of the complexities of re-weighting the admissions formula for the UNM SOM. However, the current medical school curriculum, policies and practices are not equipped to provide the type of resources and support that the 65/35 weighting scheme cohort would allow for.

The AAMC has encouraged medical schools to expand the literature on the effects of admissions committee composition and decision-making in the medical school setting to further explore the advocacy for applicants who have similar demographic factors as the committee members (Addams, Bletzinger, Sondheimer, White & Johnson, 2010). Therefore, committee composition was examined to determine what, if any, influence the gender or racial/ethnic background of committee members had on the final non-cognitive score. Examining the data for the gender interaction indicated a consistent pattern of gender differences favoring the background/diversity and interest and suitability subcategories. Thus, the gender of the committee member only mattered for the background/diversity and interest and suitability variables. The URM interaction with the background/diversity subcategory proved to be the strongest in relation to the final non-cognitive score and only mattered for the background/diversity and letters of recommendation variables.

The results of this analysis were expected, as many of the URM committee members often refer to applicants by their “story” and reference them by describing the applicants’ life experiences.

Furthermore, the results suggest that the URM committee members consider the background and diversity of applicants in very high regard and that simply averaging the subcategory scores ignores the fact that different subcategory domains have different weights. These results can also be used to guide the development of the admissions protocols, particularly for the UNM SOM, ensuring that future orientation and training sessions are designed to emphasize the assessment of problem solving skills. The Problem Solving subcategory had the largest disagreement, and a full investigation of this subcategory item and committee member training prior to the next admissions cycle is recommended.

It is incumbent on admissions committees to make every reasonable effort to ensure a high level of inter-rater reliability in the scoring of the non-cognitive criteria for medical school admissions. The Committee on Admissions considers the two final non-cognitive interview scores of 0.25 to be in close agreement and 0.50 and below to be in acceptable agreement. It was not surprising that, given the range of non-cognitive subcategories, issues and perspectives, there was not total agreement on all points discussed. Yet, in spite of the complexity of the issues and the diversity of the points of view, a high degree of consistency regarding the relative importance of the characteristics was found. This ensures that a reliable process in which everyone fundamentally agrees on the shared mission, goals, and approach has been accomplished (Addams et al., 2010).

According to Addams et al. (2010), most medical schools use the Holistic Review process in the interview and throughout the selection process. However, the AAMC recommends that medical schools also implement the Holistic Review in the screening process. The UNM SOM can consider the race/ethnicity background of applicants and consider those applicants who are not New Mexico residents but are members of a URM group in order to establish a critical mass. Other factors that have proven to be predictive with future practice in underserved populations are rural upbringing and participation in the National Health Service Corps (Grbic & Slapar, 2010). These benefits extend well beyond the classroom and serve to increase access to health care, accelerate advances in research and ultimately alleviate the health care disparities of the local communities in the State of New Mexico. By incorporating the Holistic Review early in the initial screening process, qualified and desirable applicants can enrich the pool and help to shape the entering class.

In conclusion, admissions policies to promote racial and ethnic diversity in the physician workforce are based, at least in part, on the principle that a more diverse health care workforce will improve public health. Hence, the admissions criteria used to select medical students serve a paramount role in the future of the physician workforce. These findings illuminate the valuable role of the non-cognitive criteria for URM's in the medical school admissions process and reiterate the association between the medical school interview and the high stakes results (Kulatunga-Moruzi & Norman, 2002).

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Appendix 1: Race/Ethnicity Categories on AMCAS Application

Ethnicity

Not Spanish/Hispanic/Latino/Latina

Spanish/Hispanic/Latino/Latina

- Mexican, Mexican American, Chicano/Chicana
- Other
- Cuban
- Puerto Rican

Race

American Indian or Alaska Native

Please specify the name of your enrolled or principal tribe

Asian

Please check all that apply below:

- Asian Indian
- Chinese
- Filipino
- Japanese
- Korean
- Other Asian
- Pakistani
- Vietnamese

Black or African-American

Native Hawaiian or Other Pacific Islander

Please check all that apply below:

- Guamanian or Chamorro
- Native Hawaiian
- Other Pacific Islander
- Samoan

White

Optional Race/Ethnicity Information on UNM SOM Secondary Application

Race and Ethnicity

If a member of a tribe, please specify the name of the tribe you are a member of:

Please note: The above Race/Ethnicity responses are in compliance with the Federal Race and Ethnicity Codes for data collection. However, the Race/Ethnicity characteristics are self declared by the applicant and are optional on both the AMCAS application and the UNM School of Medicine secondary application.

Appendix 2: Medical College Admission Test (MCAT)

The following information is used in evaluating MCAT scores and their use by the Committee on Admissions:

- The MCAT accounts for 25% of the applicants' total score and is calculated by the computer.
- The average MCAT score for the 2009 entering class was 28.
- There tends to be a positive correlation between performance on MCAT's and United States Medical Licensing Exam (USMLE) Step 1 such that those with MCAT sub scores in the 6-7 range or below tend to have difficulty passing the USMLE Step 1 on the first attempt.
- A combination of low MCAT scores and a low GPA indicates high academic jeopardy.

MCAT scoring levels

MCAT Score	Points
≥ 30	4.00
29	3.75
28	3.50
27	3.25
26	3.00
25	2.75
24	2.50
23	2.25
22	2.00

Appendix 3: Grade Point Average (GPA)

The following information is used in evaluating the GPA and academic record by the Committee on Admissions:

- The GPA accounts for 25% of the applicants' total score and is calculated by the computer.
- The average cumulative GPA for the 2009 entering class was 3.60.
- The grades in all courses taken, regardless of whether the courses were taken as an undergraduate, graduate or non-degree student will count towards the overall GPA.
- Only grades received in the AMCAS application will be considered in GPA evaluation.
- To allow for the fact that some students may have experienced a difficult transition from high school into college, the GPA's will be weighted according to the year in school.
- All AMCAS GPA's are calculated on a 4.0 scale (with all A+'s becoming A's).
- A combination of low MCAT scores and a low GPA indicates high academic jeopardy.

GPA Scoring Levels

<i>Cumulative Undergraduate GPA</i>	Points
4.00	4.00
3.75	3.50
3.50	3.00
3.25	2.50
3.00	2.00

GPA Weighting

Credit Hours	Year in School Status	Weighted GPA
College-level course work taken while in high school	High School	All grades X 1
0-32 semester hours	Freshman	All grades X 1
31-64 semester hours	Sophomore	All grades X 2
61-96 semester hours	Junior	All grades X 3
91 or more semester hours	Senior	All grades X 3

Appendix 4: Review Score Range

Each non-cognitive subcategory is rated by each interviewer based on the following score scale:

Score	Description
4.00	Truly Exceptional - Rolling Admissions
3.75	Outstanding - Rolling Admissions
3.50	Excellent - Definitely Accept
3.25	Very Good - Alternate List
3.00	Good - Specific small improvements required
2.75	Good - Multiple small improvements required
2.50	Fair - Specific major improvements required
2.25	Fair - Multiple major improvements required
2.00	Poor - Should not reapply

Figure 1: The Admissions Process Flow Chart

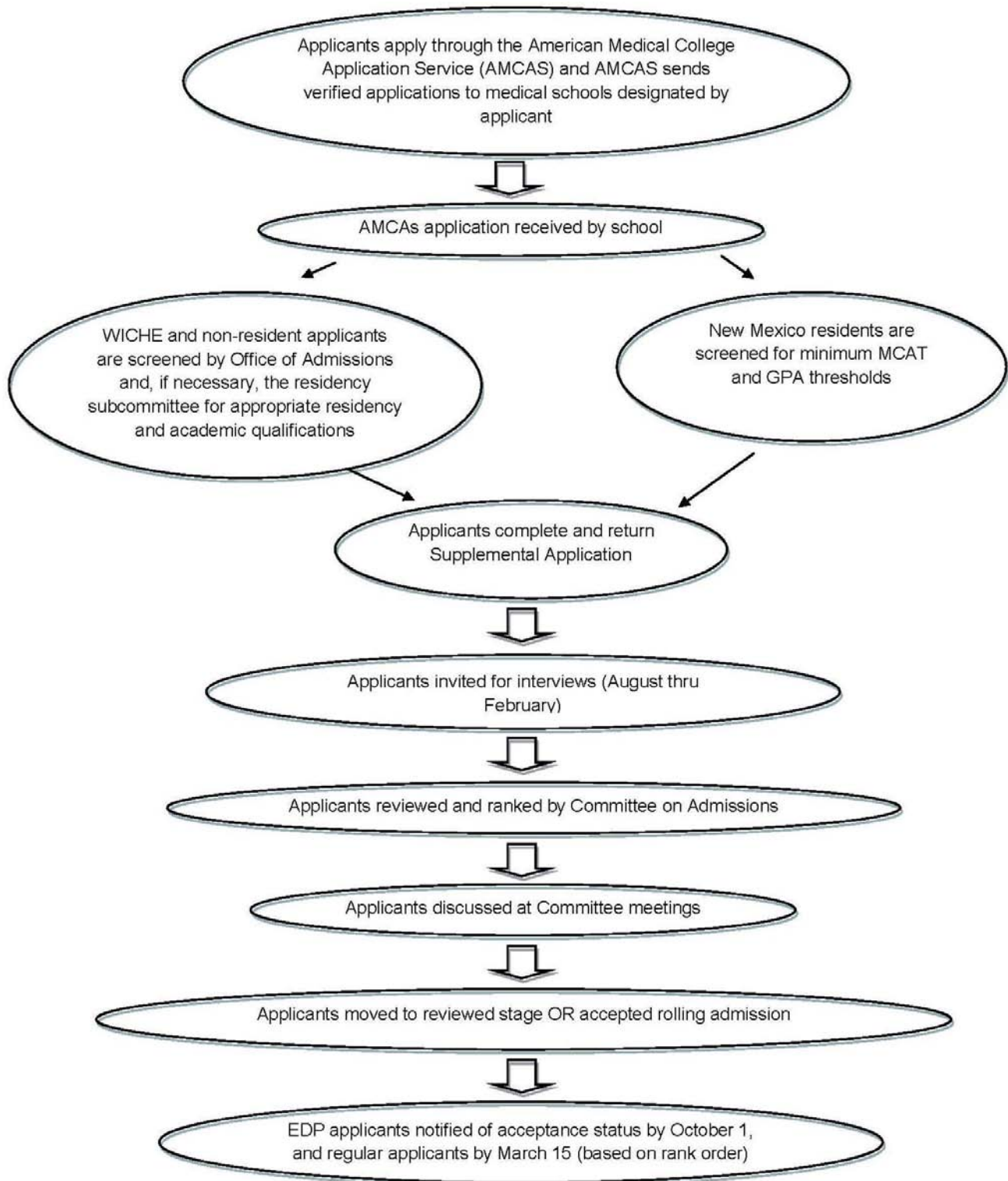


Figure 2: American Medical College Application Service (AMCAS) Application Contents

The data that is collected on the AMCAS application contains the following:

Category	Item
<i>Identifying Information</i>	Applicant Name
	Social Security Number
	Date of Birth
	Gender
	Birthplace
<i>Schools Attended</i>	High School Name/City/County
	Undergraduate School(s) Attended
	Dates of Attendance
	Program Level
	Major/Minor
<i>Biographical Information</i>	Degree
	Permanent Address
	Phone
	Email
	Legal State of Residence
	Racial/Ethnic Self-Description
	Disadvantaged Status
Felony/Misdemeanor Information	
<i>Coursework</i>	GPA
	Hours
	Academic Record
<i>Work/Activities</i>	Community Service/Volunteer/Research Experiences (dates, hours, duties)
<i>Letters of Evaluation/Recommendation</i>	Letters of Evaluation/Recommendation
<i>Essays</i>	Personal Statement
<i>Standardized Tests</i>	MCAT Test Scores/Dates