2005 AAPP Monograph Series

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AAPP Monograph Series
African American Professors Program

John McFadden, Ph.D.
Editor
University of South Carolina

2005
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FOREWORD

I was both humbled and honored when my long-time colleague and friend, Dr. John McFadden, requested that I write the Foreword for this issue of the African American Professors Program (AAPP) Monograph Series. First, I am honored because I have been privileged to know several of the contributors to this issue and, secondly, because it allows me to give my perspective of what is, in my opinion, one of the most outstanding and worthwhile programs at the University of South Carolina.

When I served as Dean of the College of Science and Mathematics at USC, I had some familiarity with the AAPP Program; however, when I became Executive Vice President for Academic Affairs and Provost in 1997, I quickly learned that this program was a jewel. Drs. Aretha B. Pigford and Leonard O. Pellicer had developed the program to train and prepare African American graduate students to become university faculty members. The program was comprised of students in many disciplines throughout the university. It was supported by the W.K. Kellogg Foundation along with some funds from the South Carolina State Legislature and the University of South Carolina.

One of the most discouraging days of my early tenure as Provost occurred when Dr. Pigford came to my office to inform me that she had decided to accept a position at another university. We had a long discussion, but it was clear that her decision to leave had been made. I talked immediately to Dr. Pellicer and urged him to continue to lead this extraordinary program; he agreed to do so. Then, Dr. Pellicer had the opportunity to become a dean at another university, and I once again feared for the future of the AAPP program. Nevertheless, I had no hesitation when I began thinking of the person within the university community who successfully could lead this program. I picked up the telephone and called Dr. John McFadden.

I had known John McFadden as a long-time scholar and leader at the University of South Carolina. Because of his many contributions in teaching, scholarship, and service, he was the holder of the Benjamin Elijah Mays Professorship. John was known across campus for his untiring efforts with The Benjamin Elijah Mays Academy for Leadership and Development and for his efforts always to attract outstanding speakers for the annual Benjamin Elijah Mays Lecture Series every year. I will never forget John’s response to my request to become the new Director of AAPP. He did not hesitate in accepting this new appointment, but he passionately told me how much the Mays Chair meant to him and that he would do his best to fulfill the responsibilities of both positions. However, he wanted both President John M. Palms and me to understand that he would be adding another title and more work to his already full plate, but he would do the best he could under these circumstances. President Palms and I discussed John’s response and neither of us had any doubt that John would do an excellent job in anything he undertook.
My confidence in John McFadden has been reinforced by the way that he has taken this program to another level. Our state legislature had shown such confidence in AAPP that, instead of having to request support on an annual basis, recurring funds are now provided. One of my favorite events every year is the AAPP Annual Scholar/Mentor Appreciation Breakfast where the doctoral students and their mentors are recognized, and each student speaks briefly about her or his research. It is one of the most gratifying and satisfying two hours one can spend to hear these very bright young people talk about their research and introduce the faculty members who share their enthusiasm for their research endeavors in the laboratory and the library. To hear some of the success stories of the graduates of the program makes one very proud to be associated with these students, their faculty mentors and, indeed, everything this program embodies.

Two of the most prized possessions hanging on the wall of my home study were presented to me at AAPP annual breakfasts. They are a framed certificate of appreciation from the program scholars and a framed poem entitled "Gentleman Returning" written by Kevin Simmonds, an outstanding Music Education scholar in the program who presented it to me on my return to the university classroom. Kevin is also a contributor to this monograph issue. Another prized possession is the 2004 edition of the AAPP monograph series that was dedicated to me and sits in a conspicuous place in my bookcase.

This AAPP monograph is a wonderful example of the diversity of disciplines represented in this program. Biology, English, Pharmacy, Management Science, and Chemical Engineering are just a few of the areas of the scholars who contributed to this issue. The efforts of these young researchers are much appreciated, and their future is bright. Their faculty mentors also deserve a sincere "thank you" from the university. Finally, Dr John McFadden deserves our special appreciation. He touches the lives of all of us involved with this program and works tirelessly to ensure that the program succeeds in its goals. Anyone who knows John knows that he recently lost his colleague, his best friend and his wife, Grace Jordan. Nothing can begin to fill the void she left in John's life, but the AAPP program, perhaps, helps to occupy his thoughts and his time as he moves forward and deals with his loss. Thank you, John, for all that you do for all of us.

Jerome D. Odom, Ph.D.
Department of Chemistry & Biochemistry
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PREFACE

The African American Professors Program (AAPP) at the University of South Carolina is proud to publish the fifth edition of its annual monograph series. The program recognizes the significance of offering its scholars a venue to engage actively in research and publish papers related thereto. Parallel with the publication of their refereed manuscripts is the opportunity to gain visibility among scholars throughout institutions worldwide.

Scholars who have contributed manuscripts for this monograph are to be commended for adding this additional responsibility to their academic workload. Writing across disciplines adds to the intellectual diversity of these papers. From neophytes, relatively speaking, to an array of very experienced individuals, the chapters have been researched and comprehensively written.

Founded in 1997 through the Department of Educational Leadership and Policies in the College of Education, AAPP was designed to address the underrepresentation of African American professors on college and university campuses. Its mission is to expand the pool of these professors in critical academic and research areas. Sponsored by the University of South Carolina, the W. K. Kellogg Foundation, and the South Carolina General Assembly, the program recruits doctoral students for disciplines in which African Americans currently are underrepresented among faculty in higher education.

The continuation of this monograph series is seen as responding to a window of opportunity to be sensitive to an academic expectation of graduates as they pursue career placement and, at the same time, one that allows for the dissemination of AAPP products to a broader community. The importance of this monograph series has been voiced by one of our 2002 AAPP graduates, Dr. Shunde LaTJuan Dogan, a recent Administrative Fellow at Harvard University and now a Program Officer for the Southern Education Foundation, Atlanta, Georgia. Dr. Dogan wrote:

“One thing in particular that I want to thank you for is having the African American Professors Program scholars publish articles for the monograph. I have to admit that writing the articles seemed like extra work at the time. However, in my recent interview process, organizations have asked me for samples of my writing. Including an article from a published monograph helped to make my portfolio much more impressive. You were ‘right on target’ in having us do the monograph series.” (AAPP 2003 Monograph, p. xi)

The African American Professors Program offers this 2005 publication as a contribution to its readership and hopes that you will be inspired by this select group of manuscripts.

John McFadden, Ph.D.
The Benjamin Elijah Mays Professor
Director, African American Professors Program
University of South Carolina
IN MEMORIAM

GRACE JORDAN MCFADDEN, Ph.D.
Mentor and Consulting Editor
African American Professors Program

Grace Jordan McFadden, Ph.D., served as a consulting editor for this monograph series of the African American Professors Program (AAPP) at the University of South Carolina. AAPP is an initiative to produce Ph.D.s who will become leading scholars, researchers, and lecturers. One component of the AAPP is the assignment of a mentor to the doctoral students. I hope that a glimpse into the personal life of Dr. Grace Jordan McFadden will inspire doctoral candidates to become excellent academicians, concerned and involved community leaders, and devoted family members and friends. Her life is an objective lesson from which a young person can obtain instruction and counsel.

Dr. Grace Jordan McFadden, a native of Sacramento, California where she was reared among various ethnic groups by conservative Christian parents, like many young people of that time, yearned to be free of conventional cultural restraints, and the civil rights movement fueled her hopes and courage. At that time, people hoped, perhaps naively so, that the passage of civil rights laws would create a new America that would provide fair opportunities for all people. The realities of that time produced many disappointments: assassinated leaders, a war in Asia, and the widespread American mourning about Kent State University students’ death in the face of continued insensitivity to many Black people’s psychological and physical deaths. Dr. McFadden expressed these anxieties in Reflections of a Black Woman (1970), a book of her collective poetry. However, rather than being discouraged by the times and the common difficulties faced during the passage to adulthood, she forged ahead to see what contributions she might make to the world.

After receiving an undergraduate degree from California State University at Sacramento, Dr. McFadden obtained a master’s degree from Catholic University in Washington D.C. Thereafter, she obtained a Ph.D. in African American History in 1975 from Antioch-Union Graduate School. She began her higher education teaching career at the University of Toledo as an instructor of Urban Education and African American Studies. She came to South Carolina in 1971 as a consultant in the South Carolina Desegregation Consulting Center at the University of South Carolina. In 1971, USC employed her as an instructor in the Department of History. Subsequently, she served in sequential roles as an assistant professor and an associate professor. Dr. McFadden was the first Black woman of professorial rank to be hired by USC in the College of Humanities and Social Sciences. She was also the first Black woman to receive tenure in that college. She was
Founder and Director of the Oral History and Cultural Project and Director of the African American Studies Program. Finally, in 1994 Dr. Grace Jordan McFadden was named professor emerita within the Department of History at the University of South Carolina. Her professional accomplishments at the university provide the Ph.D. candidates of today with a model for achievement and incremental steps accompanied by conscientiousness and perseverance.

When Dr. McFadden could no longer continue active classroom instruction due to persistent illness, she invited students to meet in her home on Santee Avenue. The students came and continued to receive benefits of her scholarship and wisdom. Despite challenging health issues, she delighted in remaining vital and active in providing instruction. She also kept in touch with many faculty members, among them Tom Feelings, formerly of the Department of Art at USC, whose artistic portrayal of the slave trade, The Middle Passage, was one of her personalized gifts to me. Attending Feelings’ last lecture with Dr. McFadden was a special, treasured occasion.

While Dr. McFadden focused her attention on being well versed in the substance of her profession, she did not refrain from being involved in many important community activities. Perhaps, her most well known contribution was her authorship of some 120 biographies over a ten-year period for the South Carolina African American Role Models calendar, a community project of BellSouth. She and her husband, Dr. Johnnie McFadden, concerned about the transmittal of social graces, served as the 1994 Poinsettia Cotillion Ball Co-Chairpersons. Dr. McFadden often had “mailing occasions” where friends of hers would gather to address hundreds of envelopes for a variety of good causes and political candidates. She also was active in the Links of Columbia organization and applauded their establishment of small business ventures in the Republic of South Africa. She enjoyed the interactions between Links’ members and South African educators during their tours in Columbia. Because Dr. McFadden had a concern about people’s access to health care, she became a founding board member of the Eau Claire Cooperative Health Centers that was founded by Dr. Stuart A. Hamilton, a Columbia pediatrician. She took delight in touring the new facility in Ridgeway, SC, a community that formerly did not have a dental, medical or pharmaceutical office.

From the foregoing, it is apparent that Dr. McFadden was a multifaceted person. This brief article about her must mention the genuine and deep love that she had for her husband, Johnnie, the USC Benjamin Elijah Mays Professor and Director of African American Professors Program, for her daughter, Rashida Hannah, and for family and friends. Often in our talks, she had such positive things to say about the many people she knew and how she cherished and maintained the confidences that she shared with them. She had a heart that was so concerned about the welfare of others that she rallied her strength to pay out-of-state visits to see a friend in the hospital and to participate in
what would be her last family reunion. She even traveled recently overseas to the United Kingdom to confirm that her beloved daughter was well situated in Cardiff, Wales. Yet, when from time to time she became ill, she would go to the hospital without widespread notice, and she did not complain. She appreciated the consistent help of her husband. Her faith in God caused her ever-optimistic view that there would be better days ahead.

Future African American professors, it is my sincere hope that you obtain pleasure from mastering and teaching the subject matter that you have selected for specialization. Persevere even though the road to acquiring tenure might not be as straightforward as you might expect. In addition to your professional accomplishments, choose to be involved in beneficial community outreach activities to make your community more enlightened and civilized. Lastly, I hope that each of you finds a friend to whom you may ask, “Do you know what I mean?” Of course, when you receive an affirmative response, I hope you are confident that the response is true. I sincerely miss my friend, Gracie.

Barbara Johnson Hamilton, J.D.
Columbia, South Carolina
March 23, 2005
John McFadden, Ph.D.
The Benjamin Elijah Mays Professor
Director, African American Professors Program
University of South Carolina
Symbols, university and college mascots in particular, have historically been chosen to create unity, pride and honor among the people and institutions that they represent. Today, mascots ideally are selected to depict characteristics and qualities of designated people and institutions. Ironically, Native American mascots reflect few Native Americans (i.e., American Indians). Not only are Native Americans underrepresented as members of the higher-education community and athletic organizations, but the ceremonial practices of the mascots and fans often inaccurately portray Native American history, culture, and behavior.

Most athletic mascots were chosen early in the 20th century when multiculturalism and racial sensitivity were not necessarily viewed as a valuable aspect of American culture. In general, mascots are not by nature political symbols. Nevertheless, symbols become politically significant when they are used to organize people and motivate them to act collectively (Shea, 1999). In the minds of many Native Americans, some mascots represent a history of oppression and racism — both of which have strong political implications.

The University of Illinois, an institution that has been under a great deal of scrutiny for its mascot Chief Illiniwek, states that “The Chief,” as they fondly call him, is not a mascot but a symbol (Spindel, 2000). Spindel is author of Dancing at Halftime and asserts the following:

The symbol gives physical form to amorphous values: the cross for Christian belief, the American flag not only for our country but also for our feelings about it, our political system, and the American people. The same symbol can be used in different ways: The Star of David worn on a chain by a Jewish person, the Star of David sewn by Nazi order to a prisoner’s clothing. In both
cases the symbol represents Jewish identity. But in one case, the symbol is chosen freely as a positive indicator. In the other, it is coerced; the person is branded with it, and the values attached are all negative. (p. 29)

Institutions of higher education are now challenged to determine whether using Native Americans as a symbol for athletic competition is merely a positive indicator or a brand placed upon the Native American people. In fact, the NAACP passed a resolution that is clearly in opposition to these mascots (Editorial, 1999), although such actions apparently have not stimulated responses in higher education.

Some Native Americans continue to show pride and support for the use of Indian mascots. Nevertheless, Native American college students, particularly those attending predominantly White institutions, may feel further disjointed from and devalued by an institution that appears to have ignored the “struggle to change attitudes and stereotypes about Native Americans” (Jackson & Lyons, 1997, p. 5). Furthermore, many faculty and academic departments, like those at the University of Illinois, have issued statements declaring “that the use of Indian mascots is both offensive and inappropriate” (p. 5).

If the majority of Native Americans, as well as the faculty at the institutions have called for the abolishment of Native American mascots, why are they still in place? The solution is complicated, but the source of the problem seems simple. Mascots are a symbol of tradition to many people. Generally, lifelong fans, students, and alumni do not want to see the names and symbols of their favorite teams change. Athletic departments certainly do not seek to lose the support of their fans. Sponsors also do not desire to compromise the profits from ticket and merchandise sales. Nevertheless, just as mascots are a symbol of tradition to those affiliated with academe, tradition is not a symbol but a history and a critical way of life for the Native Americans (Shea, 1999).

Native American mascots misrepresent the Native American cultural tradition and legacy in several ways. Flutes, whistles, weapons, and feathers are often sold and used as novelty items in the stadiums; yet, these items probably still have religious significance in the Native American culture. In addition, school bands often play their renditions of Native American themes. “Generic and fictitious Native American music trivializes what many traditional people consider to be a spiritual entity” (Perewardy, 1992, p. 3). Furthermore,
the war paint, tomahawk chops, and the whoops and calls that the fans use are viewed by
many to be misrepresented traditions of Native Americans reduced to mere party activities.
“Many of these partygoers see themselves as dignifying and honoring the Indian”; yet,
many consider it to be “the mocking of something sacred” (Rodriguez, 1998, p. 22). Most
importantly, Rodriguez notes that even the dance and ceremonial dress, donned by the
mascots themselves, are often stereotypical and inaccurate. “Charlene Teeters, a Spokane
American Indian and former University of Illinois graduate student who has been credited
with beginning the national protest against Indian mascots, avows that it was quite hurtful
to see a chief reduced to halftime entertainment” (Charlene Teeters, as cited in Rodriguez,

In light of this controversy, the majority of athletic spectators take two different
positions on the use of Native American mascots (Jackson & Lyons, 1997). The first is that
the “team name and the ethnic mascot does not matter to them and they are completely
unconcerned” (p. 6). The second position is one characterized by people who are “vocally
outraged that Native Americans and their supporters could consider altering such an old
tradition” (p. 6). Consequently, Jackson and Lyons, authors of “Perpetuating the Wrong
Image of Native Americans,” emphasize that “cultural understanding and change take
time and patience from those people who are most misunderstood” (p. 6).

IMPLICATIONS OF MASCOTS ON THE
IDENTITY DEVELOPMENT OF NATIVE
AMERICANS

Erik Erikson (1968, 1977) asserted that attaining a stable identity was the major
developmental task of adolescence. Further, he theorized that adolescents, belonging to
oppressed or exploited groups who are unable to attain benefits from the dominant group,
would incorporate negative images of themselves from both the dominant and minority
groups. When Native American mascots are portrayed as being wild, savage, or animal-
like, or their ceremonial dances and practices are imitated, it is clearly an example of the
majority group defining the identity for a minority group.

The meaning of a person’s race is defined, in part, by the culture in which he or she
lives (Shea, 1999). Consequently, members of minority groups may feel powerless in the
forceful construction of their identity. Some may argue that using Native American mascot names is no different from using the names of other groups such as Yankees or Fighting Irish; however, from a historical perspective, these cultures no longer have major political struggles. They no longer face the challenge of establishing an identity in contemporary society (Shea, 1999).

Historically, the struggle of Native Americans has been quite different from other American minority groups. Native Americans initiated a confident and proud cultural identity, possessions, and human rights, but they were subsequently stripped of these accomplishments only to face centuries of dehumanization to regain them (Shea, 1999). “The symbolic meaning of race is ascribed to people regardless of who they are, what they are really like, and regardless of their preferences. This symbolism can have a powerful role in shaping the identity of people” (p. 63).

“In the past twenty years, the racial identity development of Persons of Color and White Persons has attracted increasing attention in the literature” (Evans, Forney & Guido-Dibrito, 1998, p. 73). According to Evans et al., “student affairs practice without a theoretical base is not effective or efficient” (p. 19). Thus, while no one theory can possibly describe the full development of an individual, practitioners of student affairs and counseling can use theory, as set forth by Evans et al. in four powerful ways: description, explanation, prediction, and control.

Racial identity has been historically considered to be purely biological (Evans et al., 1998); however, today, it is more thoughtfully defined as “a sense of group or collective identity based on one’s perception that he or she shares a common racial heritage with a particular racial group” (p. 71). Consequently, racial identity theories treat race as a sociopolitical issue. In other words, based on racial identity, a person may experience either domination or oppression. “The definitions and manifestations of racial and ethnic identity do not originate in biology but are in fact social constructions based on an individual’s heritage and reflected in White domination of racial and ethnic minorities” (p. 71).
USING PHINNEY’S MODEL OF ETHNIC IDENTITY DEVELOPMENT TO ASSESS THE IDENTITY DEVELOPMENT OF NATIVE AMERICAN COLLEGE STUDENTS

Jean Phinney’s Model of Ethnic Identity Development is often referred to in the literature because of its applicability to many minority group students (Evans et al., 1998). Evans et al. assert that the “issue of ethnic identity is important to the development of a positive self-concept for many minority adolescents” (p. 79). Furthermore, “the ethnic identity construct focuses on what people learn about their culture from family and community” (p. 79). Based on these assertions, it can be said that the use of Native American mascots may have huge implications on the identity development of Native American college students.

If ethnic identity is developed partially from what a person learns from his or her community, what is the community teaching when it supports using mascots that inaccurately portray the practices and traditions of Native Americans? How are Native American college students to develop a positive self-concept when the community of higher education continues to ignore that fact that the use of these mascots constitutes “destruction of their culture” (Rodriguez, 1998, p 26)? Roberto Rodriguez, author of “Plotting the assassination of Little Red Sambo: Psychologists join the war against racist campus mascots,” contends that “it’s not a matter of people trying to be intentionally mean, but, if something is disturbing to a minority of the population, it’s not for the majority to decide whether or not it’s disturbing” (p. 26).

Phinney’s Model of Ethnic Identity Development

The applicability of Phinney’s Model of Ethnic Identity Development (Evans et al., 1998) to the development of Native Americans (e.g., college students and others who may be aware of the relevant negative stereotyped college mascots) is clear; thus, examining this developmental model can enlighten helping professionals who work with Native Americans. According to Evans et al., Phinney’s Model consists of the following three stages: Diffusion-Foreclosure, Moratorium, and Identity Achievement. Based on the model, Evans and coauthors assert that through the process of committing to an ethnic-identity minority, students must resolve two fundamental conflicts that occur because of their identification
with a minority culture. “The first conflict involves stereotyping and prejudice on the part of the White population toward the minority group” (p. 80). Symbols such as mascots that perpetuate negative stereotypes can “…pose a threat to the self-concept of minority students” (p. 80). “The second conflict involves a clash of value systems between majority and minority groups and the manner in which a minority student negotiates a bicultural value system” (p. 80). The contemporary conflict over Native American mascots is an example of this clash in values systems. In fact, what represents a source of pride for one person is likely to be the source of pain for another.

**Diffusion-Foreclosure.** The first stage of Phinney’s Model of Ethnic and Identity Development, Diffusion-Foreclosure, is characterized by students who “have not explored feelings and attitudes regarding their own ethnicity” (Evans et al., 1998, p. 80). Whether there is lack of interest in identifying with a culture or examining feelings about one’s identity or race has been a non-issue in the person’s life, these attitudes can lead to a state of diffusion. For example, regarding concerns about mascots, a Native American who is experiencing diffusion may not have recognized mascots as having any implications for his or her culture because that person has not yet explored her/his identity with any culture or ethnicity, or he/she may think that the use of Native American mascots is inconsequential.

Foreclosure, the other component of Phinney’s first stage, indicates an individual’s acceptance of how his or her culture is defined and portrayed by the majority culture. “The individual may have acquired attitudes about ethnicity in childhood from significant others that lead to foreclosure. Those who accept the negative attitudes displayed by the majority group toward the minority group are at risk of internalizing these values” (Evans et al., p. 80). Of course, students experiencing foreclosure may succumb to the idea that the misrepresentations of the mascots are true, which in turn can contribute to the development of an inaccurate, negative self-concept. The risk is that these students’ value systems actually will be defined by the majority culture.

**Moratorium.** The second stage of Phinney’s Model of Ethnic Identity Development, Moratorium, is characterized by individuals becoming “…increasingly aware of ethnic identity issues” (Evans et al., 1998, p 80). This increasing awareness is “…stimulated by an experience that causes an exploration, a new awareness causes an individual to
examine the significance of their or his ethnic background” (p. 80). This experience can be negative, as in cases with overt racism, or can be gradual with the student progressively coming to the realization that he or she is regarded as inferior by the dominant culture.

As a result of this realization of perceived inferiority, students can begin to search for ethnic identity. “During this time, individuals seek more information about their ethnic or racial group while attempting to understand the personal significance of ethnic identity. A search for information about their identity may lead Native American students to the realization that the portrayal of mascots does not support the true practices and traditions of their culture” (Evans et al., 1998, p. 76). Furthermore, they also may begin to realize that not only do mascots have an impact on how other cultures view Native Americans, but they also have an impact on how they, as individuals, are viewed by the other students on their campus.

Moratorium also is characterized by “…emotional intensity, including anger toward the dominant group and guilt or embarrassment about their own past lack of knowledge of racial and ethnic issues” (Evans et al., 1998, p. 80). For example, Charlene Teeters (as cited in Rodriguez, 1998), a graduate student at the University of Illinois, began the national protest against the use of Indian mascots in 1987 after she took her two children to a University of Illinois football game. Teeters recalls the following memory:

She tried to prepare her children for what they would see. But nothing she could have said prepared them for the humiliation of seeing people in war paint, wearing feathers and carrying tomahawks. At the tailgate parties the members of sororities and fraternities were doing buck and squaw dances. It was like witnessing the mocking of something sacred—a caricature of a Chief. The mocking, as she saw it, was akin to “Black Sambo” or the “Frito Bandito”—images that were done away with generations ago. “It was sacrilegious. They were culturally cross-dressing.” (Rodriguez 1998, p. 22)

Teeters returned to the football stadium the following Saturday with a placard that read: “Indians are Human Beings. Not Mascots” (p. 22).
It is possible that Teeters and other students with feelings and experiences similar to hers are experiencing the Moratorium stage of identity development. Certainly, Teeters was angry about the portrayal of her Native American culture and perhaps was embarrassed that she had not anticipated how profound the experience would be. Apparently, this anger and embarrassment has inspired her to lead the movement to remove racist mascots. Consequently, she has immersed herself in her Native American culture and explored her identity within it. “Healing the wounds of anger toward Whites is a major step to the last stage of ethnic identity development” (Evans et al., 1998, p. 81). By speaking out about her experiences and organizing efforts to improve them, Teeters is prepared to move on to the next level of growth, which is described in the Phinney Model.

**Identity Achievement.** The third and final stage of Phinney’s Model of Ethnic Identity Development, Identity Achievement, is characterized by an individual’s development of a healthy bicultural identity (Evans et al., 1998). In this stage, “individuals resolve their identity conflicts and come to terms with ethnic and racial issues” (p. 81). When examining mascots and their implications for Native American identity development, individuals in this stage would be comfortable and confident in their ethnic identity while still understanding the political struggle facing the Native American culture. Furthermore, there is no longer a real risk of the individual developing an identity based on the stereotypes and prejudices of the majority group. “As individuals accept membership in the minority culture, they gain a secure sense of ethnic racial identification, while being open to other cultures. The intense emotions of the previous stage give way to a calmer and more confident demeanor” (p. 81).

**USING THE STYLISTIC MODEL TO COUNSEL NATIVE AMERICAN COLLEGE STUDENTS WITH MASCOT ISSUES**

“The code of ethics of the American Psychological Association (1992) states that helping professionals must be aware of cultural, individual, and role differences, including those due to age, gender, race, ethnicity, national origin, religion...language, and socioeconomic status” (Herring 1999, p. xi). As a result, many researchers and helping professionals have begun to develop methods designed to better serve diverse populations.
Heinrich, Corbune, and Thomas (1990) state that “although Native Americans are a small minority of the U.S. population, they are burdened with a disproportionate share of social and economic problems” (pp. 132-133). Consequently, it is crucial that counselors who serve Native American clients have an understanding of their clients’ cultural experiences and foundations.

**The Stylistic Model of Counseling**

To promote this understanding, McFadden developed the stylistic counseling model that “allows persons who already have initial training in counseling or those who are receiving training to develop their own mode or style so that they can be effective in helping others who have experienced oppression” (McFadden, 1999, p. 62). This model, comprised of three dimensions of descriptors that move hierarchically in a vertical, horizontal, or diagonal motion, can help counselors “…master a knowledge of and feeling for the culture and history of the client whose life has been marked by separation, disregard, and oppression” (p. 61). Of course, many Native Americans view Native American mascots to be a sign of this separation, disregard, and oppression. Consequently, the stylistic model can be used to counsel Native Americans who are dealing with the issues associated with these mascots.

**Cultural-Historical Dimension.** The first dimension of the stylistic mode, cultural-historical, is “the basic and fundamental dimension…relating specifically to the culture of a people and how their history evolved over time” (McFadden, 1999, p. 64). This dimension operates under the premise that an effective counselor-client relationship cannot be established without the counselor’s fundamental understanding of the client’s view of his or her heritage, role in the greater social context, and how his or her cultural norms and values function within the surrounding social forces. Some cubical descriptors in the cultural-historical dimension include ethnic/racial discrimination, value systems, and leaders and heroes. Exploring these cubicals can help the counselor to “…identify with the culture of the particular race or ethnicity he or she is counseling” (p. 64).

The exploration of the ethnic/racial discrimination descriptors can help to establish a foundation based on the client’s experiences, resulting from his or her race or ethnicity. As a counselor, “this component is important because one cannot counsel another person transculturally unless one is extremely knowledgeable and sensitive to the discrimination
the client may have experienced” (McFadden, 1999, p. 64). In relation to Native American mascots, it will be important to determine what racist or discriminatory experiences the client has encountered in college as a result of the college’s mascot. “Historically, White institutions such as government bureaus, schools, and churches have deliberately tried to destroy Native American cultural institutions” (Heinrich et al., 1990, p. 129). Thus, it also will be important for the counselor to learn the client’s history, if any, with racism or discrimination. This history could help both the counselor and the client to understand the client’s reaction to the mascot.

Another cubical descriptor in the cultural-historical dimension is value systems. Discussing value systems includes an “...exploration of the history of values embraced by a given culture and how these values influence the lives of an ethnic or racial group” (McFadden, 1999, p. 66). “While keeping in mind the enormous diversity among Native Americans it is possible to identify similarities in values that exist across tribes and regions” (Heinrich et al., 1990, p. 129). When counseling students concerning mascots, the exploration of these values will help to determine the client’s impressions and feelings surrounding the mascots. In addition, it will help the counselor understand whether or not the practices of the mascot and fans accurately portray the values of the client’s culture. This will be beneficial in establishing whether or not the client’s identity development clashes with how his or her identity is defined by the majority culture.

Leaders and heroes, still another cubical descriptor within the cultural-historical dimension, focuses on the idea that there are “...individuals, who by virtue of their function in society, have attained a level of respect as leaders or heroes” (McFadden, 1999, p. 68). First and foremost of the historical leaders and heroes for Native Americans are tribal chiefs. As cited earlier, it can be humiliating for Native Americans to see the image of their chiefs reduced to caricatures and halftime shows. Leaders and heroes are role models, and, as a result, the inaccurate portrayal of these leaders and heroes can lead to confusion or negative identity development. Exploring the client’s perceptions of his or her leaders and heroes will help the counselor to better understand how to approach the issue of mascots.
**Psycho-Social Dimension.** The second dimension of the stylistic model, psychosocial, “…relates specifically to the psychological framework, the formation of a mindset of how a person’s psychic influence affects his or her scope and development, such as in the case of a person’s interaction based on how the person sees his or her own cultural heritage” (McFadden, 1999, p. 64). The psycho-social dimension is important because it helps counselors determine how a person’s cultural-historical foundation affects his or her social motivations and interactions. Some of the psychosocial cubical descriptors include social forces, human dignity, and perception of others.

The social forces descriptor is logistically, and perhaps figuratively, the nexus of the stylistic model. An exploration of this descriptor includes “… a discussion of social forces that affect the lives of persons outside the mainstream of society” (McFadden, 1999, p. 68). Thomason (1991), author of “Counseling Native Americans: An Introduction for Non-Native American Counselors,” asserts that given the diversity of the Native American population, one must be careful to avoid stereotyping Native Americans based on general assumptions. Thomason also argues that “although most of the psychological information available on Native Americans focuses on deviant patterns of adjustment such as suicide, alcoholism, and unemployment,” these generalizations are important social forces pressing on the Native American community (p. 324). Mascots and other stereotypical symbols perpetuated by the media also can be considered serious social forces.

Human dignity, another cubical descriptor in the psychosocial dimension, focuses on the “…maintenance of identity so that individuals can have feelings of self-satisfaction, self-enhancement, empowerment, dignity, and ethnic or cultural pride” (McFadden, 1999, p. 86). Ancis, Choney and Sedlacek (1996) postulate the following:

It is likely that students having been exposed to negative and stereotypical imagery of American Indians throughout the educational process, hold prejudicial attitudes toward them. Because prejudicial attitudes are implicated in the degree to which academic environments foster the emotional, academic, and vocational posture of the American Indians, it seems necessary to assess the exact nature of student attitude. (p. 27)
Consequently, Native American mascots, which are examples of negative and stereotypical imagery, may have profound effects on college students’ perceptions of Native Americans. Because the human dignity cubical is linked so closely to identity development and personality formation, it is important for a counselor to explore this cubical when focusing on the psychosocial dimension.

Finally, the perception of another cubical, perceptions of others, is defined as “... ideas and visions of people based on certain experiences that may have emerged as a result of interaction within a societal context toward a level of transcendency” (McFadden, 1999, p. 68). Charlene Teeters’ experience at the University of Illinois football game is a prime example of the perception of others. Not only was Teeters’ perception of those around her changed after she viewed their behavior, but the next week when she returned to the stadium to protest, she was met with hostility and rejection from many students and spectators. According to Teeters, these experiences had a profound impact on her perceptions of her fellow students. In order to help Teeters and students with concerns like hers, an exploration of her perceptions of others is an important step toward a higher level of transcendency.

Scientific-Ideological Dimension. The third dimension in the stylistic model, “...scientific-ideological, refers specifically to an action-oriented aspect of counseling” (McFadden, 1999, p. 64). Not only does this dimension deal with how people of different ethnicities and races function, communicate, and relate to people of their ethnic or racial groups and those outside such groups, it also deals with how the cultural-historical and psycho-social dimensions motivate people to take action. This dimension involves a “...developmental process of empowering an individual to function given that there is a support system whereby the client becomes optimally productive” (p. 65). Some cubical descriptors in the scientific-ideological dimension are individual goals, economic potency, and media influences.

The individual goals cubical descriptor includes a “...scientific exploration of the identification of goals of historically underrepresented ethnic/racial groups and their aspirations toward the development of a clear ideology for goal attainment” (McFadden, 1999, p. 66). When exploring this descriptor it is important to help the client set goals based upon his or her cultural-historical and psycho-social exploration. The cubical is
marked by a client's understanding of what he or she wants to accomplish in order to achieve a greater sense of transculturalism. In regard to mascots, this may include actions such as the exploration of social forces, action based on the goal of abolishing the mascots, and involvement of other cultures to work toward multicultural education.

Economic potency, another cubical descriptor in the scientific-ideological dimension, deals with "...the ability of ethnic/racial groups to unify and solidify their power (i.e., influence, ability, and impact on the economics of a particular system)" (McFadden, 1999, p. 68). Although Native Americans are a small minority of the United States population, "defining precisely the perimeters of the American Indian population would be a less important matter if it did not determine the apportionment of economic resources and opportunities" (Snipp, 1997, p. 680). In order to receive federal assistance, many Native American individuals and groups must provide proof of blood quantum or tribal membership; however, many agencies do not have the means and equipment to assess these qualities. "Consequently, self-identification is the most widely used method for determining ethnic background" (p. 680). Exploring this descriptor of the scientific-ideological dimension, as it concerns mascots, would involve the client's empowerment to transcend beyond these barriers to influence the higher education system.

Media influences, still another descriptor in the scientific-ideological dimension, involves "...an examination of the positive and negative ways by which the media influence ethnic/racial perceptions in society, and community programs as related to ethnic/racial groups" (McFadden, 1999, p. 68). When examining this descriptor, a counselor and client should explore not only how Native Americans are portrayed by the media but also the effects these portrayals have on the Native American culture. Media influences have a great deal of impact on the use of Native American mascots. The media decides how it chooses to cover athletic events that use racist mascots. In addition, supporters and opposers of Native American mascots use various forms of media to convey their views toward them. Because the scientific-ideological dimension is action-oriented, it is appropriate for the counselor to explore with the client ways in which the client chooses to use the media to encourage transculturalism.
Need for Application of Stylistic Counseling to Native American Students

Although readers of this monograph chapter may not work at institutions with mascots of Native American origin, such mascots exist at all levels of K-12 education, within all types of sports, and are appearing frequently in the media. Irrespective of the presence of such mascots in your particular location, they will appear in the media and influence the attitudes of the public, regarding Native American culture. Counselors who are involved in personal growth and guidance activities throughout the country need to be aware of such influences and exposure to negative mascot images through the media and can address these cultural issues in ways that can counteract their potential negative influences. Certainly, these negative influences may be at their most powerful within college and university communities; however, attitudes are formed and modified throughout people’s lives. Furthermore, these attitudes have implications far beyond classrooms or athletic fields.

One case in point is that of Ricardo Worl, a Native American and former Dartmouth student, who relates the following memories of his college experience in a book entitled *First Persons, First People: Native American College Graduates Tell Their Life Stories*:

I would venture to say that an equal amount of my learning in college came from my social experiences outside of the classroom. The variety of individuals I became friends with provided me with knowledge and lessons more valuable than any textbook. Certainly some of the more memorable moments took place at parties and during playtime. However, some of the more meaningful experiences took place in uncensored dorm room discussions or during student organization meetings...I was able to determine what was important and what wasn’t. I learned to differentiate between those who were sincere and those who were not, and what was appropriate behavior and whom I could trust. I somehow managed to become comfortable and fit in without sacrificing my Indian identity or values. (Garrod & Larrimore, 1997, p. 71)
CONCLUSION

According to Ancis, Choney, and Sedlacek (1996), authors of an article in the *Journal of Multicultural Counseling and Development* entitled “University attitudes toward American Indians,” due to the increasing diversity of the student population in higher education, it is critical to assess student attitudes toward racial minorities. “These attitudes, as a component of the university climate, have significant implications for the advancement and achievement of minority students” (p. 27). Unfortunately, Native Americans attending colleges and universities are few in number, and attitudes toward this minority group are seldom or, perhaps, never addressed on most campuses in higher education. Hopefully, counseling services are available for all students who desire them; yet, the consequences of the influences of Native American mascots on students are unlikely to be addressed.

In general, Native American college students are unlikely to sort out all of the potential negative experiences that come out of their college life independently and successfully (Thomason, 1991), particularly on campuses where the mascots are Native American in origin. Fortunately, counselors who are competent to apply the principles of the Stylistic Counseling model may be of help not only to these students but to the university administration as well.

What is appropriate behavior for colleges and universities that are using Native American mascots? The University of Illinois offers these words, “we welcome discussion and of course we support Chief Illiniwek, but we do not have an official position on this issue, . . . but we feel discussion is important and we certainly welcome it. The University of Illinois is a place of dialogue” (Spindel, 2000, p. 152). Fortunately, Ricardo Worl did not attend an institution that uses a Native American mascot. Imagine how his feelings regarding his Indian identity and values may have been altered if that had been the case. Ricardo Worl learned in college what is important and what is not. Isn’t it time institutions of higher education learn what is important—ticket sales and nostalgia, or sensitivity to culture, cultural pride and awareness, and minority empowerment?
REFERENCES


Teaching and counseling interface each other when educators interact with students and clients. Traditionally, these disciplines both function from the perspective of the learners; however, practitioners of both are likely to desire opportunities to enhance their students' overall well-being and cultural paradigm. Teaching and counseling from a base of "transculturation" can provide the impetus for effectiveness in offering those services to learners (students and counselees) (McFadden, 2003).

The purpose of this monograph chapter is to share some recent insights that the authors have gained as a result of transcultural encounters with the renowned artist, Jonathan Green. To appreciate fully the work of this gifted native of the Lowcountry of South Carolina, one needs to observe his productions with an interdisciplinary eye. His Gullah art creations are breathtaking and are being viewed also through a dance production, "Off the Wall and Onto the Stage: The Evolution of a Ballet," created and directed by William Starrett, Artistic Director of the Columbia City Ballet (Wood, 2005).

**Gullah Language and Culture**

**Historical Roots**

From the coastal islands of Georgetown in South Carolina to the Golden Islands of Georgia resides a unique culture that originated with enslaved people brought primarily from West Africa in the early 1800s (Coastal Discovery Museum, 1998). The majority of the slaves, about 40,000, came from a section of Africa known as Angola. Ingrained within these people of Mende, Kisi, Malinke, and Bantu came what is known as "the soul of Africa." In the exhibits of the Coastal Discovery Museum, their traditions, beliefs, religion, as well as the birth of a new language known as "Gullah" and/or "Geechee" are documented. These
coastal people in South Carolina generally are known as “Gullah,” and in Georgia they typically are referred to as “Geechee” (Greene, 1990). It is thought that the word Gullah itself derives from “Angola” and that Geechee is from a tribal name in Liberia (Coastal Discovery Museum, 1998). Furthermore, from the early 1800s, this enslaved population maintained many African traditions that form the foundation of today’s Gullah/Geechee culture. Even after these Sea Islands were freed in 1861, the Gullah speech flourished because of geographic isolation (“Cultural tour,” 2000). In fact, access to these islands was by water only until the 1950’s. The language of the people can be seen today also in musical performances, which preserve rich-historical pictures of oppression and a society struggling to form an identity in a strange and foreign land.

**The Language – The Culture**

The Gullah language is a Creole mixture of Elizabethan English and traditional African languages (Pollitzer, 1999). Gullah is described as a language of cadence and accents, words and intonations. The Gullah “shout” is described as a rhythmic translation of forbidden drums and the oldest of plantation melodies. In addition, old spirituals and songs spoke of storms and other events in the lives of the slaves and were used as codes for meeting times and places and as messages for freedom. Many visitors to the Sea Islands are struck by the language of long-time African residents (“Cultural Tour,” 2000). The Gullah language, a unique African American dialect, still preserves grammar and pronunciation elements of African languages, while it also incorporates English vocabulary (Pollitzer, 1999). This unique Creole language developed as a practical way for Africans and their captors from a different linguistic background to communicate with one another. Furthermore, vocabulary from English, French, Portuguese, and other European languages were added to the mix to facilitate communication with European slave owners. In fact, the language is the only distinctly African American Creole language in the United States (“Cultural Tour,” 2000).

From its religion and social customs to its music and crafts, the Gullah/Geechee culture reflects important aspects of the slaves’ African homeland. Many of the original enslaved inhabitants of the island were from societies that farmed, fished with nets, and hunted game in subtropical climates (Edgar, 1998). Many of the Africans and their descendants were allowed their own plots for growing vegetables; others learned new skills
such as carpentry and wheel righting. The African art of making coiled baskets known as sweet-grass baskets endured, and they still command a hefty price on Hilton Head Island and in the streets of coastal cities (“Cultural Tour,” 2000). In fact, it was a black-rush basket called the fanner, developed by the Gullah/Geechee, which enhanced the success of the early rice industry in the region (Edgar, 1998). Threshed rice was tossed (i.e., “fanned”) into the air from the baskets to allow the wind to carry off the chaff.

The social customs and order in many Gullah/Geechee communities can still be found within these cultural and ethnic populations today. For example, newly married couples often moved to the home of the husband’s parents until they could build their own home on the property; therefore, the home could potentially house three generations or more at one time.

Gullah culture and customs are indigenous of the “guichee” or Geechee way of life that has been passed down over seven generations. Because of their geographic protection from outsiders and strong sense of family and community, Gullah people have maintained more of the African culture than other African-American populations in other parts of the United States (“Cultural Tour,” 2000). Echoes of an earlier time are seen within this culture’s music, its religion, as well as in images. In fact, some of the natives’ original “Praise Houses” are still standing today. Many Gullah traditions and ways of life are described as spreading through word of mouth, while others are carried through artistic pictures and creative dance movements inspired of the time period.

**JONATHAN GREEN’S TRANSCULTURAL WELLSPRING**

Jonathan Green is described as a “Gullah” painter. Even a cursory look at his life and work reveals the obvious: He is an accomplished and extremely successful artist, who is of Gullah descent (Gallery Chuma, http://gallerychuma.com/jgreen_bio.html). He has consciously chosen to make the Gullah life of his childhood a focus for his art (Gullah Images: The Art of Jonathan Green, 1996, p. 12); yet, to see Mr. Green only in this way would be to miss what has motivated him, what makes him great, and what excites so many who experience his paintings. There seems to be something deeper at work in his art; perhaps, he has effectively tapped a source that can inspire and help others. In this
monograph chapter, we will discuss Green’s approach to his own development and the model it can provide for the cultivation of excellence and appreciation of the Gullah culture.

To get to the wellspring we must go the source; Green’s biography tells the factual story (Gallery Chuma, 2005). For Jonathan Green life began in Gardens Corner, which is not far from the coastal city of Beaufort, South Carolina. Jonathan is the second of seven children and enters life within a rural, closely-knit community that author Pat Conroy notes was an entire “world apart both in texture and time” (Conroy, as cited in Gallery Chuma, 2005). Gardens Corner is just one of many Gullah communities stretching along the Carolina and Georgia coasts, with a distinct heritage that evolved from slaves brought in to work on plantations beginning with the founding of Charleston in 1670 (Edgar, 1999).

Although Gullah culture had already passed its period of maximum expression by the time Jonathan was born in August of 1955 (Greene, 1990), its way of life was still very much alive. Certainly, the Gullah life was a colorful world with waterways, oystermen, boatmen, unique clothing, sweet-grass baskets, extended families living in clusters, storytelling, praise houses, and, above all, rituals passed through oral traditions that reflect centuries of African origins (Pollitzer, 1999). From the perspective of a future artist, Jonathan could not have asked for a more evocative milieu from which to emerge.

Because Green’s art is so colorful, there is a temptation to focus on picturesque aspects of his childhood world. The coastal landscapes, people, and stories that he chooses to paint are undeniably beautiful and vibrant. This makes it easy to overlook the hardships of daily living and especially the significance of “…values born in Africa and honed through slavery and oppression, based on harmony with nature and fellow men” (Pollitzer, 1999, p. 4). Jonathan’s people were not museum pieces, and, understandably, he is sensitive about his work being perceived as a quaint portrayal of a bygone era (J. Green, personal communication, February 5, 2005). In interviews given over the past decade he continuously points out that he is presenting universal themes through an interpretation of the particular culture in which he grew up. Although he concentrates on Gullah scenes, his outlook and art techniques also come from outside sources (Greene, 1990), giving his works more depth and wider appeal than if perceived as historical work.
Green's artistic inspiration began with experiences of family and communal support; yet, they are not just postcard memories from a disappearing way of life. When Jonathan was young, his mother moved north from economic necessity to seek better opportunities like so many before her. As a child, he lived with her parents in Gardens Corner. In an interview conducted at the world premier of the Ballet by William Starrett that is based on Green's art, the artist recalls,

Most of my perspective on life relates to the dialogues and expressions that I had with my grandmother and elders during my formative years . . . their thoughts, feelings, and touch are indelibly imbedded in my memory. When I paint I can hear the rich melodic voice of Grandmother singing in the church and the soothing patterns of her speech as she offered encouragement and support to those around her. I continue to recall the natural rhythm of my relatives as they toiled the earth, strolled worn paths from their homes to community meetings and moved to the music endlessly flowing from my family's treasured jukebox. These memories convey a sense of community and harmony with one's environment.  
(J. Green, personal interview, Koger Center for the Arts, Columbia, SC, February 5, 2005)

It was in Gardens Corners that Jonathan learned the Gullah dialect and was actively taught many things about his community, its traditions and beliefs. In another statement for the Gallery Chuma in Charleston, he noted that he was always interested in how crafts were done, who everyone's relatives were, and the religious functions of the community. “I had all this stuff in my head but I didn’t have a place for it until I started painting.” (Gallery Chuma, 2005, http://gallerychuma.com/jgreen_bio.html).

There would be even more “stuff” for Jonathan to put into his head before he could become an artist, since his experiences were not limited to life with his grandparents in Gardens Corner. He regularly visited his mother in New York during vacations and lived with her for a while during his preteen years (Gallery Chuma, 2005). Coping with the contrast between the worlds of Gardens Corner and New York was not always easy, but it did have an advantage. It placed Jonathan in a position to start developing a more complex
consciousness — one that is both rural and urban, which is described as a dual awareness of traditional community and an individual-modern self. For the artist and the man this was significant because it formed the early stages of a broader awareness from which he could draw and an orientation towards building bridges between peoples and generations. Although his first cross-cultural experience arose out of family necessity, it appears that it did not take him long to understand the potential benefits; thus, he began the process of actively seeking out places and cultures that could help him develop along lines of excellence (J. Green, personal communication, February 16, 2005).

Jonathan returned to South Carolina and attended Beaufort High School where some of his teachers began to take note of his abilities (Gallery Chuma, 2005). By now he was being encouraged to create art at home and at school. He clearly liked to draw but had misgivings as to whether he could actually support himself as an artist. Upon graduation he was still unclear about a career path. Living out of state with his mother had given him an interest in travel and the world beyond South Carolina. Unfortunately, there was no money for travel, formal art training, or for a college education. Because a recruiter for the Air Force indicated that Jonathan could attend illustration school if he joined the service, he signed up for a tour of duty. The plan to study illustration with financial support from the Air Force may have been based upon sound reasoning, but the reality of his tour of duty started out quite differently. He was assigned the job of cook and was sent to a base in North Dakota.

The move to North Dakota and his service in the Air Force turned out to be another broadening experience, although it felt like an enormous setback at the time. The initial hopelessness of his situation quickly led Jonathan into a depression. Over time he managed to find the East Grand Forks Technical Institute in Minnesota, which offered a training program for textile design and courses in illustration. Despite some difficulties, he devised a way to enroll so he could pursue his passion for art. The experiences he deliberately sought began to pay off as he gained professional knowledge of fabric construction and pattern and a meticulous understanding of clothing that would manifest itself in detailed expression in many of his later paintings. There also was another payoff — the presence of encouraging instructors who guided him toward the next phase in his career, a shift to the “fertile art world” of Chicago (Gallery Chuma, 2005).
After completing military service and his studies at the technical institute, Jonathan moved to study fine art at the School of Art Institute of Chicago. This was an environment from which he could progress as an artist; it is a world-class art institution with a diverse faculty and an international student body, located in a large multicultural city. For the next four years he took courses from a variety of professors with contrasting approaches to art. To support himself he became a security guard at the art museum where, in his own way, he studied great masters from all over the world, past and present. At first he imitated others’ artistic expressions, but, increasingly he found his own direction, especially when painting scenes and people he knew as a child. By the time he graduated with a Bachelor’s Degree of Fine Art in 1982, he had become an accomplished artist who was now able to earn a modest living from the sale of his paintings (J. Green, personal communication, February 16, 2005).

It was during the Chicago period that Jonathan met his partner and business manager, Richard D. Weedman. Even with an art degree in hand Green still felt the desire to examine other ways of painting and living; so, Weedman made it possible for him to travel abroad for independent study. Jonathan has often remarked that this was the watershed experience in his artistic development, one that finally brought him back decisively to his Gullah roots and his own vision. He toured Europe and Mexico visiting museums and creating paintings inspired by the people and places that he saw. As he did so, he began to recognize that “the best artists are those who paint what they know best. It took a trip to Switzerland and Mexico to return me to Gardens Corner and begin my body of work of Gullah life reflections” (J. Green, personal communication, February 16, 2005).

When he returned to the United States, Jonathan had clarified his vision, though there were still details to be worked out. He knew he would be painting recollections of life among the extended family and neighbors who raised and taught him. As he said later, “I wanted to go back to my roots. The older people were dying and I began to see people differently. I saw them as a people with a strong link, probably the strongest link with Africa of any of the black American people. I had studied African Art, and I began to appreciate a certain uniqueness” (J. Green, personal communication, February 5, 2005).

Jonathan realized that his art would have to include the tales, the rituals, the nurturing relationships that pulled past generations to the present, the traditions of
community, and the spirituality that flowed through them. He was inspired in his vision by many African American artists but especially by Jacob Lawrence whose work he studied intensively. Lawrence placed special emphasis upon the role of the artist as a storyteller. Green would follow this tradition but would concentrate upon the particulars of his own childhood, and in doing so he would recall the feel, texture, and color of a way of life he knew was disappearing. He commented on the occasion of the premier of the Starrett ballet that he was aware that he can’t save a whole culture, but as an artist he knew he could help create awareness of the Gullah culture (J. Green, personal communication, February 5, 2005).

The awareness that was motivating Green was not just of his own endangered Gullah culture but also embraced all traditions. In a recent interview he said of his approach, “It could be about any culture, anywhere in the world. I mean we all do the same things: We work, we love, we die, we worship, and then it starts over and over and over again. What I would like more than anything is for people to look at this ... and to start to think about their own form of cultural expression and their behavior ...” (Columbia Free Times, February 2-8, 2005, p. 9)

Jonathan left South Carolina in the early 1970’s motivated mainly by an interest in studying art. By the 1980’s his artistic odyssey had come back full circle but with a deeper “transcultural” motivation. Along the way he had deliberately exposed himself to art traditions from around the world and from other times. For the past twenty years Green has lived in Naples, Florida, steadily creating art that is focused on Gullah culture, using an ever-changing mix of techniques far beyond his upbringing.

The gorgeous deep blue skies stacked with clouds one often sees in his paintings are typical of where he lives now. His landscapes sometimes have a “French” feeling reminiscent of romantic painters from the 19th century. The rich green grasses in recent paintings can remind one of Van Gogh, with an obsessive, almost compulsive, attention to each individual blade of grass that creates an electric, “hyper-real” effect. The loving attention to fabric and pattern recalls the Pattern and Decoration movement of the 1970’s, the work of Henri Matisse at the turn of the century, and the many painters of clothing that go back to the renaissance. His compositions reflect formal training in the European tradition as well as modern sensibilities, but the paintings themselves often have a simple
folk-art feeling. The colors he uses can be boldly Caribbean and African, but they also have been very subtle. This is not simple “stuff,” and it is the skillful use of various artistic techniques, perhaps, as much as his subjects that make his work so appealing to a broad audience.

Whatever the techniques of the moment may be, his paintings always reflect an authentic historical concern, a conceptual accuracy, even if they are not literally realistic. Children of all backgrounds appear to love the stunning graphics in Jonathan Green’s work, as do their parents who possibly have a better conception of the underlying subject matter. Today his art is being used in classrooms (Wood, 2005) at many levels to assist in the teaching of art, social studies, African American studies, and other subjects as well. This should not be surprising since his art has such immediate eye-appeal, is rooted firmly in history, and is trying deliberately to transcend cultural and generational boundaries. Certainly, the paintings and their subject material deservedly receive most of the educational attention paid to them. This is probably just the way Green prefers it because in person he comes across as a serene and gentle man, a dignified artist who is modest and unassuming by nature. However, for educational purposes, it is instructive to focus upon the man himself to see how he came to be so good at what he does.

It is clear that Green was encouraged and valued as a child, especially by his grandmother, and he was included early in the traditions of his community, which was something greater than life with just family and peers (Gallery Chuma, 2005). Although many of us appreciate the value of such an upbringing, we may find its implementation difficult at times, especially in today’s fragmented world. Like so many other children, Jonathan began exhibiting specific interests, which were recognized by those around him, even if they were not clear about what should be done next or how to guide him (Gallery Chuma, 2005). Green could have remained in South Carolina and become a fine local painter, more or less on his own, but he took a different road.

What started Green on the road to greater excellence, however, was an immersion into a contrasting world (i.e., New York), which challenged him to transcend a merely local background, no matter how rich its heritage may be. His growth in that new and different environment apparently let him see the benefit of actively seeking out broadening experiences while still appreciating the important elements of the older ways. Indeed, it
was his later travel and exposure to other lifestyles that helped Jonathan to more clearly understand the extraordinary aspects of his own childhood world and gave him the desire to share it in some way.

The other factor in Green’s growth towards excellence was his recognition of a genuine interest and willingness over time to do something about it in a disciplined way. Psychologists know that achieving mastery of a complex skill—whether it is mathematics, music, writing, sports, or painting—can happen naturally as a child is drawn into an activity that spontaneously engages him, something that he truly enjoys. The initial passion can be the seed for high levels of attainment if the child recognizes that pursuing the skill is becoming a source of joy for him and others. Apparently, it takes pushing the limits of ability to sustain the flow of joy, which in itself becomes the motivator for getting better and better. Green continuously kept doing what he loved and was resourceful in finding ways to keep improving. His ongoing quest to improve his craft led him to many places, to other cultures, to other techniques of painting, and ultimately back to the beauty of his own upbringing (Gallery Chuma, 2005).

Jonathan Green is one illustrator who captures the essence of the people located in Coastal South Carolina. Being a descendant of enslaved Africans from various ethnic groups of west and central Africa, Jonathon Green learned his historical roots from his grandmother, who also often fulfilled the role of mother and primary caretaker. Jonathon Green learned the Gullah dialect and culture as a child growing up in his maternal grandmother’s home in the 1960s. Mr. Green has created over 1700 works depicting the unique African/American culture he considers his own (Gallery Chuma, 2005). The culture in which he was embedded as a child, indeed, became Jonathan Green’s “well spring.”

The transcultural wellspring that Jonathan Green draws upon is available to today’s students and clients as well. It derives not just from an appreciation of a particular heritage but also from an approach to learning a skill that includes the whole world and all of its possibilities. Green’s life is a wonderful example of the power of a wellspring. Perhaps, he has said it best, “The sense of my art is in my culture. What is seen in my work comes from a time and place, but it speaks to all times, all places, and all mankind” (J. Green, personal communication, February 16, 2005).
Implications for Teaching

In today's schools and classrooms, students often represent a plethora of cultures and subcultures. Certainly, students being served in today's educational system are from a variety of ethnicities and religions. It is important more than any other time in history that learners are exposed and introduced to a variety of cultures and traditions practiced by different ethnic or religious groups dissimilar from their own (McPadden, 1999). It is imperative that students gain insight and respect for the vast variety of cultural, ethnic, and religious traditions practiced in this country.

During a time when the educational system is challenged to be more global in its approach to teaching students, it is important to provide an effective passageway to deliver a sound and relevant curriculum, one in which diversity, tolerance, and multiculturalism are promoted and emphasized. The passageway should reach across academic disciplines such as art, English, mathematics, social studies, and science. It should provide students of all levels of learning ability with the equivalent amount of academic opportunity and exposure to different cultures.

Schools are given the tremendous task of preparing students to become citizens in a time of heightened awareness and the need to be multicultural and tolerant of others and their cultural, ethnic, and religious practices. In order to achieve multiculturalism and tolerance, students need to be exposed to cultures other then their own (McPadden, 1999). They have to be challenged to look outside of the protective box of conformability and bask in the light of self-examination. Hopefully, they will develop an unending enthusiasm for learning about others.

One avenue that can be used to progress toward such a goal, which is often overlooked and underutilized in today's schools, is the use of art to encourage and promote multiculturalism and tolerance of other cultures. Art and artistic works are common artifacts and traditions among cultures. Undeniably, since the dawn of mankind, some form of artistic expression has been a part of life. To find a culture or civilization in history that is without art or some expression of artistic works would be evidence of a culture that was doomed from the beginning. Art for many prehistoric civilizations was a method of communication, and without it cultures could not become progressive and could not survive (Art and Life, 1991).
To develop and promote a curriculum in which students are open and willing to examine and ultimately to accept other cultures, we, as educators, have to stress the commonalities shared by all people as well as to encourage understanding and appreciating the differences among an assortment of cultures and subcultures. The mission here is to bring to the student’s awareness an interconnectedness as well as a differentiation between one’s life, one’s culture, and the lives and culture of others (McFadden, 1999). To accomplish this mission, educators will need to focus on the content, social context, and method in which students are exposed to and taught about similarities and differences in cultures.

Art certainly can take on many forms and expressions; art can be music, dance, drama/theater, paintings, sculptures, poems, and play to name a few. Through these mediums the cultural history generally has been told and shared from one generation to another. Art has provided the pathway and linking bond for past generations to future ones. It has served as a narrative for those outside of a particular culture who have explored and showed interest in learning about traditions and rituals of that culture.

The challenge for educators is to take this knowledge of how powerful and significant a role that art can play in creating a multicultural and diverse curriculum and to implement it within the classroom setting. Through the implementation of art curriculum into the classroom, it is hoped that these efforts will foster an environment of learners that are not just aware of cultural similarities and differences but are culturally diverse and tolerant in practice. A proposed plan to foster such an implementation is presented here for the perusal of educators (i.e., teachers and counselors) who embrace the mission that is addressed here. Readers are encouraged to use the sample lesson plan that follows in pursuit of implementing a part of this transcultural mission.

**Sample Lesson Plan**

What follows is a sample lesson plan that can be implemented universally, from the elementary to the collegiate level. The example provided focuses on utilizing the paintings of Jonathan Green to introduce and expose students to the Gullah culture. This lesson can be adapted to any social studies (i.e., history and geography) or English class. The plan is generic, but educators can use a variety of activities to implement the plan.
**Day One.** Introduce the students to the Gullah culture. Provide students with information pertaining to the history of the culture. Talk about its people, their customs, traditions, language, heritage, religion, racial composition, economic impact, and their influence on today's society. This presentation will be further enhanced through the use of video, examples of traditional garments, and other visual aids.

**Day Two.** Introduce the students to the artist, Jonathan Green. The introduction should be thorough and in-depth. Give a descriptive and detailed biography of the artist including his body of work that is available particularly on the internet. The closing material will be a chronology that should summarize the information provided in the introduction and the biography, perhaps, in a time-line format.

**Days Three and Four.** Introduce the students to the artist's body of work. Give at least 15 examples of pieces that the artist has created. Show the work either through prints or through the use of slides or video. Give the students an opportunity to examine each piece and to arrive at what they believe the artist is attempting to communicate through each one. Discuss the pieces as a class, and after each discussion share with the students the artist's interpretation of each piece and the inspiration behind it.

**Day Five.** Have the students explore the paintings in more detail and find the cultural richness of each painting (e.g., small group activity may be used). Have the students examine the paintings to find the cultural symbolism that the artist is expressing. Challenge the students to make connections between the Gullah culture and their own.

**Day Six.** Review and discuss further the paintings, the artist, the culture, the similarities and differences. Small groups may prepare reports presenting the conclusions they reached on the paintings they studied the previous day.

**Day Seven.** Assess what the students have learned through the form of essay questioning. The strategies used in the assessment may constitute creative writing and personal applications of their learning to their own lives.

The process illustrated by this teaching plan can be repeated by introducing a new culture and artists whose work also lends itself to this type of cultural examination. Additional ideas to adapt to this kind of learning experiences can be found in teacher's guides that may be available from museums. One example is the Art and life of William...
Innovative educators may want to provide additional activities within these lessons that provide a means of expressing one's self in a way that could open students to "transcultural" experiences. Zimmerman's (1990) guide, *Teaching Art from a Global Perspective*, is an excellent resource. Museums often provide educational opportunities for a variety of age groups. Wood (2005) describes such an exhibit that was open concurrently with the premier of the William Starrett ballet, which celebrates the paintings of Jonathan Green. Counselors who are seeking to foster personal growth as well as cultural awareness also may benefit from the type of experiences described by Ramsey (1994) that are designed to promote multicultural counseling. Although many resources exist, listing resources it is not within the scope of this monograph chapter.

**CONCLUSION**

The inclusion of art in the American educational experience may be in jeopardy, but opportunities exist for educators to become involved in integrating art into their curriculum in a variety of disciplines. The integration of Jonathan Green's painting and William Starrett's ballet is a celebration of Gullah culture, but it also is an example of how art contributes to cultural awareness. Such awareness is one step toward providing a community with opportunities for broadening their knowledge and appreciation of a specific culture. This event also provided educators with opportunities to familiarize themselves with the personal "story" of Jonathan Green's journey to excellence in his chosen career. This chapter is an attempt to address the needs of people of all ages to grow in not only their knowledge of cultures that are different from their own but also in their potential to become "transcultural" individuals.

In a world of global crisis and rapidly expanding technology that consistently displays our cultural diversity, teaching and counseling from a base of "transculturation" can provide the impetus for effectiveness in offering those services to learners throughout our educational system. Our efforts to bring readers of this monograph example of how art can enable people to become more culturally knowledgeable about Gullah culture also serves to emphasize the need to not only retain but also, perhaps, to expand the role of art in our
educational systems. Although teaching and counseling both function from the perspective of the learners, practitioners of both need to avail themselves of opportunities such as these to enhance their students overall well being as well as their cultural paradigm. Jonathan Green is reported to say that he not only wants his art to call attention to the Gullah culture but also to call attention to other's cultural traditions (Cook, 2005).

It is important to develop and promote a curriculum in which students are open and willing to not only examine, but ultimately to accept other cultures. All of us, as educators or advocates of the best for our children, must find opportunities to stress the commonalities shared by all people as well as to encourage understanding and appreciating the differences among an assortment of cultures and subcultures. As previously cited, the mission here is to bring to the student's awareness an interconnectedness as well as a differentiation between one's life, one's culture, and the lives and culture of others (McFadden, 1999). The point is that all of us need to become "transcultural" people.

REFERENCES


PART 1: MOORE SCHOOL OF BUSINESS
DATA MINING AND INFORMATION SCIENCE: CONTRIBUTIONS, PERSPECTIVES AND FUTURE RESEARCH DIRECTIONS

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The information explosion is a serious challenge for information-intensive institutions. Data mining, which is the search for valuable information in large volumes of data, is one of the solutions to face this challenge. In the past several years, data mining has made a significant contribution to the field of information science. This paper examines the impact of data mining by reviewing existing applications, including personalized environments, electronic commerce, and search engines. For these three types of application, the manner in which data mining can enhance their functions is discussed. The reader of this paper is expected to get an overview of the state of the art research associated with these types of applications. Furthermore, the limitations of current work are identified and several directions are proffered for future research.

As information institutions transform their role from passive data collection to a more active exploration and exploitation of information, they face a serious challenge: How can they handle a massive amount of data that the institutions generate, collect and store? There is a need to have a technology that can access, analyze, summarize, and interpret information intelligently and automatically. In response to this challenge, the field of data mining has emerged. Data mining is essentially the process of extracting valuable information from large amounts of data (Hand, Mannila, & Smyth, 2001). It can be used to discover hidden relationships, patterns, and interdependencies and to generate rules that predict correlations. As a result of using these procedures, institutions can make critical decisions faster or with a greater degree of confidence than has been possible previously (Gargano & Ragged, 1999).

In the past decade, data mining has changed the discipline of information science, which includes the study of the properties of information and the methods and techniques used in the acquisition, analysis, organization, dissemination, and use of information
There is a wide range of data-mining techniques that have been used successfully in a variety of applications. This monograph chapter is an attempt to illustrate how data mining can contribute to the field of information science by reviewing some key applications. To provide a sound understanding of data-mining applications, it is necessary to build a clear link between tasks and applications; therefore, this chapter begins by explaining the key tasks that data mining can achieve. The following section contains a discussion of application domains (i.e., where data mining can be helpful). Three common application domains are identified (i.e., personalized environments, electronic commerce, and search engines). For each domain, the manner in which data mining can enhance the functions will be described. Subsequently, the problems of current research will be addressed followed by a discussion of directions for future research.

**TASKS: WHAT CAN BE ACHIEVED?**

Data mining can be used to carry out many types of tasks. Based on the types of knowledge to be discovered, it can be broadly divided into supervised discovery and unsupervised discovery. The former requires the data to be pre-classified. Each item is associated with a unique label, signifying the class in which the item belongs. In contrast, the latter does not require pre-classification of the data and can form groups that share common characteristics (Nolan, 2002). To carry out these two main task types, four data-mining approaches are commonly used: Clustering, classification, association rules, and visualization.

**Clustering**

Clustering, which is also known as Exploratory Data Analysis (EDA; Tukey, 1977), is a division of data into groups of similar objects. Each group, called a cluster, consists of objects that are similar among themselves and dissimilar from objects of other groups (Roussinov & Zhao, 2003). From a data-mining perspective, clustering is the unsupervised discovery of hidden data concepts and has the advantage of uncovering unanticipated trends, correlations, or patterns. According to Roussinov and Zhao, no assumptions are made about the structure of the data. The management of customers’ relationships via database-marketing campaigns is an example of using this approach.
Classification

Classification, which is a process of supervised discovery, is an important issue in data mining. It refers to the data-mining problem of attempting to discover predictive patterns where a predicted attribute is nominal or categorical. The objective of classification is not to explore the data to discover interesting segments but rather to decide how new items should be classified (Roussinov & Zhao, 2003). One example of classification applications is the provision of personalized-learning environments based on users' characteristics, needs, and preferences.

Association Rules

Association rules, which were first proposed by Agrawal and Srikant (1994), are primarily used to find the meaningful relationships between items or features that occur synchronously in databases (Roussinov & Zhao, 2003). This approach is useful when one has an idea of different associations that are being sought out because one is likely to find several different types of correlations in a large data set. Association rules have been widely applied to extract knowledge from web log data (Lee, Kim, Chung & Kwon, 2002). In particular, this approach is very popular among marketing managers and retailers in electronic commerce who want to find associative patterns among products.

Visualization

The visualization approach to data mining is based on an assumption that human beings are good at perceiving structure in visual forms. The basic idea is to present the data in some visual form, allowing the human to gain insight from the data, to draw conclusions, and to interact directly with the data (Ankerst, 2001). This approach is especially useful when little is known about the data, and the exploration goals are vague. One example of using visualization is author co-citation analysis.

APPLICATIONS: WHERE CAN DATA MINING BE USEFUL?

As mentioned above, data mining can be used to carry out various types of tasks, using approaches such as classification, clustering, association rules, and visualization. These tasks have been implemented in many application domains. Key application domains that data mining can support in the field of information
科学包括个性化环境、电子商务和搜索引擎。表1总结了数据挖掘在每种应用中的关键贡献。

### Personalized Environments

越来越多的个性化应用正试图集成数据挖掘（Mitchell, Chen, & Macredie, 2004）。个性化是指根据每个个体的特征自动调整内容呈现和导航支持。表1总结了数据挖掘的贡献。

<table>
<thead>
<tr>
<th>Application</th>
<th>Contributions</th>
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<tbody>
<tr>
<td>Personalized Environments</td>
<td>To adapt content presentation and navigation support based on each individual's characteristics.</td>
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<tr>
<td></td>
<td>To understand users' access patterns by mining the data collected from web log files.</td>
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<tr>
<td></td>
<td>To tailor to the users' perceived preferences by matching usage and content profiles.</td>
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<tr>
<td>Electronic Commerce</td>
<td>To divide the customers into several segments based on their similar purchasing behavior.</td>
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<td></td>
<td>To explore the association structure between the sales of different products.</td>
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<tr>
<td></td>
<td>To discover patterns and predict future values by analyzing time series data.</td>
</tr>
<tr>
<td>Search Engine</td>
<td>To identify the ranking of the pages by analyzing the interconnections of a series of related pages.</td>
</tr>
<tr>
<td></td>
<td>To improve the precision by examining textual content and users' logs.</td>
</tr>
<tr>
<td></td>
<td>To recognize the intellectual structure of works by analyzing how authors are cited together.</td>
</tr>
</tbody>
</table>

**Table 1. Data Mining Contributions**

本节提供了一个信息内容、结构和呈现方面的个性化，由个人用户（Ramakrishnan & Perugini, 2001）。一个主要的应用是e-learning程序，其中内容呈现和导航支持根据使用分类方法识别了他的/她的特征、需求和偏好。例如，Mitchell等人（2004）开发了一个个性化网络化学习环境，根据学生认知风格。

**Electronic Commerce**

The widespread use of the web has had a tremendous impact on the way organizations interact with their partners and customers. Many organizations are analyzing online customers’ behavior and developing marketing strategies to create additional markets. Therefore, new techniques to promote electronic business have become essential, and data mining is one of the most popular techniques (Changchien & Lu, 2001). Data-mining applications in electronic commerce include customer management, retail business, and time-series analysis.

**Search Engines**

Data mining is of increasing importance for companies that provide search engines. Traditional search engines offer limited assistance to users in locating the relevant information they need. Data mining can help search engines to provide more advanced features. According to current applications, the potential advantages are the ranking of pages, the improvement of precision, and citation analysis.

**PROBLEMS AND FUTURE WORK**

The above three application domains demonstrate that data mining is a useful technology and opens up new opportunities for data analysis. However, there are still some difficulties of which we need to be aware that should be investigated further.

**Data Cleaning**

It is important to know that the effective implementation of data-mining methods depends to a large extent on the quality of the data. Therefore, a data cleaning step generally is needed before analysis is attempted. Data cleaning deals with detecting and removing errors and inconsistencies from data in order to improve its quality (Rahm & Do, 2000). This becomes especially necessary when multiple data sources need to be integrated because those sources often contain redundant data in different representations. According to Rahm and Do, although the large number of tools indicates both the importance and difficulties of data cleaning, only scant research has appeared on data cleaning.
**Interdisciplinary Research**

Data mining is an interdisciplinary study, which embraces several current information technologies such as information visualization, machine learning, and soft computing. One of the significant problems for interdisciplinary research is the range and levels of domain expertise that are present among potential users. Therefore, it can be difficult to provide access mechanisms which are appropriate to all (Kuonen, 2003). Certainly, the need exists to develop tools that can help to conduct good communication between experts from the fields of different information technologies. In addition, further work is needed to integrate these technologies, and this integration may offer more methodologies to investigate the problems of data mining.

**Multimedia Mining**

Multimedia mining is used to mine unstructured information and knowledge from multimedia sources. This is a challenging field due to the fact that multimedia databases are widespread. There are tools for managing and searching within such collections, but the need for tools to extract hidden useful knowledge embedded within multimedia data is becoming critical for many applications. Nevertheless, multimedia mining has received less attention than text mining (Kosala & Blockeel, 2000), and it opens a new window for future researchers to explore. Today, it appears that we need tools for discovering relationships between data items or segments within images, classifying images based on their content, extracting patterns from sound, categorizing speech and music, recognizing and tracking objects in video streams, relations between different multimedia components, and cross-media object relations.

**Assessment of Effectiveness**

As previously described, data mining can enhance the functions of various types of application in the field of information science; however, the effectiveness of these applications is still in question. This is due to the fact that most previous evaluation concerned the comparison of different techniques, instead of assessing effectiveness from user points of view. Consequently, there seems to be a need to conduct more empirical studies to verify the effectiveness and evaluate the performance of these applications based on the users' perspective. Better understanding of users' needs can help designers to develop effective applications that will take the advantages
of the features of data mining into account at the same time as focusing on users' requirements. In addition, such an evaluation can shed light on the efficient use of data-mining techniques and can potentially result in better end-to-end system performance, which in turn has a direct positive impact on the user experience.

**CONCLUSIONS**

Within the past 10 years, there has been significant progress in the field of information science. Some of this progress represents improvements in existing techniques. One of these techniques is data mining, which can search for interesting relationships and global patterns from various types of resources.

This monograph chapter contains some background for understanding data-mining techniques. Data mining is widely used in many applications, but three key application domains, including electronic commerce, personalized environments, and search engines were the focus of this chapter. The survey of applications presented here provides additional insight into the contribution of data mining in information science. This knowledge can be useful in selecting appropriate approaches for a specific application because understanding the scope and limitations of current applications is helpful in developing new applications. There are many potential research areas for data mining. Areas where there appears to be a need for more research were identified. This research is essential if the capability of data mining and its powerful data-analysis techniques are to be fully developed.

**REFERENCES**


PART 2: NORMAN J. ARNOLD
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EMPLOYMENT STATUS AND HYPERTENSION IN WOMEN

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Hypertension is one of the risk factors that can be hereditary but can be controlled by diet, exercise, and reducing and controlling the amount of stress a person experiences. Hypertension generally is referred to as the silent killer because it often has no symptoms and can cause serious illness if it is untreated. The prevalence rate for hypertension among Caucasian females is 20.5%, and it is 36.6% for African American females (American Health Association [AHA], 2003). A higher percentage of men than women have hypertension until age 55. From ages 55-74 the percentage of women is slightly higher; after that a much higher percentage of women have hypertension than men (AHA, 2003). It is hypothesized that there is an association between employment status and hypertension. While some professions require more mental and/or physical exertion than others, choice of employment could have an effect on one’s health status (i.e., presence of hypertension).

The purpose of this monograph chapter is to determine the relationship between the exposure (i.e., employment) and outcome (i.e., hypertension) among women, to identify whether or not employment is associated with hypertension in women, and finally to identify Cardiovascular Disease (CVD) risk among women employed in traditionally-male occupations. The main area of study is the association of the employment status of women by type as well as the examination of differences between the rates of hypertension among employed and unemployed women.

BACKGROUND

Hypertension, also known as high blood pressure, is one of the most complex modifiable risk factors and medical conditions, which have the potential to lead to cardiovascular disease. It is well known that there are a variety of conditions that impact upon the risk of hypertension, which include heredity, dietary patterns, physical activity, and stress. Hypertension also is considered one of the most prevalent risk factors of
cardiovascular disease (CVD). Persons with hypertension have three to four times the risk of developing heart disease than those without high-blood pressure (South Carolina Department of Health and Environmental Control [SC DHEC], 2002). Heart disease affects more Americans than any other diseases combined. Cardiovascular disease (CVD), the disease of the heart and blood vessels, is one of the most serious diseases that leads to a greater incidence of morbidity and mortality among adults (Thompson, 2004). Research now indicates that between 70 and 80 percent of all diseases and illnesses are stress related (Seaward, 2002), with CVD being no exception. With the eradication of infectious diseases of the past, deaths today often are characterized as lifestyle diseases (Boyle, 2001), which are diseases in which pathology develops over a period of several years or decades.

More than 61 million Americans have some form of CVD, including high blood pressure, coronary heart disease, stroke, congestive heart failure, and other conditions (Center for Disease Control & Prevention [CDC], 2002). Cardiovascular disease does not discriminate between women and men; however, women with CVD tend to be under diagnosed and treated less aggressively than men (Chow, Schloss, & Waller, 2001). Hypertension killed 42,997 Americans in 1999 and contributed to the deaths of about 227,000 individuals (AHA, 2003). In addition, one in five Americans (and one in four adults) are documented as having high blood pressure. For the past 40 years, CVD has been researched and documented mainly as a male disease; however, more women and especially women, after age 55 or after menopause, are significantly more at risk of morbidity and mortality associated with heart disease (CDC, 2002). In fact, the American Health Association (2003) states that coronary heart disease and stroke remain the leading cause of death among women in America and, in 1994, accounted for 45.2% of all deaths in women.

METHODOLOGICAL ISSUES

In examining this research topic, the author conducted a small literature review of epidemiologic studies that assess employment status and health in women, as it relates to hypertensive outcomes. The majority of these epidemiologic studies utilized a cross-sectional research design. Studies were selected to address the question of the relationship between employment and hypertension. The main question under investigation is:

\[ A A P P \ M O N O G R A P H \ S E R I E S \ 47 \]
employment a risk factor for hypertension? A total of six research articles were selected for review. Out of the six studies, only one contained both cross-sectional and prospective-cohort analyses (Rose, Newman, Tyroler, Szklo, Arnett, & Srivastaca, 1999). Cross-sectional studies address the entire population and are studies in which a sample of everyone in the population of interest is taken. Cross-sectional studies provide a good assessment of the general population; however, in order to reach more definitive conclusions, especially regarding temporal sequence of an association, cohort studies are known to yield better results.

**Time-frame differences**

In several of the studies reviewed, researchers evaluated employment status and hypertension in women and conducted comparisons to men who also were in the work force. It was hypothesized that as women become involved in the work force and take on similar positions as men, women will be more at risk for cardiovascular events. The general relationship that was explored through the studies reviewed is the type of employment compared to women who were not employed. Overall, the studies were varying in their findings. All of the studies used secondary data, which included: The Rancho Bernardo Heart and Chronic Disease Survey (Kritz-Silverstein, Wingard, & Barrett-Conner, 1992); the National Health Examination Survey (NHES) (Rose, Newman, Bennett, & Tyroler, 1997); the Second National Health and Nutrition Examination Survey (NHANES-II) (Rose, Newman, Bennett, et al., 1997, 1999); or the Atherosclerosis Risk in Communities (ARIC) Study (Rose, Newman, Tyroler, et al., 1999). Four studies showed that there was no association between employment status and hypertension (Alfredsson, Hammar, Fransson, de Faire, Hallqvist, Knutsson, et al., 2002; Kritz-Silverstein et al., 1992; Rose, Newman, Bennett, et al., 1997, 1999), while other studies yielded a statistically weak association (Light, Brownley, Turner, Hinderliter, Girdler, Sherwood, et al., 1995; Rose, Newman, Bennett, et al., 1999). One study in particular found two different outcomes: The NHES (1960) and the NHANES II (1976-1980) (Rose, Newman, Bennett, et al., 1997). The employment status and hypertension rates shifted across surveys. Rose, Newman, Bennett, et al. reported that the NHES yielded a slight, but not statistically significant, elevation in odds of hypertension among the employed, which yielded a POR of 1.17 (95% CI = 0.99-1.36), while the NHANES II yielded a modest but significant reduction
in odds of hypertension among the employed, POR of .083 (95% CI = 0.70-0.99). An apparent reason for the difference is the time frame of data collection, which is the 1960s versus 1976-1980, respectfully. In the 1960s, civil and women's rights were beginning to be established, and most women did not work out of the home unless there was a financial need. Subsequently, in the 1970s and 80s, more women worked outside the home, and more women chose to work.

**Hypothesis Differences**

A reason for the difference in conclusions could be that the hypotheses for each study were somewhat different. For instance, the majority of the studies looked at employment with specific emphasis on types of employment; managerial, administrative, clerical, etc. were compared to women who were not employed outside of the home and stayed at home for other duties, such as childcare. Two studies compared general employment status and unemployment (Kritz-Silverstein et al., 1992; Rose, Newman, & Bennett, et al., 1997). Rose, Newman, & Bennett, et al. defined unemployment status as not receiving income outside of the home, while Kritz-Silverstein et al. defined unemployment as non-employment (e.g., underemployed or disabled), which implies there may be a difference between women who wanted to be employed but did not find employment versus women who choose to remain at home. The unemployed (homemakers versus the non-employed) groups are not similar by comparison. Four of the studies actually concluded that there must be a healthy-worker effect. Women working outside of the home were generally healthier than unemployed women (Kritz-Silverstein et al., 1992). Two studies found that homemakers had a significantly higher prevalence of hypertension than did any of the groups of employed women (Kritz-Silverstein et al., 1992; Rose, Newman, & Bennett et al., 1997). After age and all of the confounding factors such as sociodemographics and behavioral risk were adjusted, employed women had a lower prevalence of hypertension than did homemakers in both studies. This confirms the point that cross-sectional studies cannot distinguish whether hypertension status determines employment status or whether employment status determines hypertension. One can conclude that homemakers may have lower rates of hypertension than employed females who work outside of the home; however, employment may have a protective effect on hypertension. The evidence may suggest stronger associations between employment and blood pressure among socio-
economically disadvantaged groups whose employment would have been more consistent across the adult years (Rose, Newman, Bennett, et al., 1999).

Two of the studies looked at subsets of type of employment and hypertension. Perhaps, high-effort coping and job strain were other factors that researchers should consider (Light et al., 1995). Low job-decision latitude, which is associated with having little flexibility or control in making decisions about aspects of a one's job, was associated with an increased prevalence of hypertension, after adjustment for covariates (Alfredsson et al., 2002). In this study, women with job strain showed an increase in prevalence of hypertension when compared with females in relaxed jobs; thus, one may conclude that occupational stress, in the form of low-decision latitude or job strain, may have an adverse impact on hypertension; the results are inconclusive. The findings are not clear as to whether higher effort, in fact, was required to achieve the job status or whether only those minority individuals with this trait sought out those types of positions.

CAUSAL INFERENCE

Overall, the six studies reviewed vary in their conclusions due to the fact that each study had distinct differences in defined characteristics (e.g., employment, unemployment, type of employment) and in the time frames for data collection. It was assumed that if women were to enter the work force and take on similar roles as men, then the women would see similar effects of cardiovascular disease. If the same women are compared to non-working women, the assumption is that women who do not work outside of the home would have less responsibility and in turn have less prevalence of hypertension. The findings in all six studies dispute this fact. In all of the studies, the inverse relationship is demonstrated. In the role-accumulation model, it seems that employed women would have health advantages over homemakers because employment provided a source of gratification and self-esteem beyond that obtainable from non-paid work (Rose, Newman, Bennett, et al., 1997). The statistical power in the majority of the studies was low. The studies that demonstrated a slightly significant association between employment and hypertension did not have a homogeneous group of subjects, which indicates that there were differences (e.g., race, ethnicity, rural, other characteristics, etc.) among the subjects that were a part of the study that may influence results.
Other Variables

The majority of the literature on employment status and hypertension demonstrates a small association but does not take into consideration any additional factors that may contribute to hypertension. Each study controls for at least one or more non-modifiable risk factors such as age, race, and ethnicity (Alfredsson et al., 2002; Appel, Harrell, & Deng, 2002; Kritz-Silverstein et al., 1992; Rose, Newman, Bennett, et al., 1997, 1999; Rose, Newman, Tyroler, et al., 1999) as well as the modifiable risk factors such as socioeconomic status, sociodemographics, life-style, education, and heart disease risk factors (Light et al., 1995; Rose, Newman, Bennett, et al., 1997; Rose, Newman, Tyroler, et al., 1999). Hypertension also can be attributed to hereditary factors (AHA, 2003). The literature that was reviewed definitively has not demonstrated that employment causes an increased risk in hypertension. While some of the literature states that employment status and type of position contribute to the risk of hypertension, no study examines an individual’s mental status, coping mechanisms, relaxation techniques, or social support structure; however, each of these factors may be utilized in order to decrease one’s risk of hypertension.

Design Weaknesses

In the studies in which an association between employment status and hypertension was found, other design weaknesses exist. Specifically, a statistically significant effect modification of the relationship between extent of employment and hypertension by covariates was lacking. Each study defined the variables (i.e., employment & unemployment) in a slightly different way, which may explain the contradiction of results between the studies. Additionally, statistical power in previous research was low; therefore, the strength of the association is low (Alfredsson et al., 2002; Light et al., 1995). The dose-response relationship is not a strong correlation; that is, as the exposure (employment) increases, the risk of disease (hypertension) also increases. There is little evidence that these findings are replicable in other studies. Other research studies have a different approach in studying this specific area (e.g., job strain, high effort coping, etc. [Light et al., 1995]).

There have been follow-up studies within this area (e.g., Rose, Carson, Catellier, Diez Roux, Muntaner, Tyroler, et al., 2004), but this research appears to demonstrate little of significance to current concerns regarding women’s hypertension in the contemporary...
world of work. Rose and associates explain that the women who participated in the ARIC (Atherosclerosis Risk in Communities) Study were classified as employed or homemakers at the baseline examination (1987-1989) and were followed for approximately eleven years. After adjusting for socio-demographic factors and selected risk factors for mortality, employed women had a lower risk of mortality than homemakers (i.e., hazard ratio \[ HR = 0.65, 95\% \text{ confidence interval} \[ CI = 0.49, 0.86 \]). This decreased risk of mortality persisted in additional analyses that excluded those who died within the first two years of follow-up or, alternatively, excluded those with a history of coronary heart disease, stroke, cancer, hypertension, diabetes, or a perception of fair or poor health at baseline data collection.

The various research studies demonstrate that there are confounding factors that may contribute to hypertension; thus, employment status cannot fully determine the health outcome. While employment status/unemployment status may be associated with hypertension, there is no evidence that single factors result in hypertension. Certainly, stress, predisposing factors, diet, number of children, use of social support as well as numerous other factors may contribute to hypertension. Employment status is not the strongest risk factor associated with hypertension; therefore, the cessation of the exposure (i.e., employment) may or may not contribute to a decrease or increase in risk of hypertension. The majority of studies found that employment is not a single factor, but rather, it can include other factors that may or may not contribute to risk of hypertension in women. The writer concludes that the various research findings are not consistent with other knowledge. For example, the rate of hypertension among employed males and females is not consistent; perhaps, this is due to the diversity of employment, extra duties (e.g., especially in women), social support, and role overload.

CONCLUSION AND RECOMMENDATIONS

The exposure (i.e., employment) alone does not cause the outcome (i.e., risk of hypertension). Certainly, a combination of other factors contributes to the risk of hypertension in women. The type of employment varies along with the personality type of the individual and how the individual deals with stress (e.g., the use of coping mechanisms, relaxation techniques, role strain, role overload, social support, etc.), as
well as psychosocial factors. This area is one that has not been researched extensively, and there is a need to conduct additional studies with a variety of female populations to verify if there is a strong correlation between employment and risk of hypertension in women. A clear definition of employment and type of employment or non-employment would make the findings more meaningful, enabling the same definition to be used subsequently.

Temporal sequence was not clearly established in any of the research studies, and the strength of the association was not clinically significant but was described as being statistically weak. The biologic plausibility is unclear because of confounding factors involved in comparing the studies. This researcher recommends that additional studies be conducted in this area with a large longitudinal-cohort sample in which the same definitions of variables and same methods are used with culturally-diverse populations. If a mixed-method design (e.g., quantitative and qualitative) is utilized, it could determine the underlying factor(s) and potential solutions for decreasing hypertension among women.

REFERENCES


PART 3: SCHOOL OF MUSIC
MUSIC EDUCATION MADE PERSONAL: A RESPONSE TO E. PATRICK JOHNSON’S ESSAY, “SOUNDS OF BLACKNESS DOWN UNDER”

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As a graduate student who spends his life reading and writing about what’s already been written, it’s a wonderful thing indeed when I finally see myself in the text of an essay. I’m not talking merely about the human condition and that, in essence, we’re all part of the larger discussions documented in articles and essays. Rather, I’m talking about reading a work that recalls something startlingly parallel to my own life; I feel affirmed, compelled, and overjoyed to respond. Instantly, upon reading E. Patrick Johnson’s “Sounds of Blackness Down Under,” I wanted to harmonize my own very similar experiences with his. Furthermore, I wanted to reassess my own struggle to understand “Blackness,” especially as expressed in music, and the further complications of negotiating an authentic Blackness (if there is such) in Japan, where I travel yearly to teach and perform. In this essay, I aim to consider the points and counterpoints of Blackness as something that can be objectified and authenticated in music. More than that, I intend to draw conclusions that can guide my own life, my scholarship and, ultimately, my teaching.

THEORY FOR THE OPPRESSED

I came to theory because I was hurting—the pain within me was so intense that I could not go on living. I came to theory desperate, wanting to comprehend—to grasp what was happening around and within me. Most importantly, I wanted to make the hurt go away. I saw in theory then a location for healing.

—bell hooks, Teaching to Transgress: Education as the Practice of Freedom (1994, p. 59)

I believe that cultural theory is for everyone. Under its light, one sees how everything—and everyone—is interrelated. For scholars truly interested in understanding and demystifying the scope of this interconnectedness, they must first see themselves as participants. Seemingly, this is unthinkable for scholars because responsible intellectual inquiry demands objectivity; thus, objectivity precludes subjectivist assertions. At least that’s what we’ve been taught. Cultural critic bell hooks considers this in her book, *Teaching Community: A Pedagogy of Hope*:

Objectivity was made synonymous with an “unbiased standpoint”… Once the objectivist has ‘the facts,’ no listening is required, no other points of view are needed. The facts, after all, are the facts. All that remains is to bring others into conformity with objective ‘truth’… Embedded in the notion of objectivity is the assumption that the more we stand at a distance from something the more we look at it with a neutral view… While objectivism can work well in hard sciences and more fact-oriented subjects, it cannot serve as a useful basis for teaching and learning in humanities classrooms. In these classrooms much of what students seek to know requires engagement not just with the material but with the individual creators whose work we study. At times objectivism in academic settings is a smokescreen, making disassociation.²

This “disassociation” or “detachment” can be especially disheartening for Black scholars like me who want desperately to write about our place in this world, distilling experience not only through critical theory but also through essay or literary collage—ways that soften scholarship and imbue it with meaning and application into realms outside of the academy, an ultimately transforming praxis.³ The work of bell hooks stands as a touchstone to this possibility and as an inspiration and model for this essay. In her

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³Randall E. Allsup, “Praxis and the possible: Thoughts on the writings of Maxine Greene and Paulo Freire,” *Philosophy of Music Education* 11, no. 2, 164. Allsup discusses “detachment” within the ideology of “selective caring,” which, as I see it, is endemic to scholarly research. Thus, true praxis, or liberation through the doing, teaching and philosophizing of art, cannot find place therein.
book, *Teaching to Transgress: Education as the Practice of Freedom*, hooks talks about issues of domination and politics and how a teacher's personal views—on everything—affect their teaching. Seldom do we talk and write about how much a teacher's subjective feelings influence pedagogy.

In Chapter 3, "Embracing Change: Teaching in a Multicultural World," hooks asserts, "no education is politically neutral."\(^4\) What does that mean for the music education in public schools across America? What does that mean for me when I’m teaching middle-school students or college students? What does it mean for my students? It means that they are subject to the opinions I bring into the classroom—opinions formulated through life experiences; those life experiences (i.e., the conclusions I've drawn from them) guide my personal politic. Classrooms are virtually never democracies, so that means that my politics—played out in what I chose to teach and how I teach it—dominates the classroom. My pedagogy is an extension of my politics, no matter how much I am committed to presenting a comprehensive, objective and unbiased assessment of music. What, then, are some of the major tenets of my body politic? One of the most important tenets, to date, has been a deep analysis—an analysis and reassessment of ways in which the dominant white culture appropriates the music of other cultures, especially the music of African-American cultures.\(^5\)

**MAKING AN "AUTHENTIC" LIST**

In a society in which, I believe, people constantly appropriate, homogenize and "commodify" culture, one of my first instincts (as a musician who writes about Black music and art) is to discredit artwork that parrots Blackness as I understand it. In other words, I typically put movies, songs, videos, artists, and artistic movements through a litmus test in which I deploy a barrage of language (i.e., musical or anthropological nomenclature) to interrogate and unpack the context and content of the work. I do all this with the assumption that there are, in fact, authenticating elements of Blackness. The lynchpin that complicates my passion to act as a gatekeeper of Black music, however, has always been finding language to describe what actually makes music "Black." Trying to

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\(^5\) I say "cultures" because there is no one definitive African-American culture.
objectify the nuances of musical utterances that arise from the complicated contexts of culture is extremely difficult. For as apt as language is to describe, its limitation, ironically, is its indeterminate range. Language is abysmal when used for these purposes.

Some of the most enterprising uses of language (i.e., describing music and its making) have been coined by Bennett Reimer and David Elliot, two of the foremost scholars of music education philosophy. As a music educator, I appreciate and need terms like “musicing” and “multimusicalism” because they occupy a place of cultural, social and aesthetic middle ground on which truly liberating music education can commence. Like countless other music educators in America, I look askance at the term “multiculturalism” because it conjures images of a feigned and generalized mediation between Eurocentric ways of knowing and those of the rest of the world. To begin with culture, especially in the music class, is to begin with an amalgam of things too disparate, I believe, to consider responsibly in class. We have encountered enough problems trying to define the tenets of music education; so, why would one further complicate and overburden the discipline? Some would say that this is an inescapable enterprise and that culture and music are too closely entangled to consider them separately. I say that if we begin with the music, then the connectedness and variations of “musicing” inevitably surface. The work of a music teacher, after all, is to teach students to know music in as many ways as it can be known as long as the residual knowledge concerns itself with universal properties (i.e., structure and articulation) applied and seen through a musical lens. Otherwise, it’s not music education but something else. Now, don’t get me wrong; that “something else” can be important, especially if it’s an opening into larger conversations on how appropriating musical and other cultural utterances can be irresponsible and reprehensive. Most recently, Nike and Coca Cola ad campaigns, parroting Black gospel music and Civil Rights songs, come to mind.

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8 Nike features comedian Bernie Mac, on a basketball court, parodying a Black church scene. “Can I get an amen” is replaced by “Can I get a lay up?” Coca Cola features a young Black woman or retro-mammy (a term coined by Dr. Anthony Edwards, a friend and scholar of African-American southern education) passing out Coca
In recent months, however, I've come to the conclusion that standing as a gatekeeper is hardly rewarding and, thus, probably not worthy of my time or effort. Implicit in this determination is death to my more “critical” writings about music and my music education pedagogy, which is strongly shaped by a revisionist ideology. In other words, in my choice of subject matter (i.e., repertoire, historical teachings), I've focused on marginalized groups so as to counterbalance my students' indoctrination into believing that “world” music is secondary to Eurocentric music. Furthermore, I've sought to teach about authenticating principles: “What makes Black music Black,” for instance. No doubt, there are shared elements in Black music, but what purpose does it serve to objectify those elements. For whom am I doing this? Why is it so important for me to discredit artwork that parrots Blackness, as I see it? Of course, there are larger philosophical and social questions of responsibility. If I consider myself one of the more enlightened Black folks, one of Dubois' “talented tenth,” then don't I have a responsibility to write critically about cultural appropriation and the possible threat of cultural annihilation (i.e., Blackness being stamped out and homogenized into an authentic Americanness)

The greater question for me, however, is: Can the objectification of Blackness in music, specifically, interfere with my own teaching and music making? Though I was aware that my objective inquiry was ruining my enjoyment (i.e., as a teacher/performer/participant and observer), I understood this more fully during my time in Japan. While I understood this phenomenon subjectively, I hadn't taken the time to write about it. Furthermore, I probably didn't write about it because I didn't think that it would help me or anybody else. E. Patrick Johnson changed all that.

E. PATRICK JOHNSON'S CONFESSION

In his insightful and striking collection of essays, Appropriating Blackness, E. Patrick Johnson's longest and most revelatory essay, “Sound of Blackness Down Under: The Café of the Gate of Salvation,” he makes one startling and important point: “there are

Cola to strangers, all the while singing the Civil Rights protest song, “I Wish I Knew How It Would Feel To Be Free,” written by Dr. Billy Taylor in 1954.

W. E. B. Dubois, The Souls of Black Folk (A. C. McClurg & Company, 1903; reprint, Viking Penguin, 1989). The “talented tenth” were those black professionals, scholars, artists, writers and musicians who were to lead and enlighten the black masses.
no innocents in the perpetuation of narratives of black authenticity."10 This statement is also part confession. Johnson traveled to Sydney, Australia to study The Cafe of the Gate of Salvation, "an all-white, mostly atheist Australian gospel choir." He’d heard a CD recording of the group in 1992 and received a grant for travel and research in 1995. It was the "power of their voices" that prompted Johnson’s pilgrimage. More than that, he had this desire to debunk whatever he found: "In retrospect, I recognize that I entered this ethnographic encounter with an 'ax to grind rather than feeling for the organism.‘"11

A capable musician himself, Johnson’s research came to encompass not only interviewing choir members and observing rehearsals but also conducting gospel workshops throughout Sydney:

What began as something to do for “fun” materialized into something much more. I appeared on several national radio and television programs, and I was asked to perform at or to give concerts around the country. These programs positioned me as the “authentic” black gospel singer, and often people requested that I sing on command to demonstrate how gospel should sound. Many of the radio and television commentators, their listening audiences, and those who came to my workshops had preconceived notions about me before I sang a note: I am a black American, therefore I can sing. Or, so the stereotype goes.12

It was in these experiences—not during his ethnographic research—that Johnson had the most profound encounter with himself as a Black man and Black scholar. Despite an acute sense of self, little by little, he found himself caught in a whirlwind of popularity in which he felt overwhelmed by the expectations of his Blackness—his authentic Blackness. His presence as researcher in the ethnographic field was so powerful that it eclipsed everything:

11 Johnson., p. 163.
12 Ibid., pp. 198-99.
The more I was interviewed and the more workshops I conducted in the city, the more the news spread about the black singer from the United States who could sing "authentic" gospel. The Sydney A Cappella Association, which sponsored and organized many of my workshops, circulated flyers stating: "E. Patrick Johnson, Direct from the U.S.A., Black Gospel Workout." ... These images became one of several ways in which my own blackness affected the ethnographic field.  

Johnson was thrust into celebrity. No longer was he the scholar/researcher working to describe—as objectively as possible, mind you—a group of singers who'd appropriated Black gospel. Instead, he became—by sheer virtue of his Blackness—an authority on Black gospel that disrupted the ethnographic field. Luckily for me, Johnson writes about this, the most salient part of his research, the part where he struggles with compromise.

**BEING THE EXOTIC "OTHER"**

Being Black, not being a scholar, gave Johnson access to choirs across Sydney. In the ascent to his self-described "stardom," he saw quite clearly the construction of his image as an exoticized "Other":

The posters, featuring a picture of me that had been taken without my knowledge and used without my permission, emphasized my "authentic" talents. It also served as a palimpsest of those flyers that circulated during the slave trade that read "Direct from Africa" so asto increase the market value of the "merchandise" by emphasizing the authenticity of enslaved blacks. ... Indeed, my black and American identities were deployed in ways that I no longer controlled. Thus, as I moved from ethnographer to teacher and performer, I was catapulted into the center of identity politics. Because I am a

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13 Johnson, p. 199.  
14 Ibid., p. 205
singer raised in the gospel tradition, my workshops only worked to further the often racist perception of me as the authentic, black, exotic Other.\textsuperscript{15}

Now, it seems that Johnson would be the perfect teacher of gospel music in Australia. After all, he's a Black American, raised in the Black church and a knowledgeable and accomplished performer and teacher. All of this is true. What's also true, however, is Johnson's keen knowledge of theory (i.e., race and cultural theory), which disrupted the lull of a vacuous, celebrity state. As a result, he understood his larger role. He wasn't simply teaching but had the ability to shape the very perception of Blackness; his every word and movement authenticated Blackness in the music he sang and taught.

In short order, Johnson, an astute scholar, found himself authenticating Black gospel music more as a response to do so than as a necessity of practice. He began to set parameters, outlining differences between Australian approaches to Black gospel and more authentic approaches:

During the course of my fieldwork, I became increasingly aware of my role in the dissemination of "blackness" in Australia vis-à-vis my workshops and the media. I grew self-conscious about my teaching songs to nonbelievers whose only connection to the music might be a secular/romantic one. Was I not accountable to my black American community, who regards this music as sacred? At the same time, I was also aware of how I, an "outsider," was beginning to essentialize Australian culture in general and Australian singers specifically, while simultaneously feeling dubious about their notion of the sacred. By viewing Australians as fixed subjects and by juxtaposing that view against my own authenticating narratives of blackness, I began to fall prey to the same essentializing discourse I found among those who attended my workshops.\textsuperscript{16}

\textsuperscript{15} Ibid., 199.
\textsuperscript{16} Johnson, p. 200.
Johnson underscores that his Blackness always trumped his position as a scholar. No matter how hard he tried to assert his scholarly expertise, it was his Blackness, “southernness,” and “Christianity” that he would eventually cite as the locus of his authoritative agency. He illustrates this best in his recollection of a radio interview in which he was asked, “Can white people sing gospel?” Johnson answered “yes” but was then nudged by the interviewer to mystify gospel by locating it in the body—more as a felt experience than one that can be learned:

In addition to [the interviewer’s] obvious exoticization and fetishization of gospel and me, what stands out in this interview is how complicitous I am in the construction of the authenticating narrative of gospel. I was invited on the show as a scholar on the topic, and, as such, I spoke with scholarly authority on a subject about which I was conducting research. However, in the context of a public interview where the assumption was that white Australians cannot sing gospel music well (or worse, that they can’t sing it at all), my scholarly authority registered as cultural and social authority rooted in my blackness. No matter how I tried to undermine that authority, the fact of my blackness carried more cultural capital than the fact of my scholarship.

Though Johnson doesn’t at all shy away from his own complicity in perpetuating stereotypes and marginalizing culture, he does turn to theory to explain (and perhaps to absolve) his actions:

There is no easy way to avoid the identity politics that arise when one group or culture appropriates another group or culture’s art form and when members of the “indigenous” culture and the appropriating culture, as well as critics from both cultures, articulate conservationist or pluralistic arguments. Conservationists argue in essentialist ways that totalize and reduce black culture, most often in the name of Black Nationalism, while many pluralists

17 Ibid., p. 204.
explode the notion of any coherent organizing principal of blackness or black cultural production.\textsuperscript{18}

Johnson then cites the insightful cultural theorist, Paul Gilroy, and his assessment of a more practical understanding of culture as real, imagined, and re-invented. Clearly, it’s Gilroy’s assessment that opens up this essay to include my experiences in Japan, using Johnson’s experiences as a touchstone.

\textbf{THE GOSPEL TRUTH ABOUT JAPAN}

Four years ago, after finishing the coursework for a Master of Arts degree in Vocal Performance, I accepted a teaching position in Tono, a small city in northeastern Japan. Tono City is known as the folktale capital of Japan. Some of Japan’s most famous folktales come from this city, which is comprised of eight villages. The Japanese consider it “old” Japan. Rice fields, mountains and rivers abound. It was my chance to get away from America and all the big-city living I’d been doing until graduate school.

Though I went to teach, I’d only been in Japan a few days before making my performance debut. Seemingly, everyone wanted to know this Black American. They wanted to hear him sing. Even I was contemplating myself in the third-person: “Who is this Black American? What has he brought across the ocean?” The apparent answer was music and more music.

I started doing concerts in Tono, teaching private lessons, and doing choral workshops. Within a year, a little organization I’d started, Tono International Arts Association, got money from the Japanese government and also garnered funding opportunities for artists from the National Endowment for the Arts. We sponsored a month-long American Music Festival featuring friends and colleagues from the United States. The festival started on October 6, 2001, less than a month after September 11. Consequently, proceeds from the festival were donated to the Twin Towers Fund, and we donated a quilt signed by the artists. A few months later, I received a phone call from a woman who’d heard about the festival and seen my picture in the newspaper. Apparently, something in my Black face told her that I knew Black gospel music.

\textsuperscript{18} Johnson, p. 206.
When I met Chiaki, she asked me to help her with some “gospel” weddings she’d been contracted to sing at local hotels. She told me she knew nothing about gospel and didn’t want to run the scams so many Japanese “gospel” singers do; she wanted me to teach her Black gospel. Over the next few months, I found out just how impossible the idea of a “gospel” wedding is in Japan. Despite the lengths the Japanese go to copy Western weddings—the obscene white waterfall-of-a-dress, the white preacher, the chapel, the dusty hymns—it was impossible to fit gospel into any of it. That’s the problem, really—fitting gospel neatly into anything. Clearly, it just couldn’t be done. Gospel music, at its roots, isn’t for show. It’s for praise and worship; when that is going on, especially in the Black church, it isn’t tidy and predictable—two essentials in the culture of a highly ordered Japan.

Like Johnson, I asked myself, “Was I not accountable to my black American community, who regards this music as sacred?” But unlike him, I wasn’t on a research trip; I hadn’t gone to Japan to study this gospel-music phenomenon. Actually, I had no idea that it existed. In fact, I was taken by surprise, and—though I didn’t know this at the time—it is embraced as philosophical teaching, Paul Gilroy’s fundamental thesis of Black music. He states: “Music and its rituals can be used to create a model whereby identity can be understood neither as a fixed essence nor as a vague and utterly contingent construction to be reinvented by the will and whim of aesthetes, symbolists, and language gamers.” In other words, I didn’t care so much about appropriation and authenticating Blackness. I cared more about making music and seeing where it took us (i.e., the listeners and me).

Chiaki and I did what we could, and the weddings became fairly popular. We did one at least every weekend or so. Chiaki took our partnership to the next level and asked me to start doing gospel workshops. I told her I would teach “real” Black gospel, not stomping and hollering, and there would be absolutely no feather boas. There would be no Electric Slide gospel or “Oh, Happy Day” (made famous in Japan by Whoopi Goldberg’s *Sister Act*). The teacher in me also insisted that I would teach about the history of Black gospel, beginning with Negro spirituals.

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19 Johnson, p. 200.
We sang Negro spirituals, African songs, as well as traditional and contemporary gospel music. We’d do this for three or more hours straight. I’d walk around the room while Makiko (a jazz pianist with a penchant for playing Black gospel with soul) called down the Spirit with the Yamaha grand. I’d weave between the singers as they sang and rocked. I did about four of these workshops before returning to the United States, after two years of living and singing in my beloved northeastern Japan.

A couple of months later, while I was living in San Francisco, I got a call from Chiaki. After I left Japan, many of the workshop participants wanted to continue singing and were actually considering entering a gospel competition. She called to ask if they could name the group after me. I was humbled and got a real kick out of the honor. I told her that I would come back and help prepare the “Simmonds” Company if they won the regional competition. They did win that competition.

I arrived in Tokyo’s Sun Plaza and met the group in a dressing room. All the other groups were warming up and primping. It was a motley crew: A female quartet that sounded like they should have been at the Grand Ole Opry; a rock-gospel singer with a Tina Turner hairdo; a choir with golden robes and sequins; a choir praying fervently to Jesus. Then, of course, there was a very nervous Simmonds Company.

I took the group outside and we formed a circle. I told them again that we were there to sing from the heart and have some fun. Yes, it was the All-Japan Gospel Competition and, yes, the winning prize was 100 man (about $10,000). None of that could matter though. As we practiced our songs, folks on the street stopped to listen. We looked around at them, at each other and knew one thing for sure: We win every time we sing. Two hours later, we took second place.

“I ONCE WAS BLIND BUT NOW I SEE”

I’ve chosen the famous excerpt from the hymn, “Amazing Grace,” as the closing heading of this essay, but this choice is not to draw a parallel between the new salvation of the hymn writer and my revelations—supposedly brought on by theory and its tenants on Blackness, cultural appropriation, authenticity, my music teaching and all that. Instead, I’m sounding that often-quoted line as counterpoint to the closing paragraph of Johnson’s essay:
Negotiating any identity is a dangerous adventure, particularly in a postmodern world in which we have come to recognize that identities are made, not given. We also must realize that the postmodern push to theorize identity discursively must be balanced with theories of corporeality and materiality. In other words, “blackness” may exist as a floating signifier in various cultures, but the consequences of its signification vary materially, politically, socially, and culturally depending on the body on which it settles. I, for instance, walk this precarious tightrope of identity politics each time I conduct ethnographic research on Australian gospel.21

I don’t have to walk a “precarious tightrope” when I return to Japan to teach and perform gospel. I’m not ignorant of theory or of my position of influence, or celebrity, in northern Japan. When I teach and perform, I do so not to legitimize or peddle my personal take on authenticating Blackness. As a result, I’m not there to undermine or debunk, in any way, the Japanese perception of Blackness or Black gospel. I’m there to make music. I know from experience—over three years’ worth—that I do more by being myself and simply singing, than lecturing people about authentic gospel or torturing myself with superficial allegiances to racial ideals or Black nationalism. I know what that feels like, and it doesn’t do anything for me or for the people I work with in Japan.

When Melvin Bryant and Agape sang in Tona, they just sang. They didn’t discuss race theory over lunch, between rehearsals, or after the community sing-a-long. They simply sang. To this day, the community still talks about the power of their performance and its effect on the perception of Black gospel in northern Japan.

My myriad experiences in Japan were invaluable, but I didn’t truly understand them collectively until reading Johnson’s essay. Though I fully understand his dilemmas, I also understand his (and my) choice on how theory works in our lives. Of course, I could write a book on why one must look askance at theory because, though it tries to put into words the mechanisms of this world, it also can complicate those mechanisms.

I’ve had enough Japanese people thank me for teaching them to know that music does something that words cannot—and perhaps should not—try to explain or undo.

21 Johnson, p. 218.
Before Japan, I concentrated so much on authenticity and the refusal to “give in” to the masses that I missed opportunities for meaningful musical exchange. After my arrival in Japan, everything happened so quickly that I didn’t have time to put up my defenses. When asked to sing, I just sang. When asked to teach, I just taught. My response was natural, unforced, and freeing. This is praxis at its best, and how my music making and music teaching must be—if it is to be liberating for my students and for me.

REFERENCES


PART 4: COLLEGE OF EDUCATION
VALIDITY EVIDENCE FOR THE USE OF PERFORMANCE ASSESSMENTS WITH YOUNG CHILDREN

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The assessment of young children has been an area of interest for educators and policy makers for many years. Traditionally, children have been assessed using standardized, norm-referenced, and multiple-choice tests. Tests typically were administered on a specific day, providing only a "snap-shot" of what students know. The short amount of time required to administer and score multiple-choice tests, the cost of scoring multiple-choice tests, and the unbiased nature of multiple-choice tests have made them appealing and the most frequently used tests by school districts and state officials in their testing programs.

Robert Linn (2000) reviewed five decades of assessment-based reform since World War II and discusses major trends in testing. Historically, standardized tests were used in the 1950s to track students within high schools. In the 1960s, standardized tests were used for evaluation and accountability for Title I funds of the Elementary and Secondary Education Act. The basic use of standardized tests in the 1970s and early 1980s was to provide information on minimum competency of basic skills; in the late 1980s and early 1990s, standardized tests were used primarily for accountability purposes. Current reform efforts include content standards, high performance standards and the inclusion of all students in testing, and high-stakes accountability for schools, teachers, and, in some instances, students (Linn, 2000).

There has been a shift over the years from the traditional use of multiple-choice tests to the use of performance assessments when assessing young children. Performance assessments are "assessments requiring students to demonstrate their achievement of understanding and skills by actually performing a task or set of tasks" (Gronlund, 1998, p. 2). The use of performance-based assessments is aligned with the views of early childhood professionals. In 1990, the National Association for the Education of Young Children and the National Association of Early Childhood Specialists in State Departments
of Education (NAEYC and NAECS/SDE, 1991) adopted 18 guidelines for appropriate curriculum content and assessment in programs serving children ages 3 through 8. Some of these guidelines include: (a) integrating assessment that reflects the goals, objectives, and content of the program; (b) regularly and periodically observing children in a variety of settings over time; and (c) taking into account individual diversity of learners and their differences in styles and rates of learning.

In a review of the literature, numerous studies on validity evidence for performance assessments of young children were identified. In several studies, researchers found concurrent, predictive, and consequential validity evidence for performance assessments (e.g., Hecht & Greenfield, 2001; Hoge & Coladacri, 1989; Meisels & Bickel, n.d.; Meisels, Bickel, Nicholson, Xue, & Atkins-Burnett, 2001; Meisels, Liaw, Dorfman, & Nelson, 1995; Quay & Steele, 1998; Stevenson, Parker, Wilkinson, & Fish, 1976). These studies are limited to comparing a performance assessment to a norm-referenced, psychoeducational battery (i.e., Woodcock-Johnson Tests of Achievement). There is research that establishes validity evidence for a curriculum-embedded, performance assessment (e.g., Meisels & Bickel, n.d.; Meisels, Bickel, Nicholson, et al., 2001; Meisels, Liaw, et al., 1995).

This monograph chapter provides an overview of the available literature in the areas of validity evidence for teacher-based judgments in performance assessments for young children and validity evidence for a state’s readiness assessment. This work is organized into three sections. The first section is an overview of validity. The second section provides validity evidence for teacher-based judgments in concurrent and predictive validity. Finally, the third section describes validity evidence for teacher-based judgments for a state-wide assessment program.

**VALIDITY**

Validity, as defined in the *Standards for Educational and Psychological Testing*, is “the degree to which evidence and theory support the interpretations of test scores entailed by proposed uses of tests” (American Educational Research Association [AERA], American Psychological Association [APA], & National Council on Measurement in Education [NCME], 1999, p. 9). These *Standards* refer to several sources of validity evidence to include test content, response processes, internal structure, relations to other variables,
and consequences of testing. Messick (1996) believes in a unified concept of validity that also takes into account the content, substantive, structural, generalizability, external, and consequential aspects of construct validity. He believes that these six aspects should be included in all assessments, including performance assessments.

Prior to addressing validity evidence for performance assessments, Messick (1996) notes the need to clarify the meaning of performance assessment because “different conceptions have distinctly different implications for validation” (p. 2). In his clarification of the meaning of performance assessment, Messick states “the student performs, creates, or produces something over a sufficient duration of time to permit evaluation of either the process or the product, or both” (p. 2). This definition clearly differentiates performance assessments from the traditional multiple-choice test.

In the context of performance assessments, “relevant validity evidence includes the extent to which the processes of observers or judges are consistent with the intended interpretation or scores” (AERA, APA, & NCME, 1999, p. 13). For example, in educational settings, teachers may use a set of criteria to make judgments on students’ academic performance. It is important to determine whether teachers are applying the criteria in the evaluation process or whether they are allowing external factors not related to the intended interpretation to influence the evaluation. When expert judges, observers, or raters are used in the validation process, Standard 1.7 in the Standards for Educational and Psychological Testing states:

When a validation rests in part on the opinions of expert judges, observers, or raters, procedures for selecting such experts and for eliciting judgments or ratings should be fully described. The qualifications, and experiences, of the judges should be presented. The description of procedures should include any training and instructions provided, should indicate whether participants reached their decisions independently, and should report the level of agreement reached. If participants interacted with one another or exchanged information, the procedures through which they may have influenced one another should be set forth. (AERA, APA, & NCME, 1999, p. 19)
Linn, Baker, and Dunbar (1991) identified eight expectations and validation criteria for alternative or performance-based assessments. The criteria are: (a) intended and unintended consequences of the assessment, (b) fairness, (c) transfer and generalizability, (d) cognitive complexity, (e) content quality, (f) content coverage, (g) meaningfulness, and (h) cost and efficiency. The authors indicate that these criteria are not exhaustive, but “the traditional criteria need to be expanded to make the practice of validation more adequately reflect theoretical concepts of validity” (p. 20).

**Validity Evidence for Teacher-Based Judgments**

**Concurrent validity evidence for teacher-based judgments.**

Several studies have been conducted to examine the relationship between teacher-based assessments and test scores. The studies have typically been classified as providing either concurrent-validity evidence or predictive-validity evidence.

**Noncurriculum-embedded performance assessments.** Hoge and Coladarci (1989) reviewed 16 studies that focused on the concurrent relationship between teachers' judgments and test scores. The studies included in the review satisfied three criteria: (a) naturalistic data only was used, (b) judgmental and test data were collected concurrently, and (c) the studies appeared in published professional journals. They found, in general, high levels of agreement between teacher-based assessments and test scores. The correlations ranged from .28 to .92, and a median correlation of .66 was obtained.

**Curriculum-embedded performance assessments.** In a study conducted with 100 kindergarten students from 10 different classrooms in three Michigan school districts, Meisels, Liaw, et al. (1995) found moderate to high correlations (r = .75 for the Fall and r = .66 for the Spring) between the checklists and the Woodcock-Johnson Psychoeducational Battery-Revised (WJ-R). They also found high correlations (r = .80) between the Spring checklist and the spring Child Behavior Rating Scale (CBRS) scores. Conversely, the correlations between this checklist and the Motor Scale of the McCarthy Scales of Children's Abilities (MSCA) were low (r = .39 for the Fall and r = .28 for the Spring).
Meisels and Bickel (n.d.) examined validity for the Work Sampling System™ (WSS), using 345 students (kindergarten through third grade) in 17 classrooms in the Pittsburgh public schools. They found positive correlations between the checklist and the summary report ratings and the Woodcock-Johnson Psychoeducational Battery-Revised (WJ-R). Over three-fourths of all correlations were between .50 and .75 across all four grade levels. Although most correlations were moderate to high, there were some correlations below .50 in each of the grade levels.

Meisels, Bickel, Nicholson, et al. (2001) conducted a cross-sectional study of 345 students (kindergarten through third grade) in five Pittsburgh public schools. They found that over three-fourths of the correlations between WSS ratings and WJ-R scores were between .50 and .75; however, about 92% of the correlations fell in the moderate to high range. Only four of the correlations were low (i.e., below .50).

**Predictive validity evidence for teacher-based judgments**

*Noncurriculum-embedded performance assessments.* Stevenson, Parker, Wilkinson, and Fish (1976) followed a cohort of children from kindergarten through third grade. Teachers rated the children in the Fall and Spring of kindergarten and in grades 2 and 3 on variables related to cognitive abilities, classroom skills, and personal-social characteristics. The ratings were compared to the reading and arithmetic subtests on the Wide Range Achievement Test (WRAT) that was administered before kindergarten and at the end of grades 2 and 3. Stevenson and associates found that kindergarten ratings obtained in the Fall had a correlation of about .50 with achievement in reading and arithmetic over the four years. The stability of the children's achievement from kindergarten to after kindergarten rose from .55 to .80 in reading and from .50 to .70 in arithmetic. They also found that the ratings in second and third grade correlated about .65 with reading and .55 with arithmetic.

Quay and Steele (1998) followed a cohort of students from pre-kindergarten through second grade. Teachers rated children using the Developmental Rating Scale (DRS) at the beginning of pre-kindergarten and later in the first and second grades. Teachers administered the Developmental Profile II (DPII) at the beginning of pre-kindergarten and later in first grade and administered the Iowa Test of Basic Skills (ITBS) to a sub-sample of the children at the end of second grade. Quay and Steele found that pre-kindergarten
ratings had significant correlations with both first- and second-grade teacher reports of reading comprehension and math achievement. However, the ratings given in pre-kindergarten did not predict second grade ITBS total-reading or total-math scores of this sub-sample. First grade ratings were found to be significant predictors of both first- and second-grade teacher reports of reading comprehension and math achievement, as well as second-grade ITBS total-reading and total-math score.

Hecht and Greenfield (2001) followed a cohort of children from first- through third-grade. Teachers rated children in the Spring of their first-grade year, using the academic competence subscale of the Social Skills Rating System (SSRS). Students were administered reading-related tests (i.e., Peabody Picture Vocabulary Test-Revised, Woodcock-Johnson Tests of Achievement, Roswell-Chall Auditory Blending Test, Yopp-Singer Segmentation Test, and The Concepts About Print Test) in the Spring of first and third grades. Hecht and Greenfield found an association between first-grade teacher ratings, reading ability, and reading-related knowledge and individual differences in third-grade reading skills. They also found that teacher ratings and reading-related tests significantly predicted individual differences in word-level reading and reading-comprehension skills.

Curriculum-embedded performance assessments. In the 1995 Michigan study, Meisels, Liaw, et al. found high correlations (i.e., ranging from .67 to .76) between the Fall and Winter checklists and the Spring WJ-R and the Child Behavior Rating Scale (CBRS) scores. They found moderate to low correlations (i.e., ranging from .43 to .34) between the checklist and the Spring scores on the Motor Scale of the McCarthy Scales of Children's Abilities.

Meisels and Bickel (1998) concluded that WSS ratings were more significant predictors of students’ spring WJ-R scores than the demographic variables in the Pittsburgh study. In addition, the ratings from kindergarten through second grade continued to show statistical significance in the regression models after controlling for students’ initial performance-level effects. Meisels, Bickel, Nicholson, et al. (2001) found that the probability of a student performing poorly or well on both the WJ-R and the WSS in language and literacy was 84% and for mathematical thinking was 80%.
Validity evidence for the South Carolina Readiness Assessment

The South Carolina Readiness Assessment (SCRA) is a curriculum-embedded, performance assessment that consists of developmental guidelines and checklists. The 2000-2001 SCRA first-grade developmental checklists consisted of three domains, 15 functional components, and 42 indicators (Huynh, Prior, & Gallant-Taylor, 2002). The domains are: (a) Personal and Social Development (e.g., self concept, self control, approach to learning, interactions with others, and conflict resolution); (b) Language and Literacy (e.g., listening, speaking, literature and reading, and writing); and (c) Mathematical Thinking (e.g., approach to mathematical thinking, patterns and relationships, number concepts and operations, geometry and spatial relations, measurement, and probability and statistics). Teachers' observations of students within the three domains were recorded three times during the year (e.g., October, January, and April). Progress levels (i.e., Less than expected, As expected, and More than expected) in the domains were indicated during the April rating period.

Three types of validity evidence for the South Carolina Readiness Assessment are based on fairness, relation to other variables, and stability of internal structure across student subgroups for kindergarten and first grade students (Huynh et al., 2002). Prior to the Spring 2001 field test of the SCRA, all kindergarten- and first-grade teachers participated in statewide training sessions. The training sessions were consistent with the guidelines stated in Standard 1.7 of the Standards (AERA, APA, & NCME, 1999) for the validation of an instrument when raters are involved.

**Fairness.** To establish the fairness-validity evidence, a differential-item functioning (DIF) analysis was conducted, based on the Mantel-Haenszel (MH) procedure, on all 2001 Spring-performance indicators, progress ratings, and functional-component ratings. For the ethnicity DIF analysis, all Spring-performance indicators, progress ratings, and functional components were classified as "AA," following the Educational Testing Services/National Assessment of Educational Progress (ETS/NAEP) rules. For the gender DIF analysis, 79 of the Spring-performance indicators were classified as "AA" and three of the Spring-performance indicators were classified as "BB." Of the 60 progress- and functional-component ratings, 55 were classified as "AA" and five were classified as "BB."
There were no items classified as "CC," indicating the checklists were reasonably free of ethnicity and gender DIF.

**Relationships to other variables.** This research also examined the SCRA’s relationships to other variables, i.e., the relationship between the SCRA and scores on the Cognitive Skills Assessment Battery (CSAB). Correlations were computed for students in kindergarten and first grade between the CSAB scores and Fall, Winter, and Spring progress total scores. In addition, correlations were computed for students in kindergarten and first grade between the CSAB scores and the Fall, Winter, and Spring functional-component total scores. It was found that the variance overlap between the CSAB scores and the various SCRA components ranged from 12% to 23%; thus, the construct measured by the SCRA was substantially different from the construct measured by the CSAB.

**Stability of the internal structure.** To establish the stability of overall internal structure of the SCRA across all subgroups, principal component and factor analyses were performed on the Spring progress ratings and the Spring functional-component ratings separately for gender and ethnicity groups. These principal-component analyses indicated that the first component comprised about 50% of the total variance in the data; thus, a one-factor model emerged. The factor analyses indicated that the mean and standard deviations of the factor patterns for gender and ethnicity groups were practically equal. In addition, the correlations between the sets of one-factor Maximum Likelihood (ML) patterns were practically identical across the gender and ethnicity groups. Thus, the internal structure for both progress ratings and functional-component ratings remained stable across all subgroups.

**SUMMARY**

This overview of the available literature on concurrent and predictive validity provides evidence for teacher-based judgments in performance assessments for young children as well as validity evidence for one state’s readiness assessment (i.e., SCRA). Concurrent and predictive validity have been established for teachers’ ratings in reading and mathematics and a norm-referenced test. In both cases, moderate to high correlations were found between teachers’ ratings and students’ performance on a psychoeducational battery.
Nevertheless, there is little research available on the predictive validity of a curriculum-embedded performance assessment for young children and a criterion-referenced test. An example of a curriculum-embedded performance assessment, other than the South Carolina Readiness Assessment, is the Work Sampling System™. Available research on the WSS is limited to two states and apparently has been conducted solely by the developer of the WSS and his associates. In addition, predictive validity was established between teachers' ratings on the checklist and a psychoeducational battery.

A review of the literature suggests that additional research is needed in establishing the predictive and concurrent validity of a variety of performance assessments for young children in relation to appropriate criterion-referenced tests. Although the time required to assess children using a performance assessment has been cited as a disadvantage of the assessment process, the use of performance assessments for young children meets the guidelines established by early childhood professionals. Proponents of performance assessments for young children have indicated that since children develop at different rates the use of a continuous assessment would be more consistent with young children's development. The implications for providing support for the use of performance assessments for young children include adding to pre-existing professional knowledge on curriculum-embedded performance assessment in the field and adding validity evidence to the Work Sampling System™, the system upon which the South Carolina Readiness Assessment is based.

REFERENCES


POTENTIAL USES OF FORMATIVE ASSESSMENT IN HIGHER EDUCATION

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Assessment can be an essential part of the survival of all colleges and universities. As society's call for more accountability in higher-education institution practices increases, the use of assessment is practically inescapable for most institutions (Hunt & Pellegrino, 2002; Lewis, 2003; Newman, 2003). While assessment of major institution functions has been deemed necessary, the assessment of student learning is also of great importance (Newman, 2003). As Newman notes, more institutions are beginning to engage in the assessment of student learning at the undergraduate level. Assessment of student learning on an overall scale or a class-by-class scale can help both instructors and institutions determine if they are fulfilling part of their core mission of providing students with a quality-educational experience through teaching. Equally important to engaging in assessment is using the right type of assessment to measure the kind and type of information being sought (Bonwell, 1997).

While summative assessment's roots run deep in higher-education tradition, it is clear that summative assessment is not the only way to assess student learning. Bonwell (1997) states that Angelo (1995) defined assessment as an "...ongoing process aimed at understanding and improving student learning" (p. 73). If one views assessment from the lens provided by Angelo, then formative assessment could also provide some of the insight being sought (Bonwell, 1997). Bonwell also cited Angelo and Cross (1993), who he states broadened the concept of assessment to include another form of in-class assessment that is comprised of informal assessment meant to improve teaching and learning (i.e., formative assessment). Hunt and Pellegrino (2002) note that formative assessment is where "...assessment is integrated within instruction and aimed at increasing learning..." (p. 73).

According to some of the sources cited in this short chapter, formative assessment, when conducted correctly, has the potential to be a valuable form of assessment for three main reasons. First, the use of formative assessment can provide the instructor with the
opportunity to receive valuable feedback that may help improve instruction (Black & Wiliam, 1998; Rolphe & McPherson, 1995; Scudder, 2003; Yorke, 2003). Second, the use of formative assessment can provide students with the opportunity to actively participate in assessing their learning needs (Klecker, 2003; Rolphe & McPherson, 1995; Ulmer, 2003; Yorke, 2003). Third, the use of formative assessment can promote and reinforce active learning, which in turn can enhance the level of authentic learning that takes place (Bonwell, 1997; Murphy, 1997; Ulmer, 2001).

FORMATIVE ASSESSMENT AND THE INSTRUCTOR

The potential context-specific nature of formative assessment can make it useful to instructors (Scudder, 2003). As Scudder notes, the correct use of formative assessment can help instructors know whether students are learning a clearly-defined topic or skill. There are a number of ways to go about using formative assessment, from ungraded mini-quizzes to portfolios (Bonwell, 1997; Murphy, 1997; Yorke, 2003). Bonwell (2003) states, “formative assessment...allows us to check in immediately to see if students understand a key point or concept” (p. 74). Improvement in those key areas has a potential to enhance the overall quality of the teaching and learning process (Rolfe & McPherson, 1995). Formative assessment is not meant to be haphazardly undertaken (Black & Wiliam, 1998; Bonwell, 1997). For the instructors who choose to engage in formative assessment as a means of improving teaching and learning, reflection and examination of their beliefs about learning and their students’ potential for learning is important (Black & Wiliam, 1998; Yorke, 2003). According to Black and Wiliam, instruction and formative assessment are indivisible. Therefore, formative assessment can be an important tool used for understanding the level of student learning and quality of instruction being provided to students.

FORMATIVE ASSESSMENT AND THE STUDENT

Formative assessment can be helpful to students because it actively engages them in the learning process by allowing them to assess their learning. Moreover, the feedback provided by instructors could aid students in determining areas of weakness that need
improvement (Rolfe & McPherson, 1995). Klecker (2003) stated that formative assessments that involved collaboration and discussion between peers could lead to better learning. Although Black and William's (1998) work is written with information primarily from a K-12 schools context, it provides some information about formative assessment as it relates to the "classroom" that may have applicability to some higher education classrooms as well (Yorke, 2003). In examining a hypothesis to test whether learning standards are increased through improvements in use the of formative assessment, Black and William (1998) found that most of the studies they reviewed concluded that formative assessment helps reduce achievement range between students while raising the achievement level overall.

Also, it is possible that the right kind of feedback from formative assessment may help to encourage and support students (Rolfe & McPherson, 1995). Formative assessment also may give the student an opportunity to assess his or her knowledge in a context that may be less focused on passing or failing and more focused on what has been learned or what needs to be learned (Bonwell, 1997; Rolfe & McPherson, 1995). Furthermore, Yorke (2003) notes that formative assessment may foster student self-regulation.

FORMATIVE ASSESSMENT AND AUTHENTIC LEARNING

Formative assessment has been linked with the process of learning rather than the final outcome (Law & Murphy, 1997). Moreover, formative assessment is a major element of active learning (Bonwell, 1997). Rolfe & McPherson (1995) found that students who engaged in formative assessment as part of their program commented on how the assessment encouraged their learning. Bonwell states, "formative (ungraded) assessment, coupled with active learning, can be a powerful tool for transforming a passive classroom into one filled with active participants" (p. 73). The use of formative assessment can promote and reinforce active learning by encouraging students to take on a more active role in their educational experience (Bonwell, 1997); therefore, formative assessment takes place for the sake of learning. Ulmer (2001) notes that formative assessment also can place emphasis on a deep level of student learning rather than "patternning" (p. 68). Clearly, the use of formative assessment can promote an authentic form of student learning in higher education as well as elsewhere.
CONCLUSION

According to Newman (2003), colleges and universities have a responsibility to educate and prepare students for their place in society. Higher education institutions that make an effort to assess and improve student learning are working towards fulfilling an important part of their mission. Quality assessment is one key to making sure that institutions are actually accomplishing the things they say they are accomplishing.

The embracing of assessment can provide the context for improvement and progress particularly in the realm of student learning (e.g., Lewis, 2003). As noted above, it is possible that assessment can be a continuous process rather than one that ends with implementation, which typically is characteristic of summative assessment. Assessment remaining a continuous process helps to ensure that progress is being made in educational settings. The use of assessment can improve the educational options for students and enhance the overall learning experience. Summative and formative assessment both have their value and place within the teaching and learning process at colleges and universities (Murphy, 1997). Yorke (2003), writing out of England, notes that some assessments can be both formative and summative. Similarly, some educators also have found that formative assessment has the potential to enhance or improve learning at the K-12 level and potentially beyond into certain higher-education classrooms (Black & Wiliam, 1998; Hunt & Pellegrino, 2002; Murphy, 1997; Ulmer, 2001).

It is possible that formative assessment will make more demands on staff and at times, on students (Rolfe & McPherson, 1995). Furthermore, Hunt and Pellegrino (2002) point out that formative assessment may also be “problematic” because it “...requires that the assessor knows in advance both the material that students are supposed to grasp and the different alternative and problematical ways in which students may fail to grasp it” (p.75); however, there are possible benefits to formative assessment. Additional research can help determine how formative assessment can affect students and student learning in a higher-education context, particularly across classroom types and disciplines (Yorke, 2003). Moreover, more research like that of Hunt and Pellegrino (2002) may help determine how certain mediums like computer technology may aid in formative assessment in classrooms throughout the educational community. Yorke (2003) notes, “there is very little theorisation relating to formative assessment” (p. 485). An understanding of both types of
assessment can help educators (e.g., higher education faculty) determine their goals for their students and the means to achieving those goals (Bonwell, 1997). Employing assessment mechanisms that could foster learning may be a goal of educators and institutions that desire to see students learn. Some believe that formative assessment when implemented correctly can be one such mechanism.

**REFERENCES**


PART 5: COLLEGE OF ENGINEERING AND INFORMATION TECHNOLOGY
DECOMPOSITION OF CHEMICAL NERVE AGENTS OVER HETEROGENEOUS CATALYSTS

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The detection and decomposition of chemical-warfare agents has been gaining considerable importance over recent years in multiple settings and in various academic disciplines. Chemical nerve agents constitute a major portion of such chemical warfare agents currently employed by military or terrorist forces of countries and non-states alike. This is a short review of the most prominent materials, to date, for use in the decomposition of the most frequently employed phosphonate-containing chemical-nerve agents, i.e., GD (soman), GB (sarin), and VX. This monograph chapter is meant to provide a comparative evaluation of the performance and applicability of various metal oxides, as well as less common materials, for use as catalysts for chemical-nerve-agent decomposition. The conclusions reported here are based on data obtained primarily from infrared and NMR spectroscopy experiments. Numerous studies were conducted with actual nerve agents, while other researchers investigated the characteristics of nerve-agent simulants such as dimethyl-methyl phosphonate (DMMP), dimethyl-hydrogen phosphonate (DMHP), trimethyl phosphonate (TMP), methyl-dichlorophosphonate (MDCP), diethyl-phenylphosphonothioate (DEPPT), and diisopropyl fluorophosphate (DFP). The primary purpose of this work is to review the relevant existing literature on the decomposition of chemical nerve agents.

Modern chemical warfare has been employed since the early 20th Century. In World War I, allied forces used heavier-than-air gases such as phosgene and mustard that filled trenches and tunnels rendering them useless for combat. In the 1990's, the Aum Shinrikiyo cult, which has been considered the most successful terror organization that has ever used chemical attacks, used polyethylene pouches to disseminate sarin throughout the Tokyo subway system. More recently, in March of 1998, Saddam Hussein’s Iraqi regime used chemical weapons on their own citizens, resulting in the deaths of 3,000 to 5,000 Kurdish civilians in the northern city of Halabja. As incidences of terror attacks gain more
attention, and as hostile state and non-state organizations expose themselves and become more prolific, the issues regarding treatment, containment, and the eventual eradication of chemical-warfare agents become exceedingly problematic.

Today, a large portion of chemical-warfare agents that have the potential to be deployed falls under the category of chemical nerve agents (CNAs). Specifically, organophosphorous compounds such as GD, GB, and VX can cause considerable harm to humans by interfering with the transmission of impulses in nerve cells. These agents bind to the enzyme acetylcholinesterase, thereby inhibiting the decomposition of the neurotransmitter acetylcholine, which acts to stimulate voluntary muscles and nerve endings of the autonomic-nervous system. The consequence of this inhibition is a lack of muscular control. A drop of VX liquid on the skin of a human is likely to induce chest constriction, loss of vision, vomiting, involuntary urination/defecation, convulsions, seizures, and paralysis before death.

During the Second World War and throughout the Cold War, U.S. Military scientists produced these and other deadly chemicals for use on the battlefield and for riot-control purposes. The naming of these agents is quite unimpressive: The first letter represents the type of agent, while the second letter designates the order in which it was discovered. For example, sarin, or GB, is one type of acetylcholine inhibitor (designated by the G) and the agent soman, or GD, was the second agent of this type discovered after sarin’s development. The common names that have been associated with these chemicals most often are derived from the scientists that first isolated that particular compound.

Currently, the United States Military is interested in catalytic materials that can decompose chemical nerve agents (CNAs) in bulk or for individual personnel use. The latter may involve reactive sorbents for use on skin, personal equipment, or vehicles. Due to the hazardous nature of dealing with such chemicals in the laboratory, extreme safety measures are observed when performing these experiments. In many cases, researchers perform studies on simulants to model the characteristics of the nerve agents while remaining relatively safe in the laboratory. The structures of the most frequently employed organophosphorous nerve agents and their simulants, which are used in laboratories for research, are shown below in Figures 1 and 2.
Figure 1: Organophosphorous Nerve Agents

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<td>GB (Sarin)</td>
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**EXPERIMENTAL METHODS**

The two predominant techniques for in-situ monitoring of these chemical reactions are Fourier Transform Infrared (FTIR) and nuclear magnetic resonance spectroscopies. In FTIR spectroscopy, infrared light of 4000-600 cm⁻¹ (2.5-15 µm in wavelength) is focused on a sample. Absorption of radiation results in the excitation of vibrational, rotational, bending, and other modes, while the target molecule itself remains in its ground state. This excitation corresponds to a particular bond energy, which is detected and can be expressed either as a transmission or absorption of energy at a certain infrared frequency. This technique is useful, especially for the identification of chemical species adsorbed on solids as well as for determining unknown fluid compounds leaving a reactor.

Nuclear magnetic resonance (NMR) spectroscopy is based on the constant spin of atomic nuclei about an axis, creating a small magnetic field. These nuclei will act as tiny bar magnets and align themselves accordingly if brought in contact with a stronger magnetic field. In this field, there will be one most probable orientation. However, if the tiny magnet is oriented precisely 180° in the opposite direction, that position also
could be maintained. The small nuclear magnet may spontaneously change from one orientation to the other as the nucleus sits in the large magnetic field. However, this
relatively infrequent spontaneous occurrence can be induced if energy equal to the difference in the energies of the two nuclear-spin orientations is applied to the nucleus. The energy necessary for this induction is the same as in FM radio waves. As the sample is irradiated with pulses of this energy, the atomic nuclei begin to resonate from the first energy state to the other, and vice versa. The energy absorbed by the nuclear spins induces a voltage that can be detected by a tuned coil of wire, then amplified, and finally displayed as a signal, which will eventually decay if no further energy is added to the system.6

NMR spectroscopy is applicable for many nuclei of biological interest, including \(^1\)H, \(^{13}\)C, \(^{15}\)N, \(^{19}\)F, and \(^{31}\)P. However, the normal isotopes of carbon, nitrogen, and oxygen (\(^{12}\)C, \(^{14}\)N, \(^{16}\)O) do not have nuclear spin and, thus, are not observable with NMR spectroscopy.6 Another constraint of NMR spectroscopy is that, for the most part, it can only be performed at ambient conditions. A specialized type of NMR used in many studies on organophosphorous compounds is known as Magic Angle Spinning (MAS) NMR.7 This technique reduces much of the background features, making peaks more visible. This is achieved by spinning the sample rapidly about an axis of 54.7° relative to the static magnetic field. MAS NMR spectroscopy is especially beneficial for characterizing organic molecules and reactions on solid supports.

PERFORMANCE OF METAL AND METAL OXIDE CATALYSTS

Tungsten and Titanium Oxides

With regard to reagents, Dimethyl Methyl Phosphonate (DMMP) is the most common substance used to mimic offensive organophosphorous compounds due to its phosphorous functionalities89 and absence of toxicity.10 On most oxides (e.g., WO\(_3\), TiO\(_2\), MgO, CaO, Al\(_2\)O\(_3\), Fe\(_2\)O\(_3\), La\(_2\)O\(_3\), and AgO), these organophosphorous compounds mainly adsorb through the P=O group, then react to form a stable phosphorous-containing species on the catalyst surface, resulting in the loss of a methoxy group.11 Non-reactive sorbents, such as SiO\(_2\), are undesirable for the decomposition of organophosphorous compounds due to its lack of reactivity once the adsorbate adheres to the surface. Tripp et al. discovered that, at low temperatures, DMMP will adsorb on the SiOH surface groups; however, evacuation at elevated temperatures will result in desorption of intact DMMP.12
On the other hand, $\text{WO}_3$ and $\text{TiO}_2$ are two compounds with strong adsorptive capabilities and, thus, are used primarily as models for sensor materials that adsorb organophosphorous compounds. Once the species have adsorbed on the surface, these metal oxides can readily decompose CNAs and their simulants at favorable conditions. Tripp and co-workers have recently characterized the $\text{TiO}_2$ and $\text{WO}_3$ surfaces and their interaction with organophosphorous compounds using FTIR.$^{8,13,14,15}$

In four studies just footnoted, the researchers exposed trimethyl phosphonate (TMP), DMMP, and methyl-dichlorophosphate (MDCP) to a $\text{WO}_3$ surface. MDCP was used in order to better simulate the nerve agents GB and GD, as the phosphorus atoms in MDCP, GB, and GD are all bonded to halogens (Figures 1 & 2). The reagents were passed over a potassium bromide window, which was coated with a monoclinic $\text{WO}_3$ powder layer (22 m$^2$/g) that was mounted in an infrared cell. Three samples of powder were treated at 25°C, 150°C, and 400°C, respectively, prior to room temperature reagent introduction. This was done in order to quantify the amount of adsorbed water on the oxide surface in addition to the number of Lewis and Bronsted acid surface sites.$^{12}$ Spectra of DMMP and TMP adsorbed on $\text{WO}_3$ were taken and can be found in the 2001 study by Kanan and Tripp. Both of these spectra follow the same trend; the adsorbate $\text{O-CH}_3$ stretching vibrations observed in the 1040-1057 cm$^{-1}$ region are shifted only slightly toward lower wavenumbers when compared to the gas phase, suggesting that the methoxy group does not react with the surface and remains relatively unchanged. Alternatively, the DMMP $\text{P=O}$ stretching vibrations at 1237, 1222, and 1206 cm$^{-1}$ decrease by 39, 54, and 70 cm$^{-1}$ from those of the gas phase (large band at 1276 cm$^{-1}$), respectively. This is characteristic of $\text{P=O}$ interactions with the $\text{WO}_3$ surface. Through analysis of the relative intensities of the $\text{P=O}$ peaks in this study, the authors conclude that DMMP and TMP adsorb on $\text{WO}_3$ through the oxygen of the $\text{P=O}$ group, forming bonds with Lewis acid sites, Bronsted acid sites, and adsorbed water. Additionally, the authors claim that the number of Lewis and Bronsted acid sites on the $\text{WO}_3$ surface is directly proportional to the amount of adsorbed DMMP and TMP.

Alternatively, similar studies conducted on species containing halogenated phosphate groups, such as in the case of methyl-dichlorophosphonate (MDCP), lead to different results. The spectra of MDCP adsorbed on $\text{WO}_3$ again can be found in the Kanan and Tripp study. Once adsorbed, there is a decrease in the $\text{P=O}$ stretching modes of MDCP, just as for
DMMP and TMP, indicating that MDCP adheres to the Lewis and Bronsted acid sites of the WO₃ surface through its P=O bond. However, there is an upward shift in the methoxy C=O stretching region (1065-1106 cm⁻¹) that is attributed to MDCP hydrolysis in the presence of water. This theory was confirmed after analysis of vapor phase spectra of the MDCP on WO₃. The presence of a hydrated surface enhances MDCP hydrolysis, as is evidenced by the production of gas phase HCl and CH₃Cl. The relative quantity of hydrolysis products decrease as the catalyst pretreatment temperature increases (due to decreasing amounts of surface water), indicating that, while Lewis and Bronsted acid sites are necessary for adsorption, water is required for the decomposition of MDCP and possibly for other phosphorous-halogen-containing agents on the WO₃ surface.

Kanan, Tripp, and associates also conducted some experiments at elevated temperatures where they compared the characteristics of the decomposition of dimethylhydrogenphosphonate (DMHP), DMMP, and TMP over WO₃ and TiO₂. In these experiments, the simulants were the same except for the H, CH₃, and OCH₃ groups in DMHP, DMMP, and TMP, respectively. Preliminary room-temperature experiments upheld the theory of adsorption of the simulants through their P=O groups on both the WO₃ and TiO₂ surfaces. The authors confirmed that the simulants adhered to the surface acid sites as WO₃ experienced a larger decrease in P=O frequency shift than TiO₂ and, thus, had a greater interaction with the adsorbent, which was attributed to the higher Bronsted acidity of the OH group on WO₃.

Whereas there was no decomposition of DMMP or TMP on WO₃ at room temperature, the results obtained from infrared experiments employing TiO₂ at higher temperatures suggested that decomposition over this material is possible. Mitchell and associates found that as the surface temperature increases, the peak at the frequency corresponding to the DMMP methoxy group (2957 cm⁻¹) decreases. The intensity of the peak at room temperature is reduced by 50% after treatment at 200°C and disappears completely at 400°C, indicating that DMMP decomposes at its methoxy groups. Observation of the low-frequency region of the spectrum shows a shift and a decrease in the P=O peak (1236 cm⁻¹) in addition to a decrease in the C-O peak intensity (1036 cm⁻¹) with increasing temperature. The data showed that as the OCH₃ and P=O bands disappear, peaks at 1150 and 983 cm⁻¹ begin to grow, which is representative of phosphorous-oxygen species containing a PCH₃...
group. Similar trends are evident for DMMP on WO$_3$; the C-O peaks at 1037 and 1064 cm$^{-1}$ decrease with increasing temperature, as does the P=O vibration at 1223 cm$^{-1}$. The peak at 1314 cm$^{-1}$ is characteristic of P-CH$_3$ and remains relatively unchanged.

The authors conclude that DMMP and other organophosphorous compounds will adsorb onto WO$_3$ and TiO$_2$ through the oxygen of the P=O bond at room temperature. As the temperature increases, the methoxy groups are cleaved and the P=O bond is modified until, at temperatures above 300°C, a non-reactive surface phosphorous-oxygen species is formed. It is evident that WO$_3$ and TiO$_2$ have the capacity to decompose organophosphorous nerve agents; however, these materials are not robust, since the catalysts’ acid surface sites are consumed by the product phosphate species in a 1:1 DMMP: acid-site ratio.

**Magnesium and Calcium Oxides**

Wagner, Klabunde, and others have been studying the synthesis and characterization of high-surface-area (344 m$^2$/g) nanoscale metal-oxide catalysts for organophosphorous compound decomposition. Their work focuses primarily on NMR studies of MgO and CaO in solutions of VX, GD, and DMMP. They note the expected benefit of nanosize particles is enhanced reactivity, primarily due to smaller particle sizes and a large number of defect sites (i.e., non-uniform surface sites that facilitate adsorption and reaction).

MgO and CaO particles were formed in the pores of aerogels in order to obtain nanosize granules that were shown by electron-microscopy experiments to have a narrow size distribution. A quantity of liquid agent (e.g., VX, GD, or DMMP) then was added to the center of a column of aerogel-prepared metal oxide (AP-MgO or AP-CaO) in an NMR rotor, and the reaction was monitored in-situ. All experiments by these researchers were conducted at room temperature.

The NMR spectra for the reaction of GD with AP-MgO, in the Wagner and Klabunde 1999 study, shows a doublet at approximately 28.5 ppm. They describe this feature as representative of the strong coupling between the phosphorous and the fluorine atoms. This peak decreases as time progresses, signifying hydrolysis by adsorbed water or surface OH groups. At the same time, peaks at 25.7 and 18.5 ppm appear, representing the formation of pinacolylmethylphosphonic acid (GD-acid) and methylphosphonic acid (MPA), respectively.
Wagner and Klabunde next looked to the decomposition of VX over MgO. A peak discovered at 51.6 ppm is attributed to VX while the smaller peaks are spinning sidebands. Slow hydrolysis by surface OH and/or adsorbed water decreased the initial peak intensity by approximately 50% after 24 hrs. The products of VX hydrolysis include ethyl methylphosphonic acid (EMPA) (25.2 ppm) and MPA (19.8 ppm). In previous studies of VX hydrolysis, by Yang and associates, researchers show that the toxin EA-2192 is among the reaction products in aqueous solution.\textsuperscript{21,22,23} In the experiments performed by Wagner and Klabunde with pure liquid agents, no peak was observed. Their finding suggests that, at low-water concentrations, the ethyl group of VX is not cleaved to yield the toxic product. For both GD and VX, the product species are represented by relatively broad NMR peaks. This is consistent with the formation of surface-bound magnesium phosphonates that are similar in structure to the products formed on WO\textsubscript{3} or TiO. The findings for GD and VX hydrolysis were similar for AP-CaO.\textsuperscript{19}

Reaction profiles for the decomposition of GD and VX over AP-MgO, as a function of NMR intensity vs. time, also have been reported by Wagner and Klabunde.\textsuperscript{18} Both agents exhibited a fast initial reaction that slowed to a steady-state first-order destructive adsorption. In this study, the half-lives of GD and VX over AP-MgO were 28 min and 68 hrs, while over AP-CaO they were 4.5 hrs and 93 hrs, respectively.

Wagner and Klabunde concluded that, although the AP-MgO and AP-CaO surfaces are highly active, the reactions of these agents on these solids are stoichiometric, as opposed to catalytic. At the conditions studied, no desorption of the phosphate is possible once the agent has reacted on the surface to form MPA. The initial fast reaction of these agents may be attributed to wetting of the surface. The agent spreads as it enters a pore, creating a sort of wave, where the reaction is taking place mainly at the wave front. The reaction will slow to steady state when the wave reaches the end of the pore and when the liquid completely covers all of the surface that it is capable of covering in that phase. That flow, in this pore, is most likely dictated by the cohesive forces of the agent. The results support this theory, as GD has a lower surface tension than VX and, thus, spread the fastest, yielding a more rapid initial reaction.\textsuperscript{18} Furthermore, the authors believe that the steady state reaction kinetics is diffusion limited and due mainly to the agents' rate of evaporation (to reach fresh surface in the pores). The vapor pressure of GD is higher than that of VX.
Additionally, the half-lives of GD over AP-MgO and AP-CaO are both shorter than those for VX. For both GD and VX, the reaction rate will decrease and will ultimately reach zero when all of the Mg and Ca sites are occupied with the adsorbed phosphonate, as mentioned above. Still, in 1988, Cao and associates reported that these surface-bound phosphonate complexes can be removed in aqueous acid solution. This may provide insight for developing a technique to regenerate spent AP-MgO or AP-CaO materials used for reactive adsorption of organophosphorous compounds.

**Aluminum Oxide**

Various forms of $\text{Al}_2\text{O}_3$ have been studied for the decomposition of organophosphorous nerve agents. Recently, Sheinker and Mitchell investigated DMMP decomposition over gamma and sol-gel aluminas at ambient and elevated temperatures. They observed high activity for the sol-gel prepared alumina and attributed this performance to the presence of catalyst's transitional phases and heightened number of defect sites.

Wagner and Bartram have studied the interaction of nerve simulants over $\gamma$-alumina, while Wagner and Klabunde have applied their aerogel synthesis technique and performed studies with the agents VX, GB, and GD on aerogel-prepared $\text{Al}_2\text{O}_3$ (AP-$\text{Al}_2\text{O}_3$). These and the aforementioned reactive sorbents are described as environmentally friendly, and they are deemed "hasty," as their potential uses are for rapid decontamination on the battlefield. Alumina, in particular, is a material that has received much attention, due in part to its relatively low cost.

In Wagner and Bartram's work, the simulants O,S-diethyl phenylphosphonothioate (DEPPT) and diisopropyl fluorophosphate (DFP) were injected into a column of $\gamma$-alumina, and the reactions were monitored in-situ at room temperature via NMR spectroscopy. DEPPT and VX are similar in that both compounds have a sulfur atom on the central phosphorous, while DFP is a model for GD and GB, which contain fluorine (refer to Figures 1 and 2).

In the work of Wagner and Bartram, NMR spectroscopy data obtained for liquid DEPPT adsorbed on gamma-alumina showed two peaks, one at 43.5 ppm and the shoulder at 44.7 ppm, after 14 minutes of exposure of the stimulant to the alumina material. These features are unambiguously representative of DEPPT. As the time of DEEPT exposure to alumina increased, there emerged of a broad band at approximately 12 ppm that...
corresponds to the resonance of the P-S cleavage product ethyl-phenylphosphonic acid (EPPA). Kinetic results indicated a fast initial reaction, followed by a steady state degradation of DEPPT, and then the ultimate halt of activity after approximately 10 hrs. As the reaction entered the steady state regime, the shoulder at 44.7 ppm disappeared. These results suggest similar behavior as in Wagner and Klabunde’s studies on AP-MgO and AP-CaO. The DEPPT liquid initially spreads across the alumina surface until it is saturated. The authors assign the shoulder at 44.7 ppm to “liquid-like” DEPPT and the sharp peak at 43.5 ppm to DEPPT in the presumed monolayer. The fast reaction takes place as the liquid wets the catalyst surface until the reaction enters the diffusion-limited steady state regime.

Hydrolysis of DFP by γ-Al₂O₃ was considerably more effective than that of DEPPT. The NMR spectra for DFP over alumina show that the DFP peaks at -4.3 and -16.5 ppm decrease more rapidly than the DEPPT peaks. As was reported for DEPPT on γ-alumina and for GD and VX on AP-MgO/AP-CaO, there is initially no peak representing adsorbed DFP; only the spectrum for liquid-phase DFP is observed. The DFP peaks become broader as they decrease in intensity, suggesting that, after a substantial period of time, the DFP is being adsorbed slowly on the surface. The peak that emerged after approximately 3 hrs at -1.3 ppm is due to the production of diisopropyl phosphate (DIP) upon cleavage of the P-F bond. Since the reaction of DEPPT and DFP with γ-alumina is still stoichiometric, the blocking of surface sites by phosphonate species will ultimately disable this catalyst.

Both to confirm the studies performed on the simulants and to identify a possible reaction mechanism, in 2001, Wagner and Klabunde probed the efficacy of their AP-alumina catalysts with the actual agents: VX, GD, and GB. The results from these experiments indicated that the room-temperature reaction capacity of AP-Al₂O₃ for these agents is very large, due primarily to the structure of the substrate and its exposed oxygen atoms. The phosphonic acid product of these agents will chemically degrade and penetrate the surrounding oxygen layer to better interact with the aluminum atoms and form reaction-stopping aluminophosphonate complexes. These solid remnants for the reactions of GB, GD, and VX have the potential to be used as forensic markers, indicating whether or not a chemical attack was employed and, if so, what type of agent was used.

As noted earlier, these surface-bound phosphonate species are very stable on the support, and they will not desorb in the presence of water (e.g., rain) unless the cleansing
solution is aqueous with a low pH. It is also interesting to note that AP-MgO, AP-CaO and the various aluminas are able to facilitate room temperature decomposition of these agents and simulants, whereas WO₃ and TiO₂ only exhibited minimal activity for the decomposition of MDCP.

**Cerium and Iron Oxide Catalysts Supported on Alumina**

One of Mitchell's most recent works (2003) involves the decomposition of DMMP over alumina-supported cerium and iron catalysts.²⁹ Although previous studies on sol-gel prepared alumina and FeOₓ/Al₂O₃ catalysts proved the former to be more active,²⁵ results with the iron oxide/alumina catalyst indicate that a greater availability of oxygen might facilitate higher activity for agent decomposition.²⁹ In this recent research, Mitchell and associates co-impregnated the alumina support with iron and cerium oxides in the hopes that ceria would act as an oxygen-storage material and further increase the reactivity.

The reaction products of DMMP over Al₂O₃, 5 wt %Fe/Al₂O₃, 7.5 wt %Ce/Al₂O₃, and 5 wt %Fe-7.5 wt %Ce/Al₂O₃ were measured, and all of the impregnated materials show an increase in product flow compared to the pure Al₂O₃. However, the difference is made clear by observing the total amount of carbon produced from DMMP decomposition. The 5 wt %Fe-5 wt %Ce/Al₂O₃ sample outperformed all the other materials tested in this study. Also, X-ray diffraction and FT-Raman studies showed that this co-impregnated catalyst formed large quantities of CeO₂ upon impregnation. In light of these observations, Mitchell's group concluded that the active component for DMMP decomposition is a two-dimensional ceria network on the alumina support. They report that lattice oxygen reacts with DMMP to form methanol, most of which desorbs and leaves the system, while the rest continues to react downstream on the surface to produce dimethyl ether. Wagner and associates report that the presence of the iron is thought to disrupt the ceria network, resulting in a large number of defect sites, which further increases the reactivity.³¹ This material exhibited extremely high levels of DMMP decomposition, resulting in an activity of more than two times that of sol-gel alumina, which was the best catalyst in previous DMMP decomposition experiments.

**Other Catalysts**

There are many other catalysts that have been studied for organophosphorous nerve agent decomposition. Although they may not be as practical as those mentioned above for
personal decontamination or large-scale demilitarization, these materials may find a use in specialized areas. For example, many toxins that are deemed chemical nerve agents (or their derivatives) are used as pesticides. It may be practical to employ a non-traditional decontaminant for removing pesticides from tomatoes, or for use as containment in a building that houses large stocks of organophosphorous compounds.

In 2001, Wagner, O’Connor, and Procell published their results on the fate of VX in concrete. Surprisingly, VX readily adsorbs onto concrete to form a VX-\( \text{H}_2\text{CO}_3 \) species. What follows is a two-phase reaction: A fast reaction step, followed by slower steady state reaction, which is similar to what is observed over the previously described metal-oxide materials. The half-life of VX during the initial reaction is 2.2 hours; however, the reaction slows considerably once a monolayer of the agent has accumulated in the concrete pores (VX half-life of 28 days to 3 months). This type of concrete may find its application in construction of pesticide or chemical weapon stock houses as a constituent in a secondary- or tertiary-containment structure.

Wagner and Bartram also have studied the decomposition of organophosphorous compounds over NaY and AgY zeolites. Silver complexes are known to decompose VX; yet, one of its reaction products is its more volatile G-agent analogue, ethyl methylphosphonofluoridate (EMPF). The goal of more recent research was to incorporate silver into zeolites in order to limit the production of EMPE. The silver-incorporated zeolite exhibited enhanced reaction rates compared to the NaY sample. After the initial decomposition steps, the silver was shown to desulfurize the cleaved VX thiol group, enabling further reaction to the less toxic QB agent, whose LD\(_{50}\) (i.e., the dosage that will result in the fatality of 50% of those who are exposed) is three orders of magnitude less than VX.

In addition to agent decomposition at elevated temperatures, \( \text{TiO}_2 \) powder can be used to photooxidize DMMP. Using infrared spectroscopy, Rusu and Yates determined that, after DMMP adsorption, the methoxy and methyl groups are cleaved at equal rates and react further to produce \( \text{CO}_2 \), \( \text{CO} \), and \( \text{H}_2\text{O} \). The phosphorous species remains intact on the surface as a free P=O species; however, they report that this system only works for small coverages of DMMP, as \( \text{O}_2 \) adsorption onto the surface is necessary to facilitate photoexcitation.
Finally, one group that investigated the decomposition of DMMP over alumina-supported platinum catalysts observed tremendous longevity of catalyst activity. In 1994, Tzou and Weller reported complete removal of DMMP from a 74mg/hr DMMP stream for up to 76 hrs at 200°C and 135 hrs at 400°C. This is a significant accomplishment, as most other materials will lose their reactivity sooner than 24 hours or allow the agents to "slip" through the reactor even near the start of reaction.

CONCLUSION

As is the case for any detrimental-chemical species, the ideal method for the complete eradication of chemical-warfare agents is to prevent their production; however, this task is not easily accomplished. For the most part, halting the production of these agents is the responsibility of policy makers and not of chemists. Until the production of chemical weapons is curtailed, scientists must continue to develop technologies to mitigate the lethal properties of such agents. With the push towards nanotechnology, supported metal and metal-oxide catalysts may play a significant role in the decomposition of organophosphorous nerve agents in the near future.

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At critical junctures of American literary history, it becomes evident that scholars will question the dominant ideological paradigm that establishes American literary identity. Often scholars look to the “great works” of literature to do the work of shaping that identity. Moreover, the contributions of African American writers to the “great works” are a significant component to the construction of an all-inclusive American literary identity. Accordingly, the formation and reformation of the canon of African American Literature is a topic of worthy dialogic enterprise. Professors of literary studies have a unique position of being custodians of literary canons. They are charged with the responsibility of selecting works of literature that give students a perspective on literature that encompasses the experiences and artistic contributions of a pluralistic society. In any given semester, professors of introductory survey courses in Literature, make the critical decisions about what works of literature should be covered and which ones are cut from the selection list. It is implausible that in a matter of 16 weeks three centuries of Literature, with multicultural and multi-ethnic representations, can be fairly considered. Hence, with academic freedom, professors select an anthology and prepare a course syllabus precariously, but they often overlook the superlative works of African American writers and their offerings to the American literary landscape. Because of this oversight, African American literary-canon formation has become necessary; however, over the years the African American literary canon itself reflects adjustments made to address the evolving and diverse characteristics of African Americans.

This monograph chapter is an exploration of the requisites for African American literary canon formation and the essential issues of African American canonicity. First, there is an historical perusal of the African American literary canon; then a glimpse into the debates surrounding the Black aesthetic and characterizations of authentic identity is
presented; and last an examination of the present leading African American anthologies and typical text selections drawn from them is included.

**WHY AN AFRICAN AMERICAN LITERARY CANON?**

Post-structuralist scholars persist in reifying the notions of what represents the authenticity of African American culture. The African American literary canon is essential to the critical assumptions about African American culture and literary contribution. Scholars are often at odds about what literary works represent the culture the best, which makes their debate similar to the conundrum that the overarching American literary canon adds to the challenge of selecting good representative works. As a result, African American literary anthologies are circuitously searching for the "best" representations of ideological shifts in African American history and experiences.

At the very core of these polemics are the questions of whether literature should be the focal point of ideological indoctrination and endowed with the onus of dispensing the character and virtue of society, or should literature imbibe the aesthetic purpose of emitting pleasure and perhaps igniting imagination? Perhaps, an even more provocative question might be how has the African American literary canon been affected since the initial inception? More precisely, how does the ever-raging debate affect what is or is not taught in the academy?

The initial accounts of the formation of an African American literary canon began in 1846 to address the accusations that African Americans made no significant contributions to the American literary landscape. According to Henry Louis Gates' (1992) "The Master's Pieces: On Canon Formation and the African-American Tradition," Theodore Parker launched the notion that American literature had been derivative, claiming that "'we have no American literature which is permanent. Our scholarly books are only an imitation of a foreign type; they do not reflect our morals, manners, politics, or religion, not even our rivers, mountains, sky'" (p. 22).¹ Parker alleged that in this sense American literature only reflected the ideology and interest of the upper classes, and upon this claim he asserted that

there was only one kind of literature that would be a genuine product of Americans. He was referring to the slave narratives. While not sanctioning the narratives as necessarily "great works" of literature, Parker did acknowledge them as "a prime site of America's 'original romance'" (Gates, p. 23). Later, in 1852, Charles Sumner would reinforce his claim that the narratives of fugitives slaves are "among the heroes of our age. Romance has not storms of more thrilling interest than theirs" (p. 23). The Parker, Sumner acknowledgements served to establish a basis for identifying an authentic American identity while at the same time establishing the humanity of African Americans by way of their artistic contributions. Gates (1992) reveals that "the relationship between the social and political subjectivity of the Negro and the production of art" would be launched as the early transcendentalists would begin the first debates over canon formation (p. 24). Gates echoes Ralph Waldo Emerson (1844) in "Emancipation in the West Indies:"

If [racial groups] are rude and foolish, down they must go. When at last in a race a new principle appears, and idea—that conserves it; ideas only save races. If the black man is feeble and not important to the existing races, not on a parity with the best race, the black man must serve, and be exterminated. But if the black man carries in his bosom an indispensable element of a new and coming civilization; for the sake of that element, no wrong nor strength nor circumstance can hurt him; he will survive and play his part...[Now let [the blacks] emerge, clothed and in their own form. (p. 24)

Upon Emerson's sentiment, Armand Lanusse, would edit Les Cenelles, the first Black anthology of black French verse in New Orleans in 1845. Much like the Fugitive Poets who would reify the South as aesthetically viable, Gates (1992) conveys that Lanusse's anthology would serve as "a defense of poetry as an enterprise for [B]lack people, in their larger efforts to defend the race against 'the spiteful and calumnious arrows shot at us' at a target defined as the collective [B]lack intellect" (p. 25). Though the reaction itself had a

2 Ibid.
3 Ibid.
4 Ibid.
political bent, Gates (1992) reveals that the anthology did little to address the experiences of Black Creoles or call for attention to the racist oppression they faced. What Lanusse's anthology did accomplish is to refute the pervasive notions in the 19th century that the African is inherently intellectually inferior. Later in 1849, according to Gates, William G. Allen would publish an anthology in which George Moses Horton and Phillis Wheatley would be included as exemplary African American heirs of the "great African tradition" of writers the likes of Pushkin, Placido, and Augustine (p. 25).

From 1849 to 1922, Gates (1992) reveals that there would be a contention regarding what constitutes Black canon formation. He shares that "the poles of black canon formation established firmly by 1849: Is 'black' poetry racial in theme, or is 'black' poetry any sort of poetry written by black people?" (p. 26). The inception of the New Negro Renaissance would carry this notion forward as James Weldon Johnson's The Book of American Poetry (1922), Alain Locke's The New Negro (1925), and V. E. Calvert's An Anthology of American Negro Literature (1929) would, according to Gates, present a body of literature that would not only represent black production it would see as its "... goal the demonstration of the existence of the black tradition as a political defense of the racial self against racism" (p. 26). Gates (1992) shares Johnson's outlook that

The world does not know that a people is great until that people produces great literature and art... The status of the Negro in the United States is more a question of nation mental attitude toward the race than of actual conditions. And nothing will do more to change that mental attitude and raise his status than a demonstration of intellectual parity by the Negro through the productions of literature and art.5 (p. 26)

These purveyors of the Black literary enterprise launched the first attempt at highlighting the Black vernacular, making Spirituals, Blues, and Labor songs crucial ingredients of an African American genre, and they later influenced Sterling Brown, Arthur Davis, and Ulysses Lee to edit The Negro Caravan in 1941. This anthology would stress the "representative value" of African American writing, which establishes what Gates (1992)

5 Ibid.
refers to as “a rhetoric of nationalism” (p. 29). This anthology would seek to create art for the sake of characterizing an authentic Black image for Black use without necessarily trying to prove itself to the European mainstream or be set outside of it. This anthology would become the definitive collection of African American writing that would illuminate the ideas of African American inclusion into the American literary canon. The editors challenged the notion that Negro writing should be set apart for critique outside that of English and the American mainstream. They maintained that Negro writing should address and illuminate social reality and contest white-racist stereotypes that attempt to corral the Negro experience into a monolithic identity, asserting its common literary thrusts. Brown, Davis, and Lee, editors of *The Negro Caravan* (1941), concluded:

> [I]n spite of such unifying bonds as a common rejection of popular stereotypes and common ‘racial’ cause, writings by Negroes do not seem to the editor to fall into a unique cultural pattern. Negro writers have adopted the literary traditions that seemed useful for their purposes. . . . While Frederick Douglass brought more personal knowledge and bitterness into his antislavery agitation than William Lloyd Garrison and Theodore Parker, is much closer to them in spirit and in form than to Phillis Wheatley, his predecessor, and Booker T. Washington, his successor. . . . The bonds of literary tradition seem to be stronger than race (p. 30).

Gates (1992) notes that during this life of *The Negro Caravan* (1941), “thirteen years before Brown v. Board, the ‘integrationist’ thrust promoted the idea that African American literature be considered ‘American literature’ written by Negroes” (p. 30). Twenty-seven years later the Black canon would make an abrupt departure from the spirit of inclusion.

In 1968, Amiri Baraka and Larry Neal published *Black Fire*, which was described by Gates (1992) as “the blackest canon of all” (p. 31). This anthology would announce “black liberation . . . with an up-against-the-wall subtext” that had no desire to seek white approval. Unlike *The Negro Caravan*, *Black Fire* refuted American essentialism and

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6 Ibid.
instead asserted “‘African’ essentialism.” *Black Fire* (Baraka et al., 1968) would establish a Black aesthetic that would maintain that art and politics go hand in hand.

In the same year, but in a less confrontational vein, *New Black Voices*, edited by Abraham Chapman (1972), would stress as its primary goal, “To bring to the general reading public and to the students of American literature in the high schools and colleges a large and diverse collection of writing by black Americans at a popular price — literature worth reading as literature and worthy, . . . of inclusion in the American literature curriculum in the schools” (Chapman, p. 29). Chapman’s *Voices* would seek to accentuate the beauty of the Black experience rather than concentrate on the protest against white America.

Gates (1992) later would himself make a foray toward canon formation with *The Norton Anthology of African American Literature* (1997). He proposes that the anthology would be a vast collection (i.e., over 2,000 pages) of African American literature that makes a variety of African American texts readily available to anyone interested in teaching African American Literature, making the assertion that “no one will ever again be able to use the unavailability of black texts as an excuse not to teach our literature” and also maintaining that “a well-marked anthology functions in the academy to create a tradition, as well as to define and preserve it” (p. 32). Gates’ forecasts that the *Norton Anthology* (Gates et al., 1997) will include critical insight from an array of scholars who contribute to the anthology, offering what Gates (1992) calls diverse “ideological, methodological, and theoretical perspectives” (p. 32). With an intense marketing and distribution strategy, *the Norton Anthology of African American Literature* is the most widely used text in African American Literature courses and is recognized generally as a representation of the black canon. The second most recognizable collection is *Call and Response: The Riverside Anthology of African American Literature* published by Houghton Mifflin in 1998 and features Patricia Liggins Hill as the general editor. This anthology (Hill et al., 1998) is also a massive collection of African American texts and, as the title suggests, is organized in a manner that reflects the call and response patterns that these editors claim are reflective of “black performance modes” and the evolution of the African American literary tradition. Presently, these anthologies define the African

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American canon though they also provoke some question as to who is and is not included. This leads to the second part of the discussion about the strategy of the African American canon and its claim to represent or delineate the authenticity of African American culture.

**THE SOCIO-POLITICAL AGENDA OF THE AFRICAN AMERICAN CANON**

Comparing the leading contemporary anthologies and the manner in which they mold the African American canon, there are a few significant differences that might reveal a basis for internal strife over canonization. The Norton anthology (Gates et al., 1997) contains 120 writers, 52 of whom are women. The Riverside anthology (Hill et al., 1998) features over 150 authors, including 70 women. There is obviously some contention about the inclusion of some authors or texts in the latter. The glaring difference, from a feminist perspective, calls attention to that conflict. While the Norton anthology showcases many 19th Century female writers, in *Call and Response*, the voices of women from the colonial period to the present are highlighted. The omission of some of these authors might raise questions in the feminist camp about advancing patriarchal-rhetorical authority and/or shaping sexist ideology. This phenomenon is conspicuously situated for a battle among literary critics. In “Shaping an African American Literary Canon,” Robert Elliot Fox (1998) points out that “debates over what's in and what's out in the end have more to with the politics of canon formation than they have to do with the practical business of conducting a course” (p. 1). The struggle to impose a socio-political agenda, while claiming an aesthetic purpose, continues to be a driving force of contention among literary scholars. Gates (1992) asserts “The recent move toward politics and history in literary studies has turned the analysis of texts into a marionette theater of the political, to which we bring all the passions of our real-world commitments” (p. 19). While the canon wars over inclusion rage on, in an effort to provide its own attempt to structure cultural literacy and identity, the African American canon apparently exists within a schizophrenic rift, regarding its own augmentation. The rift might be attributed to a few factors as determined by Sarah Corse and Monica Griffin’s (1997) “Cultural Valorization and African American Literary History: Reconstructing the Canon.” They claim that the internal factors leading to shifts in the African American canon include:
(1) The application of new evaluative criteria, (2) the reconstruction of textual meaning through newly available interpretative strategies, and (3) changes in the institutional and organizational environment that allowed new claims on high-status critical positions to be made by those previously outside the literary hierarchy. (1997, p. 173)

There is little surprise that *The Norton Anthology of African American Literature* became the fastest selling of Norton’s anthologies (i.e., 30,000 copies were sold in the first month of publication), when its popularity is correlated with the growth of African American studies in the academy and to Henry Louis Gates’ popularity and his efforts toward book promotion (Fox, 1998). Gates (1992) claims that his anthology will be “eclectic and . . . democratically ‘representative’” (p. 32). He touts the *Norton Anthology* (Gates et al., 1997) as representing the “essence” of the tradition and maintains the anthology as a necessary instrument of education to retroact the exclusion from the “western” literary canon. However, in defending the position of the African American canon against deformation, Gates (1992) risks falling into the same quagmire of selectivity, acknowledging that the literary canon serves a pedagogical purpose of establishing aesthetic values, yet he obviously fails to notice some significant African American writers that accentuate the “western” literary tradition and the African American experience. In one critical review, Vince Passaro (1997) notices an indiscretion of the Norton Anthology in that “the theme of ‘the vernacular tradition’ [is] abused in service of a favorite social theory of contemporary academics: a denial of the efficacy of actual individual authorship and a new definition of literature as a form of cultural production, the result of ‘call and response’ between speaker and listener, the expression of whole communities” (p. 73-4). The Passaro review precedes the publication of the *Riverside Anthology* (Hill et al., 1998), which is divided into six periods with selections in which the divisions reflect the call and response patterns that the editors “see as characterizing, not just black performance modes, but the evolution of the African American tradition itself” (Fox, 1998, p. 1).

*The Norton Anthology* (Gates et al., 1997) is arranged by seven time periods: The Vernacular Tradition: Before 1746; The Literature of Slavery and Freedom: 1746-1865;
Literature of the Reconstruction to the New Negro Renaissance: 1865-1919; Harlem Renaissance: 1919-1940; Realism, Naturalism, Modernism: 1940-1960; The Black Arts Movement: 1960-1970; and Literature since 1900. Comparatively, the two anthologies are slightly similar in arrangement and canonical approaches. Critics like Passaro (1997) believe the Norton to be somewhat more superficial in its approach to defining an African American literary tradition. Passaro (1997) again, criticizes the Norton for exhibiting "a suffusion of editorial sentimentality and weak politics" (p. 72). He does not stand alone because many critics charge that Gates exploits the notion of African American literary canon formation. Fox (1998) claims that "a canon formation project is necessarily conservative in the best sense of the term, since it is an effort to consolidate and preserve the best works and to delineate (contain) a tradition" (p. 1).

The Norton Anthology (Gates et al., 1997) is accused of abandoning the political combativeness upon which some feel the African American literary tradition is predicated. In "The Black Canon: Reconstructing Black American Literary Criticism," Joyce (1987) maintains that there is a "historical interrelationship between literature, class, values, and the literary canon," and she criticizes Gates for moving away from emphasis on race as proposed in "Preface to Blackness: Text and Pretext." Joyce quotes Gates' (1979) proposal that

Ultimately, black literature is a verbal art like other verbal arts. "Blackness" is not a material object or an event but a metaphor; it does not have an "essence" as such but is defined by a network of relations that form a particular aesthetic unity.... The black writer is the point of consciousness of his language.8 (p. 337)

Gates (1997) obviously wanted to be exonerated as a literary critic from any responsibility towards authenticating the African American aesthetic as a political tool. Later it appears that the anthology is mired in the politics of canonization and manipulation of how the African American aesthetic is conveyed.

Aesthetics is a philosophy administered to gain insight into what people value, learn, and apply to the culture within which they live. To diminish the aesthetic value of African American literary form is to hinder knowledge of the culture as a whole. When we consider the criteria, professionalizing (institutionalization), aestheticizing, and histiographic that Paul Lauter (1991) expresses in his essay, “Race and Gender in the American literary canon,” the formation of the canon within these guidelines is imbued with segregationist attributes. In particular aestheticizing, or setting preconceived criteria for art within the structure of forms such as language, is particularly off putting for African American literary acceptance because at any given time Black cultural identifiers can be negated or disqualified for inclusion. African American literature becomes what philosopher Emanuel Kant, according to Michael Berube's (1989) “Avante-Garde,” might even refer to as anti-aesthetic because it is both beautiful and functional.

Looking more closely at the dichotomy of functionality and aesthetics in African American literature, there is a more finite split between some imagined rarified universal aesthetic and that which challenges or helps people survive. Such a concept is evidenced within the Negro Spiritual or, if we want to choose artifacts, within quilts. We can utilize Alice Walker's *Everyday Use* (In Gates et al., 1997) to illustrate this concept. The story focuses on two sisters. One sister adheres to the Kantian view of the “...aesthetic as 'useless' (Kant's purposive purposelessness)” (Berube, 1998, p. 217), as she wanted to sell her family quilt to be hung on display in a museum. The other was concerned with the functionality of the quilt and would put the family heirloom to “Everyday Use.”

Within Walker's short story there are several binary oppositions that separate aesthetic purpose and the functional purpose of an artifact. The first is the portrayal of the sister, Dee (Wangero), who has left home and become a Black intellectual. She comes home and stands in judgment of the place of her birth. She also is condescending to her family as evidenced in the lines, “She used to read to us without pity; forcing words, lies, other folks, habits, whole lives upon us two, sitting trapped and ignorant underneath her voice” (In Gates et al., 1997, p. 2128). Dee (Wangero) represents the “artiste” who sits on high and appears to punish those who cannot value the art for just being beautiful. In opposition, we have Maggie who has learned the art of quilting from her mother and grandmother. She is the artist who helps form and maintains the community with her skill. One day
Maggie will be married, and the legacy of the family that is secured in the quilts will be passed on to her children (much like the oral traditions have sustained African American culture), and the quilts will be used to keep her family warm (i.e., functional utility).

Another binary that exists is the exclusivity of the aesthetic. The artist establishes constructs outside the Black community, keeping participants from the dominant community out, much like literary societies and—Canons. Dee (Wangero) operates out of a transcendent ego, as she overuses her intellect with her family, indicated in: “she washed us in a river of make-believe, burned us with a lot of knowledge we didn’t necessarily need to know. Pressed us to her with the serious way she read, to shove us away at just the moment, like dimwits, we seemed about to understand” (p. 2128). Conversely, Maggie’s intentions appear to be more political, sustaining the family legacy, and the community.

Finally, what transpires within this dynamic is an opposition wherein Dee attempts to be defined by a mainstream culture (i.e., one outside of her own), and Maggie challenges mainstream culture by claiming self-definition.

When we apply this dynamic to canon formation and the black aesthetic, what we find is African American scholars who want to cling to self-definition through Narratives, Spirituals, community-forming, and community maintaining verbal traditions and to have them perpetuated with venues such as African American Anthologies and literary journals. Joyce (1987) maintains that “with Black American literature in particular, the issue of the responsibility of the creative writer is directly related to the responsibility of the literary critic” (p. 6). With Joyce’s declaration, it is interesting to point out that while there is a lull in the 21st century about canonization per se, the contention about representation and authenticating Blackness continues its furious trek across African American literature courses, particularly in terms of who and what is selected as most crucial to teach.

**WHAT ARE COLLEGE STUDENTS ENCOURAGED TO READ?**

As previously established, literature in general is a crucial element of shaping values and ideology. Reinforcing the notion of a selected group of “great works” in the African American tradition continues to build a sense of “self-definition” for African American students in high schools and colleges. In the African American literary tradition, the
dichotomy of political functionality and aesthetics is finitely split between some imagined-rarified-universal aesthetics and that which challenges the status quo. For example, when students learn about the Negro spiritual and the Blues, though melodious and beautiful, these literary forms function as a means to express hope, survival, and perseverance through adversity. In “Great Books for Entering Black Freshmen” (Gates et al., 1993-94), a number of the nation’s leading scholars (e.g., Henry Louis Gates, Jr., Rita Dove, Manning Marable, Franklyn G. Jenifer, Leonard A. Slade, Jr., Sharon P. Holland, and Richard A. Goldsby) have pointed out their ideas of “superlative” selections, which they each believe is essential reading for all Black college students. The article claims, “certain books have the power to open one’s eyes to an entirely new field of scholarly pursuit or to dramatically change our political, social, or religious views...or even alter the way we view ourselves and our world” (p. 97). Consistent suggestions among all of the scholars included in this text are the works of W.E.B Dubois, Toni Morrison and Richard Wright; however, each scholar has a somewhat unique preference. Henry Louis Gates, W.E.B Dubois Professor of the Humanities at Harvard University, selects \textit{Race Matters} by Cornel West, \textit{In My Father’s House} by Kwame Anthony Appiah, \textit{Slavery and Social Death} by Orlando Patterson, \textit{The Black Atlantic} by Paul Gilroy, and \textit{When and Where I Enter} by Paula Giddings. Manning Marable, Professor of History and Political Science and Director of the Institute for Research in African American Studies at Columbia University, claims that “the best approach is not to craft some type of multicultural curriculum with a set of required works. Rather students should be acquainted with...‘the black intellectual tradition’” (p. 99). Among these are \textit{The Souls of Black Folk}, W.E.B Dubois; \textit{Native Son}, Richard Wright; \textit{Wretched of the Earth}, Frantz Fanon; \textit{Women, Race and Class}, Angela Y. Davis; and \textit{The Truly Disadvantaged}, by William Julius Wilson.

It is interesting to note that many of the suggestions from leading scholars of the field rarely appear in either the \textit{Norton} or \textit{Riverside} anthologies. As a matter of fact, Dubois’ absence from the \textit{Norton Anthology} (Gates et. al., 1997) appears particularly conspicuous, considering his proximal distance from its general editor. In many cases, courses in African American literature tend to be arranged around the focus of a particular theme or concept but may not place specific emphasis on the “great writers” who might explore that topic. For example, the Twentieth Century African American Literature course (ENGL 757)
offered at the University of South Carolina (Fall, 2004) “combines major and lesser known text with cultural criticism and theoretical interpretation” (Whitted, 2004). This course description promises to “…explore questions of racial representation, vernacular tradition, canonicity, and social responsibility as a platform to discover selected African American writers” (p. 1). Most of the distinguished canonical writers are taken up in this course: Jean Toomer, Zora Neal Hurston, Richard Wright Lorraine Hansberry, Toni Morrison, and Ann Petry. These writers appear consistently on lists of superlative selections, though not always the same selections of their works are chosen for study. In the two major African American anthologies, Zora Neal Hurston’s “Spunk” and “Sweat” show up most consistently over the most critically appraised Their Eyes Were Watching God. Similarly, Richard Wright’s Black Boy or Long Black Song are included, rather than the often more suggested Native Son, and Toni Morrison’s selections in anthologies, perhaps, are most inconsistent. In the Norton Anthology (Gates et al., 1997), the only Morrison selection is Sula, and in the Riverside Anthology (Hill et al., 1998) the selection is “Recitatif.” In fact, both selections are perhaps the least taught in African American literature courses.

Inherent in the above observation are two important charges: (1) Best works may be a misnomer, and (2) a professor ultimately selects what students study. Regarding the misnomer, the anthology, as a representative of “best” works, seems inconsistent and unreliable across the board. The production of an anthology might appear to have more to do with literary copyright laws, lengths of selections, or costs incurred with printing rather than securing a clear idea of what should be taught in American classrooms. Secondly, the professor remains the primary adjudicator of what should be taught from the African American literary tradition. The implication is that individual professors who possess academic freedom can show bias or privilege particular writers or genres. Because of this it would almost seem that the idea of the canon itself, though necessary for the pool of choices, is almost rendered useless. In the twenty-first century, it appears that very little has been said about the canon debate. In light of this observation, one might question where have all the good canon wars gone?
Much of the debate about canon formation and reformation appears to take place in the mid to late 1980s to the 1990s. Theoretically, what appears to be at the core of the ebb and flow of struggles over the canon is directly correlated with the prevailing ideology of the day. During the conservative Reagan years (1980–1988), scholars took up arms apparently against an insurgence of a multicultural insurrection. During the Clinton administration (1992–2000), when most of the critics had written most profusely in defense of diverse ideology, it appears that scholars rested too quickly on their laurels. In 2004, under another conservative watch in government, the issue begins to creep in again as the ideas of what is or is not being taught is rehashed. Today, anthologies of American literature have made slow movements towards what some view as radical inclusion of African American writers. The diatribe of exclusion/indoctrination vs. aestheticism appears to parallel and respond to the proliferation of Cultural Studies in the academy. As the academy expands with courses containing emphasis on the experiences of minority populations, there is a struggle with inclusion and maintenance of the “traditional” American literary canon. With inexhaustible contributions to the supposition that canon formation in American literature complicates the structure of cultural politics and ideology, John Guillory has become one of the primary commentators of the literary canon rivalry. His contributions include the 1983 essay, “The Ideology of Canon Formation: T.S. Eliot and Cleanth Brooks,” and a 1993 book called Cultural Capital: The Problem of Literary Canon Formation. The motivation for Guillory and many others who subscribe to his theories is to challenge those who appoint themselves the first and last critics of what comprises American and even Western Literary value. One such self-appointed opponent is United States Secretary of Education, William Bennett, who served during the Reagan administration. Secretary Bennett failed to recognize the contributions of American minorities when recommending children’s reading lists. With a vociferous assessment of public education in 1983, Bennett charged that the diversification of the humanities destroys the fabric of American society and does an injustice to the “legacy” of “great” literature. With his later contribution, The Devaluing of America, Bennett (1992) maintains his claim that “multicultural education subverts American moral ideology” (p. 302). According to website “Literary Canon & Eurocentric bias,” “In the Reagan years
(1980s) & early 90s, ... the Western academy rushed to re-assert orthodox authorities and canons — a list of 20 or 30 western books was selected and, in tone of embattled patriotism, the academic elites declared that the list was essential reading for the education of a westerner” (Discourse—the Literary Canon). The bottom line is that the canon debate will always be at either the center or periphery of literary studies. The canon has a positive function in that it preserves the enduring social values of our time and allows the future to be transmitted through the “best” representations of the past.

CONCLUSIONS

This investigation has focused primarily on the work and observations of Henry Louis Gates, Jr. though he is not alone in the Black Canon debates. Gates’ significant and variable views on the Black aesthetic and his work in the formation and reformation of Black canonicity make him a formidable scholar of the topic. Gates also speaks out most about pedagogical intent. Subsequently, the rationale for this investigation of African American canonical history and the politics inherent within it is to reinvigorate discussion about what is being taught. It is imperative that scholars continue to take notice of the ways that African American literature is valued or perhaps devalued in American literature. What is more deeply implied is that in the assessment of the African American canon, we determine and construct ideologically how African Americans themselves are valued in the American landscape.

REFERENCES


PART 7: COLLEGE OF PHARMACY
Cancer is a major cause of death among individuals living in the developed countries of the world[1]. Presently, the most common treatments for cancer are radiation therapy and chemotherapy, which have the unhealthy side effects of hair loss, nausea, fatigue and many others [2,3]. In addition, the direct excision of the cancerous mass is also a form of treatment, but, in that process, cells are often overlooked and the cancer continues to develop [3]. As a result of the need for a more innovative approach to treatment, researchers have begun determining the cellular mechanisms and proteins involved in DNA repair and tumor suppression [2,3]. Determining the mechanisms involved in tumor prevention and understanding the tumor preventive proteins involved will allow researchers to develop pharmaceutics in order to combat tumor genesis [2,3].

Cancer arises due to DNA mutations, which are caused by external or internal sources such as ultraviolet radiation and metabolic byproducts [4,5]. Reactive oxygen species (ROS) are a harmful byproduct of oxidative respiration that typically is eliminated by molecular scavengers or is reduced to a less harmful form, but at times ROS are not eliminated and become incorporated into DNA forming genetic lesions [1,4,5]. Cells are equipped with evolutionary conserved DNA repair mechanisms that provide protection against the formation of DNA lesions [4,5]. In the event of excessive or irreparable DNA damage the cell may choose to undergo apoptosis (i.e., programmed cell death) rather than repair this damage [4,5]. If the DNA lesions go unrepaired, mutations may arise, which could alter the cellular pathways or proteins involved in tumor prevention [4,5]. Altering the activity of proteins is vital for tumor prevention. For example, proapoptotic proteins may result in the growth of genetically unstable cells leading to loss of function and tumor formation [4,5]. Reinstating the tumor suppressive properties by introducing fully-active tumor-suppressor proteins into tumor cells or by redirecting the molecular pathways to cell death are both ways in which researchers may be able to fight tumors [4,5]. In addition, identifying vital tumor-suppressor genes will lead to genetic screening.
to identify tumors in the early stages and to identify persons most susceptible to tumors [4,5].

**E2F-1 AND CANCER CELLS**

The initial detection of DNA damage by cell sensors followed by inhibition of cell-cycle progression and the activation of DNA repair, or apoptotic pathways, are important processes in tumor prevention [4,5]. E2F-1 is a transcriptional regulator with dual functions in which it is involved in tumor suppression and cell cycle progression [6]. E2F-1 is a major target for cancer therapeutics because it is expressed constitutively in both normal and tumor cells [7]. As a tumor suppressor protein, E2F-1 mediates the expression of proapoptotic proteins such as p14ARF, which mediates p53-dependent apoptosis [7]. The objective of this research project is to be able to determine if p14ARF expression is regulated by a feedback mechanism to E2F-1 and to determine if apoptosis can be reinstated into tumor cells.

**E2F-1 Is Vital For Cell Cycle Progression**

E2F-1 is one of seven E2F family members of transcriptional regulators (i.e., E2F-1-7) that exist as a heterodimer with DP-1 [8,9]. DP-1 is a member of a family of cofactors (DP-1 & 2) that is required for E2F-1 activity [8,9]. E2F-1 regulates the cell cycle by the expression of proteins necessary for the progression from the G1 to the S phase of the cell cycle [10]. The G1 phase of the cell cycle is the gap phase that prepares the cell for chromosomal replication (i.e., the S phase) [10]. The G1 and S phase contain “cell cycle checkpoints,” which allow cells to pause between phases in order for genomic sensors to screen for DNA damage and to proceed with an appropriate course of action [10]. The retinoblastoma tumor-suppressor protein (Rb) is a pocket protein that negatively regulates the G1 to the S phase of the cell cycle by forming a complex with E2F-1, in order to stall cell-cycle progression during DNA damage [10,11]. Rb is present constitutively as an allosteric inhibitor to prevent excessive E2F-1 activity, which may lead to cell proliferation [10,11]. The retinoblastoma locus encodes 3 proteins (i.e., Rb/p105, p107, and Rb2/p130), which bind to specific E2F proteins [12]. Rb/p105 inhibits E2F-1 activity by two known mechanisms: (a) Rb binds directly to E2F-1 forming a Rb/E2F-1 complex, thereby
inhibiting E2F-1 transcriptional activation and (b) actively repressing E2F-1 activity by formation of the Rb/E2F-1 complex at the promoter and recruitment of chromatin-modulating enzymes such as histone deacetylases [12,13]. Researchers (i.e., Pennaneach et al.) have observed the significance of Rb as an inhibitor of E2F-1 during cell-cycle progression and apoptosis in Rb knockout mice, which developed multiple tumors [12]. In addition, Kang Liu, et al. observed an additional point of cell-cycle regulation, in which DNA topoisomerase IIβ binding protein I inhibits cell-cycle-progressive activity of E2F-1 in an ATM/ATR-dependent manner [14]. It is important to understand the various mechanisms of cellular regulation in order to develop ways to target key-control points to inhibit tumor-cell proliferation.

During cell-cycle progression, protein-kinase complexes restore E2F-1 transcriptional activity by the hyperphosphorylation of Rb [10,11,12]. Protein-kinase complexes consist of a cyclin-dependent kinase (CDK) and a cyclin, which inactivates Rb by the addition of phosphoryl groups that also result in the dissociation of Rb from E2F-1 [10,11,12]. When DNA damage is detected at the G1 phase of the cell cycle by DNA-damage sensors, cell progression is stopped or “arrested” by the family of CDK inhibitors (CDKIs), Cip/Kip and INK4a inhibitors, resulting in the entry of the cell into the subG1 phase [10,11,12]. As a result, upstream proteins may trigger the transcriptional activity of E2F-1 in order to express the mRNA of proteins involved in DNA repair.

One member of the Cip/Kip family, p21Waf1/Cip1 (p21), is transcribed by the p53 tumor-suppressor protein [10,11,12]. The p21 protein inhibits cell-cycle progression by binding to and inactivating the cyclin/CDK complex, thereby preventing the hyperphosphorylation of Rb [10,11,12]. Also, p16INK4a is a member of the INK4a family of inhibitors that negatively regulates the cell cycle independently of p53 in the G1 phase by abrogation of cyclinD/CDK4- and cyclinD/CDK6-mediated phosphorylation of Rb [10,11,12]. Preventing the phosphorylation of Rb by p21 and p16 is an important checkpoint control in the cell cycle to maintain genomic stability and cellular proliferation [10,11,12]. In addition, inhibiting the cell-cycle progressive activity of E2F-1 allows the cell to undergo DNA repair or apoptosis to prevent tumor formation [10,11,12].
**E2F-1 Is a Novel Tumor Suppressor Protein**

The duality of E2F-1 activity allows it not only to regulate cell-cycle progression but also to express proteins required for apoptosis and DNA repair [8,9]. The importance of the tumor-suppressive activity of E2F-1 clearly is evident in previous studies in which defects in apoptosis and a significantly increased likelihood for tumors in E2F-1 null mice both were observed [8,9].

In the event the DNA damage cannot be repaired, the cell signals for apoptosis [15,16,17]. DNA damage that is not repaired may result in mutations that lead to the alteration in cellular function, thereby promoting uncontrolled-cell proliferation and tumor formation [15,16,17]. Therefore, apoptosis acts as a defense mechanism that causes cells with irreparable- or excessive-DNA damage to undergo self-termination in an ordered manner to prevent uncontrolled-cell growth [15,16,17]. Although researchers do not understand when the cell decides to commit to apoptosis, it is believed that apoptotic sensors detect an overwhelming amount of irreparable or excessive double-strand breaks and activate a cascade of proteins involved in the apoptotic pathway [15,16,17].

Double-strand break formation is believed to be the most lethal form of DNA damage because repair is not as efficient as single base or strand lesions [15,16,17]. The apoptotic sensors (i.e., ataxia telangectasia [ATM], ataxia telangectasia Rad3-related [ATR], and DNA-dependent protein-kinase catalytic subunit [DNA-PKcs]) are members of the phosphatidylinositol-3-0H-kinase-like kinases (PIKK) family of kinases that are believed to initiate apoptosis by the activation of checkpoint kinases (Chk1 and Chk2), as well as other proteins [15,16,17]. Clearly, neither the apoptotic sensor that is involved in the initial detection of genetic lesions nor the specificity of the apoptotic sensors for lesion detection are understood completely. Nevertheless, research has shown ATM to be the sensor that detects DNA damage induced by UV-radiation and etoposide treatment [15,16,17]. Researchers believe that ATM may initiate apoptosis by activating Chk2 kinase, which phosphorylates the serine-364 residue in the carboxy-terminal region of E2F-1, thereby activating the transcriptional activity of E2F-1 [15,16,17]. As a result, E2F-1 mediates apoptosis by the upregulation of p14ARF (i.e., alternating reading frame), which activates p53 [15,16,17]. In addition, p14ARF is able to activate p53 homologues, p63, and p73 [15,16,17]. The ability of p14ARF to activate p53 homologues is important in determining...
the actions of p14ARF in p53 deficient cells due to the fact that p53 may trigger apoptosis independently of p14ARF [15,16,17]. The mechanism of the action of p14ARF is not understood completely, but it is believed that p14ARF binds to HDM2, thereby blocking the ubiquitination of p53 and allowing the translocation of HDM2 to nucleolar compartments [15,16,17]. HDM2 (i.e., human double minute 2) functions as a negative regulator of apoptosis by inhibiting p53 by the formation of a HDM2/p53 complex [15,16,17]. HDM2 inhibits p53 activity by 3 known mechanisms: (a) the direct binding of HDM2 to the amino-terminus of p53 and inhibiting the interaction of p53 with other transcriptional machinery; (b) the translocation of p53 to the cytosol; and (c) the targeting of p53 for ubiquitin-mediated degradation [15,16,17]. The noncomplexed, or active, form of p53 is able to mediate apoptosis by the activation of proapoptotic proteins, such as the caspase cascade [15,16,17].

**Importance of Targeting E2F-1 in Tumor Cells**

Introducing apoptosis in tumor cells is an important means for combating tumors [7,8]. The reinstatement of E2F-1 is studied extensively in tumor cells because it is constitutively expressed, which may allow researchers to manipulate the proliferation of tumor cells [7,8]. In normal cells, genomic sensors are able to detect excessive DNA damage and initiate apoptosis by activating Chk 2, which activates the apoptotic activity of E2F-1 [7,8]. As a result, E2F-1 is able to upregulate the expression of p14ARF, which activates p53 by inhibiting the antiapoptotic effects of HDM2 [6,7]. In addition to regulating HDM2 activity, p14ARF is able to inhibit the activity of E2F-1 by direct binding through an autoregulatory-feedback mechanism [6,7]. In many tumors, E2F-1 is fully active and only the proteins that regulate the activity of E2F-1 tend to be mutated in tumors [6,7]. The disruption of the proteins that regulate E2F-1 protects tumor cells from programmed-cell death and inhibited-cell growth [6,7]. The current treatments used to introduce cell death in tumors have harmful side effects such as hair loss, nausea, and fatigue among many other symptoms [4,5]. As a result, other means of introducing cellular death must be sought; therefore, the tumor-suppressive actions of E2F-1, by way of p14ARF, must be studied in order to develop pharmaceuticals that may reinstate apoptosis in tumors.
PROPOSAL

The objective of this research project is to determine if an autoregulatory feedback mechanism exists in the expression of p14ARF by E2F-1 and, if so, to determine if p14ARF has the ability to reinstate cell death in tumor cells. The primary research question being studied is whether expression of p14ARF in tumor cells reinstates apoptosis by the inhibition of E2F-1 by way of an autoregulatory-feedback mechanism.

Methods

Transfection. This protocol is a modification of the research of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001). Transfection is carried out in SAOS2 cells grown in DMEM by calcium-phosphate-mediated transfection using pCMV expression vectors, according to the manufacturer's protocol in the Mammalian Transfection Kit (Stratagene). Various concentrations of vectors containing the cDNA (i.e., E2F-1, DP-1, p14ARF and HDM2) are used during transfection, and pCMV-βgal will be included as a negative control. Transfection efficiency will be determined by monitoring β-galactosidase activity by reporter assay.

Protein Purification. This protocol also is a modification of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001). Histidine-tagged E2F-1 and HDM2 are overproduced from the pET vector in an Escherichia coli JM109 strain by a 42°C heat-shock treatment. Bacteria are grown in a volume of 100 ml LB media with 50 µg/ml ampicillin. At a cell density of 0.5 (A₆₀₀), the culture is induced with 0.4 mM isopropylthiogalacto-pyranoside (IPTG) for 18 hours at room temperature. Cells are lysed by sonication on ice in 5 mM imidazole, 0.5 M NaCl, 20 mM Tris-HCl (pH 7.9), 4 mM β-mercaptoethanol (BME), and a protease-inhibitor cocktail (Sigma). After centrifugation, the clear lysate is loaded onto a 1 ml Ni²⁺ charged HiTrap affinity column using an AKTA FPLC (Amersham). An elution gradient is performed with 0.02 M sodium phosphate (pH 7.4), 0.5 M NaCl, 0.5 M imidazole, and 4 mM BME. Protein purification will be confirmed by SDS-PAGE analysis and pooled. The pooled fractions are concentrated using a Millipore ultrafree-15 centrifugal-filter device. The FPLC-purified proteins are stored at −70°C in 50 mM Tris (pH 8.3), 1 mM EDTA, 15% glycerol, and a protease inhibitor.
GST-tagged DP-1 and p14ARF are overproduced from a pGEX vector in an *Escherichia coli* JM109 strain grown in LB media. The cell lysate is combined with 2 ml of a 50% slurry of glutathione-agarose resin in PBS and shaken gently for 30 minutes at room temperature. After centrifugation, the supernatant is removed. The unbound proteins are washed four times by adding 10 bed volumes of PBS to the pellet and mixed. The supernatant is removed by centrifugation, and the bound protein is eluted using a glutathione buffer (10 mM reduced glutathione and 50 mM Tris-HCl, pH 8). The sample is incubated for 10 minutes at room temperature. The bound protein is eluted and pooled.

**In Vitro Binding Assay.** This protocol also is based on the research of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001). SAOS2 cells are transfected with expression vectors for DP-1, E2F-1, HDM2, and p14ARF (i.e., 1 µg of each). The amount of transfected pCMV-HDM2 is varied (i.e., 0 µg, 0.2 µg, 0.4 µg, 0.6 µg, 0.8 µg, 1 µg) in order to observe the selectivity of p14ARF for E2F-1 after HDM2 saturation with p14ARF. In addition, 6 µg of pCMV-βgal is included as a control to test for protein expression by reporter assay. Nuclear extracts are prepared by scraping monolayers and swelling in buffer (i.e., 20 mM HEPES, 20% glycerol, 250 mM NaCl2, 1.5 mM MgCl2, 1 mM EDTA, 0.1% Triton X) for 30 minutes, then lysis in ice-cold buffer (i.e., 50 mM Tris pH 8.0, 150 mM NaCl2, 5 mM EDTA, 0.5% NP40) is followed by centrifugation at 2000 rpm for 10 minutes. The supernatant is extracted and binding assays are carried out with 20 µg of nuclear extract and 1 µg of GST-p14ARF at 4°C. Binding reactions then are carried out in TNE (i.e., 50 mM Tris pH 8.0, 150 mM NaCl2, 5 mM EDTA, 0.5% NP40/1 mM DTI, 1 mM PMSF and protease inhibitors). Glutathione beads are washed 3 times and resuspended in a SDS buffer for polyacrylamide-gel electrophoresis. The appropriate GST and His-tagged proteins are incubated with 50 mM Tris, 150 mM NaCl2, 5 mM EDTA, and 0.5 mM NP40 for 1 hour at 4°C. The samples are run on a 10% 0.5X TBE polyacrylamide gel and visualized using a BIO-RAD Molecular Imager FX and Quantity One software.

**Reporter Assay.** This protocol also is a modification of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001). Approximately 30 µl of transfected pCMV-βgal is set aside, and cell extracts are prepared using an EBC lysis buffer (i.e., 50 mM Tris-Cl pH 8.0, 120 mM NaCl, 0.5% [v/v] Nonidet P-40, 5 µg/ml leupeptin, 10 µg/ml aprotinin, 50 µg/ml PMSF, 0.2 mM sodium orthovanadate, 100 mM
A 50°C heat treatment is used to inactivate endogenous β-galactosidases for 60 minutes. For each sample of transfected cell lysates (30 µl), 3 µl of 100x Mg²⁺ solution, 66 µl 1x ONPG, and 201 µl of 0.1 M sodium phosphate pH 7.5 are mixed. The reactions are incubated for 30 minutes to 6 hours at 37°C. The reaction is stopped with 500 µl of 1 M Na₂CO₃, and the optical density of the samples is examined at 420 nm in a spectrophotometer.

**Nuclear extracts and Coimmunoprecipitation.** This protocol also is based on the research of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001). The protein-binding interactions are determined in vivo by coimmunoprecipitation with antibodies specific for both interacting proteins and control antibodies. Thirty 10-cm plates of the appropriate cells (approximately 6 x 10⁷ cells) are washed in phosphate-buffered saline, and each plate of cells is scraped into 1 ml of ice-cold EBC lysis buffer (i.e., 50 mM Tris-Cl pH 8.0, 120 mM NaCl, 0.5% [v/v] Nonidet P-40, 5 µg/ml leupeptin, 10 µg/ml aprotinin, 50 µg/ml PMSF, 0.2 mM sodium orthovanadate, 100 mM NaF). Next, 1 ml of the lysed cells are pelleted by centrifugation at maximum speed for 15 minutes at 4°C. The supernatants are pooled to approximately 30 ml, and 30 µg of relevant antibody added and rocked for 1 hour at 4°C. Then, 0.9 ml of protein A-Sepharose slurry (i.e., 1:1 slurry and NETN buffer) is added and rocked for an additional 30 minutes. The protein A-Sepharose mixture is washed six times in NETN, containing 900 mM NaCl (i.e., 20 mM Tris-Cl pH 8.0, 1 mM EDTA, 0.5% [v/v] Nonidet P-40, 900 mM NaCl), and finally washed once in NETN (i.e., 20 mM Tris-Cl pH 8.0, 1 mM EDTA, 0.5% [v/v] Nonidet P-40, 100 mM NaCl). The liquid is removed by aspiration, and 800 µl of 1x SDS gel-loading buffer is added to the beads and boiled for 5 minutes, and then it is left on ice for 5 minutes. The samples are loaded onto an SDS PAGE gel and run overnight. The gel is stained with Coomassie Blue for visualization using a BIO-RAD Molecular Imager FX and Quantity One software. Additionally, the proteins are analyzed by excising the gel containing the band, or bands, of interest and washing twice for 3 minutes each in 1 ml of 50% acetonitrile. While in the gel, the proteins are digested with trypsin, and the peptides are electroeluted. The peptides are fractioned by narrow-bore high-performance liquid chromatography and analyzed by mass-spectral analysis.
**TUNEL Assay.** This protocol also is a modification of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001). SAOS2 cells are plated on coverslips and transfected with expression vectors for p14ARF, HDM2, DP-1, and E2F-1 (i.e., 6 µg of HDM2, DP-1 and E2F-1, respectively). Increasing levels of p14ARF are transfected (i.e., 0 µg, 1 µg, 2 µg, 3 µg, 4 µg, 5 µg, 6 µg, 7 µg, 8 µg, 9 µg, 10 µg, 11 µg, 12 µg). After transfection, the cells are washed twice in PBS and serum starved (0.2% serum) overnight. The cells are fixed for 15 minutes in 4% paraformaldehyde and permeabilized for 10 minutes in 0.1% Triton, 0.1% sodium citrate in PBS. TUNEL is performed as described in the manufacturer's protocol (Roche). The cells are counted at least 3 times by fluorescence microscopy.

**EXPERIMENTAL APPROACH AND EXPECTED RESULTS**

**p14ARF Binds to HDM2 and E2F-1 In Vitro**

This protocol also is based on the research of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001). The experiment is designed to test for the binding interactions of p14ARF with HDM2 and E2F-1, and the selectivity of pWRF for HDM2 and E2F-1 at different concentrations in vitro by the GST Fusion Protein Pulldown Technique.

SAOS2 cells are transfected with expression vectors for DP-1, E2F-1, HDM2 and p14ARF (i.e., 1 µg of each). The amount of transfected pCMV-HDM2 is varied (i.e., 0 µg, 0.2 µg, 0.4 µg, 0.6 µg, 0.8 µg, 1 µg) in order to observe the selectivity of p14ARF for E2F-1 after HDM2 saturation with p14ARF (see in vitro binding assay for details). The pulldown technique uses the affinity of GST for glutathione-coupled beads to extract interacting proteins from a solution containing noninteracting proteins. In this technique, nuclear extracts are prepared. The nuclear extracts are mixed with GST-p14ARF protein in a microcentrifuge tube containing glutathione-agarose beads and incubated to allow the protein-protein interactions to occur. The samples are spun down to pellet the GST-p14ARF and any bound proteins. The GST protein and the associated protein are separated from the glutathione-agarose beads by resuspension in SDS buffer and washed. The protein-protein interactions of p14ARF with E2F-1 and HDM2 are observed on a polyacrylamide gel.
by using a BIO-RAD Molecular Imager FX and Quantity One software. The results of this technique will show that p14ARF is able to bind to HDM2 and E2F-1, and that p14ARF has selectivity for HDM2 only when p14ARF are equal to or less than HDM2 protein levels. The polyacrylamide gel will reveal that at equal protein levels of p14ARF and HDM2, only HDM2 is detected. As the protein levels of HDM2 are lowered, p14ARF will bind to E2F-1 with a higher affinity, which can be observed by band intensity.

If the protein-protein interactions of p14ARF for HDM2 and E2F-1 are not observed, or there is low detection, the cell-lysate conditions may need to be optimized by lowering the salt and detergent concentrations. In addition, the time for protein-protein interactions to develop during incubation may need to be increased. Inefficient elution may cause the GST protein and associate protein to remain intact on the glutathione-agarose beads. Unsuspected protein-protein interactions may be due to a low salt and detergent concentration, which could be reduced by increasing the stringency of the elution. If p14ARF is able to bind to both HDM2 and E2F-1 in vitro without any selectivity, this will not rule out the possibility that p14ARF has selectivity for HDM2 over E2F-1. In vivo, unknown proteins or mechanisms maybe involved insuring that p14ARF has a higher binding affinity for HDM2 than E2F-1. If p14ARF doesn’t bind to E2F-1, there is a possibility that p14ARF can negatively regulate E2F-1 activity by binding to E2F-1 transcriptional promoters in a nonclassical inhibitory affect. E2F-1 target promoters will be produced and amplified by PCR to observe binding of p14ARF by electrophoretic mobility shift assays (EMSA).

**p14ARF Binds to HDM2 and E2F-1 In Vivo**

This protocol also is a modification of the research of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001). This experiment is conducted to investigate the binding selectivity of p14ARF in vivo. SAOS2 cells are transfected with expression vectors for DP-1, E2F-1, HDM2 and p14ARF (i.e., 6 µg of each). Then, 6 µg of pCMV-βgal is included as a control to test for protein expression determined by reporter gene assay (see methods for reporter assay for details). The selective binding affinity of p14ARF is determined by coimmunoprecipitation with antibodies specific for investigating p14ARF/HDM2 and p14ARF/E2F-1 binding (see coimmunoprecipitation methods). Multiple antibodies are used for p14ARF in order to increase the level of confidence that protein-protein interactions occur in vivo. Control antibodies of p14ARF are used to identify any
interactions between antibodies and nonspecific proteins. The ionic strength of the immunoprecipitate wash buffer is examined for the appropriate strength to reduce nonspecific proteins binding and to increase protein-protein interactions. In addition, the level of protein expression and the amount of antibody used must be determined. Since it is possible for proteins to interact post-lysis, purified HDM2 and E2F-1 are added to the cell lysis buffer to determine if coprecipitation is inhibited. The protein extracts are run on a SDS-PAGE gradient gel followed by staining with Coomassie Blue and visualized.

The experimental results will reveal a selective-binding affinity of p14ARF for HDM2. In addition, protein-protein interactions will be supported further by excision of the desired protein and digestion with trypsin. Next, the peptides are fractionated by narrow-bore high-performance liquid chromatography, and the molecular weight is determined by mass-spectral analysis. If protein-protein interactions are not observed, the ionic strength of the cell lysis buffer will be checked for possible binding disturbances, and a reporter gene assay (see method above) will be conducted to determine if the proteins are being expressed. If other proteins besides HDM2 are observed on the gel, then post-lysis binding may have occurred, and the level of protein expression and amount of antibodies used will be investigated.

### Activity of E2F-1 Varies in the Presence or Absence of DP-1, p14ARF and HDM2

This protocol also is based on the research of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001). This experiment provides a way to determine apoptosis with and without E2F-1, p14ARF, and HDM2 with varying levels of p14ARF. Terminal deoxynucleotidyl transferase-mediated dUTP-biotin nick end-labeling (TUNEL) is used to detect apoptosis in order to rule out the possibility of necrosis. The ends of the double-stranded DNA are labeled with dUTP using terminal deoxynucleotidyl transferase (Tdt). SAOS2 cells are transfected with expression vectors for p14ARF, HDM2, DP-1, and E2F-1 (i.e., 6 µg of HDM2, DP-1 and E2F-1, respectively). Increasing levels of p14ARF are transfected (i.e., 0 µg, 1 µg, 2 µg, 3 µg, 4 µg, 5 µg, 6 µg, 7 µg, 8 µg, 9 µg, 10 µg, 11 µg, 12 µg). After transfection, the cells are washed and grown in 0.2% fetal calf serum in DMEM, then apoptosis is assayed 18 hours post-transfection by TUNEL assay. The data are expressed as the percentage of TUNEL positive cells relative to the number of transfected cells (see methods for detailed TUNEL assay). The cells are counted at least 3
times by fluorescence microscopy. This procedure consists of several experiments. For instance, apoptosis is detected with E2F-1; E2F-1 and DP-1; E2F-1, DP-1 and HDM2; and E2F-1, DP-1, HDM2 and p14ARF (i.e., increasing levels of expression). The experimental results will show: Apoptosis is increased when E2F-1 is transfected with DP-1; apoptosis will drastically decrease when HDM2 is transfected; and transfecting p14ARF with expression levels equivalent to HDM2 will counteract HDM2 inhibition and restore apoptosis. Additionally, increasing p14ARF levels will cause an increased apoptosis.

If more cell death than expected occurs, the cells will be checked to see if necrosis is occurring. The DNA will be purified and run on an agarose gel. A ladder-formation pattern of the bands on an agarose gel means that organized cell death is occurring (i.e., apoptosis). Smearing bands reflect necrosis or unorganized cell death. Other methods of apoptotic detection will involve identifying the expression of enzymes involved in apoptosis such as caspases by immunoprecipitation and immunoblotting with relevant antibodies. The media used will be examined for proper culturing and harvesting conditions. The cells will be checked to see if contamination is present. In addition, mouse models will be used to determine if overexpression of p14ARF will restore or prolong livelihood in tumor-expressing mice.

**MATERIALS**

**Mammalian and Bacterial Strains**

The materials used also were based on the research of Valko, et al. (2004) and Stevens and La Thangue (2003). SAOS2 (i.e., osteosarcoma) tumor cells p53⁻/Rb⁻ and the *Escherichia coli* JM109 strain will be obtained from American Type Culture Collection Bioproducts.

**Plasmids and Antibodies**

The materials used were based on the recent work of Valko and associates (2004) as well as Stevens and LaTrangue (2004). The pCMV expression vectors: pCMV-E2F-1, pCMV-DP-1, pCMV-p14ARF, pCMV-HDM2, pCMV-CD20 (empty vector), pCMV-βgal, and pET vectors will be obtained from Novagen. The plasmids: HA-E2F-1, HA-DP-1, HA-p14ARF, pGEX-p14ARF, pGEXHDM2, and HA-HDM2 will be obtained from Pharmacia. The antibodies: anti-E2F-1,
anti-p14ARF, anti-HDM2, and anti-HA will be obtained from Santa Cruz Biotechnology and Babco.

**Recombinant Proteins**

These materials used also were determined from the work of Valko and associates (2004) as well as from Stevens and LaTrangue (2004). The recombinant proteins to be used are GST-DP-1, GST-p14ARF, His-E2F-1, and His-HDM2.

**SUMMARY**

This research, which is comprised of a series of experiments based on the previous work of Valko, et al. (2004), Stevens and La Thangue (2003), and Sambrook and Russell (2001), was designed to investigate whether an autoregulatory feedback mechanism exists in the expression of p14ARF by E2F-1, and if so, to determine if p14ARF has the ability to reinstate cell death in tumor cells. Specifically, the aim of the research proposal is to determine if the expression of p14ARF will be able to reroute E2F-1 activity towards DNA repair or apoptosis by the activation of p53 and p53 homologues in order for the prevention or reinstatement of apoptosis in tumor cells to occur. Focusing on pathways central to both survival and death, such as E2F-1, is necessary to determine the mechanisms involved in tumor prevention. In addition, understanding the proteins involved in tumor prevention will allow researchers to develop pharmaceutics to restore normal cellular activity in order to combat the genesis of tumors.

**REFERENCE NOTES**


PHARMACEUTICAL COST CONTAINMENT: THE CONTROL OF EXPENDITURES FROM THE INSURER’S PERSPECTIVE

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A major problem facing insurers is the increasing cost of pharmaceuticals as part of benefit packages offered to their consumers. As employer-provided insurance programs grapple with this issue, many are seeking methods of cost containment such as increased cost sharing, prescription limits, tier copayment systems, and tightened formulary limiting their enrollees’ access to expensive medications. The motivation behind such measures is not to deny patients access to health care but to minimize unnecessary expense for services and products that are not essential to health maintenance.

This monograph chapter is extracted from the dissertation of the author (Perkins, 2005) and will focus on cost-containment mechanisms of pharmaceutical-benefit plans, particularly those methods that affect patients from an economic perspective—cost sharing and prescription limits.

COST CONTAINMENT METHODS OF PHARMACEUTICAL INSURANCE PROGRAMS

In the United States, cost sharing for prescription drugs and medical services is now common. Cost sharing is applied in the forms of copayment, coinsurance, and deductibles. Cost sharing for prescription drugs is now common in all three major market segments: Public entitlement programs (e.g., Medicaid), private insurance, and managed care.

An objective of cost sharing is to deter the patient from unnecessary (or marginal use) of health-care services. By making the patient financially responsible in part for the bill, cost sharing is an attempt to create a more judicious user of health care services. Of course, this effort supposes that the patient possesses the ability to distinguish trivial conditions from serious symptoms of illness.

Another objective of cost sharing is simply to shift costs from the insurer and the provider to the consumer. When consumers decline to use a health-care service, logically, the insurer saves 100% of the cost and not just the fraction that the consumer would be required to pay but also saves what the provider would be paid by the insurer for the service rendered. Certainly, this potential for substantial cost avoidance represents a strong motivation for payers to implement cost sharing as both a cost-containment and financing mechanism.

In general, there are three types of cost sharing: deductibles, coinsurance, and copayment. A deductible is defined as a provision in an insurance scheme that states a defined financial outlay by the individual before payment for insured benefits is commenced. Coinsurance, unlike a deductible, typically is percentage-based; the insured patient is required to pay a pre-stated percentage of the cost of medical services. Finally, a copayment is defined as a fixed-dollar payment by the recipient regardless of the price of the service.

When Medicaid was founded in 1965, federal law explicitly prohibited states from imposing any patient charges. That policy changed in 1972 when Congress permitted nominal copayments for services delivered to the so-called optional recipient groups—primarily, the people who are medically needy. With the passing of the Tax Equity and Fiscal Responsibility Act (TEFRA) in 1982, states were given greater latitude to impose copayments.

One of the earliest studies to investigate the impact of a copayment was conducted in the California Medicaid population in the early 1970s. In this study, commonly referred to as the “Medi-Cal Study,” approximately 30% of Medicaid eligible patients were required to pay a copayment of $1 for each of their first two visits to health care providers each month and 50 cents per prescription for the first two prescriptions filled each month. The investigators, Stuart and Zacker, believed that although the presence of a copayment reduced overutilization, it did not completely control it. Additionally, the presence of a copayment resulted in a substantial decline in preventive care. Besides the decline in

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3 Ibid.

preventive care, three other aspects of the study results were found to be particularly noteworthy: (a) Some of the most consistent changes in services that could be attributed to the copayment were found in the use of pharmaceuticals; (b) the rate of physician-service utilization of the copayment cohort was 17% of the rate of the non-copayment group; and (c) the copayment had little or no effect on diagnostic testing and dental services.

After the implementation of the Medi-Cal copayment study for utilization of ambulatory services, physician visits and prescription drugs declined in the copayment group, but after a brief lag, there was an increase in hospitalization rates for the copayment group compared to the control group, which lacked a copayment requirement. The investigators inferred that the increase in hospitalizations, a more expensive health-care utilization than physician visits, would offset any savings from the decrease in ambulatory care. Although the study was controversial due to its statistical methodology, this research suggests that both necessary and marginal consumption was deterred by the copayment intervention.4

Three additional studies exist that measure the effect of cost sharing on prescription drug use. Each was done in a different patient population: Employed persons covered by traditional indemnity insurance (i.e., RAND study), employed health-maintenance organization (HMO) enrollees, and indigent persons in a Medicaid program. All three studies reported that cost sharing reduced prescription drug use.

Newhouse and associates’ report indicates the Rand Health Insurance Experiment was a randomized controlled trial spanning from November 1974 to January 1982 that involved six study sites and 7,700 individuals. Participants in the study were randomly assigned to different insurance plans with varying co-payments, deductibles, and maximum-expenditure levels. The purpose of the experiment was to determine the effect of cost sharing on the use of medical services and expenditures.5 These investigators report that coinsurance for physician visits combined with coinsurance for drugs dramatically reduced both office visits and prescription-drug use.

Despite the shortcomings of the RAND Health Insurance Experiment, the study produced important results with regard to the impact of cost sharing on utilization of pharmaceuticals: (a) persons with less generous insurance buy fewer prescription drugs; (b) the degree of coinsurance can dramatically affect drug use (i.e., Those with zero coinsurance had a 57% higher drug expenditure than those in the 95% coinsurance plan); (c) patients were likely to go without both essential (i.e., medications for chronic conditions) and nonessential medications in the face of cost sharing; and (d) the probability of patient use of specific categories of drugs varied as a function of the level of cost sharing. Although the RAND study did not measure the effects of drug cost sharing alone without simultaneous cost sharing for office visits, the researchers believe the reductions in drug use resulted mostly from reductions in office visits.\(^6\)\(^7\)

Harris and colleagues measured the rate of prescription filling for 20,000 employed HMO enrollees subjected to two successive, small drug copayments (i.e., $1.50 and $3) over a 3-year period, followed by a $3 drug copayment coupled with a $5 copayment for physician visits. The first copayment of $1.50 resulted in a 10.7% reduction in prescriptions filled. The second copayment of $3 resulted in an additional 10.6% reduction in prescriptions filled, for more than a 21% reduction in prescriptions filled. A third copayment, coupled with a copayment for physician visits, resulted in another 12% decrease.\(^8\)

The change in the co-payment policy, with HMO patients, had a two- to three-fold greater impact on use of nonessential drugs compared with essential drugs. The reported use of drugs for acute conditions was reduced more than that of essential drugs. It was concluded that the greater effect of co-payment policies on nonessential versus essential medications indicates that drug use is largely determined by the patient’s perception of the seriousness of the condition and whether the patient seeks treatment. Nevertheless,

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\(^7\) Lohr, K.N., Brook, R.H., Kamberg, C.J., et al. Use of selected drugs and procedures. *Medical Care (Supplement)* 1986; 24: 529.

essential medication usage decreased after the implementation of the $3 copayment, which may have had a negative impact on health.9

In the third study, a small copayment of 50 cents imposed in 1977 on South Carolina Medicaid patients was associated with an 11% decrease in prescription utilization. The abrupt decline in drug use was reported as substantially greater than in the comparator state, Tennessee, which lacked a drug copayment. The decrease in drug utilization by South Carolina Medicaid patients persisted for three years following implementation of the co-payment policy.10

The South Carolina copayment had different effects on utilization of drugs across therapeutic categories.11 Although there was an immediate and significant decrease in utilization of all drugs with the exception of analgesics and sedatives/hypnotics, long-term decreases were found only for cardiovascular, cholinergic, diuretic, and psychotherapeutic agents. Long-term utilization of adrenergics, antihistamines, antibiotics, and gastrointestinal agents was not affected. The rate of change in prescription expenditure remained positive after the copayment was introduced, but the researchers attributed this increase to inflation in the ingredient costs rather than to an increase in average-prescription size.

A more recent development in cost containment is the introduction of the multiple-tier prescription drug co-payment system, which was studied by Fairman, Motheral, and others. Faced with rapidly escalating prescription-drug expenses, health-care payers are increasingly adopting prescription-benefit designs that require consumers to pay higher out-of-pocket costs, particularly for brand medications. Three-tier prescription benefit designs, which charge consumers the lowest copayments for generic drugs, higher copayments for formulary-branded drugs, and the highest copayment for nonformulary-branded drugs, have grown in popularity among payers. Copayment amounts in three-tier designs are usually considerably higher than in two-tier (i.e., generic/brand copayment) structures; in 2003, copayments for third-tier drugs were commonly $25 and sometimes as

9 Ibid.
high as $50. Three-tier designs have been linked to a reduction in use of medications placed on the third-tier that actually are the most expensive drugs.\textsuperscript{12}

The first published study to examine the effect of three-tier copayment on pharmaceutical and medical utilization compared a three-tier plan with a two-tier plan in a population of commercially-insured preferred-provider organization (PPO) members, using a quasi-experimental, pre-post design with a comparison group.\textsuperscript{13} Based on a retrospective analysis of prescription and medical-claims data, Motheral and Fairman found that the three-tier structure decreased the payers’ prescription-drug costs and increased consumers’ out-of-pocket drug expenditures without affecting physician office visits, inpatient hospital stays, or emergency department visits.

Existing cost-sharing pharmaceutical literature suggests that the above cost-sharing methods result in decreased utilization of prescription drugs, but there are differential effects across therapeutic-drug categories. The long-term effect of pharmaceutical cost-sharing mechanisms on the utilization of expenditures for other medical services is largely unknown. Based on recent studies, it can be inferred that decreased prescription utilization is associated with an increase in hospitalizations and emergency-department usage, but this finding is not consistent across all studies. Also, the impact on overall health status and the appropriate level of cost sharing that will deter unnecessary utilization of prescription drugs and medical services is not known.

PRESRIPTION LIMITS AS A COST CONTAINMENT METHOD

Most state Medicaid programs have implemented some method of prescription limits as a method of cost containment. These cost-containment policies include limits on the number of prescriptions allowed per month, on the maximum day’s supply that is allowed, on the number of refills permitted, and also on greater formulary-control that is enforced at a pharmacy level due to on-line adjudication of prescription claims. Prior authorization


and "step-therapy" programs also are common mechanisms of cost containment used by pharmacy-insurance programs.

Whether or not a drug product is on a formulary list, individual states may require physicians and other prescribers to request and receive official permission before a particular product is dispensed at a pharmacy. This procedure is called "prior authorization" or "prior approval." Federal law allows the use of drug formularies, or preferred drug lists, provided that any drug excluded from the formulary list lacks a "significant, clinically meaningful therapeutic advantage," over a formulary alternative. Formularies are always paired alongside a prior authorization provision because outright exclusion of drugs from coverage is prohibited under the federal Medicaid statute. The exception to this ruling includes agents for weight control, fertility, and cosmetics. Prior authorization programs may stand alone, and when they do, it is permissible for states to make authorization contingent solely on a drug's cost.

Step therapy, also known as "fail first" programs, is instituted to deter use of expensive medications. Such programs require that patients must fail to benefit from older, less expensive drugs before more costly, and usually newer, drugs are used. As one class of medications fail, a second class of usually more expensive medications of like indication may be used, and so forth. The newest/most expensive medications are reserved for a last resort and may or may not require prior authorization if the previous steps have been followed.

Although there are several studies that examine prescription limits, controversy remains regarding methodology, sampling, and possible confounding effects associated with the designs of the research studies. Spending on mental-health services under Medicaid and other programs has been examined in the context of specific populations, for particular states, or under particular programs. Based on current literature, one may conclude that the imposition of prescription limits as a method of cost containment does not

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decrease prescription-drug use and insurer expenditure, but the degree of change varies across therapeutic categories.

Soumerai et al. examined the effects of a three-prescription monthly-payment limit (i.e., cap) on the use of psychotherapeutic drugs and acute mental-health care by noninstitutionalized patients with Schizophrenia. These researchers studied utilization of prescription drugs, emergency mental-health services, partial hospitalization (both full-day- or half-day-treatment programs) and psychiatric-hospital admissions. New Hampshire Medicaid claims for a period of 42 months were used along with clinical records from two community-mental-health centers (CMHS) and the single state-psychiatric hospital in New Hampshire, where Medicaid imposed a three-prescription limit on reimbursement for drugs during the 11 months of the study. The New Jersey Medicaid program was used as the control group for comparison purposes. At the time of the study by Soumerai et al., nine states limited the number of prescriptions per patient per month that would be reimbursed by Medicaid, but no data were collected on the effects of limiting Medicaid reimbursement to three prescriptions-per-month as a cost-cutting measure, in lieu of the anticipated-budget crisis that was due, in part, to the reduced-federal support for its Medicaid program. Patients who required more than three prescriptions per month were usually unable to pay for them out-of-pocket, resulting in both the decreased use of essential medications among elderly patients with chronic diseases and increased nursing-home admissions. After litigation by New Hampshire Legal Assistance, a public legal-aid agency, the state replaced the cap with a $1-per prescription co-payment policy.

Soumerai et al. report a sudden drop in the level of reimbursed use of all three categories of psychiatric medications, among their Schizophrenic cohort group, after the implementation of the $1-cap on prescriptions. Although there was an increase in the amount of antipsychotic drugs administered to members of the study cohort group, this change shifted costs for medications from outpatient prescriptions to the state mental-health system. The limitation resulted in an increase in costs of about $139 per patient per month at the two CMHCs that were studied. The estimated statewide cost was $390,000

based on figures extrapolated from the sampled CMHCs. CMHC visits increased during the
time period of using the prescription cap, as did emergency-department visits and partial
hospitalizations. Conversely, there was no change detected in the rate of admission to the
state-psychiatric hospital.

Martin and McMillan evaluated the effect of the change in monthly-prescription
limits in the Georgia Medicaid program. Medicaid-claim data as well as pharmacy-
generated patient profiles were used to determine both Medicaid expenditure and enrollees’
out-of-pocket expenditures following the policy change. The researchers found that total
prescription use declined after implementation of the more restrictive prescription limit,
but results varied across therapeutic categories. Immediate and long-term decreases in
cardiovascular, palliative, and pulmonary drugs were observed. No change was seen in the
utilization of chemotherapy agents, insulin, and drugs for the central nervous system and
the gastrointestinal system.

Schulz and colleagues investigated the relationship between a three-prescription limit
policy and patient outcomes in the South Carolina Medicaid population. Through home
interviews, the researchers found that a number of patients were unable to obtain
additional medications through the state Medicaid program due to the imposed
prescription limit and thus resorted to other means of obtaining them, or simply tried to
cope without them. Patients exercised a variety of ways to procure additional prescriptions
such as borrowing money from others to purchase the drugs, paying for prescriptions out-
of-pocket, obtaining sample medications from prescribers, or they resorted to medication
sharing (i.e., using someone else’s drugs).

CONCLUSION

Finding ways to slow the increase in pharmaceutical costs has become a challenge for
insurers. Current literature suggests that prescription limitations in Medicaid programs
may affect other facets of medical care such as increasing hospitalizations, physician-office
visits, and emergency-department visits. The long-term effect of prescription limits and

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other forms of cost containment is largely unknown, especially the effect on patient-health outcomes. Current literature shows what has happened in research studies that are short term. Due to aggressive protests and sometimes litigation, many of these policies have been reversed or restrictions greatly loosened. Also unknown at this time is the delicate line between necessary and unnecessary utilization of prescription drugs and the appropriate level of cost sharing to arrive at this juncture.

REFERENCES


PART 8: COLLEGE OF SCIENCE AND MATHEMATICS
Y CHROMOSOME: THE GENETIC TIME MACHINE

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Humans have wondered about their origins since the dawn of time. For decades scholars of all disciplines have postulated their theories and hypotheses about the development of modern humans. Early research on human evolution was an interdisciplinary effort between anthropology, ecology, archaeology, genetics, paleontology and molecular evolution to understand modern human origins. Human genetics has sparked many theories about human evolution. Current anthropological and archaeological research supports the theory that modern humanity originated first in Africa (Excollier, 2002). It also is accepted that today's modern humans, Homo sapiens sapiens, are the descendants of Homo erectus, an early hominid that migrated out of Africa in the last two million years (Seielstad, Bekele, & Ibrahim, 1999). Molecular research revealed that humans passed through a bottleneck, a period where a population “crashes” due to a catastrophic event, and the number of people who survived is small (Marth, Czabarka, Murvai, & Sherry, 2004). Rogers and Harpending (1992) proposed that modern humans went through a population expansion after a population bottleneck during the late Pleistocene period based on anthropological and molecular-genetic data. Exactly how Homo erectus evolved into today's modern humans is unclear. There are three theoretical models that scientists use to explain this gap in human evolutionary time; they are the Out-of-Africa, Multiregional-evolution, and Diffusion-wave models.

The first theory is the Out-of-Africa model that also is known as the Recent African Origin (RAO) model in which modern humans evolved into a new species within the last 150,000 years and began to migrate to the rest of the world, replacing the archaic lineages of Homo erectus in Africa, Europe and Asia (Seielstad et al., 1999). The RAO model includes the original model and revised models of gene flow that occurred in early hominids. The difference between the strict RAO model and later versions is admixture, the mating of distinct groups with one another (Reed, Smith, Hammond, Rogers, & Clayton,
2002). In the strict RAO, there was no mating between modern humans and archaic humans. Both versions state that geographic restrictions caused the migration from west Asia to Europe and that this is how modern humans evolved in Europe.

The Multiregional-evolution model, or the, “Candelabra” theory, hypothesizes that modern humans evolved simultaneously around the world during the Pleistocene (Excoffier, 2002). Supporters refute the Out-of-Africa hypothesis (RAO model) because there is evidence of regional continuity that would show this hypothesis to be incorrect.

Geographic isolation led to the differentiation between African Homo erectus and non-African Homo-erectus archaic forms; one such form is Neanderthals in Europe. Gene flow between the two was constant and slowed the individual evolution of the two groups, but the admixture of genes between them gave rise to modern humans (Templeton, 2002).

The third model, which is proposed by Eswaran (2002), is the Diffusion-wave model, which is based on Sewall Wright’s shifting balance theory. Proponents of the Diffusion-wave theory suggest that a character change involving multiple alleles coadapted for a genetic advantage of modern over archaic humans rather than a speciation event that caused the African transition to the anatomical modernity of humans. According to this theory, modern humans were growing at a steady rate into the region of archaic humans where the two groups overlap only at the peak. Selection and hybridization would favor modern humans over the archaic, and the archaic would die out. Unlike the strict RAO model, there is admixture where the modern-human genome was a hybrid of modern and archaic genes, giving rise to an advanced group of modern humans who would replace their predecessors. Modern humans of today are a hybrid of archaic and early modern humans (Eswaran, 2005).

**HYPOTHESIS DEVELOPMENT**

One approach that is now available is genetic analysis of the Y chromosome (i.e., paternal inheritance) and mitochondrial DNA (i.e., mtDNA, maternal inheritance) using population genetics and molecular evolution. Y-chromosomal and mitochondrial DNA can be used to analyze the genetic basis of two of the theories and to create theoretical models that best explain the genetic analysis. Each of the theoretical models created from genetic analysis seeks to identify and explain mutation, population dynamics, and
migration as related to allele frequencies of genetic data. Whichever model we use, there are certain assumptions that are essential to making the model work; they include: $N_e$ (i.e., the number of reproducing individuals), random mating (i.e., no mating with familial relatives), random extinction (i.e., mortality due to illness or natural disaster); and that the autosomal (i.e., body cells) mutation rate equals the sex-specific mutation rate (Kimura & Ohta, 1973). Each of these assumptions is critical to the selected model because they define the conditions of the analysis.

**METHODOLOGY**

In analysis of genetic data between these two theories, performed by Lahn, Pearson, and Jegalian (2001), there must be an examination of allele frequency (i.e., the number of multiple copies of a gene) on Y chromosome microsatellite-mutation rates. The Y chromosome is uni-parentally inherited from father to son. The son’s copy resembles his father’s copy of the chromosome. The Y chromosome has recently been receiving a lot of attention for the role it can play in forensics (e.g., paternity) and in human evolution because it can preserve mutations due to its largely non-recombining nature. In the past it was considered a genetic wasteland of functionless genes and regions; however, it is getting a second look today. The Y chromosome is quite different from its homologue, the X chromosome, in that it is mostly non-recombining and contains lower functional diversity (Lahn et al., 2001).

In examining allele frequency, a researcher must take into consideration the roles of population size, effective population size ($N_e$), natural selection or genetic drift, and mutation rate. The term “selection” refers to the survival of those traits that are advantageous for the species over those that are not. “Genetic drift” is the random chance events that can occur in a species via their genetic makeup (Hartl & Clark, 1997). According to the Neutral Theory of Evolution, mutation and genetic drift are the primary-driving forces in evolution. Evolutionary rates differ among various parts of a molecule (Kimura & Ohta, 1973). This information can be used to understand the role of mutations in human-evolutionary history, assuming that the mutations are neutral.

The stepwise-mutational model (SMM), developed by Kimura and Ohta (1978), is a mathematical theory that provides an estimate of allele frequency of a finite population.
In their theory, if a mutation occurs in an allele, it will increase or decrease the electrophoretic mobility of an allele to move one positive space or negative space. In their model, loci mismatches, in terms of a frequency spectrum (i.e., 0, 1, 2, 3), are analyzed. By deriving the equilibrium distribution, it gives a realistic frequency distribution of allelic numbers at equilibrium. With the understanding that allelic states are in integers (-1, 0, 1), then allele frequencies and alleles can be represented on a number line. The Stepwise mutational model can predict one-, two-, or three-step mutations that have occurred. In this research study, using the SMM, the single-step mutation is the primary method used for this analysis.

Figure 1: Stepwise-mutation model diagram

\[
\begin{array}{cccccc}
A_2 & A_1 & A_0 & A_1 & A_2 & \ldots \\
X_2 & X_1 & X_0 & X_1 & X_2 & \ldots \\
\end{array}
\]


Figure 1 shows the representation of the Stepwise-mutation model expressed as integers (Kimura & Ohta, 1973); the mutation can be positive or negative and the \(v/2\) is the mutational rate/locus/generation divided by two because there are two alleles per locus. The first assumption of the stepwise mutational model is that mutations occur at the same frequency. \(N_e\) is important because it not only influences population substructure, but it also will determine the mechanism of evolution. A low \(N_e\) implies that drift is the major force, while a large \(N_e\) would suggest that selection is driving mutation. If allele \(A_i\) has a frequency of \(X_i\), then it would include the sum of the frequencies of \(X_0\) (from the \(A_0\) allele) and \(X_2\) (from the \(A_2\) allele); thus, the change of \(X_i\) in one generation is \(\delta X_i = -vX_i + (v/2)(X_0 + X_2) + \xi\). The change in the allele frequency of \(X_i\) is equal to the variance*allele frequency of \(X_i\) + variance/2 * sum of the frequencies of \(X_0\) and \(X_2\), the change of \(X_i\) in one generation (Kimura & Ohta, 1978). The model also has a mean and variance that can be...
calculated. When a population grows ($N$) with a constant $N_e$ (i.e., number of breeding individuals), the alleles in the population reach a plateau close to $N_e$ ($N = N_e$). To test how close theoretical values match with data, a series of Monte Carlo experiments was performed. Kimura and Ohta used a homogenous population with one allele type and $N_e = 50$ where each run has a sequence of 75,000 generations. In every 100 generations, the allele frequencies were counted. The simulations were plotted against the theoretical values, and their results revealed that the model was in agreement with the simulated results. It also should be noted that this model works best when $4N_eV$ is low (Kimura & Ohta, 1973).

The stepwise-mutational model also has been used to help explain the rate of mutations in autosomal and sex-specific systems. Sex-specific mutation rates are proving to be valuable (e.g., the Y chromosome). Structurally, the Y chromosome contains pseudoautosomal loci and three basic classes of non-recombining loci (Lahn et al., 2001). These researchers found that pseudoautosomal regions (PAR) are located at the short and long ends of the chromosome (i.e., 2600kb and 320KB) and makeup only 5% of its total sequence. Clearly, PAR is “active” because it undergoes meiosis (Quintana-Merci & Fellows, 2001). The non-recombining portion of Y, which is designated NRY, is comprised of mostly highly-repetitive sequences and is about 60 megabases long. The NRY region consists of three classes, each with multiple genes (e.g., class 1: eight genes; class 2: eight genes; and class 3: five genes). There is a 25 mb region that is euchromatic; it is the region that interacts with the X chromosome. The remaining 35mb are heterochromatric regions that do not interact with the X homologue (Lahn et al., 2002). According to these researchers, there are only a few genes active in NRY, SRY being the most studied—with the majority currently believed to be non-functional. There are several theories regarding why the Y chromosome lost its functionality across most of its structure. One such theory is that a large-scale inversion of Y on itself would break up the alignment, and over evolutionary time the misaligned sequences would evolve to where they lost their recombination ability. If the inversions theory was true, the genetic makeup would have significantly changed, with these alleles driven to fixation. There is support in the literature for inversions occurring in the Y chromosome at least three to four times in human history (Lahn et al., 2002). It is conceivable that these inversions cause duplication of chromosomal regions.
that possibly lead to slippage during replication. It appears that the inversions theory could account for the origin of microsatellites. Microsatellites, also known as STR, are highly polymorphic-genetic markers comprised of multiple alleles at each locus. Y chromosomal microsatellites are 1-6 bp repeats motifs (e.g., CATA) found in the human genome (Zhivotovsky & Feldman, 1995). Microsatellites are classified by the number of nucleotide repeats and are named by the prefixes “di,” “tri,” “tetra,” and “penta.” Simple microsatellites are dinucleotide repeats, while tri- and tetra-nucleotide repeats are “compound” microsatellites. Of course, microsatellites provide an excellent opportunity to study human evolution because the Y chromosome is highly conserved. The repetitive nature of STR’s can be used as a quantitative trait for population genetics (Zhivotovsky & Feldman, 1995). The more variable a locus is, the higher its mutation rate is (Kayser & Sajantila, 2001). Kayser and Sajantila note that, currently, 90% of the mutations observed are single-step mutations and are in agreement with the single-stepwise mutational model.

**DATA ANALYSIS**

In an experiment using 10,844 parent/child alleles and nine loci, Brinkman, Klintschar, and Neuhuber (1998) used a stepwise-mutation model to apply the model to microsatellites (i.e., autosomal). Five microsatellites (i.e., CD4, F13B, TH01, FES, VWA, D125391, D21S11, FGA, ACTBP2) were used for paternity testing. Procedurally, if a mismatch was located, another five microsatellites were added for validity. After amplification by PCR, the researchers separated the alleles under denaturing conditions or native gel. In addition, allele frequencies were fluorescently detected using allelic ladders as guides. The measured length was in agreement with the sequenced length. Of the nine loci tested, Brinkman and associates identified twenty-three mutations from six loci, and no insertions or deletions were identified from the analysis; twenty-two mutations were single-step mutations and one was a two-step mutation. Findings indicate there was a correlation between microsatellite (STR) lengths, and the longer the homogenous repeat (i.e., in terms of mean number of repeats), the higher the probability of a mutation. ACTBP2 has the highest average repeat length and also the highest mutation rate (Brinkman et al., 1998). In this experimental study, the stepwise-mutational model was applied, and the model showed a good fit to the data.
In an experiment conducted by Dupuy, Stenersen, Egeland, and Olaisen (2004), the mutation rates of loci between father/son pairs were examined using the stepwise-mutational model. Although previous studies revealed differences in mutation rates in autosomal loci, in this study, 1,766 father-son pairs were analyzed, using nine Y chromosomal microsatellites (i.e., DYS: 19, 385, 388, 389, 390, 391, 392, 393) and five biallelic markers. The analysis yielded thirty-six mutations (i.e., 24 gains and 12 losses) between loci. The gains observed were mutations in short alleles; while the losses were from long alleles (Dupuy et al., 2004). Of the twenty-four gains, twenty-two were single-step and the other two were two-step mutations. All twelve losses were single-step mutations. These results are statistically significant using a 95% confidence interval \( (p = 0.046) \). In addition, when microsatellite length was compared with mutation rate, a correlation between the two was found. In support of current literature, the loci with longer homogenous repeats (caused by a higher average repeat number) were more likely to mutate. The overall mutation rate for all microsatellites calculated, using Fisher's exact test, was \( 2.3 \times 10^{-3} \) (Dupuy et al., 2004). The mutation rates reported were between loci from 392 to 390 and 391 and were from 0 to 4.53 \( \times 10^{-3} \), respectively.

**MATHEMATICAL MODELS**

In both of the previous studies, a mutational bias occurred; if researchers accept this mutational bias, the next question to be addressed is how these mutations arise theoretically. Using the formula proposed by Zhivotovsky and Feldman (1995), \( w = \Sigma c v_c \)
\[ c^2 = v c r^2 m, \]
we can represent microsatellite mutation with the variance based on the terms below:

- \( w \) = the variance of changes in repeats among new mutations.
- \( c = j - i \), the change in repeat number due to mutations of the allele that carries \( j \) repeats to the allele with \( i \) repeats.
- \( v_c \) = the probability of a mutational change by \( c \), the number of repeats (assuming the allele is not location dependent on the loci it mutates from).
- \( v = \Sigma v_{c \text{rep}} \) is the total mutation rate.

There are several assumptions that also must be made to address this mutation process question. The one assumption is that there is no directional mutation, which is
also an assumption of the Stepwise Mutational model (Zhivotovsky & Feldman, 1995). With this assumption in mind, any new mutations in Y-STR numbers are equal to zero. For this model, researchers will be working from the one-step method primarily. The next part of the assumptions is that skewness and kurtosis are added to display the first four population parameters also known as central moments ($P_i$), the allele frequency of “$i$” repeats carried by “$A_i$” allele. To estimate population parameters at time “$t$”, we need four parts: “$r$” is mean (arithmetic) repeat number ($r = \sum_i i \cdot P_i$); “$v$” is variance; “$S$” is skewness; and “$K$” is kurtosis. The formula, $P_i = \sum_i v_i - c \cdot \sigma$, states that the allele frequency of “$i$” repeats is equal to the sum of the change in repeat number ($\sum_\sigma$ of the mutation times the variance of the “$i$” allele subtracted from allele frequency of the change in $c$ (Zhivotovsky & Feldman, 1995).

Each of the population parameters of a mutation can individually affect STR in the population. The central moments are the predicted variances in repeat score variances across all loci (Zhivotovsky & Feldman, 1995). Their theoretical calculations are in alignment with simulations from other published studies. Using data from a previously published data set of 86 microsatellite loci, they calculated the mutation-gene-drift equilibrium variance $v = 4.88$. The variance expected in microsatellite number at mutation drift equilibrium is $V = \frac{N-1}{N}\mu;
\hat{V}$ = is the variance at mutation gene equilibrium.
\n$\hat{N}$ = the effective number of gametes

$\mu$ = mutations that cause a change of $+1$ and $-1$ in repeat # with a probability $\mu/2$. (Goldstein et al., 1996)

Using the equations presented in this paper, the theoretical values were close to the data, which implies that the single-step mutational model at mutation-gene drift equilibrium is valid (Zhivotovsky & Feldman, 1995). This theory is in agreement with the SMM that mutations are not related to the specific locus and that they occur symmetrically. Microsatellite loci examined in the Goldstein and associates (1996) study are in the mutation-gene drift equilibrium; thus, there is no evidence present to reject the gene-mutation-drift equilibrium theory of Y-STR. One major drawback of this drift equilibrium model is that the number of loci available is small, or the variance is lower than the drift.
equilibrium. The role of migration on Y-STR allele frequency was not examined in this review of research. A major assumption in most of the studies reviewed is that the rate of Y-STR mutation resembles autosomal mutation, even though there are four times as many autosomes than Y chromosomes (Goldstein et al., 1996). The rate of mutation could be different, which would cause either under- or over-estimates of the Y-STR mutation rate.

**DISCUSSION**

Current research supports the use of SMM for explaining microsatellite variation. One critical component of this theoretical model is the estimation of effective population size ($N_e$) because it can explain whether drift or selection are the key driving forces of Y-STR variability. For the Stepwise Model, $N_e$ is predicted to be small, as modern humans evolved from a small founder population. Under this founder effect, the Y-STR loci would be expected to be in gene-mutation drift equilibrium. This information can be used to calculate the most recent common ancestor using microsatellites.

Y-chromosomal microsatellites exhibit a better adherence to a stepwise-mutational model (i.e., single- and double-step) instead of the infinite-allele model because the latter under-estimates the amount of variation. Simulations from the Monte Carlo model of Kimura and Ohta (1978) as well as phylogenetics currently support the findings of the single-step stepwise mutation model. The mutation rate of Y-STR using the stepwise model showed a good fit to the data. There were several assumptions that had to be made to make the model apply. With the assumption of a small founder population of modern humans, these processes represent a plausible explanation of modern human evolution as determined by Y-STR. Y-STR does not adhere completely to all assumptions of the model; however, it is seldom that any one model matches exactly. Of the two theories, Recent African Origin (RAO) is the one most widely accepted today. Research from mtDNA coalescence theory, cladistics and simulations support the RAO hypothesis of modern human origins.

**FUTURE RESEARCH**

Further study is needed to examine the variation between modern humans and primates, as a comparison of models that further examine Y-STR loci correlations to
mutation rate. Future research is needed to compare autosomal and sex-specific microsatellite rates and the role of the environment on Y-STR viability. Science and technology are advancing so rapidly that the capabilities are astounding for what can be done in genetic research today. As technology advances, so will the accuracy and power of research to answer questions that have long plagued the human memory. Researchers in genetics and evolution must continue to seek the answers to these questions in the pursuit of knowledge, as long as we are genuine in our efforts to share this light with those who don’t understand it.

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AAPP ALUMNI CONTRIBUTION

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Goldfried (2003) presented a brief history of cognitive behavioral theory and explained that when the cognitive constructs by theorists such as Bandura (1968), Mischel (1968), and Peterson (1968) were introduced to traditional behavioral therapy, important changes in conceptualization and therapeutic methodology occurred. Prior to the introduction of these constructs, Goldfried asserts that behavioral therapy was based on classical operant conditioning, and a stimulus-response-consequence model for operant conditioning. Thus, with the inclusion of cognitive constructs in behavioral therapy, the model was broadened to represent that of stimulus-organism response-consequence components.

According to Goldfried (2003), the integration of cognitive variables and behavioral theory resulted in therapists adopting the information-processing model used within cognitive psychology. He explains that cognitive psychologists postulated that the processes related to encoding, storing, and retrieving information may not always be in an individual's awareness; rather, these processes may reflect distortions, resulting from inaccurate classification of events, selective attention, and random storage of information and/or incorrect retrieval from memory.

COGNITIVE-BEHAVIORAL THERAPY

Beck, Rush, Shaw, and Emery (1979) asserted that Alfred Ellis was a major catalyst in the development of cognitive-behavioral therapy. They described Ellis as connecting the Activating Event from the environment (A) to the Emotional Consequences (C), by the Intervening Belief (B). Ellis' Rational-Emotive Psychotherapy is focused on helping persons become aware of their irrational beliefs and the inappropriate consequences of these beliefs.
Day (2004) notes that “cognitive-behavioral therapy is a persuasive methodology, in that the therapist works to convince the client that his or her way of viewing the world is not the only one or, for that matter, the most correct one. The role of the therapist is one of teacher or guide, a catalyst through which the educational and corrective experiences come about” (Day, p. 298).

According to the National Association of Cognitive-Behavioral Therapists (NCBT, http://www.nacbt.org), “Cognitive-Behavioral Therapy is a form of psychotherapy that places emphasis on the role of thinking and how individuals feel and behave. Furthermore, cognitive-behavioral therapists stress that when the brain is healthy, it is the thinking that causes the individual to feel and behave in a certain manner. Essentially, when persons experience unwanted feelings and behaviors, it is important for them to identify the thinking that causes the feelings and behaviors in order to learn how to replace this type of thinking with thoughts that prompt reactions that are more desirable” (NACBT, http://www.nacbt.org/whatiscbt.htm).

In general, cognitive-behavioral therapists utilize several approaches to treatment. These approaches include Rational Emotive Behavior Therapy (Ellis), Rational Behavior Therapy (Maultsby), Rational Living Therapy (Pucci), Dialectic Behavior Therapy (Linehan), and Cognitive Therapy (Beck) (NACBT). These approaches all fall under the umbrella of Cognitive-Behavioral Therapy (CBT) because they share several characteristics as delineated by the NACBT (http://www.nacbt.org/whatiscbt.htm).

These characteristics are the following: (a) cognitive-behavioral therapy is based on the Cognitive Model of Emotional Response (i.e., cognitive-behavioral therapy is based on the scientific fact that a person’s thoughts cause feelings and behaviors rather than external things such as people or situations); (b) CBT is brief and time-limited; (c) a sound therapeutic relationship is necessary for effective therapy, but it is not the focus of the therapy; (c) CBT is a collaborative effort between the therapist and the client; (e) CBT is based on a stoic philosophy; (f) CBT uses the Socratic Method; (g) CBT is structured and directive; (h) CBT is based on an educational model; (i) CBT theory and techniques rely on the inductive method; and (j) homework is a central theme of CBT.
Cognitive-Behavioral Group Therapy for Treating Depression

Current literature on cognitive-behavioral therapy emphasizes the utility of this theoretical approach for group therapy in mental-health settings (Mackenzie, 1997, as cited in White & Freeman, 2000). Cognitive-behavioral group therapy was initially defined by Hollon and Shaw (1979, as cited in White & Freeman, 2000). White and Freeman delineated four cognitive-behavioral group principles for the treatment of depression that were derived from Aaron Beck's (1976) formulation of cognitive therapy; they are each discussed below.

The first principle is cohesiveness, which reflects the degree of personal interest group members have for each other. When persons want to attend the group and look forward to relating to each other, there is a high level of cohesiveness. Cohesiveness is described by White and Freeman (2000) as the social force of the group that allows members to respect differences and disagreements. They indicate that group therapists should insure that cohesiveness maintains a healthy balance by monitoring group movement in the direction of too much or too little cohesiveness. Furthermore, effective therapists should be prepared to make subtle adjustments continuously in order to maintain the balance of group cohesiveness.

The second principle of cognitive-behavioral group therapy is that of task focus. With task focus, the therapist is viewed as seeking to encourage clients' problem resolution. Cohesiveness and task focus are used by the therapist to be mutually beneficial. For example, after an emotional group experience where the empathic connection between members is intensified, the therapist could ask the following question, "How does this closer feeling help you make progress in coping with your depression and moving forward with therapeutic goals?" (White & Freeman, 2000, p. 33). The therapist also would continually monitor when the group reaches an impasse on certain tasks and divert the group to other goals at such times.

The third principle of cognitive-behavioral group therapy involves the role of the therapist; this conceptualization of the therapist's role requires one to model active participation and collaboration. White and Freeman present the primary responsibilities of the therapist as encouraging members to build agendas, to develop adaptive responses, and to design homework that is suitable for each group member as well as to use teaching...
skills. In order to implement these strategies, cognitive-behavioral group therapists utilize Socratic questioning as the primary mode of communication. This type of questioning draws individuals into the group discussion and stimulates diversity in thinking (White & Freeman, 2000).

The fourth principle of cognitive-behavioral group therapy is the appropriate selection of group members. White and Freeman recommend that the therapist engage in a minimum of one evaluation session in which the perspective member can meet the therapist individually. During this session, the therapist is described as initially determining if the individual is experiencing active-suicidal ideation and as evaluating the extent of the individual's clinical depression. These authors also believe that active suicidal ideation is the primary exclusion criterion for potential members of cognitive-behavioral therapy groups. Other exclusionary criteria include chemical dependency and current psychosis. Apparently, there are circumstances where individuals who have experienced past suicidal ideation, psychosis or chemical dependency can be included in such a group; however, the therapist must insure that these client issues have been treated properly and do not present a current problem.

White and Freeman (2000) also recommend that cognitive-behavioral group therapists adhere to specific structure and content during the therapy session. For example, prior to weekly sessions, group members should complete the Beck Depression Inventory ([BDI]; Beck & Steer, 1987). The BDI instrument usually is provided to members while they wait for the group to begin. Typically, during the first group meeting the therapist discusses the BDI results in detail so that members will understand the meaning of their scores. In subsequent sessions, the members usually are presented with a chart that graphically depicts their weekly-outcome scores to examine trends and patterns in their treatment. The weekly examination of BDI scores is important because persons with depression tend to de-emphasize their progress in therapy, unless they are provided with concrete, objective comparisons of weekly scores and initial scores on the inventory. Following the review of the BDI, a session's structure would include a “check in” during which members can share important developments of the previous week and report changes in their depression recovery. The second structural component of group sessions is the agenda. The therapist encourages members to formulate what agenda topics will be
discussed. The decision to focus on a specific agenda facilitates cohesiveness because the decisions are made by consensus. The third component of the cognitive-behavioral group structure is the “adaptive response.” This involves members’ generation of adaptive responses to thoughts of helplessness and hopelessness. In essence, therapists who utilize cognitive-behavioral approaches in groups strive to reduce the tendency for an authority figure to generate adaptive responses. Homework is the fifth component of cognitive-behavioral-group sessions. This component is a means of facilitating the integration of therapy with everyday life, thus, making therapy practical. The therapist encourages each group member to design homework assignments that will facilitate relevant progress in his or her therapy. Homework also is important because it allows members to learn from the experiences of a variety of people (White & Freeman, 2000).

White and Freeman also emphasize that the therapist who uses cognitive-behavioral approaches should seek to assist members to consolidate both what they learn and gain from the group experience. As a result, recurrent themes can be elicited for a final review. The themes of hopelessness and helplessness are specifically addressed because, as Beck, Rush, Shaw, and Emery (1979) explained, these are the two dominant forces in depression. Furthermore, at the conclusion of group therapy, the members generally are encouraged to complete a self-assessment of their depression to determine how their present condition relates to their initial treatment goals as well as to the expectations of the group.

**Efficacy of Cognitive-Behavioral Therapy for Working with Depressed Clients**

Hollon (2003) explained that cognitive behavioral therapy has emerged as a widely used treatment intervention that is supported with empirical research regarding its efficacy. Additionally, he notes that cognitive-behavioral theories are some of the only therapeutic interventions upon which the results extend beyond the end of treatment. Apparently, this phenomenon is frequently the case for the treatment of depression. Hollon, Thase, and Markowitz (2002) explained that although pharmacotherapy suppresses the reemergence of symptoms, during use of medications, there is no indication that it serves to reduce the risks of depression once the use of drugs is terminated. Although it is unclear why cognitive-behavioral therapy (CBT) has a more lasting effect than other therapeutic interventions, Barber and Derubeis (1989, as cited in Hollon, 2003) emphasized that it may be associated with the emphasis that CBT places on teaching clients skills that they can use.
to manage their personal emotional reactions to negative life events and the subsequent behavioral strategies that they select to help them cope with such events. There also are indications that CBT can be used to prevent initial onset depression in children and adolescents who are at risk for depression (Gillham, Shate, & Frerers, 2000).

Seligman, Schulman, DeRubeis, and Hollon (1999) examined how cognitive-behavioral therapy could be used to prevent depression and anxiety. These researchers developed a brief cognitive-behavioral prevention program at the University of Pennsylvania for students who were at risk for depression. "At risk" was defined as scoring in the bottom quartile of the Attributional Style Questionnaire ([ASQ]; Seligman, Abramson, Semmel, & Von Baeyer, 1979). All of the participants (N = 23) entered the study as first-year undergraduates and participated in the study for three years. Men constituted 48% of the participants, and women represented 52% of the sample. The primary purpose of this study was to explore the effects of a depression- and anxiety-prevention workshop on college students. The secondary goal was to examine mediators of any preventive effects. The researchers examined alterations in explanatory style, hopelessness, self-esteem, and dysfunctional attitudes. Because of the high co-morbidity of depression and anxiety, the two primary targets of the program were the prevention of new episodes of depressive behavior as well as of anxiety disorders and the symptoms. The prevention workshop consisted of sixteen hours of meetings which were held for 1-2 hours each week over an eight-week period. The participants also completed homework assignments between the meetings. These meetings/workshops consisted of 10-12 student participants for each group with one trainer and one co-trainer. The workshops focused on topics that included the cognitive theory of change (i.e., the relationships among thoughts, feelings and behaviors), the identification of automatic negative thoughts and underlying beliefs, delineating evidence to question and dispute automatic thoughts and irrational beliefs, and replacing one's negative thoughts with positive alternatives.

Seligman et al. (1999) explained that three major findings emerged from their study. First, the workshop group had significantly fewer episodes of generalized-anxiety disorder than the control group and showed a trend toward fewer depressive episodes. Second, the workshop group had significantly fewer depressive symptoms and anxiety symptoms than the control group. The latter finding was measured through self-report as opposed to a
rating from a clinician. The third finding was that the workshop group had significantly
greater improvements in explanatory style, hopelessness, and dysfunctional attitudes when
compared to the control group. One limitation of this study was that the experimental
design did not include a placebo-control group. Additionally, factors such as expectation of
gain, social cohesion, and attention from older authority figures could have contributed to
the prevention effect of the workshops. Seligman et al. concluded that if episodes of
depression and anxiety among students can be prevented in schools and in colleges, this
could result in long-term beneficial effects on the mental health of the general public.
Such a conclusion can be regarded as an overgeneralization of the results, which were
obtained with a sample of 23 at only one university. Nevertheless, these researchers
maintain that this study served as a potential model for middle and secondary schools to
develop prevention programs that potentially could prevent and mitigate depression and
anxiety among students as they mature.

OVERVIEW OF COGNITIVE THERAPY

The goal of cognitive therapy is to alleviate emotional distress and symptoms related
to depression, anxiety and phobias (Beck et al., 1979). The authors also asserted that
through “...close examination of the client's misinterpretations, self-defeating behaviors,
and dysfunctional attitudes, followed by the implementation of reality testing of these
previous themes, the client will benefit” (Beck et al., p. 35). Additionally, they underscored
that the therapist must be attuned keenly to their client's intensified emotions and
empathize with the client's distress while simultaneously identifying the client's faulty
cognitions and connections between negative thoughts and negative feelings. Apparently,
sensitivity and empathy are essential to positive therapeutic outcomes in CBT.

Judith Beck (1995), augmenting the work of Aaron Beck, explained that the cognitive
model emphasizes treatment of distorted or dysfunctional thinking, which has an influence
on moods and behaviors and is a commonality in all psychological disturbances. She
asserts that evaluation and modification of distorted thinking results in the improvement of
mood and behavior. Consequently, long-term improvement occurs through the
modification of the client's underlying dysfunctional or distorted beliefs.
Additionally, J. Beck (1995) explained that even though cognitive therapy is tailored to meet the needs of the individual client, there are ten principles that underlie cognitive therapy for all clients. Those principles are:

Principle one: Cognitive therapy is based on an ever-evolving formulation of the client and his/her problems in cognitive terms. This involves the conceptualization of a patient's difficulties in terms of, (a) problematic behavior, (b) precipitating factors, and (c) developmental events and enduring patterns of interpreting events... Principle two: Cognitive therapy necessitates a strong therapeutic alliance... Principle three: Cognitive therapy emphasizes collaboration and active participation in therapy... Principle four: Cognitive therapy is goal oriented and problem focused... Principle five: Cognitive therapy initially emphasizes the present. Exceptions to focusing on the here and now occur when work directed toward current problems produces little change; when the therapist determines that it is important to understand how dysfunctional ideas originated; and when a client has a personality disorder... Principle six: Cognitive therapy is educative, with a focus on teaching the client to be his/her own therapist, and it stresses relapse prevention... Principle seven: Cognitive therapy strives to be time limited... Principle eight: Cognitive therapy requires structured sessions... Principle nine: Cognitive therapy teaches clients to identify, assess and respond to their dysfunctional beliefs and thoughts... Principle ten: Cognitive therapy employs a range of techniques to change thoughts, moods and behaviors. (Beck, 1995 p.p. 5-9)

J. Beck (1995) also identified numerous topics and techniques, which she considered important to be successful in using cognitive-behavioral therapy. Among them were dealing with the identification of and response to automatic thoughts and beliefs. She also presented techniques such as dysfunctional thought records, positive self-statement logs, and coping cards. The author, subsequently, pointed out that during the first stages of cognitive therapy, the therapist and the client work on automatic thoughts before addressing beliefs; however, she recommended that the therapist from the first session begin
to formulate a conceptualization that connects automatic thoughts and beliefs in a logical manner. Furthermore, she recommended that the therapist begin to complete a Cognitive Conceptualization Diagram once he or she has obtained information regarding the client's automatic thoughts, emotions, behaviors, and beliefs. The Cognitive Conceptualization Diagram was developed by Aaron Beck and published in 1993 (J. Beck, 1995). This diagram includes relevant childhood data, core beliefs, conditional assumptions, and compensatory strategies. The author emphasized that the Cognitive Conceptualization Diagram should make sense to both the client and the therapist. Clearly, the diagram was intended to be continually refined and reevaluated in response to client progress and changing strategies. Beck also asserted that some clients are emotionally and intellectually prepared to see the bigger picture early in the therapy; however, clients who do not have a strong therapeutic relationship or do not have faith in the cognitive model should be exposed to the diagram later in therapy.

In the typical therapy described by J. Beck (1995), once client and therapist review a conceptualization of automatic thoughts and beliefs, the therapist determines which dysfunctional beliefs are most important. Once the important core beliefs are identified, the therapist can educate the client about the nature of the beliefs. Generally, the therapist is described as helping clients examine the advantages and disadvantages of continuing to hold on to a particular belief. When the negative core belief is identified, the therapist then helps the client develop a more realistic and less rigid belief and guides the client toward it (Beck, 1995). For example, an old core belief could be that “I am completely unlovable,” whereas the new core belief could be “I am generally a likable person.” The strategies that can be used to modify beliefs are identical to those that are used in the modification of automatic thoughts; however, there are some additional techniques as well. Beck describes these techniques as including Socratic questioning, behavioral experiments, cognitive continuum development, rational emotional role plays, using others as a reference point, acting “as-if”, and self-disclosure. Use of these techniques is noted as challenging core beliefs and providing the client with the opportunity to engage in alternative behaviors and thinking.

In addition to the cognitive-behavioral techniques mentioned above, there are additional techniques that a therapist can utilize, depending upon his or her overall
conceptualization of cases. The purpose of these techniques also is to influence the client's thinking, mood, and behavior (Beck, 1995). Such techniques include the use of problem-solving worksheets for clients who are experiencing difficulties with decision making. Disadvantage and Advantage analysis also is helpful when assisting clients with the decision-making process. Another technique is the use of Activity Charts; such charts are used for monitoring the activities that are completed by clients daily. The charts also are used to monitor other client activities and to analyze pleasure and negative moods. The therapeutic process also can include use of coping cards, which J. Beck indicates are cards that have a key automatic thought or belief on one side with an adaptive response on the other. The response side consists of behavioral strategies to use in a specific problematic situation. The client is encouraged to keep coping cards in accessible areas such as a pocket, desk drawer, refrigerator or the dashboard of a car. Beck also discussed the technique of positive self-statement logs. These logs are daily lists of positive things that the client is doing for which he or she deserves recognition.

Many of the cognitive therapy techniques discussed above are completed by the client in the form of homework. Beck et al. (1979, as cited in J. Beck, 1995) asserted that homework is fundamental to effective cognitive therapy because homework allows the client to extend the therapeutic process beyond the actual sessions. J. Beck (1995) explained that sound homework assignments allow the client “to test thoughts and beliefs, to modify thinking, and to practice using cognitive-behavioral tools” (p. 248). In order to facilitate the homework process, therapists are advised to customize the assignments to the client and to insure that the client actually can do the assignments. Additionally, it is critical that the therapist thoroughly explain the purpose of the homework. Moreover, it is recommended that homework assignments be initiated in the session if possible. Therapists also should anticipate potential problems and prepare the client for possible negative outcomes of homework assignments.

Beck (1995) pointed out that when teaching the techniques learned in therapy, it is essential for the therapist to emphasize that the process is ongoing and that the tools of therapy can be applied to situations in the future. Beck also notes that these tools should be used whenever the client realizes that he or she is behaving in a dysfunctional manner.
The author identifies tools that can be implemented during and after therapy, including the following: Breaking down large problems into manageable components, generating alternative responses to problems, identifying, testing and responding to automatic thoughts and beliefs, using dysfunctional thought records, monitoring and scheduling activities, doing relaxation exercises, using distraction and refocusing techniques, creating and working through individual hierarchies of difficult tasks, writing positive self-statement logs, and identifying advantages and disadvantages of specific thoughts, beliefs, and behaviors. Beck also explained that therapists should inform clients of the potential for relapse and setbacks after termination, and she recommended that therapists encourage self-therapy sessions for clients as well as maintenance sessions to help the client get back on track after a setback.

**Implementing Cognitive Therapy in the Individual Treatment of Depression**

The cognitive model of depression evolved from Aaron Beck’s systematic clinical observations and client testing procedures. In this model of depression, set forth by Beck and his associates (1979), the authors postulate three specific concepts to explain the psychological substrate of depression. The first concept is that of the cognitive triad, which includes the depressed person’s view of himself or herself, the depressed person’s tendency to interpret his or her ongoing experience in a negative way, and the depressed person’s negative view of the future (i.e., hardship and suffering will continue indefinitely). The second concept is that of schemas, “which can be defined as the basis for molding data into cognitions (i.e., ideations with verbal or visual content); therefore, a schema constitutes the basis for screening out, differentiating, and coding stimuli that confront the individual. Furthermore, a schema may be inactive for extended periods of time; however, it can be stimulated by specific environmental inputs such as stressful situations” (Beck et al., 1979, p. 12). In essence, during this state the client is preoccupied with repetitive-negative thoughts. The third concept of the cognitive triad is that of faulty information processing. This represents the errors in the depressed individual's thinking. Examples of faulty information processing include arbitrary inference (i.e., drawing conclusions without evidence), overgeneralization (i.e., drawing a conclusion from isolated incidents), and absolutistic thinking.
Beck et al. (1979) contended that in order to maximize the impact of cognitive therapy for depression there are four essential concepts that the therapist must embrace. The first is the importance of the collaborative enterprise with the client; the second is the value of capitalizing on the fluctuations in the client's depression; the third is the continuing emphasis by the therapist on client exploration; and the fourth is the client’s independent learning and his or her collaborative work with friends and family. Beck et al. also recommended that, during the initial stages of therapy, the therapist should take the position that any feelings of the client would be appropriately discussed during the session because it is important to format the session in a manner that prevents the entire time period from being devoted to the client's emoting. Furthermore, if the client's emotional reactions are excessive and founded on irrational thoughts, it is important for the therapist to encourage the client to examine attitudes that seem to generate exaggerated feelings.

As a result of pathological pessimism and, in some cases, previous unsuccessful attempts with therapy, some depressed clients may believe that therapy cannot result in enduring treatment outcomes (Beck et al., 1979). These authors asserted that therapists need to indicate at the onset of therapy that the natural course of depression has ups and downs and that the client may experience severely-diminished-mood levels after experiencing improvement. They also contended that clients should be informed throughout the course of therapy that certain symptoms may be exacerbated and that problems may be temporarily intensified. Following the presentation of the information discussed above, they noted that the therapist guides and monitors the client's willingness to follow a therapeutic plan that was developed collaboratively.

According to Beck et al. (1979), in addition to establishing an agenda, the primary therapeutic goal for the initial interview is for the therapist to mitigate some client symptoms. This can be accomplished by the following: “...attempt to define the set of problems and, throughout the course of the session, to demonstrate to the client strategies for coping with their issues” (Beck et al., p. 95). Prior to defining client problems, therapists also need to select client symptoms to target. These target symptoms are defined as components of the depressive disorder. The authors specified five categories of symptoms that include affective symptoms (e.g., sadness, loss of gratification), motivational symptoms (e.g., wish to escape from life through suicide), cognitive symptoms (e.g.,
difficulty with concentration), and behavioral symptoms (e.g., remaining in bed or sitting in a chair for extended periods of time). These authors advocated that therapist and client collaboratively determine which target symptoms should be addressed by rank ordering the symptoms that are most distressing to the client and by considering which symptoms are most amenable to therapeutic intervention.

Beck et al. (1979) stressed that the therapist and the client determine the topics for the agenda of each therapy session and that the therapist initiates each session with a brief review of the client's experiences since the previous session; he or she also provides feedback on homework (e.g., activity and dysfunctional-thought logs). Additionally, the specific topics of the session should be delineated in concrete and precise terms in order to direct the client's attention on the current tasks. Even though it is advisable for therapists to adhere to the steps discussed above regarding agenda planning, the authors underscored that the specific agenda of a given interview depends upon three things. They are: The stage of therapy and the level of client progress; the most challenging problems to the client; and the general severity of the depression. For example, behaviorally-oriented tasks and homework assignments should be used to a greater extent with severely-depressed persons. Also, the therapist frequently can ascertain important topics to consider by closely examining the client's homework.

Beck et al. (1979) emphasized the importance of getting the therapist and client to discuss the agenda during the beginning of a session to facilitate work on therapeutic goals. The therapist also needs to be consistent and firm with ending the session. Ideally, the therapist would adopt the routine of setting time aside prior to ending the session to summarize the main points and to obtain feedback from the client on session content. Time at the end of the session also is needed to make appropriate homework assignments. Similar in importance to ending sessions properly, the termination of therapy also is essential to plan. These authors assert that the benefits of cognitive therapy can be lost when treatment termination is ineffective. Effective terminations usually allow the client to translate learned strategies into coping with future challenges. In preparing for final sessions, therapists are encouraged to discuss termination throughout the therapeutic process.
Efficacy of Cognitive Therapy in the Individual Treatment of Depression

Beck (1995) noted that cognitive therapy is unique in that it is an integrated theory of personality and psychopathology that is supported by significant empirical evidence. For example, Annonuccio, Danton, and DeNelsky (1995) examined the efficacy of cognitive therapy in a comparative study of psychotherapy versus medication for the treatment of depression. Annonuccio et al. discussed the Murphy, Simmons, Wetzel, and Lustman (1984) study where 87 moderately depressed psychiatric outpatients were provided with 12 weeks of three types of treatment. These three therapies were: (a) cognitive therapy only, (b) nortriptyline (a tricyclic antidepressant) only, or (c) both cognitive therapy and the antidepressant. The recovered patients ($n = 44$) from this study were followed for one year after the termination of treatment. The patients who had received cognitive therapy, whether or not they also had been treated with the antidepressant nortriptyline, were less likely to experience relapse. The patients who had received nortriptyline, whether or not they also had been treated with cognitive therapy, did experience more relapse. The results of this study indicated that treatment with the medication nortriptyline in addition to making relapse more probable also may have interfered with the long-term efficacy of cognitive therapy. Antonnucio et al. also listed other studies that have shown cognitive therapy to be more effective than antidepressant medication as well as other studies where cognitive therapy was as effective as antidepressant medication (e.g., Hollon et al., 2002).

Differentiating between Cognitive Therapy and Cognitive-Behavioral Therapy

Goldfried (2003) explained that, even though there are points of similarity between cognitive-behavioral therapy (CBT) and cognitive therapy (CT), there also are clear distinctions. He asserted that with CBT there is more emphasis on behavioral rehearsal such as assertiveness training. He discussed a study conducted by Goldsampt, Goldfried, Hayes, and Kerr (1992) where a process-analysis demonstration-therapy session was conducted by Beck (using Cognitive Therapy), Michenbaum (using Cognitive-Behavioral Therapy), and Strupp (using Psychodynamic Therapy) with one client, Richard. This client was presented to each therapist for treatment of depression following the dissolution of his marriage. A process analysis revealed similarities among the sessions of all three therapists, such as their comparable focus on the impact that others made on the client. For example, Goldfried notes that the therapists asked questions such as “Richard, how do...
you feel when your wife says that to you?" and that Michenbaum and Strupp placed more emphasis on the impact that Richard was having on others (e.g., "Richard do you think you might have done something to contribute to the problems in your relationship?"). In contrast, Beck, using cognitive therapy, focused more on how the client Richard interpreted the actions of others (Goldfried, 2003).

Other views on the differences between cognitive therapy and cognitive behavioral therapy were presented by Hollon et al. (2002), who emphasized that they often treat the cognitive and cognitive behavioral approaches as one approach; however, "[a]s for cognitive approaches, the authors noted that although they often match or exceed medication results, the level of expertise of the therapist/counselor makes a greater difference in results the more severe the depression is to treat" (Paradise & Kirby, 2005, p. 117).

CONCLUSION

As discussed previously, the evolution of cognitive-behavioral and cognitive therapy have unfolded rapidly over the last 35 years and emerged as some of the most efficacious therapeutic interventions for treatment of depression in individual and group counseling sessions Hollon (2003). Apparently, cognitive-behavioral and cognitive interventions are some of the only therapeutic interventions that mitigate symptoms of depression that extend beyond treatment. The empirical support for the efficacy of cognitive-behavioral and cognitive therapy is extensive, and, as a result, these therapeutic interventions have emerged as the first choice for some managed-care providers. The popularity of cognitive therapy as the intervention of choice has resulted in criticism as well as in perpetuation of generalizations that CT is a sterile and directive intervention approach that is not applicable to a range of client populations. Beck et al. (1979) asserted that cognitive therapy is "humanistic as opposed to mechanistic therapy" (p. 36). In conclusion, it is important to revisit the assertions of the founder of cognitive therapy, Aaron Beck. He emphasized that CT is a holistic intervention that requires a therapist who is extremely capable of empathizing with the intensified emotions of the client and that the therapeutic process focuses on the importance of the collaborative enterprise between client and therapist. As discussed in the Seligman et al. (1999) study, one of the most innovative
developments in the fields of cognitive behavioral and cognitive therapy is the preventive capacity of these approaches. Gilroy, Carrol, and Murra (2002), as cited in Paradise and Kirby (2005), note that depression is one of the most common disorders presented by individuals who seek the help of mental-health professionals. It appears that the implementation of depression-prevention programs that use cognitive-behavioral and cognitive-therapy approaches in schools and communities could potentially reduce the prevalence of depression among certain populations.

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OPPORTUNITIES AND CHALLENGES OF HISTORICALLY BLACK COLLEGES AND UNIVERSITIES

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Today, as in the past, Historically Black Colleges and Universities (HBCUs) still assume the lion's share of the nation's responsibility for educating African American students (Hawkins, 1994). The opportunities and challenges of HBCUs appear to be increasing as we move into the 21st Century; however, HBCUs must fulfill educational and financial goals that exceed even the wildest dreams of their founders and certainly the principles on which they were founded. HBCUs are committed to their mission and challenge (Allen & Allen, 2002). Certainly, one of the biggest challenges they face is acquiring funding that will enable them to run their overall operations efficiently. HBCUs are committed to helping students who are likely to have sparse financial resources; thus, they have to provide assistance to a higher percentage of students with fewer institutional financial resources than are available at other types of institutions. In fact, HBCUs have to provide more tuition assistance for students than other types of institutions (e.g. Traditional White). As a result of these kinds of challenges, the National Center for Education Statistics (NCES) reports that public HBCUs spent $9,782 per student in 1984 for institutional operations, or about 12 percent less than the national average-per-student expenditures for public colleges and universities (U.S. Department of Education, 1996a). In addition, private HBCUs spent about 14 percent less per student than all private colleges and universities.

These financial challenges make it hard for HBCUs to keep up with other schools in technology, facilities, and financial aid. It also has made it difficult for HBCUs to offer competitive salaries to their professors. The NCES report indicates that the female faculty member at HBCUs earns 86 percent of the National Average; however, a male faculty
member earns only 79 percent of the National Average (U.S. Department of Education, 1996b). Despite these challenges, students and professors are attracted to HBCUs generally because they believe in their mission. Private companies and groups across the nation also are believers; organizations like the Wal-Mart Foundation, the Lilly Endowment, and the Giant Food corporation, to name a few, offer financial support to HBCUs (Hawkins, 1994). It is apparent that the challenge continues to exist to solicit funding from private and public sources to assist with the challenges and opportunities of HBCUs. Of course, one of the biggest challenges facing all HBCUs is the demand to provide a high quality of education to African American students. HBCUs are among the oldest institutions in our nation. Malik (2004) indicates that there is a need to modernize the physical facilities at HBCUs and to build state of the art, new facilities that are comparable to Traditional White Institutions (TWIs). He notes that there are a little over 100 HBCUs in our nation and that each one of them is in need of money. The United Negro College Fund, which supports 39 private Black colleges, along with the Rockefeller Foundation, the Ford Foundation, the Carnegie Foundation, and major corporations seem to be doing their part (Chalowu, 2004).

**HISTORY**

Changes in the structure of postsecondary education not only challenge HBCUs but also may jeopardize their continued existence (Brown & Freeman, 2004). Most institutions were created at a time when African American students could not attend TWIs. Their survival today, to some extent, depends on their ability to compete with TWIs and to demonstrate that they can provide educational benefits not otherwise available (Evans & Evans, 2002). The struggle for survival and existence continue over time as the HBCUs’ mission and goal of educating the African American student remains the focus. The Annals of HBCUs were inscribed in the history books with a series of Supreme Court cases from 1935 through 1954 (Allen & Allen, 2002). This gradually changed the system for both HBCUs and TWIs. These cases involved the issue of out-of-state tuition grants. In some states, no separate “professional” school specifically for African Americans existed; thus, TWIs created other options for the Black students they did not want to admit to their programs. For example, when African Americans applied to state TWIs and were considered
qualified for admission but were not admitted, they generally were offered tuition grants, which provided financial support to attend a professional school in another state. The Supreme Court held that this arrangement was unconstitutional, creating an unnecessary hardship for African American applicants (Allen & Allen). It was not until Brown v. Board of Education of Topeka, 1954, that desegregation actually began (Hora, 2001). Hora explains that Brown v. Board of Education of Topeka, focusing on elementary and secondary education, held that segregation by its nature caused fiscal inequities between black and white schools, and the court ordered states to desegregate them. The case was followed by additional decisions that applied specifically to higher education.

The Higher Education Act (HEA) of 1965 prohibited the spending of federal funds on segregated schools and colleges (Ruppert, 1995). The HEA of 1965 provided financial aid to individual students, who otherwise could not afford post-secondary education (i.e., disproportionately Black students), as well as direct grants to HBCUs to reduce resource inequities with TWIs. Ruppert explained that the Supreme Court decided desegregation should be a reciprocal responsibility between HBCUs and TWIs with each trying to make their student bodies and faculties more diverse. In another court case, the U.S. v. Fordice (1962), the Supreme Court held that HBCUs are indeed a vestige of segregation and that state legislatures must either eliminate them or find a compelling educational justification for their continued existence (Hora, 2001). State legislatures have begun to act to meet this requirement through changes in admission policies and proposals for mergers and closures (Fields, 2001).

**Faculty**

The ability to attract and retain young African American faculty at HBCUs is still a challenge (Jackson, 2002). Traditionally, African American faculty worked at HBCUs and did not have the option of working at TWIs. On the other hand, white faculty typically worked at TWIs because there were little or no incentives to work at HBCUs, especially when faculty members held doctoral degrees. Currently, young African American faculty members routinely have employment options at TWIs. It seems clear that even if they are going to be the only African American in their department or the entire college or school, this option creates competition for HBCUs that also are in pursuit of Black faculty.
members. According to research generated on earned doctorates in 2000, African Americans accounted for only 1,652 or 6% of the 27,888 Ph.D.s awarded (Jackson, 2002). In contrast, whites accounted for 82% of all Ph.D.s produced that year. Jackson points out that most of the African Americans received their doctorates in the field of education; among this group, many worked for K-12 school systems instead of colleges and universities. In contrast, only 86 African Americans are reported as receiving doctorates in the physical sciences, and of that number only 14 African Americans earned Ph.D.s in mathematics, a core discipline in higher education. Jackson also contends that the small number of African Americans receiving Ph.D.s is even more daunting when we consider the so called “graying of” African American faculty, who have spent their entire careers at HBCUs and are now approaching retirement, along with many other baby boomers. Consequently, this obviously opens new employment opportunities for people interested in working at HBCUs; however, employment at HBCUs tends not to be attractive because of issues such as tenure, salaries, teaching loads, budget restraints, and employment packages.

Tenure is as valued at HBCUs as it is at TWIs (Fields, 1997). Nevertheless, given the current political and economic climate at HBCUs, Fields notes that African American faculty may be in greater danger of losing their tenure privileges than their counterparts at TWIs. Clearly, one of the main factors threatening tenure at HBCUs is money. Of course, tenured faculty members constitute a big-ticket item in any institution of higher education’s budget. Because of budget constraints and limited funding at HBCUs the number of tenure appointments that can be granted is sometimes limited by cost; therefore, HBCUs tend to have a higher proportion of adjunct professors and non-tenured faculty than TWIs (Fields, 1997).

Tenure for African American faculty, especially for females, may become increasingly stressful (Ruffins, 1997). Ruffins also states that most institutions of higher education have as their stated policy that research, publications, service, grant proposals, teaching, and advisement are given equal weight when a faculty is considered for tenure; however, most of the time only research is given serious weight when tenure decisions are made. The focus for African American faculty tends to be commitment to teaching, mentoring students, and providing community-service work (Moody, 2000). In human terms, getting tenured actually means having a small group of your colleagues decide that you are good
enough to become a member of the “elite class” forever (Ruffins, 1997). From the perspective of an untenured faculty member, even if tenure is achieved, unless the vote was unanimous, it means that you may spend the rest of your academic professional life with some people who thought you were not good enough to be among the “elite class.” When that belief is a faculty member’s perception, it appears that the political “fallout” of getting tenure may have some psychological implications. Overall, Ruffins concludes that the literature on tenure suggests that faculty chairs, deans, and administrators believe that the tenure system in higher education is “broken” and needs repair.

The faculty dilemma continues beyond promotion and tenure at HBCUs. HBCUs will certainly have to become more competitive with their employment packages to attract the best faculty (Dumas-Hines, Cochran, & Ellen, 2001). Inevitably, the heavy teaching load and extremely large classes are major problems for faculty employed at HBCUs. Dumas-Hines et al. indicate that these academic constraints tend to reduce the time that faculty are able to commit to research, publications, and other high-priority components, which are necessary to be tenured. Moreover, faculty, chairs, deans, and administrators must develop and renew their commitment to the scholarly development of faculty at HBCUs to enable faculty to have adequate time for research and writing. They also should be committed to providing allocations for travel to professional conferences, especially if the faculty member is on a program or holds an office in the professional organization (Cole, 2002). Concomitantly, HBCUs also may find it beneficial to provide seed money for research and grant writing as well as recognition and bonuses for outstanding accomplishments in one’s respective discipline in order to establish faculty incentives for an initial-employment package and to assist faculty to progress toward tenure.

According to the National Center for Educational Statistics, in 2001, faculty salaries at HBCUs tend to be lower than at TWIs (U.S. Department of Education, 2002). Furthermore, the average salary of full-time instructional and research faculty on a 9-month contract was $52,662 at TWIs compared to an average salary of $45,615 at HBCUs. Finding the dollars needed to compete for young faculty at HBCUs appears to be an ongoing challenge. If HBCUs are to become research institutions, it seems clear that they need to enhance their fundraising resources to enable them to maximize support for faculty scholarly activities.
During the last decade, many institutions of higher education, including HBCUs, have experienced financial difficulties that have resulted from economic recessions and stagnant state revenues, which lead to major cuts in state appropriations for higher education (Hawkins, 1994). Consequently, public colleges and universities responded to decreasing state support by increasing tuition when not restricted by a state legislature. Hawkins notes that some colleges and universities responded by cutting academic programs, staff, and faculty, as well as delaying major purchases, which is a price that is apparently too much to pay for HBCUs. The rising cost of higher education has placed a great financial burden on both students and parents, particularly those students who would be attending HBCUs (Powell, 2004).

Historically, HBCUs have had problems in securing funding to run their institutions (Evans & Evans, 2002). Evans and Evans assert that state funding, which has never been sufficient for HBCUs, is augmented by student tuition, grants, corporation funding, and individual donations. Furthermore, they view state dollars to public HBCUs as having been inadequate throughout the history of their existence. Their funding tends to be tied to accountability measures, such as enrollment, retention, graduation rates, excess course credit, and research funding (Hawkins, 1994). Some HBCUs, particularly private institutions, are documented to be in unfortunate situations of paying off multi-million dollar debts and, unfortunately, jeopardizing their accreditation standards. Issues such as inadequate budgets, outdated facilities, decreasing endowments, low alumni support, and a high turnover in faculty and staff are just a few of the financial problems of HBCUs (Chalowu, 2004).

Research findings suggest that approximately 12 HBCUs have closed in the last two decades primarily due to declining enrollments, falling endowments, mismanagement, and fierce competition for talented African American students from mainline campuses (Chalowu, 2004). Organizations such as the National Association for Equal Opportunity in Higher Education (NAFEO), the United Negro College Fund (UNCF), and the Thurgood Marshall Scholarship fund (TMSF) are trying to make sure HBCUs “survive” tough times. The NAFEO, under the leadership of Dr. Fredrick S. Humphries, indicates that HBCUs are thinking “outside of the box” by joining together to leverage buying power of supplies and
by taking fundraising campaigns to the internet. Apparently, HBCUs must become entrepreneurial to address their financial challenges. Adopting bold business plans, and marketing the likeness of their school’s logos and mascots are recommended by Chalowu to increase their foundation funds and supplement their operational costs. Furthermore, Chalowu indicates that because of inadequate funding, HBCUs have a need to enhance fundraising endeavors to increase their foundation funds and to supplement their operational costs. Although they do not receive as large an amount of donations as TWIs, they currently have increased their foundation endowments to millions of dollars. For example, many alumni and other supporters of HBCUs are beginning to make sizable donations, such as giving from one-hundred thousand dollars to one million dollars to their schools. Chalowu further asserts that when institutions have excellent financial management, some HBCUs’ endowments have increased considerably. Such endowments can fund additional student scholarships, faculty endowments, matching grants, advisement centers, and academic programs in addition to relevant travel by the faculty and administrators of HBCUs.

Currently, in HBCUs, the focus on fundraising has become critical to institutional survival, whereas in past years they were more dependent on state revenues. With millions of dollars in state funding to public colleges and universities being cut and HBCUs being hit the hardest, fundraising is becoming a number-one priority for survival (Hawkins, 1994).

**Students**

HBCUs’ traditional mission is to provide postsecondary education opportunities for African American students, who otherwise would be denied access to college (Gabibaldi, 1984). In the most recent times, TWIs have become racially diverse; therefore, they compete with HBUs for African American students. In many HBCUs, students are the first in their families to attend a higher education institution, and many of them currently come from low-income families (Redd, 2000). Redd reports that in 1995-96 about 40 percent of African American undergraduates at HBCUs were first-generation college students. He also reports the median adjusted-gross-family income of African American undergraduates at HBCUs in 1995-96 was $19,573, and 62 percent came from families with annual incomes of less than $30,000. About 80 percent of the students received financial
assistance to help pay their costs of attending college, compared with 73 percent of those attending TWIs (Redd, 2000).

The literature tends to suggest that students choose to attend HBCUs for the following main reasons: (a) Their parents attended HBCUs; and (b) HBCUs are more affordable than TWIs. Students were asked 15 possible reasons for why they chose to attend the schools in which they were enrolled (U.S. Department of Education, 1996b). The reasons offered were:

- The school has a good reputation.
- The school offers a generous financial aid package.
- The school has an interesting set of course offerings.
- Parents like the school.
- The school is close to home.
- Students can live at home.
- The school is good at placing students in jobs.
- Students can finish their programs quickly.

The fact that African American students choose HBCUs because a parent had attended the institution also probably has implications for the African American family’s income level. According to the research data, African American students perceive the cost of tuition to be lower at the HBCUs, which is not surprising, because the average student attending an HBCU pays $1945 in tuition annually, as opposed to $3,309 for the average student attending a TWI (U.S. Department of Education, 1996b). It appears that reasons for choosing an HBCU are multifaceted for families of African American students.

ATHLETICS

Intercollegiate athletics plays an important part in college life at HBCUs as well as at TWIs. When HBCUs were the only colleges for African American athletes to attend, many of their players advanced to professional athletics, and their varsity sports seemed to be more competitive (Jackson, Lyon, & Gooden, 2001). These authors note that, today, HBCUs must share the top African American athletes with TWIs and that most of the more competitive “Blue Chip” players are going to TWIs because of the television coverage and the likelihood that professional scouts will see them play. The cliché that one can find more African
American students on the athletic teams than in the classrooms of TWIs, perhaps, has a bit of truth to it. Moreover, when HBCUs have winning teams, they concurrently have increased their enrollment and funding (Smiles, 2004).

The difference in graduation rates between student athletes and other students has remained almost the same at both Division I HBCUs and other schools in the past several years, according to NCAA statistics (Powell, 1994). Nationwide, graduation rates for student athletes in Division I schools are reported as reaching the 20 per-cent mark for the first time and maintaining the same two-percent margin over the total student populations it has held since 1998 (Smiles, 2004). Smiles concludes that the research is evidence that African American athletes do graduate from HBCUs and TWIs; however, the decision of African American athletes to choose between HBCUs and TWIs still presents challenges to both the athletes and the institutions. The main issues surrounding the educational decisions of athletes appear to be graduation and gainful employment, if one doesn’t get drafted into a professional sport.

**LEADERSHIP**

The presidents of HBCUs have the challenge of establishing a “sound and reliable” funding base for these institutions (Hawkins, 1994). It seems clear that these presidents must “step up to the plate” and think “outside of the box” to move HBCUs to the next level of excellence in our education-oriented society. Fundraising and public relations seem to take “center stage” with all presidents of higher education institutions (Brown & Allen, 2002). Unfortunately, only a handful of HBCUs have large endowments and predictable sources of revenue of sufficient size to enable the chief executive to devote his/her attention to other more creative aspects of college leadership. Therefore, it appears that the challenge to HBCUs’ chief executives seems to be to make HBCUs competitive with TWIs, to move the institutions to a level of self sufficiency, and to produce quality educational programs for a diverse-student population. This challenge could be a “fair and simple” task if the “playing field” actually was level and if the “rules” were the same for all institutions.

The paucity of literature seems to suggest that the leadership and assertiveness of HBCUs presidents, communicating and interacting with Board of Regents, legislators, the
federal government, and our society itself will be imperative to the success of these particular presidents. Establishing rapport with a diverse student population, listening to their issues, strengthening and modernizing academic programs, recruiting new faculty, and bringing current faculty salaries up to the level of TWIs appear to be continuous tasks of HBCUs' presidents in addition to the many other components that make up the chief-executive descriptions and duties (Brown & Allen, 2002).

**CONCLUSIONS**

HBCUs have made extensive progress in educating African American students throughout their struggles (Redd, 1998). The increase in HBCU enrollment over the past decades and the increasing numbers of alumni who graduate from HBCUs and make outstanding contributions to our society are both clear indications of success, in spite of the many challenges described here. These educational institutions will continue to survive as we move into the future (Powell, 2004). For the unforeseen future, issues such as funding, leadership, legislative cutbacks, admission standards, recruitment, facilities, financial aid, athletics, technology, and court cases are just a few of the many challenges facing the HBCUs (Brown & Freeman, 2004).

Funding probably ranks among the top five major issues and challenges for most HBCUs (Gasman & Anderson-Thompkins, 2003). Traditionally, HBCUs always have been under funded (Evans & Evans, 2002). Legislative cutbacks in funding of HBCUs as well as the autonomy that some legislators are giving HBCUs and TWIs to raise tuition does not appear to be a solution to the funding issue, particularly in HBCUs (Chalowu, 2004). Seemingly, African American students always have struggled to attend an institution of higher education because of the financial circumstances surrounding the family from whence they come. The mandate for HBCUs to enhance fundraising and create endowed chairs is indeed a challenge (Redd, 1998). Progress seems to be made in fundraising (Chalowu, 2004); however, adequate state and federal funding, along with support from the political leaders as well as the general public, all are needed to enhance funding sources further for these institutions (Allen & Allen, 2002). Perhaps, none of these efforts may be successful without excellent leadership from presidents of HBCUs. The leadership of
HBCUs need to be innovative to assure the success of their institutions; in fact, the survival of their institutions seems to depend upon it.

REFERENCES


