



# McNair Scholars Journal

Volume I



*Published by the SIUC McNair Scholars Program  
at Southern Illinois University Carbondale*

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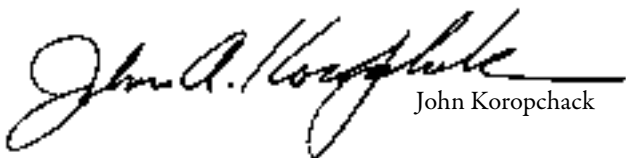
## FROM THE VICE CHANCELLOR FOR RESEARCH AND GRADUATE DEAN

I am extremely pleased to have this opportunity to introduce you to this first edition of Southern Illinois University Carbondale's McNair Scholar Journal. In a sense, this journal is the culmination of a long journey for the first students to join our McNair Scholars Program that began in earnest with their selection of faculty mentors and the identification of their research topics. These students subsequently learned how to develop and investigate their research topic, evaluate the results of their research, and arrive at conclusions that contribute new information for the body of knowledge in their respective fields. The works in this journal provide documentation on the results of this effort that spans disciplines from art to zoology.

Important to this process was the guidance of our faculty mentors, for which we are immensely grateful. Arguably, the process of research where a student and faculty member work together to solve a problem and create new knowledge is the highest form of teaching/learning, and an experience that will position these students well for future success.

In another sense, this journal is the culmination of another long journey that began with the vision of Drs. Karen Renzaglia and Pru Rice in 2002 to develop a proposal that would convince the Department of Education and its reviewers to commit the resources to support a McNair Scholars Program at SIUC. We are grateful to them for their vision and efforts and to the Department of Education for their support. We are proud to be participants in the McNair Scholars Program, and of the efforts of our program staff and faculty to guide these wonderful young people, our McNair Scholars.

The McNair Scholars Program was created to honor the memory of Ronald E. McNair, a physicist and astronaut, and has the goal of preparing undergraduates from underrepresented groups for graduate studies toward the doctorate, and ultimately, for faculty positions in U.S. colleges and universities. I am certain that after reading this journal you will find that our McNair Scholars are well on their way to achieving that vision.

A handwritten signature in black ink, reading "John A. Koropchack". The signature is fluid and cursive, with a long horizontal line extending from the end of the name.

John Koropchack

## FROM THE DIRECTOR

It is with great pride that I present the first edition of the SIUC McNair Scholars Journal. The hard work of our Scholars is reflected in the high quality of the six scholarly papers and 18 abstracts published herein. This Journal presents one window on which to evaluate the caliber of research undertaken by our Scholar/mentor teams. In addition, our Scholars have garnered success in a wide range of professional endeavors; three received REACH awards, 16 presented at meetings, five received awards for presentation, and 11 were awarded graduate scholarships or fellowships. Fifteen are enrolled in Master's degree programs and one is admitted in a PhD program beginning July 2007.

Our program trains and supports Scholars to succeed in graduate school and as professionals. With all the varied activities, it is the research experience that has the most profound influence on our Scholars. During the Summer Research Institute Scholars experience the excitement and challenges of self-directed research by immersing themselves in an original discipline-specific project. Faculty mentors provide guidance throughout the summer and are instrumental in fine-tuning the project, identifying pertinent research, analyzing data, and preparing the final presentation. The success of the research experience is based on the input and devotion of the excellent mentors who have participated from all departments on campus. The McNair Scholars Journal provides a forum in which to showcase the research accomplishments of the first two cohorts of stellar Scholars.

This publication has come to fruition due to the dedication and support of a cohesive team of staff, faculty and administrators across campus. To all of these talented professionals I extend my sincere gratitude. The McNair staff has worked long and hard to facilitate the development of our Scholars into productive and successful academics. Thank you, Julia Spears, Tina Price, and Rhetta Seymour for your hard work and innovative approaches to strengthening and enriching our program. Of course, our Scholars are the reason this publication has materialized. To all of our celebrated Scholars I say "bravo, well done".....you have made us hold our chests out and beam with pride.



Karen Renzaglia

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# The Representation of African-American Women in Television Advertisements

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## ABSTRACT

Mass media is a means by which people gather ideas and beliefs about each other. The way people think and what is perceived as common consumer behavior is also influenced by mass media. Television plays a substantial role in communicating prototypical ways of thinking. The focus of this research study is to observe the way that African-American women are portrayed in television advertisements. The research was conducted through a content analysis of prime-time advertisements featuring women. Trends associated with African-American women in advertisements were compared to trends associated with Caucasian women in advertisements. Previous research has revealed that African Americans are significantly underrepresented in the media; however, these figures have changed over time. The relevance of this study was to observe the way that African-American women are represented in today's media. The study yields information that will prove to be valuable when researching minority women, the mass media, and how they affect each other interdependently.

## INTRODUCTION

According to current research findings on the representation of women in the media, it is clear that women have been the victims of many different prejudices. Too often, women who belong to ethnic minorities have been stereotypically illustrated in the media. This researcher examined television commercials and investigated the way that women of ethnic minorities are portrayed in television advertisements.

### *Background*

In the early 19th century, a period of time strongly dominated by men, women were excluded from advertising altogether. Duane Jones conducted research on advertising to the American woman, and he found that "...companies did not market their products to females because women were not considered an influential force in spending" (Jones, 1955, p. 20). However, that is not the case today. Now it is common to see women in advertisements, and minority women are used more often as well. In a book entitled *Provocateur*, Anthony Cortese wrote, "In the early



part of the twentieth century, popular cultural objects caricatured minorities, echoing their second-class citizenship and assisting as an instrument of social control” (Cortese, 1999, p. 77). This research focused on how minority women have been depicted in prime-time television advertising.

The growth rates for minority populations have proven to be a profitable base for sustaining minority media and are changing the structure and character of the media and advertising in general (Dennis & Pease, 1997). This research sought to unravel some of the different approaches used by the media when African-American women are depicted in advertisements in contrast to the approaches used when depicting their Caucasian counterparts. There is a serious dearth of studies that examine minorities in general-interest media, rendering minorities “invisible” by ignoring minority media. Yet, there has been tremendous growth in media and advertising firms catering to these rapidly expanding markets (Dennis & Pease, 1997).

## LITERATURE REVIEW

Television is considered a very integral part of the American family structure. Claims have been made that family life is sparingly featured on television, and that where it does occur, there is pronounced stereotyping of family and gender roles (Gunter & Svennevig, 1987). This study attempts to observe the way that African-American women are portrayed in television advertisements. In order to look at a particular demographic of people and make determinations on how they are portrayed in advertisements, it is necessary to first look at mass communication and the media in general. Mass communication and media can be the means by which consumers are trained to behave as consumers. Mass media has the power to influence the audience. Social and civil rights movements have proven to help increase the number of minorities represented in the media. However, the recognition of the potential value associated with marketing to minorities has been noted in the growing number of minorities that are represented in “mainstream” advertising (Dennis & Pease, 1997).

Advertising has been given a great deal of credit for helping to improve the quality of life for American citizens by boosting the economy and encouraging competition within the marketplace (Woods, 1995). However, advertising has also been blamed for subliminally urging consumers to use products and services that they do not need or want (Cortese, 1999). In addition, advertising separates people into different groups or classes through a process called branding. Branding is the process of differentiation that rests at the core of advertising (Cortese, 1999). The major theme behind advertising is to remind consumers to seek out a particular brand for purchase. Branding is a way of marketing two or more very similar items to make them appear to be completely different. This is a very important concept when it comes to considering minorities in advertising and it was examined more thoroughly later in this review.

For this study, the terms *ideology* and *discourse* were addressed as significant

concepts that aid in empowering advertising with the strength to influence. William O'Barr defines both terms in his book, *Culture and the Ad*. According to O'Barr, ideology is defined as, "...ideas that buttress and support a particular distribution of power in society" (1994, p.2). In other words, ideology can be very political in nature. O'Barr further develops this concept by using the political issues of the former Soviet Union as a concrete example of how ideology works. The author further states that the former Soviet Union used "...state-sponsored propaganda to instruct the public about issues of patriotism, community, and the social order" (O'Barr, 1994, p.2). Apparently, as a result of the state using its power to inculcate these issues upon the people of the Soviet Union, the citizens tended to repress ideologies that influenced an alternative view about society. O'Barr explains that in terms of the media and advertising, ideologies pertain to the ideas contained in advertising that support and buttress the social order of a society (1994).

In relation to this study, ideology is important because it is associated with the way that certain ideas and perceptions of people can be shaped by what is seen in television advertisements. In his book, O'Barr makes reference to discourse as "ideas that involve society in some way or form" (O'Barr, 1994, p. 3). He also designates two main forms of discourse; *primary* and *secondary*. Primary discourse is usually concerned with the good or service that is being solicited in the advertisement. Primary discourse seeks to openly convey things that are product or service related. For example, this detergent is stronger, this cereal tastes better, and this car goes faster (O'Barr, 1994). However, *secondary discourse* has a much stronger sociological connotation attached to it. Secondary discourse refers to the ideas about society that are contained in advertisements. These ideas seem to surface when showing how the detergent works, how the cereal is eaten, and how the car functions. O'Barr reveals that by depicting the use of a product or service, a number of conclusions can be drawn about society, such as who does the laundry, who prepares breakfast, who drives the car, and who rides in the passenger seat of the car (1999). The theory of secondary discourse is important to this research study because it investigates the different roles taken by certain people in advertisements.

This research study observed the portrayal of African-American women in television advertisements. It can also be thought of as observing the way that African-American women are depicted through secondary discourse in television advertisements. The intent of this research was to observe African-American women in television advertisements and compare their roles to the roles played by Caucasian characters. Anthony Cortese states that the image of African Americans in advertising has made significant changes over the last 50 years (1999). Mass media has somewhat reflected the rising numbers of African Americans advancing professionally and in education since the era of the civil rights movement. Researchers of this discipline have found that the overall numbers of African Americans in commercials have increased over the years (Wilkes & Valencia, 1989, p. 23). However, little research has been conducted with a focus on the increased number of African-American women

in television advertisements. This research study not only viewed the presence of African-American women in advertisements, it also looked at the roles that they are playing in commercials as well.

This study used a content analysis approach to decipher the roles of African-American females in television commercials. A content analysis is a research technique that is based on measuring the number of times that a certain element is presented within a representative sampling of some mass-mediated popular art form (Berger, 1998). The content analysis approach is often used to compare and contrast two different things, and measure their compatibility with one another. In 2003, Mastro & Stern conducted a content analysis of prime-time advertising, and their findings revealed that African Americans were featured more often in commercials compared to previous studies. The study by Mastro and Stern also found that in general, African Americans were most commonly depicted in commercials for financial services and food (2003). The content analysis approach was used in the current research study because of its cost effectiveness and flexibility in deciphering very current material. Past researchers have found that television imageries of African Americans are repetitive and, oftentimes, stereotypically negative (Cosby, 1994). These patterns can be documented quite easily through incorporating the content analysis method.

Research concerning minority portrayals in prime-time television advertising was conducted by Licata and Biswas in 1993. These researchers observed television advertisements that were broadcasted during the top five "typical" prime-time shows, as well as the top five "Black-oriented" television shows aired in 1991. Their study found that the number of Caucasians viewed in skilled occupations was higher than that for African Americans, and that when African Americans were associated with skilled categories, they were three times more likely to be portrayed as sports figures than Caucasians (Bang & Reece, 2003). In 1997 similar research was done by Taylor and Stern. The results of that research revealed that African Americans were represented in the media much more frequently in 1996. In fact, African Americans were portrayed in nearly one-third of all advertisements with models. However, the authors made note that minorities were less likely to be depicted in major roles (Taylor & Stern, 1997, as cited in Bang & Reece, 2003).

When observing the topic of minorities in the media, it is important to consider stereotyping. It is possible for stereotyping to occur where mass media is concerned, because a large number of people are exposed to particular portrayals of minorities and it is easy for stereotypes to develop based on the images that are broadcasted through television. When discussing stereotypes and prototypical thinking, the perception of "image" should be considered. Downing and Husband state, "...image may be used with specific reference to the visual dimension of media, and thus especially in relation to photography, cinema, television or the internet" (Downing & Husband, 2005, p. 29). This study used content analysis to look at images of African-American women in television advertisements, and analyzed their overall role in the industry.

According to a social learning theory by Bandura (1971), people learn certain beliefs and behaviors based on their observation of other people's behaviors. Gerbener's cultivation theory supports the same logic. His theory states that "constant exposure to a specific image of an object can lead to distorted beliefs about that object" (Gerbener, 1980, p. 16). In advertising it is important to give clear, representative examples of situations. If not, people can possibly form stereotypes based on what is presented in the advertisement. Entman and Rojecki developed a theory known as "the prototype theory" when they conducted research on the topic of African Americans and Caucasians in the media. The prototype theory states that, "prototypes are unconscious embodiments of stereotypical traits that make up a socially constructed category" (Entman & Rojecki, 2000, p. 146). According to their findings, evidence proves that people use prototypes to represent groups to which they do not belong, and groups that they know very little about (Entman & Rojecki). For example, look back to the secondary discourse theory and think about a television advertisement for an automobile. If a new sports-utility vehicle (SUV) is depicted as "tough," and the commercial displays a male driver and a female passenger in every scene, it will be very easy for viewers to associate toughness with the male driver. On the other hand, a viewer could also subconsciously assume that the female passenger is everything but tough because she is not in the driver's seat of the vehicle, hence dissociating the female from toughness altogether and forming a stereotype that females cannot drive the new vehicle because they are not "tough." That is how the secondary discourse theory relates to stereotypical thinking.

This research sought to analyze the roles of African-American women characters in television commercials and to gain a general perspective of the way that they are portrayed in comparison to Caucasian women. This research study attempted to continue in the path of the research already completed on this topic and to detect any new developments in this discipline. In addition, it attempted to analyze the current depictions of African-American women in television advertisements.

Studies show that minorities, including African-American women, have received more media exposure in recent years. However, the way that minority women are presented in the media should continue to be observed for comparisons on a continual basis.

#### *Research Questions and Hypotheses*

When considering the possible impact of exposure to television commercials as it relates to the development of prototypical thinking, the following research questions and hypotheses were developed.

RESEARCH QUESTION 1: Are similar roles used when portraying African American women and Caucasian women in advertisements?

HYPOTHESIS 1: African-American women will be portrayed in a "minor role" more often than in a "major role."

RESEARCH QUESTION 2: Are African-American women placed in

group scenarios in advertisements as often as Caucasian women?

HYPOTHESIS 2: African-American women are placed in group scenarios more often than Caucasian women.

RESEARCH QUESTION 3: In advertisements, do African-American women model/endorse products that are similar to the products that Caucasian women model/endorse?

HYPOTHESIS 3: African-American women do not model the same types of products as their Caucasian counterparts.

RESEARCH QUESTION 4: Is the percentage of African-American women in advertisements representative of the percentage of African-American women in the U.S. population?

HYPOTHESIS 4: The percentages of African-American women depicted in advertising are greater than the percentage of African-American women in the U.S. population.

## METHODS

Television commercial advertisements serve as a major contributing factor to the revenue of television networks. This project focused specifically on the medium of television, and paid close consideration to advertisements that are aired during “prime-time” television viewing hours. Prime-time television is regarded as the time of day with the largest number of viewers. According to Nielsen Media Research prime-time television receives the highest television ratings among African Americans. This researcher assumed that the most accurate assessment of network television advertisements featuring African-American women would come from the time of day that African Americans view the most television. In other words, it is important to select a time of day that has high ratings among African Americans in order to insure that African Americans are being taken into consideration by advertisers when the commercials are produced. Prime-time television is loosely considered “evening television,” but is typically fixed to the hours of 7:00 p.m. to 10:00 p.m. Monday through Saturday, and 10:00 a.m. to 6:00 p.m. on Sunday. In order to keep this research relevant, the researcher observed the most recent ratings data tabulated by Nielsen Media Research.

### *Data Collection*

The researcher then used a convenience sample of television advertisements recorded in seven consecutive days during the week of June 20, 2005 through June 26, 2005. The researcher also used a selective programming system to determine which networks to sample, and which programs to sample commercials from. The selective programming system involved referring to the weekly top ten prime-time broadcast program listings provided by Nielsen Media Research. According to the Nielsen Media data, the U.S. top ten prime-time broadcast programs listing, and the top ten prime-time broadcast programs listing for African Americans, there was a total of four networks selected. ABC, CBS, NBC, and UPN make up

the list of selected networks. For each network, programs from the two top ten listings were selected. From ABC: "My Wife and Kids," "2005 NBA Playoffs," "Dancing with the Stars," and "Desperate Housewives" were selected; from CBS: "Everybody Loves Raymond," "2½ Men," "CSI," and "60 Minutes" were selected; from NBC: "Law and Order," and "ER" were selected; and from UPN: "All of Us," "Eve," "Half & Half," and "Girlfriends."

### *Coding*

The researcher used a quantitative system, a content analysis, to gain results for the research questions. The content analysis system was designed to observe massive amounts of data and assist in determining the meaning of the data. The researcher coded commercials based on the following categories of analysis: type of product or service, type of program commercial aired, number of people in the ad, frequency of presence of ethnic groups, perceived importance of character, relationship to other characters in the ad, location/setting of the commercial, and length of commercial. This content analysis method was adapted from a similar method used by Robert Wilkes and Humberto Valencia in 1989. In their study, Wilkes and Valencia analyzed the Hispanic and African-Americans in television commercials (Wilkes & Valencia, 1989). Using Wilkes and Valencia as a model, a coding sheet and a response sheet were developed for reviewing the advertisements (see Appendix for details). Due to the time constraints and availability of participants, the researcher coded each commercial independently for a total of 19.5 hours of programming. Programs were videotaped during each evening of the sample week and the tapes were then reviewed for analysis of the advertisements that were aired. A total of 689 commercials were coded, excluding local commercials, public service announcements, and network promotional announcements.

This research not only observed television commercials and advertisements, but it also analyzed literature, books, scholarly publications, and videos presented by researchers that have completed work in this discipline.

## **RESULTS**

A total number of 689 commercials were reviewed. As shown in Table 1, from the 689 commercials included in the sample, 70.8% of the commercials (N= 489) featured models that were identifiably Caucasian women. African-American women appeared in 28.6% of the advertisements (N=197). These figures can be compared against the most recent U.S. Census information regarding the number of women in the general populace of the U.S. (i.e. 12.7% of women in the U.S. are African American). In regards to the number of advertisements, it was revealed that African Americans, male and female, were overrepresented in prime-time television advertisements.

**TABLE 1**

Total # of Ads	Caucasian		African-American		Hispanic-American		Asian-American	
	N	%	N	%	N	%	N	%
Number of Ads	668	97	389	56.5	64	9.3	46	6.7
Male	511	74.2	270	39.2	42	6.1	38	5.5
Female	489	70.8	197	28.6	36	5.2	42	6.1
Number of Models	3447	84	706	17.2	103	2.5	74	1.8

Disregarding the actual numbers, another important consideration is the perceived importance of a character or model when they appear in television commercials. For instance, African-American women were represented well as far as numbers and percentages are concerned, but were they portrayed in major roles, minor roles, or background roles? The results revealed in Table 2 show that Caucasian women were featured in major roles more frequently than any of the other ethnic groups. Table 2 shows that in 56.0% (N=274) of the advertisements that Caucasian women appeared in they played a major role. African-American women were portrayed in major roles in 39.1% (N=77) of the number of advertisements that featured African-American women. African-American women were portrayed in minor roles or background roles in nearly 61% (N= 125) of all advertisements from the sample that featured African-American women.

**TABLE 2**

Perceived Importance	Caucasian		African-American		Hispanic-American		Asian-American	
	N	%	N	%	N	%	N	%
Major Role	274	56.0	77	39.1	7	19.4	11	26.2
Minor Role	148	30.2	88	44.6	20	55.6	15	35.8
Background Role	67	13.7	37	16.2	8	22.9	16	38.1

When considering how African-American women are portrayed in advertisements, and making an assessment of their roles in advertisements, it is important to observe how many other models are featured in the advertisement along with the African-American model. Table 3 shows the number of advertisements that featured nine or more models. It is the assumption of the researcher that an advertisement that features nine or more identifiable people can safely be considered a group scenario commercial. According to the results of the study, Caucasian women appeared in 66.9% (N=144) of advertisements that featured nine or more live models. On the other hand, African-American women were cast in 17.2% (N=37) of commercials that included nine or more models.

**TABLE 3**

Group Scenario	Caucasian		African-American		Hispanic-American		Asian-American	
	N	%	N	%	N	%	N	%
Number of Ads	144	66.9	37	17.2	30	13.9	4	1.9

When analyzing the way that African-American women are portrayed in commercials, it is necessary to observe which products African-American women are modeling in comparison to other women. Table 4 is a breakdown of exactly which categories were included in the analysis and which ethnic groups are modeling the products. Previous researchers have discovered biases toward minority models as it pertains to certain products (e.g. African-American models as sports figures and athletes). African-American and Caucasian models were both portrayed in advertisements for foods the most often (African-American women; 39.1% [N=63], and Caucasian women; 21.1% [N=103]). The interesting factor here is that in the case of the African-American woman, the food category represents a huge outlier. If the researcher were to ignore the food category altogether and observe the other products that African-American women are modeling, it would be evident that the rest of the categories are evenly distributed between 1.0% in the jewelry category, and 13.7 percent in the automobile category. However, in order to see a balanced distribution of Caucasian models and the products that they are featured with, the researcher would need to remove the food category and the electronics/appliance category. In 19.2% (N=94) of the commercials featuring Caucasian women electronics or appliances are being modeled.

**TABLE 4**

Type of product/service	Caucasian		African-American		Hispanic-American		Asian-American	
	N	%	N	%	N	%	N	%
Foods	103	21.1	63	39.1	7	19.4	6	14.3
Automobiles	51	10.4	27	13.7	2	5.5	4	9.5
Clothing	35	7.2	37	6.1	-	-	-	-
Jewelry	11	2.2	2	1.0	-	-	-	-
Institutional	21	4.2	9	4.6	4	11.1	5	11.9
Electronics/App.	94	19.2	15	7.6	6	16.6	7	16.6
Entertainment	48	9.8	25	12.7	11	30.5	6	14.3
Cosmetics	46	9.4	14	7.1	4	11.1	5	11.9
Medicine/Hygiene	62	12.7	22	11.1	2	5.6	6	14.3
Other	18	3.7	8	4.0	-	-	3	7.1



## DISCUSSION

The findings of this study suggest that in terms of numbers and statistics, African-American women are represented in prime-time television advertisements relatively well. As far as proving and disproving the research questions and hypotheses, the following information was gathered.

In regards to the first hypothesis, African-American women will be portrayed in a “minor role” more often than a “major role.” By observing Table 2, it is revealed that this hypothesis was proven correct. Based on the sample, African-American women do tend to appear in minor/background roles more often than major roles in prime-time television advertisements. In instances where models are not seen with the product or speaking about the product’s benefits, it leaves room for the assumption that the particular product is not designed for certain people.

As for the second hypothesis, Caucasian women will be placed in group scenarios less often than African-American women; Table 3 shows that this hypothesis is incorrect. According to the study, Caucasian women appeared in group scenarios more often than African-American women. Appearing in an advertisement with nine or more other models takes away some of the significance, and perceived importance of the model. In this case, the portrayal of Caucasian women in advertising can be interpreted differently. In this instance group scenarios can be viewed as a form of racial integration.

The third hypothesis states that African-American women will not model the same types of products as their Caucasian counterparts. This hypothesis was proven in a way because according to Table 4 African-American women do appear to model different products and services than Caucasian women. However, this information could be misleading because both African-American women and Caucasian women most often appeared in advertisements pertaining to food. These findings regarding African-Americans and the food category are consistent with those of Taylor and Stern (1997). This hypothesis should be considered neutral due to the fact that Caucasian women appeared most often in food advertisements as well.

Finally, the fourth hypothesis says that the percentage of African-American women depicted in advertising will be greater than the percentage of African-American women in the U.S. population. According to U.S. Census data, this hypothesis was proven correct. African-American women make up 12.7% of the number of females in the U.S., yet African-American women were featured in 28.6% of the advertisements in the sample.

## CONCLUSION

The findings of this study reveal that although African-American women are being portrayed in prime-time advertisements more often, there are still more effective and equal ways of portraying minority women and Caucasian women in advertising. This revelation opens up new opportunities for further research regarding this topic. It is imperative that minorities are depicted in advertisements

appropriately because when misrepresentations occur the larger population will be exposed to poor prototypical models. Based on these poor prototypical models, observers of television advertisements subconsciously form stereotypes about the ethnic groups to which they have limited exposure.

There are three main limitations to this study. The first limitation is the fact that cable programming was not included in the sample. With the number of homes with cable television access increasing, it would be beneficial to this study if these programs and advertisements could be coded in a separate study. The second limitation coincides with the first one. Due to the fact that cable television was excluded from this study, popular networks for women and minority ethnic groups were excluded as well. Some of these networks include BET (Black Entertainment Television), Lifetime (a network designed for women's programming), and WE (Women's Entertainment). These networks may include advertising that is more specific to the character of women in America, thus strengthening the validity of this study. The third limitation is that only prime-time programming was considered. Future researchers should research Nielsen Media data and determine which time of day has the highest ratings for women exclusively and sample advertisements, networks, and programs that are aired during that time. In the U.S., the expectations for the upcoming generations to eradicate stereotypical thinking are growing day by day. It is important to recognize the fact that if the media can become unbiased and neutral in advertising schemes, then consumers will not be subconsciously exposed to stereotypes of minorities.

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# Is Black Beautiful? A Content Analysis of Beauty Characteristics of African-American Women in the Advertisements of *Cosmopolitan* and *Essence*

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## ABSTRACT

Some consider beauty to be in the eye of the beholder, but what if the beholder is the media, and the gatekeepers to the media constantly place advertisements that tell women to change who they are? Previous research indicates that African-American women were not only underrepresented in advertising, but were often shown with physical characteristics that were Eurocentric instead of Afrocentric. This study uses content analysis to examine the frequency of representation and the images of African-American women in the magazine advertisements of *Cosmopolitan* and *Essence* between the years 1974-2003. Over 2,700 advertisements were examined and those featuring African-American women were studied based on the following physical features of the models: skin tone, hair texture, body type, and eye color. Results indicate that the African-American women found in advertisements of both *Cosmopolitan* and *Essence* were more likely to have Eurocentric characteristics. Furthermore, while the number of advertisements featuring African-American women in *Cosmopolitan* had increased over time, the number in *Essence* had decreased, with most recent numbers falling below the percentage of readers who were African-American.

## INTRODUCTION

There has been a great deal of debate, both in the industry and in academe, about the effects that advertising messages can have on consumers. Is advertising reflecting society or influencing it? In recent years, much of the debate has focused on the portrayal of women and the proliferation of products and advertising messages designed around enhancing beauty. Some consider beauty to be in the eye of the beholder, but what if the beholder is the media, and those working in the media only allow a certain type of beauty to be seen?

## LITERATURE REVIEW

“Every day, at any moment, images of beauty, particularly images in advertisements and television commercials, confront women of all colors” (Frisby 2004, p. 324).

Studies have shown that women may develop negative self concepts by viewing advertisements that portray unobtainable body images. For African-American women, advertising images may be harmful in an additional way. They may be sending the message that being Eurocentric is more beautiful than being Afrocentric.

Although the primary purpose of advertising is to persuade consumers to choose a certain company's brand over another, studies have shown that advertisements may negatively affect the self-concepts and esteems of women who view these ads (Frisby 2004, p. 324; Poran 2002, p. 66). The importance of this project is to document the portrayal of African-American women in the advertisements of both *Cosmopolitan* and *Essence* beauty magazines. This study looked at the changes over time of how the African-American models are physically shown in reference to the current beauty standards. This study will contribute information that may be helpful in researching the effects magazine advertisements may have on African-American women as a whole.

### *Advertising and Beauty*

In today's society, media play an important role in almost every aspect of life. They provide entertainment as well as information about current events, news, and existing trends. Advertising is found within the media, and offers some of the same qualities as the media. Many of the images in advertisements provide consumers with the latest styles and influence individual perceptions of beauty. Studies have supported the theory that physically appealing models within advertisements affect the self-concepts of consumers' own attractiveness when they compare their personal facial and body image to those of the models in the advertisements (Richins 1991; Myer and Biocca 1992; Basil et al. 1994). The images of beauty in advertisements are representative of the perceptions of the people who are creating and placing the ads. "The particular looks chosen by cultural gatekeepers reflect their own implicit theories of beauty, as well as their beliefs about which types of beauty will appeal to the intended audience" (Basil et al. 1994, 51). Since the intended audience has almost no input in the development of the message, their opinions and preferences concerning beauty are of little consequence.

### *Women in Advertisements*

There have been numerous studies that have researched the portrayals of women in advertisements (e.g., Baker 2005; Coltrane and Messineo 2000; Kang 1997; Lindner 2004; Myer and Biocca 1992). It has been found that women viewing advertisements are subjected to unrealistic beauty standards that are hardly attainable through natural ways of life (Wolf 1990). "The environment in which women learn about the politics of the body is saturated with media presentations of what a woman's body should be" (Poran 2002, p. 66). These beauty standards are based upon images of models that rarely represent the average American women. Currently, the average American woman weighs approximately 164 pounds and is 5' 4" tall (Center of Disease Control and Prevention 2004), while the average American model weighs 117 pounds and is 5' 11" tall (Weight Lost

Through Fitness 2005). In reference to changes over time, Silverstein found that in the photos of magazines, the bust-to-waist ratios of famous female actresses have significantly decreased over time (Silverstein 1986, p. 521). As time has passed, the media's representation of female beauty in terms of body size/weight has considerably changed. In addition, the actual body size/weight of women overall has changed also. Between 1960 and 2002, the average weight for an American woman increased by twenty-four pounds (Center of Disease Control and Prevention, 2004). However, these changes for both women in advertisements as well as in the real world are going in opposing directions. Bridging the gap between what is real and what is in an advertisement has never been harder.

"Images of women in American media have been found to affect women's perceptions of themselves" (Poran 2002, p. 66). These results have sparked further interest in how these images affected the women who view them. Needless to say, the results have not been positive. Due to the many advertisements that are viewed on a daily basis, studies indicate that women can develop a self-perceived negative body image. "Negative body image is often the result of a social comparison process, in which discrepancies are perceived between the cultural ideal of attractiveness, usually characterized in the media by a particular emphasis on thinness, and women's views of their own bodies" (Linder 2004, p. 410).

#### *African-American Women and Advertising*

"Cultural diversity has always been a hallmark of our society. Ethnicity has been a part of the social character in the United States since its inception" (Cortese 1999, p. 103). Though this may be true, previous research indicates that African Americans are significantly underrepresented in the media, especially in magazine advertisements (Colfax and Sternberg 1972; Humphrey and Schuman 1984). This underrepresentation is particularly evident in mainstream beauty magazines where the majority of advertisements feature Caucasian women or models (Baker 2005, p. 20). Webb quotes the concern of African-American supermodel Iman saying "Only one or two Black models will symbolize this generation's beauty. It's weird; ten White models symbolized my generation. How can the definition of Black beauty be so narrow?" (Webb 1996, p. 112).

In addition to being underrepresented in the media's messages, African Americans and other minorities are often excluded from the development of the messages. "Ethnic groups and social classes of all types share a great deal of common culture through the media. Yet ethnic minorities and the lowest social classes have little to do with the creation of mainstream culture" (Cortese 1999, p. 13). Even the studies that have researched advertising and how it affects its viewers have primarily focused in on the Caucasian population. "Researchers who analyze images of women in advertisements often take for granted that these images apply to all women. However, most women in the images they analyze are White" (Baker 2005, p. 14).

### *Eurocentric and Afrocentric Beauty*

Though America holds a multitude of different standards for what is beautiful, the beauty standards for African-American women fall somewhere in between European and African standards. Eurocentric beauty refers to certain physical characteristics more common to those of European descent. These characteristics include fair skin, blue/green eyes, hair that is light in color and straight, and a thin body. Afrocentric beauty includes darker skin tones, brown eyes, a more curvy body, and naturally curly hair (Baker 2005, Sekayi 2003). While Eurocentric and Afrocentric beauty characteristics cannot be completely categorized, there is a significant difference between the two. Cortese (1999) found that “African Americans like multicultural ads that depict people of various skin tones, hair types, and personalities,” and that “they are attracted to positive representations of black life.” Despite this fact, some research has found that “Black women are portrayed with European-like features, such as fair skin, a thin body, and straight hair” (Baker 2005, p. 17).

#### *Mainstream Beauty Magazine, Cosmopolitan*

*Cosmopolitan* magazine is one of the largest mainstream beauty magazines with a circulation of over three million. Of that circulation, African-American women make up 11.51% of the audience (Baker 2005, p. 18). *Cosmopolitan's* mission statement states that it is “for a large audience of young women in mid-to-late 20s” (iVillage 2005). With this all-inclusive mission statement, *Cosmopolitan* is depicted as a magazine that fully represents everyone within its readership. However, research has shown that this is not true (Colfax and Sternberg 1972; Humphrey and Schuman 1984). Eurocentric ideals are the most prevalent standard of beauty found within the advertisements on the pages of mainstream beauty magazines (Baker 2005, p. 20). These images include models that have physical features such as thin lips, narrow hips, pale skin, straight hair, and slim bodies (Sekia 2003, p. 467). These physical characteristics are not representative of people from African descent. “When Black women were (and are) presented, they typically met (meet) Eurocentric ideals in terms of body type, skin color, and hair texture. Actress Halle Berry and singer/performers Lena Horne and Dorothy Dandridge, for example, have light skin, slim bodies, and straight hair” (Sekia 2003, p. 468).

#### *African-American Targeted Beauty Magazine, Essence*

With the introduction of African-American targeted beauty magazines such as *Essence*, African-American women have not been limited to only viewing beauty standards that have been placed within mainstream beauty magazines. “Because of the limited opportunities available for Blacks in all aspects of the mainstream media, there have emerged media options designed by Blacks specifically for Black audiences” (Baker 2005, p. 17). *Essence* differentiates itself from other magazines by stating “for more than three decades, *Essence* has been the only magazine dedicated to reflecting Black women and their lives” (*Essence* 2005). It would seem that advertisements in African-American targeted beauty magazines

would present images of Black women who have physical characteristics that are more representative of the actual physical features of African-American women, “However, the Black media, like their White counterparts, have also been criticized for having a predilection for portraying African-American women with physical characteristics that conform more to European than African standards of beauty” (Jewell 1993, p. 50).

## METHODS

In order to evaluate whether Eurocentric or Afrocentric beauty standards dominate the portrayal of the African-American women population in beauty magazines, this content analysis examined the physical characteristics of African-American models between the years 1974 and 2003, within the advertisements of *Cosmopolitan* and *Essence* magazines. *Cosmopolitan* magazine was chosen because it ranked as one of the largest beauty magazines in the U.S., with a circulation of over 2,989,301. The magazine also provided an all-inclusive mission statement that claimed that the target market for the magazine is all women in their mid-to-late twenties. *Essence* magazine was chosen for this study because its primary audience was African-American women in their mid-to-late twenties, and because it has a circulation of 1,060,500. This magazine’s mission statement stated that its purpose was to accurately represent the African-American women population. The thirty year span was chosen because *Cosmopolitan* was redesigned as a women’s magazine in 1974 and *Essence* magazine was established in the early 1970s. Each magazine was coded for one month out of each existing year between 1974 and 2003. All issues were numbered from 1 through 360, assuming there were 12 issues per year. A random number generator was used to randomly pick one month from each one-year period.

The unit of analysis was the advertisements within both magazines. This was limited to only full page and double full-page ads. Only images containing at least one African-American model were analyzed in this study. The central physical characteristics of the models were determined by four measurable variables: (1) Skin tone (e.g. light, medium, or dark), (2) Hair texture (e.g. straight, wavy, or curly), (3) Body type (e.g. thin, full-figured, curvy), (4) Eye Color (e.g. any color other than brown, brown, or dark brown).

The categories used to code the advertisements were based on Baker’s (2005) analysis (skin tone, hair texture and body type). Additionally, another physical characteristic (eye color) was added to expand the overall focus of the study. Only physical characteristics that were viewable were chosen as expectable variables. Within the category are subcategories, which are explained in further detail.

### *Physical Traits*

- 1) *Skin tone*: For the models, complexions were coded as light, medium or dark. The natural skin tone of the models were placed against a scale titled “Easy Shade Finder” by Maybelline New York. The complete scale varied from the palest shade of “porcelain ivory” to the deepest shade or “cocoa.” Twelve



different shades were included in the shade finder. Models were placed either in the light, medium, or dark portion of the shade finder, depending on which section best represented their complexions.

- 2) *Hair Texture*: The hair texture of the models was based on the three variables: straight, wavy, or curly. These variables were determined by a hair care company that produces extensions specifically for African-American women. The three different hair textures were presented in a photograph that allowed the advertisements to be compared to it.
- 3) *Body Type*: Thin, full-figured, or curvy were the three characteristics used to determine body type. A thin model was defined as having small breasts, a narrow waistline, and a visible sternum or rib cage. Full-figured models were defined as having large breasts, hardly defined waistline, and no visible sternum or ribcage. The last characteristic was a curvy model which was defined as a women with medium breasts, a well-defined waistline, and an hour glass figure.
- 4) *Eye color*: The eye color of the models was also coded when applicable. A scale entitled "Freshlook" by Ciba Vision was used to determine the eye color of the models. Based upon this scale, models were separated into three categories: any color other than brown, all shades of brown lighter than brown (determined by the brown on the scale), and all shades of brown darker than brown.

Another portion of this study looked at the frequency of representation of African-American models throughout the three decades. For each magazine coded, the total number of advertisements that included a model were counted, as well as the number of advertisements featuring African Americans. Based on the findings from previous research and in the possible relationships between frequency of representation, portrayals, magazines, and time, the following research questions were developed:

- RQ1. What percentage of models shown in the advertisements of mainstream beauty magazine *Cosmopolitan* are African-American?
- RQ2. Are African-American models shown in the advertisements of mainstream beauty magazine *Cosmopolitan* portraying Eurocentric or Afrocentric values of beauty?
- RQ3. Has the frequency of representation of African-American models in the advertisements of mainstream beauty magazine *Cosmopolitan* changed significantly between the years 1974-2003?
- RQ4. Have the beauty characteristics of African-American models in the advertisements of mainstream beauty magazine *Cosmopolitan* become more or less Eurocentric between the years 1974-2003?
- RQ5. What percentage of models shown in the advertisements of African-American targeted beauty magazine *Essence* are African-American?

- RQ6. Are African-American models shown in the advertisements of African-American targeted beauty magazine *Essence* portraying Eurocentric or Afrocentric values of beauty?
- RQ7. Has the frequency of representation of African-American models in the advertisements of African-American targeted beauty magazine *Essence* changed significantly between the years 1974 and 2003?
- RQ8. Have the beauty characteristics of African-American models in the advertisements of African-American targeted beauty magazine *Essence* become more or less Eurocentric between the years 1974 and 2003?

Coding was done by the author. One independent coder, who did not know the intent of the study, analyzed a 10% random sample of the advertisements that were coded. Intercoder reliability for the entire sample was 91%. However, each individual category was tested for intercoder reliability. Skin tone had an 86% intercoder reliability, hair texture received an 89%, body type received a 96%, and eye color had 89% intercoder reliability.

## RESULTS

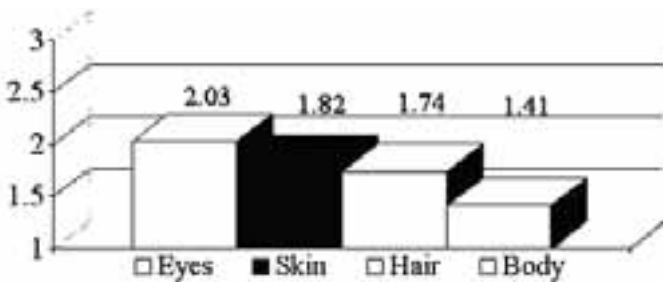
This study examined thirty issues of *Cosmopolitan* magazine and thirty issues of *Essence* magazine between the years 1974 and 2003. One randomly selected issue of each magazine, for each year, was analyzed to observe how often African-American women were included in the advertisements and when included, whether they were portrayed with features that were more Eurocentric or more Afrocentric. A total of 2,713 advertisements were viewed with 1,884 of the advertisements coming from *Cosmopolitan* magazine and 829 of the advertisements coming from *Essence* magazine. There was a total of 855 advertisements that were coded for including an African-American woman, with 95 advertisements found in *Cosmopolitan*, and 760 found in *Essence*.

### *Cosmopolitan Magazine*

The first four research questions focused on results from *Cosmopolitan* magazine. Research question one asked, "What percentage of models shown in the advertisements of mainstream beauty magazine *Cosmopolitan* are African-American?" A total for all advertisements with African-American women and a total for all advertisements with women in general were calculated. There were a total of 1,884 advertisements documented in *Cosmopolitan*, and 95 included African-American. Between the years 1974 and 2003, 5% of the women in the advertisements viewed were African-American. Research question two questioned, "Are African-American models shown in the advertisements of mainstream beauty magazine *Cosmopolitan* portraying Eurocentric or Afrocentric values of beauty?" There were four physical characteristics that were established in order to define Eurocentric and Afrocentric beauty. These four variables included skin tone, hair texture, body type, and eye color. These characteristics were placed on

a 1-3 scale that ranged from light to dark, straight to wavy, thin to curvy, and any color not brown to brown. Mean results that were 1.99 and below were considered Eurocentric while results 2.0 and above were considered Afrocentric. With the four categories for different beauty characteristics, a descriptive analysis was used to generate a mean number for each category. This number signified how Eurocentric or Afrocentric that category was as an overall for the entire thirty year span. Skin tone had a mean of 1.82 which suggested that the models were more Eurocentric in terms of their skin tone. The hair texture of the models had a mean score of 1.75 which also implied that the African-American women's beauty characteristics were skewed more toward Eurocentric beauty. Of all the physical features viewed, body type received the lowest score with a 1.41, and eye color received the highest score with a 2.31 which shows that the magazine is not totally Eurocentric with its beauty characteristics.

Table 1: Physical Characteristics of Models in *Cosmopolitan*



In addition, a mean score for all the beauty characteristics for the thirty year period was also averaged. This was formed by combining the separate mean scores for each category and finding the average. A mean for all the categories were evaluated and from the sample used, the African-American models received a 1.83 score which implied that *Cosmopolitan* portrayed its African-American women more often with Eurocentric beauty characteristics.

The results for research question three gave more than one possible answer to the question "Has the frequency of representation of African-American models in the advertisements of mainstream beauty magazine *Cosmopolitan* changed significantly between the years 1974-2003?" The first result found that the total number of advertisements with African-American women increased significantly for the years 1994-2003 in comparison to the two decades before.

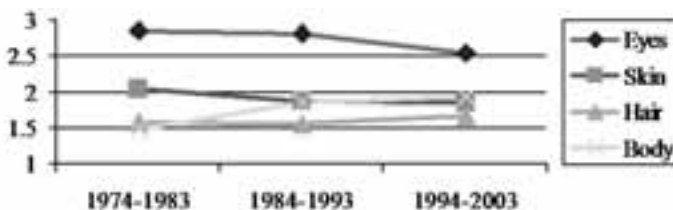
When the same total number of advertisements with African-American models was compared to the total number of advertisements with women in general for each decade it was found that African-American women accounted for 3% of the women in the ads in between the years 1974-1983, 3% between the years 1984-1994, and significantly increased to 10% between the years 1994-2003.

The final research question that related to *Cosmopolitan* asked "Have the beauty characteristics of African-American models in the advertisements of mainstream beauty magazine *Cosmopolitan* become more or less Eurocentric or Afrocentric

between the years 1974-2003?" The most significant changes in any beauty characteristics was found in eye color and hair texture. For eye color, the African-American women's eye color began at a mean of 2.75 in the first decade (1974-1983), then began to decrease to 2.57 in the second decade (1984-1993), and ended even lower in the last decade at 2.18 (1994-2003). As a result, it seems that the overall lightness of the models eyes has gotten lighter over time, but has still stayed brown.

Second, the hair texture of the models has changed. In decade one (1974-1983) the African-American models had a mean score of 1.40, which indicated that the hair texture was relatively straight. In the second decade there was a decrease in the mean score for hair texture to 1.35 which implied that the hair texture was getting straighter from the year before. However, there was a significant change in hair texture in the last decade (1994-2003) where the mean score increased to 1.93 which showed that the African-American models hair texture began to be more curly than straight in comparison to the preceding decades. There were also variations in the means for body type and skin tone for all three decades. Body type increased from 1.47, to 1.86, and ended at 1.94. Compared to 1974-1983, the third decade (1994-2003) made a .47 increase which is almost one-fourth of the scale. This change shows that the shape of the models are beginning to be more curvy than before. The last change that was noted was in skin tone. The models began in 1974-1983 with a 2.05 mean, which indicates that the African-American women were more Afrocentric at the time. In opposition, it decreased to 1.88 in the second decade, and dropped two hundredths of a point to 1.86 in the third decade. From these changing means, the models seem to be getting a little lighter as time passed.

Table 2: Physical Characteristics of Models in *Cosmopolitan* Over Time



As an overall, the mean score with all beauty characteristics amalgamated showed very small changes over time. 1974-1983 had a mean score of 1.83. The years 1984-1993 had a mean score of 1.77. Lastly, the years 1999-2003 had a mean score of 1.87. Throughout the three decades, the African-American models seemed to be Eurocentric in the first ten years, a little more Eurocentric in the second decade, and less Eurocentric in the third decade.

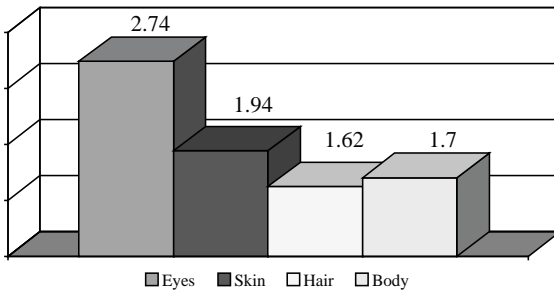
#### *Essence Magazine*

The final four research questions focused on results from *Essence* magazine. Research question five observed, "What percentage of models shown in the advertisements of African-American targeted beauty magazine *Essence* are African-American?" A sum for all advertisements with African-American women and a total for all

advertisements with women in general was used to determine the percentage. There were a total of 829 advertisements that included women of all races in *Essence*, and 760 included African-American models. Between the years 1974-2003, 92% of the women in the advertisements viewed were African-American.

Research question six examined “Are African-American models shown in the advertisements of African-American targeted beauty magazine *Essence* portraying Eurocentric or Afrocentric values of beauty?” The same four categories as stated earlier were used to determine how Eurocentric or Afrocentric the African-American models were. The descriptive analysis for this magazine provided a mean score specifically for each separate characteristic based off of all the scores within each category (ie. skin, eye, hair, and body). The skin tone of the African-American women in the advertisements had a mean score of 1.94 which indicates that in terms of skin tone, the models are more Eurocentric. The hair texture average score was 1.62 which also implied the models were more Eurocentric than Afrocentric. The body type of the models received a mean score of 1.70, while on the other hand the eye color of the models had an average score of 2.74. This considerable difference in eye color compared to the other characteristics indicated that not all Eurocentric beauty standards were adopted by the magazine.

Table 3: Physical Characteristics of Models in *Essence*



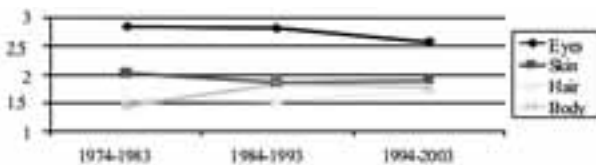
The total mean score for each category was summed and averaged to decide how the African-American women were portrayed physically in the advertisements of *Essence* and it received a score of 2.00. As an overall, it is supported that the women in the advertisements of *Essence* were portrayed more often with Afrocentric beauty characteristics, though located at the lowest point on the scale.

The next research question addressed “Has the frequency of representation of African-American models in the advertisements of African-American targeted beauty magazine *Essence* changed significantly between the years 1974 and 2003?” The first results for research question seven had no statistical significance when analyzed with chi square. In the first decade, 248 models were coded, in the second decade 264 models, and in the third, 248. Though these results were not statistically significant, when analyzed in comparison to the total number of advertisements with women in general, some changes were viewed. Between the years 1974 and 1983, 253 advertisements were totaled, which indicated that 98%

of advertisements had African-American women in them. However, in 1984 to 1994, that percentage dropped to 91% with a total number of advertisements at 287. It dropped even lower in the last ten years (1994-2003) to 86% with a total number of ads at 289. These changes show that more women of other races have emerged in the advertisements of *Essence* magazine.

The final question that was researched was “Have the beauty characteristics of African-American models in the advertisements of African-American targeted beauty magazine *Essence* become more or less Eurocentric or Afrocentric between the years 1974-2004?” When comparing the mean score of all three decades the physical characteristic with the most noticeable changes was eye color. Over the three decades the mean has decreased, which means the models eyes were getting lighter over time. In decade one the mean score was 2.86, in two it was 2.82 and in three it decreased to 2.58. Next, some other changes were observed, however these changes were not in a steady direction. For skin tone and hair texture there seemed to be a decrease then an increase in score. Skin tone began the first ten year span (1974-1983) with a 2.05 mean score. It then decreased to 1.88 for 1984-1994, but then increased to 1.91 for the years 1994-2003. The same phenomenon was observed for hair texture, except the decrease was smaller. In decade one it generated a mean score of 1.47. It decreased to 1.56 in the next decade, which is not much change. Still, in 1994-2003 the mean score increased to 1.79. The last physical characteristic was body type. This characteristic had an opposite effect in comparison to skin tone and hair texture. In 1974-1983, it began with a mean score of 1.47. Then in the next decade it increased to 1.86. In the final decade it decreased again to 1.79. The changes of all the characteristics show that these physical features changed over time, and the only characteristic that continued in a particular direction was eye color. It would seem that in *Essence*, eye color is becoming more Eurocentric with time.

Table 4: Physical Characteristics of Models in *Essence* over Time



To find out how Eurocentric or Afrocentric *Essence* has been over time, the overall mean of each decade was analyzed. For the years 1974-1983, the mean score was 1.99. For the second decade 1984-1993, the mean score increased to 2.03. Lastly, in 1994-2004, the mean score decreased to 2.00. Overall the magazine started off more Eurocentric, became more Afrocentric, and continues to be more Afrocentric.

## DISCUSSION

This study examined magazine advertisements in *Cosmopolitan* and *Essence* magazine to see how often African-American women were included in

advertisements and whether their physical characteristics were more Eurocentric or Afrocentric. Specifically, thirty issues of each magazine were analyzed for the time period of 1974-2003. In the assessment of both *Cosmopolitan* and *Essence* beauty magazines, frequency of representation of African-American women was an important issue. There are 19.7 million women in their mid-to-late twenties in the United States (U.S. Census Bureau 2004). African-American women in their mid-to-late twenties make up approximately 3 million, or 15% of that number. *Cosmopolitan* magazine's mission statement stated that the magazine is "for a large audience of young women in their mid-to-late twenties" (Aranas 2001). However, in the results, the highest amount of African-American models in advertisements for any decade was 10%. If the magazine is representative of all young women in their mid-to-late twenties, the amount of advertisements with African-American women in them should be increased by five percent. Furthermore, it has been found that African-American women make up 11.51% of the total readers that subscribe to *Cosmopolitan* (Baker 2005, 18). With that in mind, in the last decade *Cosmopolitan* took a huge leap in order to increase the representation of its African-American women readers. There is still room for a little improvement since the 10% is short of the 11.51% of African-American models. However, the 7% increase in representation of the African-American women population between 1984 to 1993 and 1994 to 2003 has shown how much change has come over time. Previous research indicated that African Americans were significantly underrepresented in the media, especially in magazine advertisements (Colfax and Sternberg 1972; Humphery and Schuman 1984). However, Colfax and Sternberg (1972) also found that the frequency of representation of African Americans had increased over time. The results of this study supported both findings. African Americans were underrepresented in the advertisements of *Cosmopolitan* magazine, however the frequency of representation did increase over time.

In reference to the portrayal of the African-American models, in *Cosmopolitan* they had been found to be Eurocentric and Afrocentric in more than one way. These beauty ideals were not strictly adhered to regardless of the time or particular magazine chosen. Yet, as an overall, the magazine scored 1.83 on the 1-3 scale, which means that the average model had more Eurocentric features than anything else. This study observed these features in order to identify how the African-American women population was being represented. When the skin tone and eye color of the models began to decrease overtime, that indicated there was a trend. Are the models in *Cosmopolitan* purposefully getting lighter in skin tone and eye color? When viewing a short biography for Naomi Campbell, it was found that she has brown eyes. There were several advertisements within this study that included Naomi, and her eyes were green and blue. This phenomenon could possibly be explained by increases in interracial marriages, or just the magazine's way to conform to Eurocentric beauty standards.

Body type in *Cosmopolitan* advertisements began in the Eurocentric beauty category with a low score of 1.47, but by the third decade, it was at 1.94. This change showed that the African-American models had become more curvy, or

were moving closer to Afrocentric beauty standards. It has already been found that within the United States, the population as an overall is weighing more than in the past. This increase in body weight may also represent that weight increase over time for this magazine. That is not also to overlook current icons that represent African-American beauty in entertainment today. In 2005 women in their mid-to-late twenties look to such artists as Beyoncé, Jennifer Lopez, and Ashanti, who are not as frail or thin as models in the past. Supermodels Iman, Tyra Banks, and Naomi Campbell are hardly ever seen as thin figures, showing with their rib cages while walking the runway.

The changes in hair texture also showed a trend that was noteworthy. It was viewed that the hair texture of the African-American women population began to straighten over the first two decades, but took an opposite turn towards “curly” by the third ten-year span. This change was subtle, yet noticeable. This result indicated that although *Cosmopolitan* did choose African-American models that had held features portraying Eurocentric beauty, no one way was set, and as time has passed they were open to more than just Eurocentric beauty.

*Essence* magazine is considered one of the largest African-American targeted beauty magazines in the country with a circulation of 1,052,925. African-American women make up 91.28% of its readers. In this study, it was found that the magazine began with the overall amount of African-American models at 98% in the first decade. This number decreased for the second decade to 91%, and has decreased even more for the third decade to 86%. This means that as times have changed, the magazine has also adapted to the changes. Yes, the magazine has allowed more than African-American women to be within its advertisement, but its specific purpose is for today’s African-American women. Over the last decade, the magazine went below its normal readership and that implies that African-American women are now underrepresented in the advertisements in their very own magazine. This occurrence could have a lot to do with changes in the U.S. population or other ethnicities’ interests in knowledge concerning the African-American community. Still, the advertisers in *Essence* and *Essence* magazine has fallen off track and is beginning to neglect the very women it was originally established for. If the frequency of representation continues to decline, the magazine may want to redesign its current mission statement that states, “for more than three decades, *Essence* has been the only magazine dedicated to reflecting Black women and their lives” (*Essence* 2005). If this trend continues, it will no longer be a magazine specifically for African-American women.

When looking at Eurocentric and Afrocentric beauty in *Essence*, Afrocentric beauty was the most prevalent beauty standard found. As an overall the magazine portrayed its models with Afrocentric features, however only one of the physical characteristics (eye color) had a mean that was within the Afrocentric section of the scale. Skin tone and hair texture both followed similar patterns over time. The skin tone of the models began darker in the 1974-1983 years, but decreased suddenly to 1.88 in the 1984-1993 years. Models began to get lighter for that short time, but began back toward the Afrocentric side after the third ten-year span



with 1.91. Though the skin tone ended on the Eurocentric side of the spectrum by the end of this study, it can be speculated that it might continue this trend all the way into the Afrocentric portion of the scale.

Hair texture started straight, got a little straighter, and then began to get wavy. This event could possibly be explained by the African-American community conveying that it is okay for an African-American woman to wear her hair in a natural state without chemically altering it, or it could be the magazine's way of not conforming to Eurocentric beauty ideals. Parallel to *Cosmopolitan*, *Essence* had the same changes in eye color. The eye color of its model seemed to get lighter over time. The mean score began at 2.86 and ended at 2.58. This change in eye color helps support assumptions that in the future this physical feature will only get lighter, to a certain point.

The body type of the models in *Essence* followed no specific pattern as it increased in the second decade, and decreased in the third decade. It never left the Eurocentric beauty standards, yet it did move a lot toward the Afrocentric beauty characteristics.

As an overall mean, *Essence* still only scored a 2.0. Though this number is within the area which is considered Afrocentric, it is the farthest away from Afrocentric as it can possibly get. Afrocentric was scored highest with a 3 and Eurocentric began at 1.99. That means *Essence* magazine was .01 points away from portraying its African-American women with more Eurocentric features.

## LIMITATIONS OF THE RESEARCH

The two magazines that were coded were only small portions of all the possible magazines that could have been chosen. Also, the sample size of this study only looked at one month of each year, for thirty years. A larger sample size would yield more significant results. Body type and skin tone were difficult variables to operationalize, due to the subjectivity of the coders and the types of advertisements that were viewed. Many advertisements did not photograph the models in positions that allowed observation of their body types. Also, almost all of the models were wearing make-up which could also change their overall skin tone. Additionally, it is likely that other magazines may have followed different trends in portraying the African-American women population.

## FUTURE RESEARCH

The findings for this study emphasize the need to look deeper into the portrayals of the African-American woman community. It has been found that women in general (specifically Caucasian women) are affected by the images that are viewed in advertisements, but this study may help in finding how advertisements specifically affect African-American women (Frisby 2004, Poran 2002). African-American women respond more positively to advertisements that include women of their race, but how does it affect them when women of their own race still do not physically represent them? The African-American woman population

is at risk of eating disorders, just as their Caucasian counterparts. Other forms of the media need to be addressed in order to get a broad overview of how the African-American women population is being portrayed generally. This same study may also be applied to women of other ethnicities, in that African-American and Caucasian women are not the only races that are misrepresented in the media. Maybe if these misrepresentations are brought to the public's attention, there will be changes in the future.

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# Factors Influencing Childcare Choice: An In-Depth Study of College Student Parents

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## ABSTRACT

Past literature on childcare choices has primarily concentrated on the needs and concerns of employed mothers; however, college student parents make up a unique population with different needs and characteristics. Therefore, it is important that we understand what factors influence their choice of childcare and their childcare needs. This in-depth study of college student parents explores the ways in which student parents make and talk about their childcare decisions through interviews with five full time, college students who are mothers. The mothers in this study all had different reasons for going to school, but many acknowledged the positive influence their studies would have on their children. These mothers find encouragement in the fact that they are going to school for the children's sake. For the mothers in this study, choosing the "right" kind of childcare was often a complicated, emotional decision and one primarily taken on alone. These mothers' choices to use childcare and the types of childcare chosen were influenced by many factors. Often times their decisions were made as a result of the balancing between their desires and constraints. In the end, the factor that seems to matter most when evaluating childcare arrangements is the mothers' ability to uphold their identities as "good mothers."

## INTRODUCTION

When parents decide to have a child, they are faced with many complicated decisions extending from childbirth methods to childrearing practices. Although some parents choose to adjust their lives greatly in order to raise a child, many parents choose to incorporate parenting into their preexisting life styles. Consequently, many parents must deal with making the decision to put their child into someone else's care. In addition, they must decide what type of care to put their child into.

There are many different childcare options available to parents today, both formal and informal (Halliday and Little 2001). These include: hired labor, commercial daycare, in-home daycare, family, and friends, among others (Hertz 1986). Deciding the type of care to use for one's child can be a very complex

decision. Many variables have been suggested as affecting one's childcare usage. Furthermore, many explanations have been offered to explain the differences in choice among parents.

## LITERATURE REVIEW

### *Variables Affecting Childcare Choice*

Past research has revealed that the type of childcare used varies with the age of the child. Some literature states that younger children are more likely to receive care from relatives and friends (Brewster and Padavic 2002). On the other hand, Harris et al. found that when there is more than one child of preschool age, the oldest is more likely to be in commercial daycare and the youngest in non-relative care (2002). Brandon and Hofferth's study of after school care for school age children found that the older the child the less likely relative, non-relative, or school-based care would be used (2003).

Childcare use has also been shown to vary with the race of the child. Race has been cited as a factor influencing both the type of childcare chosen and the site of childcare. People of color tend to choose childcare sites with ethnic diversity (Uttal 1997; Ball et al. 2004; Shlay et al. 2004; Hertz and Ferguson 1996). In additions, Shlay et al. (2004), as supported by Fuller, Holloway and Liang, asserts that African American families are more likely to use center care than either White or Latino families.

Another factor which has been suggested as influencing childcare use is social class. Families have a tendency to look for childcare settings where class characteristics are similar to their own or that of a higher class (Uttal 1997; Shlay 2004; Ball et al. 2004). Additionally, class has an effect on the type of childcare chosen. Hertz (1991) revealed that the most common type of childcare used by upper-middle class families was in-home hired labor.

Many other factors have also been cited as influencing childcare use. Heidemann et al. (2004) cited gender as an influence on childcare choice. They found that girls are significantly more likely than boys to be in regular non-relative care between the ages of three and six. In addition, studies have revealed that a mother's educational attainment has an influence on childcare choice. The more education a mother has, the more likely she is to use non-relative care (Brandon and Hofferth 2003; Heidemann 2004; Brewster and Padavic 2002).

Number of children has also been cited as a factor influencing childcare use. Harris et al. (2002) found that when there is more than one preschool aged child in a family, the parents are the most likely childcare providers and the children are most likely to be in the same care arrangement. Similarly, Brewster and Padavic (2002) noted that kin care was more often used with the presence of more than one child. In addition, Heidemann (2004) found that the presence of school aged siblings was negatively associated with non-relative care.

Marital status has been cited as factor influencing childcare use as well. Brandon and Hofferth (2003) found that single mothers were more likely to use relatives for care while Brewster and Padavic (2002) found that married women were less likely to use relatives for care. In contrast, Heidemann et al. (2002) found that for children under three years old, single mothers are more likely to use non-relative care.

Another inconsistency in the literature relates to economic advantage. Brandon and Hofferth (2003) found that economic disadvantage reduced the use of formal types of childcare while Brewster and Padavic (2002) found that the higher one's income, the more likely kin care was used. The authors attribute this to their sample of African American women. They assert that when they begin to make more money, they want to give it to their relatives in order to help them financially.

Lastly, employment status has been cited as affecting childcare choice; however, the results have been inconsistent. Brandon and Hofferth (2003) found that those working fulltime were more likely to use relative care. They attribute this to the fact that parents need childcare with more flexibility. Brewster and Padavic (2002) found the opposite; full time mothers were less likely to use relatives for care. This inconsistency may be attributed to the fact that the children's ages in the studies varied. The ages in the sample were five through twelve and five and under, respectfully.

#### *Explaining Childcare Choice*

Just as many factors have been found to influence childcare use, many possible explanations have been proposed to explain this variation. Shlay et al. (2004) assert that parent's childcare choices can best be explained by looking at their preferences for particular childcare characteristics. The study found that the mothers' most desired qualities were those intrinsic characteristics that directly affected the child's experience. These were whether the care was licensed, was accredited, provided planned activities, offered individual attention, was safe and sanitary, was experienced, had training in childcare, and was warm. The authors assert that these desired characteristics mirror how child development experts define and evaluate quality childcare. The study also demonstrated that the type of care (e.g. in-home, center based, relative) had no effect on its desirability. The respondents were only influenced by the characteristics of the care, not the type of care.

A second explanation of the variation in childcare usage is one's values. Many authors cite values which are rooted in class and/or race to explain variations in childcare usage (Shlay et al. 2004; Uttal 1997; Hertz and Ferguson 1996; Ball et al. 2004). Ball asserts that, "childcare... settings are sought and used by particular middle class fractions to maintain and ensure social homogeneity" (2004:480). Families are looking for childcare that offers the same class background, which is determined, in part, by the style of those giving and receiving the care as well as the price involved. Shlay et al. (2004) also found that mothers valued caregivers that displayed equal or higher socioeconomic statuses and racial diversity. Uttal (1997) found that mothers were primarily looking for childcare situations which

shared their values. These values were expressed as similar worldviews, shared childrearing philosophies, shared racial ethnic experiences, and class based characteristics like lifestyles and upbringing.

Other values were also mentioned. Hertz and Ferguson (1996) distinguish between one's preference for credentials and professionalism which lead to the use of center-based care versus one's preference for nurturing and similarity to the mother which leads to family daycare. Halliday and Little (2001) cite rural values as leading to the choice by families to avoid formal childcare arrangements.

Halliday and Little's findings are similar to those of Hertz (1997). Hertz asserts, "...A combination of *a priori* beliefs and economic resources explains the choice of childcare practices" (1997:356). Hertz's findings suggest that one's values regarding family life influence childcare patterns. She has developed a typology of approaches to childcare. These are: the mothering approach, the parenting approach, and the market approach. Those who use the mothering approach believe that the mother is most suitable to raise the children. Consequently, work schedules are rearranged to maximize the mother's time with the children, and outside care is rarely used. The second approach is the parenting approach. Those who use this approach organize family life so that both parents play a pivotal role in the child's care. Here, too, work schedules are rearranged (e.g. part time rather than full time or working from home) so that the child spends most of his/her time with both parents. Because of this, external care is rarely needed, and if it is used it is only for a few hours or days in a week. Lastly is the market approach. These parents hire others to care for their children most of the time. They place importance on professional childcare, and often times look for someone to fill the mother's role.

Some authors attribute one's childcare usage to a balance between constraints rather than a choice. Hertz and Ferguson (1996) assert that one must find a balance between the constraints of family ideologies and economic responsibilities. Hertz (1999) recognizes the constraints brought on by underemployment and how these constraints can lead to non-traditional childcare arrangements. Uttal (1997) also acknowledges that childcare choices are often a negotiation between competing preferences. In addition, these findings suggest that families are often constrained by economic resources, time, structure of the childcare market by race and ethnicity, and class. Halliday and Little (2001) acknowledge constraints based on the physical and social characteristics of rural areas as well as a lack of adequate childcare.

Of all the studies cited here, none have examined the college student population. According to the American Council on Education, as cited by Abdullah (1997), there will be about 6.5 million students over the age of twenty five in the colleges and universities of the U.S. in 2005. With this rise in non-traditional students will come the increased use of childcare by college student parents. Because college student parents make up a unique population with different needs and characteristics (e.g. irregular school hours, low incomes, multiple roles) it is

important that we understand what factors influence their choice of childcare and their childcare needs.

Furthermore, additional emphasis needs to be placed on the way that parents talk about their childcare choices. It is important to acknowledge the way that parents' values and preferences are constructed and how these constructions are perpetuated through interaction in everyday life.

This study will explore the ways in which students make and talk about their childcare choices. As noted by Hewitt (2003), culture constrains our actions. Whether consciously or not, our understanding of cultural norms and expectations affect our decisions as well as how we explain those decisions to others. This study will explore in depth the way that student parents rationalize their childcare choices. How are these choices affected by perceived cultural constraints, theirs and other's attitudes regarding parental roles, education, religion, and social class? How do these parents decide what is most important, and how do they explain these decisions? Looking at childcare choices in this manner will provide insight into what student parents see as culturally acceptable and relevant, as they seek to align their actions with these expectations.

## METHODS

This study used qualitative research methods in order to obtain the data. Because the goal of this project is not hypothesis testing but to develop a thorough understanding of student parents who must deal with childcare issues, in-depth qualitative interviews were conducted with five college student parents from June to July of 2005. The study took place at a mid-sized, southern, public university. A nonprobability theoretical sampling technique (Babbie 2001) was employed to obtain the participants. Students currently working toward a degree with at least one child not yet school age were recruited for the study. This method was employed in order to obtain a sample of students with a wide variety of backgrounds and characteristics who have made different childcare choices.

Five mothers participated in this study. Most of the participants were recruited by means of flyers posted throughout the buildings on campus; however one of the participants was directly recruited by me. Each of these mothers participated in an interview lasting between one and two hours. In each interview, a semi-structured interview guide was used. The interviews took place wherever the mothers felt most comfortable. Most were conducted at the mothers' homes, but one took place in an office. In addition, each mother was given a \$25.00 gift certificate to a local merchant as compensation for her time.

In order to analyze the data, each of the interviews was transcribed. This research employed grounded theory methods which "attempt to derive theories from analysis of the patterns, themes, and common categories discovered in observational data" (Babbie 2001, pg. 284). Each of the transcriptions were then extensively reviewed in search of these common categories, patterns, and themes.



## DATA AND ANALYSIS

The sample for this study consists only of mothers. Although both fathers and mothers were recruited for participation, those who participated in this initial sample were all mothers. The mothers who participated exhibited a wide variety of characteristics in both personal attributes and childcare arrangements. The age of the mothers ranged from twenty-two to thirty-six years. Three of the participants were married, while the other two were single mothers. The race of the participants varied as well. Both African American and White mothers were interviewed. The number of children in each family ranged from one to two, with ages ranging from one to six years. All of the mothers in the study were full time students who also worked part time. Three were undergraduate students and two were graduate students. In addition, several different childcare arrangements were used by the participants. Although the majority used center care, in-home daycare, kin care and kith care were also utilized.

For the mothers in this study, choosing the “right” kind of childcare was often a complicated, emotional decision and one primarily taken on alone. Although many of the mothers utilized recommendations from childcare referral services and friends and family, the final childcare decision was often the mother’s. These mothers’ choices to use childcare and the types of childcare chosen were influenced by many factors. Often times their decisions were made as a result of balancing between their desires and constraints. Although these desires and constraints varied by individual, each mother was fueled by a common motivation, earning a degree.

### *Children’s Influence on the Mother’s Education*

The mothers in this study all had different reasons for going to school, but many acknowledged the positive influence their studies would have on their children. Angela, twenty-nine years old and mother of two boys, went back to school in order to get a job that would allow her to work the same hours her children were in school. “I thought, I’ve got to get something where I’d have to work days... the same hours he is... so it’s basically for the children’s lives I went back to school.” Similarly, Kaitlyn, a single mother of two, acknowledges that going back to school was, “a much better situation.” “I couldn’t support my children, so I came to school.”

Having the children in mind when making the decision to go back to school also influenced these mothers’ perceptions about the challenges incurred by taking on this extra role. When talking about the difficulties of being a student parent, Natalie, twenty-two and a mother of two says, “I think it’s difficult. It’s not as hard as I thought it would be. Whatever I set my heart to, I know that I can do it.” These mothers find encouragement in the fact that they are going to school for the children’s sake. Angela says, “[Having children] encourages me in knowing that I have to do this and I have a reason for doing this.” Kaitlyn acknowledges the same kind of motivation. “I think having children makes me more focused, keeps me just concentrating on school. [It] lets me show them

how important having an education is by leading by example.” For the women in this study, having children, although sometimes very difficult, has a positive influence on their educational experience.

### *Emotions and the Work of Finding Childcare*

For all of these women, the decision to go to school means putting their child(ren) into someone else’s care. For some there are many emotions related to this decision. One of these is guilt. Cindy, graduate student and mother of one, felt “kind of guilty because there’s this idea that moms should stay home with kids. That’s how [she] was raised.” However, not all mothers felt like this. Some of the mothers just knew it was something that needed to be done. Kaitlyn explains her circumstance like this. “I always knew they had to go, so I felt like the emotional separation but it was never like this is an optional sort of situation, so I never felt guilty about leaving her or anything like that.” Similarly, Linda, mother of two, had her children in care since they were little, so she “felt comfortable with the idea of putting [them] back into daycare.”

For these women, finding childcare is often a lot of work, requiring much time and effort. This too can be an emotional task. Even the mothers who seemed settled with putting their children into care expressed feelings of nervousness and frustration in their quest to find quality childcare for their children. Most of the mothers had different strategies for finding childcare. For many of the mothers finding childcare meant getting references, calling places, visiting centers, and interviewing childcare workers, which can be a very time consuming task. The amount of time and effort involved in each woman’s childcare search varied tremendously. Some of the women took the additional step of taking the children to the center to see how they reacted to the environment. Furthermore, some of the women were “lucky.” They found the right childcare situation after calling and visiting only one childcare center. On the other hand, one mother’s attitude was “you just have to try it and see.” Similarly, another mother also admits that “[her] children have gone to, let’s see, one, two, three, four, five, six different places since [they’ve] been down here.” Sometimes finding the right childcare situation is a matter of trial and error.

### *Desires vs. Constraints*

When looking for a childcare arrangement, most of the mothers had a very clear idea about what they wanted in a childcare provider. Although these desires varied tremendously among the mothers, one factor was apparent throughout. Full time childcare was a necessity. Even though the schedules of college students are flexible, in order for these mothers to balance the multiple responsibilities of being a student parent, full time childcare was a must. Linda explains, “We need full time care because... our class time and our study time is about the same... trying to study with two children running around, it’s really not great.” Having the children in care all day allows these mothers to fulfill their school and work responsibilities and spend the evenings with their children.

For these mothers, quality was also frequently mentioned. Although quality was expressed in slightly different terms among the mothers, many aspects were the same. Like Linda, many of the mothers desired a “quality staff... meaning some formalized educational training... with experience.” Cindy was looking for “somebody who has some background knowledge on how kids work.” Many desired a place with high standards like “sanitation rules and regulations... and if [the center] has more than what’s required,” including a “low child to teacher ratio.” Cindy wanted a place that was “kid friendly that had lots of stimulation.” These mothers expressed the meaning of quality in terms similar to those of childcare resource and referral literature (CCRR 2005).

Another important factor to these mothers was interaction. Most of the mothers, like Kaitlyn, “look for the interaction, the way the providers speak to [her]. Do they know who [her] child is?” Cindy also wanted “a good relationship between the instructors and the parents.” Interaction with the children was also important. Linda said, “If I come in and your general interactions with the children are off, I won’t send my children.” Like Natalie, the mothers here wanted teachers who will “interact with the children on their level.”

Sometimes the mothers explained what they desired in a childcare provider in terms of what they didn’t want. Diversity was explained this way. Kaitlyn, when explaining why she left a childcare arrangement said, “One thing I didn’t like was that all the children were like rural, white, southern children and there was not even a chance for exposure to any kind of diversity.” Similarly, Cindy “did not want [her childcare center] to be a white, Christian, generic loaf of wonder bread.”

Most of the mothers expressed a desire for center-based care rather than in-home daycare. Although many of the mothers had trouble articulating why this was, issues of quality and trust came to the surface. Linda explains, “With the home day care centers, their prices are kind of the same as the daycares and the quality isn’t the same... the children, the teacher child ratio, the age mix... They just don’t have enough people.” In addition to quality, trust was also a factor in these mothers’ preferences for center-based care. Like many others in the student population, none of these mothers were originally from this area. Therefore, they don’t have the networks established which would lead them to a home daycare provider. Kaitlyn was “reluctant to look for in-home daycare because [she] didn’t trust people very much.” Similarly, Cindy didn’t even consider home daycare because “they didn’t know anybody... not being from around here, it’s really hard to tell.” On the other hand, these mothers shared a trust in center care because of the supervision, “there’s more of them... There’s two teachers in every room.” Angela felt something similar. “They’ve got people watching over [the ones] that are actually taking care of the kids, ya know. There’s people watching over everybody.” These mothers found comfort in the fact that no one was ever alone with their children.

Aside from the mothers who were lucky enough to find a childcare arrangement that they were happy with from the start, most of these mothers were forced to

find a balance between what they desired and what they could obtain. There were often times many factors constraining their choice. Cost, availability, and transportation were the major constraints on these mothers' choices. Many of the mothers mentioned cost as one of the most prominent factors limiting their childcare choice. For Angela, "money [was] like huge. Ya know, it's your decision on what your childcare's going to be." She, like many of the other mothers, receives subsidized childcare. "If it wasn't for [these subsidies], there would be no possible way for me to even go to school." At the same time she acknowledges, "being subsidized, you know, you're not going to the best place, ya know, you kind of can't be that picky."

Similarly, Linda struggles with financial issues. Being a graduate student, her family is no longer eligible for financial assistance; however, they are still in need of assistance because both she and her husband are full time students. "We knew that we had a budget to stay with in and we're going to try... so we're kind of in a between place because we can't afford \$130.00 a week for two children to go full time.... We realized that we may need to find a way to make more money to have them in childcare and be exposed to a lot of stuff." Finding a way to make more money isn't always possible. Linda, like some of the other mothers, had to settle with something that she could afford.

Another major constraint faced by these mothers is the lack of available childcare centers. Sometimes availability is a major factor in childcare choice. Angela received a list of licensed childcare providers in the area from a local childcare referral service. "I called all of them and Matoon's was the only people taking anybody... It's hard to call around and find someone to take your kid, ya know. You either have to be put on a waiting list and if you need childcare, you need it then." Kaitlyn also attributes availability as a major factor in her decision. "The major thing is there's just not a lot of childcare centers around here." For Linda, availability was a major issue which greatly constrained her choices. "Here looking for daycare, no one has an opening and that is unheard of to us... And then I don't have any family members here to watch my children... I'm getting frustrated with all the centers around here, getting very, very frustrated."

A third constraint faced by these mothers was transportation. The mothers that didn't have vehicles were forced to accept childcare arrangements where transportation was offered or find an arrangement near the bus route. Not having a vehicle sometimes added a lot of stress to these mothers' lives. Kaitlyn explains, "...As long as I caught all the buses, it was a two and a half hour trip every morning and every night in the spring semester, which was horrible." At the same time, she was grateful for the bus service. "If it wasn't for the bus service, I wouldn't have been able to pull it off." Furthermore, many of these mothers faced multiple constraints at the same time. Having to choose from what was available, affordable, and accessible often times left little room for these mothers' desires to be fulfilled. These mothers found themselves in a position of accepting childcare arrangements which didn't incorporate the qualities they had in mind. So how did these mothers rationalize their childcare choices when both their desires and needs couldn't be met?

## DISCUSSION AND CONCLUSION

### *Being a Good Mom*

The findings suggest that when it comes down to it, the greatest influence on these student mothers' choices of childcare seems to be each one's perception of what it means to be a good mother. These mothers were forced to weigh and balance many factors, and in the end, what seemed to be most important was that these mothers could find a childcare arrangement which would allow them to continue to feel like "good moms." Each of these women have different expectations of themselves, and each has a different definition of what it means to be a good mom; however, the way they talk about their childcare decisions reveals that it is important to all of them to uphold their conceptions of themselves as good mothers.

As mentioned earlier, these mothers often attributed their going to school as a benefit to their children's lives. They feel like going to school contributes to their identities as good mothers. Going to college is a priority, and finding childcare is an aspect inherent in pursuing this goal. Consequently, these women can still feel like good mothers when putting their children into someone else's care because going to school and supporting their children is a necessary aspect of being a good mother.

For Linda, supporting her children financially was an important aspect of her identity as a good mother. Even though she was able to spend more time with her children, not being able to find a job made her feel very uncomfortable. Being a daycare provider herself, she was looking for a job at a reputable center where she could also enroll her children; however, constrained by the local options, these desires could not be met. "When I found out that I couldn't find a job in any of the daycare centers around here, I cried." She explains "...my husband, he started to go to school, so I got to stay home with [the children], so then I started to feel like I was being a bad mom because I knew I needed, we needed work, and then I know I needed to stay home with the girls." Her previous daycare arrangement allowed her to make money and take care of her children at the same time. "[It was] excellent care. I still got to breast feed. I pumped. I worked in the building." Although she couldn't find an equivalent arrangement here, she was able to find a job and put her children in a home daycare run by one of her friends. This allowed her to continue to feel like a good mother because she could work, go to school, and know her kids were being taken care of by someone she knew well.

When thinking about childcare, often times these mothers were forced to renegotiate the meaning of being a good mom. When Cindy was growing up, her mother never worked, so when she was deciding to put her child into daycare she really had to renegotiate the meaning of good mom. "It made me feel guilty, but I realized that I'm not a kid person and keeping Lucy at home with me... is not fair to her because I don't know what to do all day with a child, and she loves school. She's got good social interaction. So for our situation, I think that was the right thing to do." She was able to justify putting her daughter into care through acknowledging the benefits care could bring to her daughter's life. By doing this, she was able to maintain her identity as a good mother.

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# Soil Water Nitrogen Leaching in Riparian Autumn-Olive Stands in Southern Illinois

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## ABSTRACT

Autumn-olive (*Elaeagnus umbellata* Thunb.) is an N fixing invasive, exotic shrub that has become naturalized in the eastern United States. Our study objective was to determine whether excess nitrogen (nitrate and ammonium) was leaching below riparian autumn-olive stands, potentially contributing to stream nitrogen loads. To achieve this objective, we installed six tension lysimeters in both autumn-olive and field plots at three riparian sites in southern Illinois. Soil water samples were collected monthly and analyzed for dissolved nitrate and ammonium in the Water Quality Laboratory in the Department of Forestry at Southern Illinois University Carbondale (SIUC). Mean soil water ammonium-N concentrations were relatively low and were similar between autumn-olive ( $0.10 \pm 0.02$  S.E.) and open field ( $0.11 \pm 0.02$  S.E.) plots. Mean soil water nitrate-N concentrations were relatively high under autumn-olive stands ( $4.95 \pm 1.58$  S.E.) and were significantly higher than the open field plots ( $0.08 \pm 0.01$  S.E.). This high soil water nitrate could potentially contribute to non point source nitrogen pollution of streams, and the presence of autumn-olive in riparian areas may convert these ecotones from net nitrogen sinks to net sources of nitrogen.

## INTRODUCTION

The quality of our surface waters can have important implications for ecosystem as well as human health. High nitrate concentrations in stream systems can result in human health problems such as methemoglobinemia, often referred to as “blue baby syndrome” where hemoglobin in the blood is unable to transport oxygen to muscles and tissues (Maimo and Redick, 2004). The U.S. Environmental Protection Agency has set safe drinking water standards for public water supplies at  $10 \text{ mg L}^{-1}$  in response to this public health concern (Melillo and Cowling, 2002).

Hypoxia in the Gulf of Mexico is another problem associated with excessive nitrate levels in the Mississippi River drainage basin. Hypoxia is defined as dissolved oxygen concentrations  $< 2 \text{ mg L}^{-1}$ , which can result in habitat reduction, food resource change, and even mortality of fish and benthic organisms (Rabalais et al. 2001). These low oxygen concentrations are the result of eutrophication of



the estuarine system, which has been linked to the transport of limiting nutrients nitrogen and phosphorus via the Mississippi River. Other factors that can increase the threat of hypoxia are more natural, such as favorable temperature and light conditions. These factors may not be able to be controlled but the input of nitrates into the stream systems can be (Rabalais et al, 2001).

Vegetated riparian buffer zones can help to decrease the amount of nutrients entering stream systems through plant uptake of nutrients. However, riparian areas can also contain nitrogen-fixing species, which add nitrogen to soils rather than remove it. Autumn-olive, invasive exotic shrub, is an example of a nitrogen fixing species that can commonly be found in riparian areas, especially in southern Illinois. As a nitrogen fixing plant, autumn-olive converts diatomic nitrogen gas to ammonia, which can be quickly converted to nitrate (Hart et al, 1994). Autumn-olive fixes the nitrogen due to the symbiotic relationship it has with actinomycetes of the genus *Frankia* in the root system (Church, 2004).

Autumn-olive was originally planted for various reasons; however, a main objective was to provide food for wildlife, such as various species of birds, deer, and black bears. The fruit is a good source of food during normal food shortages since it remains on the shrub throughout a portion of the winter. Autumn-olive was also planted to help control erosion and to help return nutrients to unproductive soils. Its most noted attribute, the ability to fix nitrogen, is also one of its most troublesome problems (Munger, 2003), as the fixed nitrogen can potentially leach into ground water and stream systems contributing to non point source pollution of waterways. The objective of this research was to assess whether excess nitrate and ammonium was leaching below the rooting zones of riparian autumn-olive stands compared to open field areas.

## METHODS AND MATERIALS

### *Study Sites*

The study was conducted at three riparian sites located in Jackson Co., IL on land owned by Southern Illinois University Carbondale. The three sites were chosen based on the presence of closed canopy areas of autumn-olive and the close proximity of autumn-olive stands to herbaceous open field areas. The Minetree Road (MT) site (Lat. 37° 41' 04" N, Long. 89° 14' 33" W) was abandoned from livestock grazing in 1990. The soil was classified as an Oxyaquic Fragiudalfs and had loam texture (Herman 1979, USDA 1999). The Pleasant Hill Road (PH) site (Lat. 37° 41' 25" N, Long. 89° 15' 14" W) also had a history of grazing by livestock, but was fenced from an adjacent, actively grazed pasture. The soil of the site was classified as a Typic Fluvaquents and had a silt loam texture (Herman 1979, USDA 1999). The Tree Improvement Center (TIC) site (Lat. 37° 42' 34" N, Long. 89° 16' 08" W) was originally managed by the U.S. Forest Service and contains experimental stands of black walnut (*Juglans nigra* L.). The soil was classified as an Oxyaquic Fragiudalfs and had a silt loam texture (Herman 1979, USDA 1999).

### *Field Methods*

At each of the three sites, two 8.5 m x 4.8 m plots with 0.6 m buffers were established in similar landscape positions, one in an area dominated by autumn-olive and one in an open field condition. Each plot within each vegetation type was divided into 18 subplots (1.2 m x 1.2 m). Six subplots were randomly selected in each plot to monitor soil water nitrogen with tension lysimeters.

The tension lysimeters were made of polyvinyl chloride (PVC) pipe with porous ceramic cup attached to the bottom to allow soil water to be drawn in. A rubber cap with an attached hose was placed at the top of the pipe to hold the lysimeter under 60 centibars of tension. Soil water samples were collected from lysimeters once a month during the study period from February to July 2004.

### *Laboratory Analysis*

Soil water samples were transported on ice to the Water Quality Laboratory in the Department of Forestry at Southern Illinois University Carbondale for analysis. Samples were frozen if not analyzed within 48 hours. Dissolved nitrate concentrations ( $\text{mg L}^{-1}$ ) were analyzed on a Dionex 4000i ion chromatograph (Sunnydale, CA). Ammonium-nitrogen ( $\text{mg L}^{-1}$ ) was tested on a Hach 4000v spectrophotometer (Loveland, CO) using a Nessler's reagent method (APHA, 1992).

### *Statistical Methods*

An equal variance T-test in Excel was used to determine if the mean soil water nitrate-N and ammonium-N concentrations for the two vegetation types (autumn-olive and open field) were significantly different. Statistical significance was set a  $\alpha = 0.05$ .

## **RESULTS & DISCUSSION**

Mean dissolved soil water nitrate-N concentrations were significantly ( $p = 0.002$ ) greater in the autumn-olive plots compared to the open field plots (Table 1). This finding was not surprising given autumn-olive's ability to fix nitrogen. Results indicate that fixed nitrogen in the form of ammonia was likely being converted to nitrate and leaching below the rooting zone of the autumn-olive. Other researchers have discovered significant nitrate leaching under woody nitrogen fixers. Red alder (*Alnus rubra* Borg.) ecosystems leached  $2.2 \text{ kg ha}^{-1} \text{ yr}^{-1}$  of nitrate-N compared to  $0.6 \text{ kg ha}^{-1} \text{ yr}^{-1}$  in Douglas fir (*Pseudotsuga menziesii* (Mirb.) Franco) ecosystems in the Pacific northwestern United States (Cole et al. 1978). Van Miegroet and Cole (1984) found up to  $50 \text{ kg ha}^{-1} \text{ yr}^{-1}$  nitrate-N leached below 40 centimeters in red alder stands. Montagnini et al. (1991) found that soil water nitrate-N concentrations were 87 times greater under a black locust dominated stand at a 60 cm depth compared to a pine/mixed hardwood stand.

Surprisingly, mean soil water ammonium-N levels were not significantly ( $p = 0.544$ ) different between the autumn-olive and open field plots (Table 1). Given autumn-olive's ability to fix nitrogen in the form of ammonia, we would have expected higher soil water ammonium-N concentrations under the autumn-olive

plots. One potential explanation for the low observed soil water ammonium-N concentrations under autumn-olive is that fixed ammonia may have been quickly nitrified to nitrate, which is supported by the soil water nitrate-N results.

Soil water nitrate-N concentrations were greater in the dormant season (Feb. – April) compared to the growing season (May – June) (Figure 1), which may have been due to lower nitrate immobilization rates by soil microbes and/or vegetation during this time period. The relatively high observed soil water nitrate-N concentrations in April, may have been a function of relatively optimal soil conditions, high soil moisture and warmer temperatures, for microbial nutrient cycling such as N fixation and nitrification. Soil water ammonium-N concentrations were not nearly as variable throughout the study period as nitrate-N concentrations (Figure 2).

## CONCLUSIONS

Results of this study demonstrate that autumn-olive, an exotic nitrogen fixing species, has likely altered the nitrogen cycling regime and nitrate leaching potential of invaded riparian areas. Normally, vegetated riparian buffers are promoted and established for their ability to serve as nutrient sinks. However, the presence of autumn-olive may be converting some of these ecotones to net sources of nitrogen. This excess nitrogen can contribute to non point source pollution of streams and rivers, which is linked to the eutrophication and subsequent hypoxia in downstream water bodies such as the Gulf of Mexico.

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## APPENDIX

Table 1. Mean Soil Water Nitrate-N and Ammonium-N Concentrations ( $\text{mg L}^{-1}$ )  $\pm$  S.E. in Riparian Autumn-Olive and Open Field Plots in Southern Illinois.

Vegetation Type	Nitrate -N	Ammonium-N
Autumn-Olive	$4.95 \pm 1.58$ a1	$0.10 \pm 0.02$ a
Open Field	$0.08 \pm 0.01$ b	$0.11 \pm 0.02$ a

<sup>1</sup>Mean soil water nitrogen concentrations with different letters within a column are significantly different at  $\alpha = 0.05$ .

FIGURE 1. Monthly Mean Soil Water Nitrate-N Concentrations for Riparian Autumn-Olive and Open Field Plots in Southern Illinois.

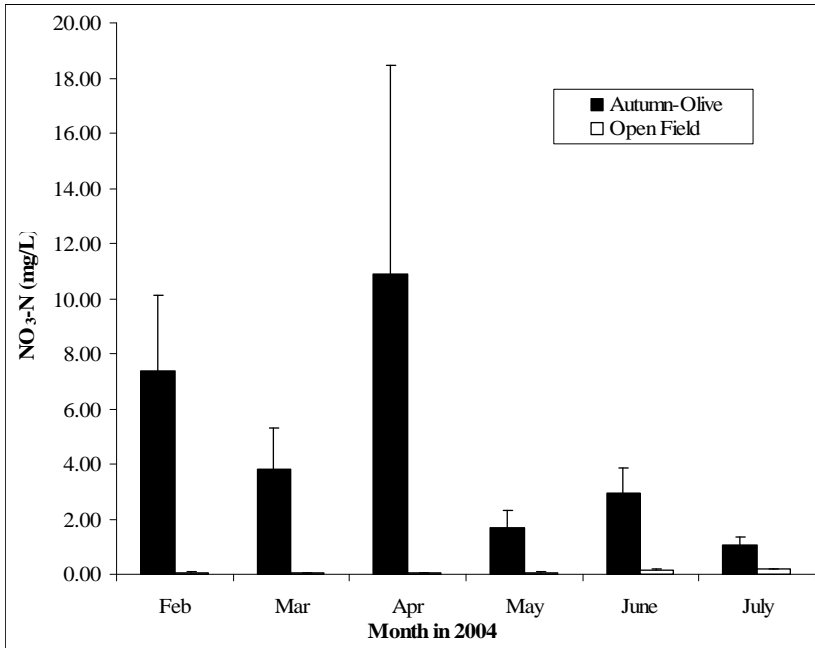
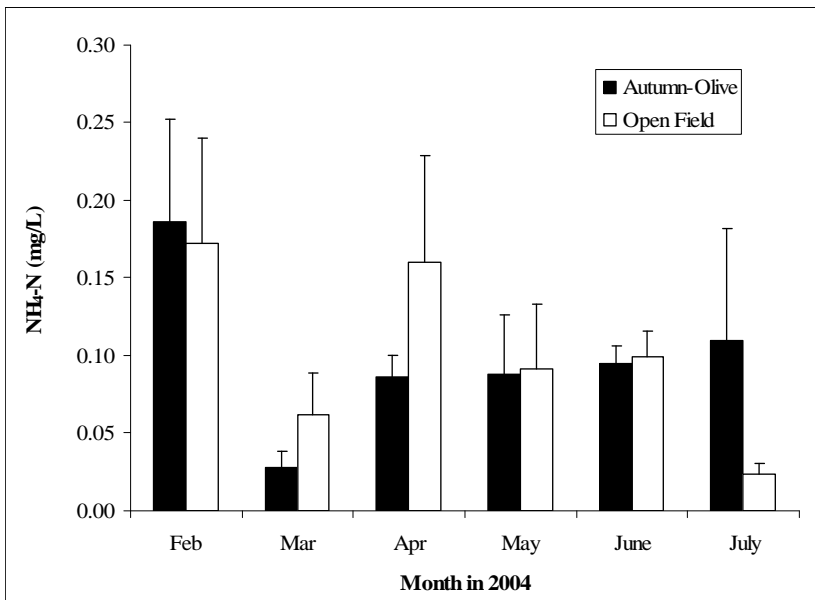


FIGURE 2. Monthly Mean Soil Water Ammonium-N Concentrations for Riparian Autumn-Olive and Open Field Plots in Southern Illinois.



# Predicting Torque and Fuel Rate with CAN Data

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## ABSTRACT

Accurate torque and fuel consumption data are preferred for in situ estimation of engine performance. There is a direct relationship between fuel consumption and torque with respect to the amount of emissions produced. Modern agricultural engines are equipped with sensors and a controller area network (CAN) for transmission of sensor data. The CAN-based percent torque and fuel consumption data from the test engine (Ford ESG-642 LPG) were inadequate for determining actual torque and fuel rate. The objective of this study was to predict torque and fuel rate of the test engine with available CAN and ambient condition data. ModelQuest® software was used to generate equations to predict torque and fuel rate of the engine. Equations for estimating torque in ft-lbs ( $R^2 = 0.993$ ) and fuel rate in L/h ( $R^2 = 0.994$ ) were generated using only the CAN data of percent torque and fuel rate, respectively. Additional inputs did not improve the fit of the equations. The resulting equations compensated for limitations of the CAN data and could be used to estimate horsepower and fuel rate during field operations.

## INTRODUCTION

Torque and fuel rate are two values required to compute engine performance in terms of horsepower and fuel efficiency. The ability to accurately determine torque and fuel rate of an engine without dynamometer or laboratory fuel measurement equipment would allow instantaneous calculation of horsepower and fuel consumption per horsepower hour of an engine under field operating conditions. Accurate *in situ* prediction of torque and fuel rate will benefit efforts to more accurately estimate emissions of agricultural engines in grams per horsepower hour. Environmental regulations limit the amount of exhaust gas emissions allowable by new engines (EPA, 2000). These regulations apply to non-highway or agricultural engines. Sawyer (2000) preferred fuel consumption data as a convenient starting point for assessing current and future emissions. Lindgren (2002) reported, "Fuel consumption and emissions of a specific tractor engine depend mainly on engine speed and torque." Harrison et al. (2004) used linear regression to determine the importance of input variables as predictors of oxides of nitrogen ( $\text{NO}_x$ ) emissions from a propane engine. They found fuel rate and

percent torque to have correlation coefficients of 0.85 and 0.79, respectively, with respect to  $\text{NO}_x$  emissions.

Grisso et al. (2003) collected fuel consumption and power data from 20 years of Nebraska Tractor Test Laboratory reports. They analyzed a total of 720 tractors and established new equations to predict fuel consumption for diesel engines during full and partial loads and under conditions where engine speeds were reduced from full throttle. Similar equations for propane engines were not developed.

Many new engines incorporate a controller area network (CAN). CAN is a serial communications protocol which supports distributed real-time control (Bosch, 1991). CAN is commonly used in engine applications for communication among the engine control unit (ECU) and various sensors. Data from sensors can be broadcast on the CAN for processing by the ECU and can also be read by diagnostic equipment and similar equipment. The Society of Automotive Engineering (SAE) standard J1939-71 provides parameter definitions and details for interpreting CAN signals to extract data such as engine speed, fuel rate, percent torque and various operating temperatures (SAE, 2002).

Manufacturers differ in their CAN implementations and the data cannot always be taken at face value. For example, the propane-fueled engine used in this study had fuel rate data available on the CAN, but the data was calibrated for gasoline rather than propane. Prior comparison of actual fuel rate to the fuel rate on the CAN revealed an average error rate of forty three percent with CAN data consistently under estimating actual fuel rate (Watson, 2004). For the same propane engine, a percent torque value, based on maximum rated torque, was available on the CAN. Under dynamometer testing, the engine did not exceed a percent torque value of eighty six percent. Under no-load, low idle conditions, the CAN percent torque value was twelve to fourteen percent. Although torque and fuel rate data were available on the CAN, they did not accurately measure torque or fuel consumption.

The objectives of this study were as follows.

- 1) Collect CAN data related to engine performance, weather data, actual torque and actual fuel rate from a propane engine at various loads across the rpm range.
- 2) Develop equations using statistical modeling methods to predict torque and fuel rate from CAN and weather data.

## EQUIPMENT AND PROCEDURES

Primary equipment used for this study included a propane engine, CAN protocol interface, data acquisition equipment, dynamometers and strain gage for fuel weight measurement. The propane engine was a 2003 Ford model ESG-642 (see Figure 1). This engine was purchased to power an irrigation pump. The V-6 engine had a displacement of 4.2 L. Engine ratings for continuous operation were 204 ft-lbs of torque at 2,200 rpm and 104 hp at 3,000 rpm.

A Dearborn Protocol Adapter (DPA) model DPA III/I from Dearborn Group Technology was selected to interface between the CAN and data collection equipment. The DPA was connected to a diagnostics connector on the engine wiring harness, allowing it to operate as an intelligent device on the CAN. A serial cable (RS232) was used to connect the DPA to a computer or data acquisition equipment.



FIGURE 1. Ford ESG-642 propane engine equipped with DOT fuel tank. The M&W dynamometer is in the background.

Nearly 750 parameters were defined in SAE J1939-71 (SAE, 2002). Only a fraction of these were applicable to the propane engine and fewer were actually implemented by the manufacturer. By using terminal software on a notebook computer and configuring the DPA via a serial cable, the available parameters relevant to engine performance were determined (see Table 1).

TABLE 1. List of SAE J1939 parameters relevant to engine performance available on the CAN of the Ford propane engine, with corresponding SAE J1939 “SPN” numbers.

Parameter Description	SPN #
Throttle Position	51
Engine Intercooler Temperature	52
Percent Load at Current Speed	92
Intake Manifold Temperature	105
Air Inlet Pressure	106
Engine Coolant Temperature	110
Fuel Rate	183
Engine Speed	190
Actual Engine – Percent Torque	513



Although available on the CAN, some of the parameters were not implemented, as expected. The propane engine did not have a typical intercooler, but did have a heat exchanger to change liquid propane to gas phase. The percent load at current speed data was identical to the actual engine percent torque and was not implemented to reflect percent load at current speed. Once the available CAN parameters were determined, data acquisition equipment was programmed to collect the data.

An Opto 22 SNAP Ultimate I/O (UIO) industrial controller system (see Figure 2) was selected for data acquisition. The DPA was connected to a RS232 module of the UIO. Opto 22's ioControl (Opto 22, 2004) software was used to program the DPA to monitor the CAN parameters listed in Table 1 and update the values at 500 ms intervals. Weather sensors for ambient temperature, relative humidity and barometric pressure were connected to analog input modules of the UIO.

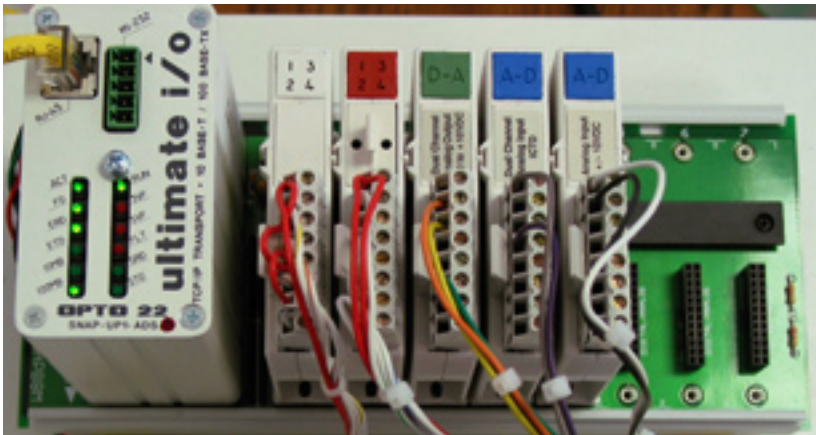


FIGURE 2. Opto 22 SNAP Ultimate I/O industrial controller with input/output modules.

Actual fuel rate was measured by using a sling to suspend the propane fuel tank from an Omega LC101 strain gage (see Figure 3). The strain gage was connected to an Omega DP41-S strain gage meter which provided signal conditioning and analog output to an input module of the UIO. The strain gage was calibrated and was accurate to 0.005 lb, based on testing by the Illinois Department of Agriculture's Bureau of Weights and Measures.

An AW Dynamometer NEB460 brake dynamometer (see Figure 4), was used to measure actual torque. The millivolt output of the strain gage sensor on the NEB460 was connected to a millivolt analog input module of the UIO. Due to unavailability of the NEB460, a M&W P-400B dynamometer (see Figure 1) was used to apply a load to the engine for half of the fuel rate tests.

LabVIEW (National Instruments, 2003) software was used to create a user interface (see Figure 5) to the data monitored by the UIO and to collect the data at the specified time intervals for the duration of each test. The software was installed on a notebook computer and used by the operator to start data collection.

OLE (object linking and embedding) for Process Control (OPC) software was used for data interface between the UIO and LabVIEW. OPC server software was installed on the same notebook computer as the LabVIEW software and was configured to continually monitor the desired UIO data. The built-in OPC client of LabVIEW was configured to access the data from the OPC server. This system provided real-time data access with updates as frequent as 250 MHz.



FIGURE 3. Propane tank suspended from an Omega LC101 strain gage for monitoring fuel consumption via changes in tank weight. The tank is suspended within an enclosure for safety.



FIGURE 4. AW Dynamometer Model NEB460 dynamometer used to measure torque.

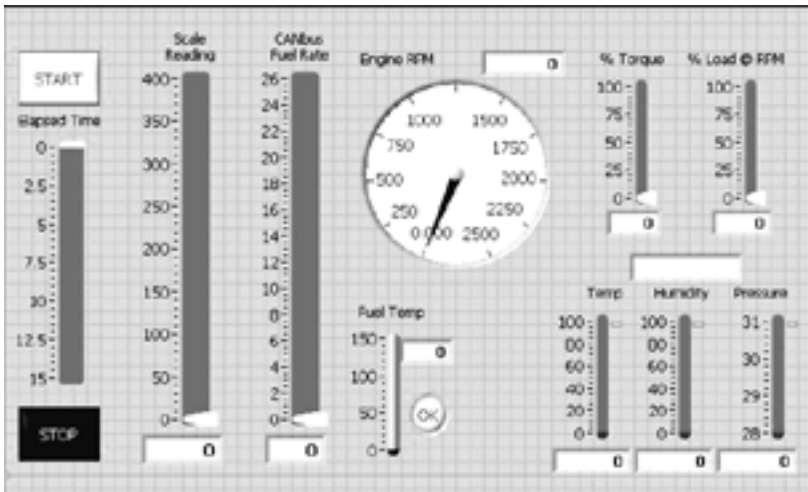


FIGURE 5. LabVIEW interface used to monitor CAN and ambient data during tests.

CAN and ambient temperature, humidity and barometric pressure data for predicting torque and fuel rate were collected while the propane engine was loaded at 25%, 50%, 75% and 100% while operating at 800, 1200, 1500, 1800, 2100, 2400, 2700 and 3000 rpm. The NEB460 dynamometer was available and used for the two replications of tests for predicting torque and one replication for fuel rate. The torque values for partial load were calculated as a percentage of the torque in ft-lb measured at 100% load. Two additional replications of data were collected using the M&W dynamometer for predicting fuel rate. Three replications of no load data at each engine speed were collected without a dynamometer connected to the engine and used to predict fuel rate.

For each speed and torque setting, seven minutes were allowed for the engine to stabilize and then data was collected over an eight minute period at twenty second intervals. After the data collection period the data points were averaged, except for strain gage weight data for which the overall weight difference was calculated. The summary data for each setting were stored in a comma separated values file for further analysis.

MarketMiner ModelQuest<sup>®</sup> (2004) software (MQ) was used to analyze the data to determine the best equations to predict torque and fuel rate. MQ used a variety of statistical modeling techniques, including: statistical networks (StatNet), linear regression, logistic regression, K-nearest neighbor (KNN) and C4.5 decision trees. A model for torque was developed by using one replication of data as a training set and the second replication as a verification data set. The model to predict fuel rate was generated by using two replications of data for training and one replication for verification.

## RESULTS AND DISCUSSION

The first step in algorithm development consisted of analyzing the data to find which inputs had the highest coefficients of correlation with respect to the outputs of torque and fuel rate. Figures 6 and 7 illustrate variable importance as measured by the Pearson coefficient of correlation of each input with respect to the output variable. Variables with a higher coefficient of correlation were expected to be selected by the algorithm generating feature of MQ to produce the best algorithm.

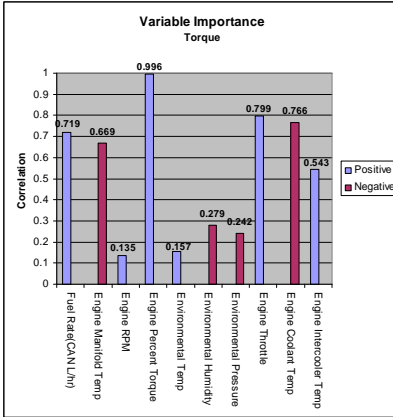


FIGURE 6. Coefficient of correlation for each input variable with respect to measured torque.

The data depicted in figure 6 was based on information from the first replication of the torque data set. A positive correlation existed between measured torque and each of engine percent torque, engine throttle, engine fuel rate (from CAN), engine intercooler temperature, engine RPM and environmental temperature. A negative correlation existed between measured torque and each of engine manifold temperature, engine coolant temperature, environmental humidity and atmospheric pressure. The CAN-based engine percent torque input had the highest coefficient of correlation of 0.996.

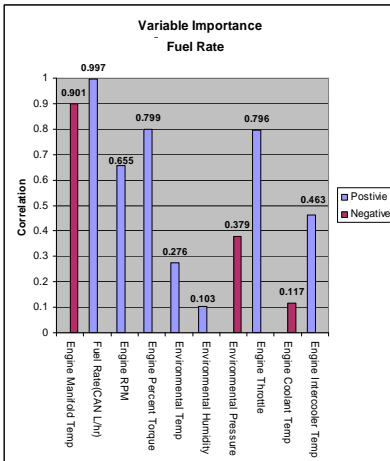


FIGURE 7. Coefficient of correlation for each input variable with respect to measured fuel rate.

The data depicted in figure 7 was based on the first and second test replications of data to measure fuel rate. A positive correlation existed between measured fuel rate and each of fuel rate (from CAN), engine RPM, engine percent torque, engine intercooler temperature, engine throttle and environmental humidity. A negative correlation existed between measured fuel rate and each of engine manifold temperature, engine coolant temperature and atmospheric pressure. The CAN-based fuel rate data had the highest coefficient of correlation of 0.997, even though it underestimated actual fuel rate by as much as forty-three percent.

MQ generated the best models to predict actual torque and fuel rate using its proprietary StatNet procedure. The equation to predict torque was:

$$T_p = [117.9398 + \{54.0514 (-2.651 + 0.0507 * T_c)\}]$$

where:  $T_p$  is predicted torque in ft-lbs  
 $T_c$  is percent torque from the CAN

Of the input variables available, MQ generated the best model using only the input value of percent torque to predict actual torque in ft-lbs. The model was limited to an input range of twenty-two percent to eighty-three percent torque.

The equation to predict fuel rate was:

$$FC_p = [15.9192 + \{9.8042 (-1.5274 + 0.1358 * FC_c)\}]$$

where:  $FC_p$  is predicted fuel rate in liters per hour (L/h)  
 $FC_c$  is fuel rate from the CAN

MQ found CAN fuel rate was the only variable needed to develop the best equation. The model was limited to the input range of 1.49 L/h to 30.61 L/h.

Each equation was tested with inputs from an additional replication of data that had not been used by MQ during the process of generating the equations. Table 2 summarizes the performance of the two equations to predict actual torque and fuel rate.

TABLE 2. Descriptive and performance indicators of the equations generated by MQ to predict torque and fuel rate.

Descriptor	Torque	Fuel Rate
Model description	StatNet	StatNet
Number of observations	36	92
Minimum input value	22%	1.49 L/h
Maximum input value	83%	30.61 L/h
Maximum absolute error	13.78 ft-lbs	3.13 L/h
Average absolute error	3.62 ft-lbs	0.56 L/h
R <sup>2</sup>	0.993	0.994

The coefficient of determination (R<sup>2</sup>) of the torque model was 0.993. The maximum

absolute error of 13.78 ft-lbs for the torque equation was based on a maximum of 206.8 ft-lbs. Figure 8 plots the error of the predictive torque equation compared to measured torque. Figure 9 compares actual torque values to predicted values. The average absolute error of the torque model was 3.6 ft-lbs or 3.4%. Actual torque was measured within the range of 33.5 ft-lb to 206.8 ft-lb with 62 units of CAN torque measurement (22% to 83%). The resolution of CAN torque measurement was approximately 2.8 ft-lbs. The average absolute error of the predictive equation was within 0.6 ft-lbs of the resolution of the CAN percent torque data. This model was considered suitable for *in situ* estimations of torque in ft-lbs using available CAN data.

The fuel rate equation had an  $R^2$  of 0.994 and a maximum absolute error of 3.13 L/h. The maximum measured fuel rate was approximately 40 L/h. Figure 10 illustrates the error of the predictive fuel rate equation compared to measured fuel rate. Figure 11 compares actual fuel rate to predicted values. The average absolute error of the fuel rate model was 0.56 L/h. The average percent error for this model was 4.13% compared to the CAN fuel rate average error of 43%.

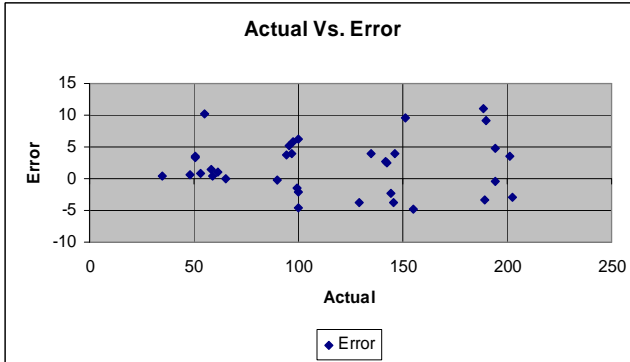


FIGURE 8. Plot of error of predictive equation compared to measured torque (ft-lbs).

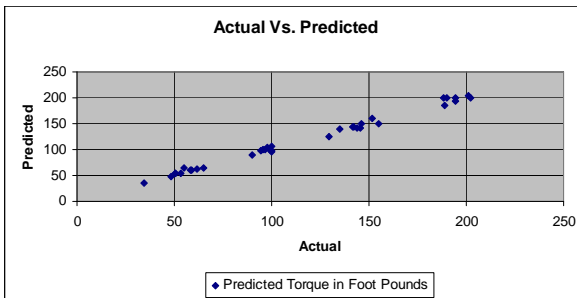


FIGURE 9. Plot of actual versus predicted torque values.

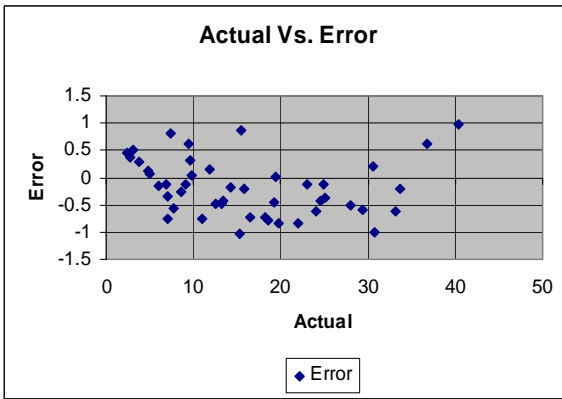


FIGURE 10. Plot of error of predictive equation compared to measured fuel rate (l/h).

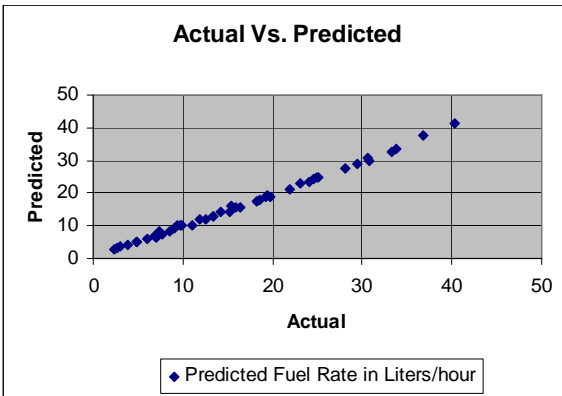


FIGURE 11. Plot of actual versus predicted fuel rate values.

The fuel rate model was also considered suitable for *in situ* estimation of fuel rate using CAN data.

The data was collected within a range of ambient conditions: 25.5 to 40.8 deg C, 24% to 65% relative humidity and 29.66 to 30.18 inHg of barometric pressure. Within this range, including ambient condition data in the models did not improve the  $R^2$ . If plans were to collect *in situ* data under ambient conditions outside the ambient ranges of this study, the ambient conditions may or may not be a factor in the equations. If a different test engine had been used in this study the best equations would be expected to differ to some degree due to differences in the accuracy of the CAN data and the engines.

The resulting equations to predict torque in ft-lbs and fuel rate in L/h compensate for limitations of the CAN data and provide units required for *in situ* estimation of engine performance. A computer, industrial controller or data logger could be used to record CAN data during field operations. CAN percent torque and fuel rate data could be adjusted with the equations to accurately estimate horsepower and fuel efficiency for this engine. Data from a gas analyzer combined with the estimated horsepower would allow expression of *in situ* emission data in grams per horsepower hour.

## CONCLUSIONS

An equation was developed to convert the percent torque data from the CAN of a propane engine to torque in ft-lb for inclusion in a horsepower equation. The equation had a  $R^2$  of 0.993 and an average absolute error of 3.6 ft-lbs.

An equation was developed to convert the fuel rate data from the CAN of a propane engine from the gasoline calibration to propane. The fuel rate equation had a  $R^2$  of 0.994 and an average absolute error of 0.56 L/h. The models developed in this study were considered sufficiently accurate for the range of ambient temperature conditions of the test and suitable for use in determining horsepower and fuel rate during *in situ* operations.

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Sensationalism and *The Narrative of A. Gordon Pym of Nantucket*

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**ABSTRACT**

This study will address how the literary market and racial climate of the 1800's influenced Edgar Allen Poe's writing of *The Narrative of A. Gordon Pym of Nantucket*, one of his most debated texts. The study will also focus on how reading *Pym* with sensationalism in mind will provide a better understanding of the literary market of the time. Using textual analysis, criticism, personal letters between James K. Paulding and T.W. White pertaining to Poe, and a brief historical sketch, a more accurate view of sensationalist influences in a pre-civil war society will come to view and provide a better idea of what people in the 1800's expected from a piece of literature. Emphasis will be placed on Poe's attempt at "writing for the masses" and the exaggeration found in *Pym*. The results found from this reading will be applied to recent criticism on Poe's work and the present view of *Pym*.

**INTRODUCTION**

In relation to racial studies, Edgar Allen Poe's works have gained increasing popularity throughout the years as scholars have attempted to gain a better understanding of racial views in the antebellum period of this country. Because Poe wrote during a time in which people were just beginning to notice the negative connotations of slavery, his work is a window into views of race unaffected by the Civil War and the intense racial debates that followed. Scholars have made assumptions about race in Poe's work based on literature reviews, Poe's "racist" texts, and popular literary trends of the 1800's, such as nationalism, colonialism, and sensationalism.

Toni Morrison's reviews of race and slavery in Poe's works in *Playing in the Dark: Whiteness and the Literary Imagination* (1992), has had a strong influence on scholars' work in Poe studies in identifying themes of "whiteness" and "blackness". With her statement, "No early American writer is more important to the concept of American Africanism than Poe,"<sup>1</sup> she inspired scholars to read race in Poe's works in the singular manner of "racist" or not, ignoring the numerous external factors that could have influenced the texts of many of Poe's most debated works.

<sup>1</sup> Toni Morrison, *Playing in the Dark: Whiteness and the Literary Imagination* (New York: Random House, 1992), 32.

While the themes of “whiteness” and “blackness” are important — and are one of the most obvious signs of racial separation and condescension in a text — situating Poe, as an author, in a time of racial difficulties is crucial to gaining a better understanding of the racial attitudes of the nation as a whole. Scholars such as Terence Whalen and J. Gerald Kennedy support this view. Their Poe studies, although loosely based on Morrison’s observations, rely more heavily on the political and historical impact of literary trends in the 1800’s.

Another contrasting opinion in the issue of Poe and race is the frequently debated “Paulding-Drayton” review. Throughout the years, this review acted as a central focus for scholars studying race in Poe’s work. In 1902, James A. Harrison included the “Paulding-Drayton” review in his book *The Complete Works of Edgar Allen Poe*, attributing the pro-slavery review to Poe himself. Subsequent scholars have relied heavily on this, basing their analyses on views of race in the review. When a letter was found containing textual references to the “Paulding-Drayton” review between Poe and Beverly Tucker proving Poe not to be the author, many scholars were forced to reevaluate their theories of race in Poe’s work. These new theories on race in Poe’s work and the time period in which he wrote are important because a look at views on race in the 1800’s, based on a national audience, provides a more accurate representation than a view found in one review, attributed to a single author.

Although many of Poe’s works, such as “The Gold-Bug” and “The Black Cat,” contain instances of racism, few have such a negative outlook on race as *The Narrative of A. Gordon Pym of Nantucket*. This story, Poe’s only novel length work of fiction, may be one of his most frequently debated texts. *Pym* contains the most clear-cut racial discourse in terms of “whiteness” and “blackness” to be found within any of Poe’s texts. What must be taken into account, however, are parallel works of literature during the same time, influences of friends, and the overwhelming pressure of financial difficulties that often plagued Poe during his career as a writer. All of these could have played a role in the shaping of *Pym*.

This study will address the issue of slavery in Poe’s most racist text, not in terms of “whiteness” or “blackness,” but social and political motivation. Reading *Pym* from the view of a national audience will provide a better understanding of racial attitudes in an antebellum culture. This understanding, based not on anti-slavery or pro-slavery views, removes the cultural influences of the author from the text and becomes not a personal statement on the issues of race and slavery, but a reflection of the people it was written for.

## THE “PAULDING-DRAYTON” REVIEW

In 1902, James A. Harrison, in his book, *The Complete Works of Edgar Allen Poe*, included the “Paulding-Drayton” review as a work of Poe’s. Subsequent scholars have relied heavily on its attribution to Poe, building their criticism of race in Poe’s works off the extremely pro-slavery view to be seen in the review.

The review, as it appeared in the *Southern Literary Messenger* in April 1836, originally titled “Slavery,” was written in response to James K. Paulding’s *Slavery*

in the *United States*, and *The South Vindicated*, now attributed to William Drayton. The review itself was “less a book review than it [was] an excuse for a proslavery essay.”<sup>2</sup> The different approach to slavery contained in the article focuses on the relationship between slave and master rather than the inherent rights of the Southern slaveholder. The author states that “it is the will of God that [slavery] be so,”<sup>3</sup> and not the necessary evil that many abolitionists claimed it to be. Throughout the article, there are frequent mentions of sick bed scenes between master and slave, and the care with which masters tend to their ill servants. After mentioning this, the author continues, “but here, we shall be told, it is not humanity, but interest that prompts.”<sup>4</sup> The argument continues with examples of humanity shown to ill servants by their masters. “Is it interest which labors to rear the crippled or deformed urchin, who can never be anything but a burthen — which carefully feeds the feeble lamp of life that, without any appearance of neglect, might be permitted to expire?”<sup>5</sup> These examples support the author’s belief that slavery is the will of God and that in its practice slavery incites feelings “stronger than they would be under like circumstances between individuals of the white race.”<sup>6</sup>

These views, in connection with Poe, would leave no doubt as to his political beliefs on the issue of slavery and would provide a broad base of study for his works containing racism. There exists, however, a letter from Poe to Beverly Tucker, stating, “I must also myself beg your pardon for making a few immaterial alterations in your article on Slavery, with a view of so condensing it as to get it in the space remaining at the end of the number.”<sup>7</sup> This letter and its contents would seemingly provide proof that Beverly Tucker was the author of the review, but such scholars as Bernard Rosenthal still dispute the letter’s relevance. Scholars are now turning to the texts of Poe’s works and other letters between associates to provide a more supported view concerning Poe’s opinions on slavery, disregarding the “Paulding-Drayton” review as an unreliable source. The lure of attributing the “Paulding-Drayton” review to Poe is a strong one, because it provides scholars with solid political proof on Poe’s opinions of slavery, therefore making it much easier to read issues of race into his work. While this may seem harmless, the views gained on important works, such as *Pym*, with Poe’s personal opinion on slavery in mind, would be judgmental and harsh, lending itself to a biased reading of a

<sup>2</sup> Joseph V. Ridgely, “The Authorship of the ‘Paulding-Drayton Review,’” from *PSA newsletter*, XX, no. 2, Fall 1992, 1-3,6.

<sup>3</sup> Anonymous, “‘Slavery’: Slavery in the United States, The South Vindicated,” *Southern Literary Messenger*, April 1836, 338.

<sup>4</sup> *Ibid.*, 338.

<sup>5</sup> *Ibid.*, 338.

<sup>6</sup> *Ibid.*, 338.

<sup>7</sup> E.A. Poe Association, “Edgar Allen Poe to Beverly Tucker — May 2, 1836,” 19 May 2005, <http://www.eapoe.org/works/letters/p3605020.htm>.

text that can provide valuable clues to national views on issues of race in a time period just beginning to feel the negative connotations of slavery.

## HISTORY AND THE RISE OF SENSATIONALISM

When Poe was nineteen years old, a year before he published *Al Aaraaf, Tamerlane, and Minor Poems*, Andrew Jackson was elected seventh president of the United States, beginning what was to be called the Age of Jackson. This age brought about a dramatic change in politics and public policy, affecting both the national economy and individual cities.

Andrew Jackson “rode the crest of a populist swell by repeatedly affirming the rights of the multitude and the wisdom of the common (white) man. Jackson’s professed aim was to honor the infallible ‘will of the people’... attacking the symbols of privilege and corrupt power, such as the chartered corporations, paper money, expensive federal projects, and especially the Bank of the United States.”<sup>8</sup> Jackson’s political aims and aspirations “would have offered Poe a formula for success (appeal to the masses) and an easy polemical target (the wealthy gentleman).”<sup>9</sup> The Age of Jackson is important to study when looking at Poe’s works because it provides a look at the economy and political issues of the time when Poe was just beginning his career as a writer. While Poe generally tried to stay away from any sort of formal statement of his own political views, there are an abundant number of texts published during his time that do not contain Poe’s restraint. By looking at these works, and the varied receptions that they had with the public, both North and South of the Mason-Dixon Line, the literature itself will paint a picture of the struggling economy and changing opinions of the North and South.

Poe’s position as a foster child to a merchant would have also played a major role in his development of a reader-conscious attitude toward writing. In this position, Poe would have realized that, “literature was a commodity produced for sale in the capitalist marketplace”<sup>10</sup> beginning the trend of “writing for the masses” that can be seen in *The Narrative of A. Gordon Pym*, “The Gold-Bug,” and “Murders in the Rue Morgue,” all linked in some way to the rising popularity of sensationalist literature.

The literary economy, like the “larger” economy, was frequently plagued with unpredictable surges and falls in prosperity. This, and the fact that no international copyright law existed, presented native authors with a difficult situation. Publishers, realizing the people’s demand for literature from Europe, frequently pirated novels from overseas. Native authors, such as Poe, would have recognized that publishers would much rather make a great deal of money off of books with an established reading base than pay unknown authors for stories that had not

<sup>8</sup> Terence Whalen, “Poe and the American Publishing Industry,” in *A Historical Guide to Edgar Allan Poe*, ed. J. Gerald Kennedy (Oxford University Press, 2001):65.

<sup>9</sup> *Ibid.*, 65.

<sup>10</sup> *Ibid.*, 66.

been tested on the literary market. This would have made the talent of writing for the masses that much more important.

During this time, people would also have been dealing with increasing arguments over the institution of slavery. In 1820, "Congress negotiated the Missouri Compromise, debating for the first time the morality of slavery and addressing the diverging interest of free and slave states."<sup>11</sup> An example of these arguments can be seen in the *Southern Literary Messenger*. As editors of a nationally circulated journal, Poe and White tried to avoid the subject of slavery, knowing that taking a stance on one side or the other could crumble at least one of their audience bases. Although the two editors tried to stay away from the debate, "certain valuable contributors [Beverly Tucker and Lucian Minor] felt compelled to register their sentiments."<sup>12</sup> The two articles that arose from this belief were printed in the *Southern Literary Messenger* after careful editing by White and Poe. This gave rise to the popular opinion that Poe was himself the author of Beverly Tucker's article on slavery, later known as the "Paulding-Drayton" review.

In the 1800's, with the economy suffering frequent dips and rises in national prosperity, and the rate of literacy in the East steadily rising, the major publishing centers in the United States recognized the people's need for inexpensive, easily attainable literature.

In this day and age, "freedom of the press" is taken for granted, but in the early 1800's, newspapers and journals quickly realized the benefits of their new freedom and began to publish tales that would, previous to the new law, have been "censored in more repressive societies."<sup>13</sup> With the popular new demand for sensationalism in America, newspapers began to print "a new kind of racy literature that reflected the tastes of working-class and frontier readers,"<sup>14</sup> mirroring Andrew Jackson's appeal to the masses and the common man. Popular newspapers with large reading bases "made a dramatic shift toward the sensational,"<sup>15</sup> and crime literature, containing gruesome tales of double murders and homicidal maniacs, gained an increasing following.

This sordid literature found a home in the new penny newspapers of the day, and it was not long before "every major American city had one or more penny papers,"<sup>16</sup> flooding the literary market with tales of horror. The effects of crime literature, and reports of the same type, are easily seen in a number of Poe's works, namely "The Tell-tale Heart" and "Murders in the Rue Morgue," which contains the

<sup>11</sup> J. Gerald Kennedy, "A Brief Biography," in *A Historical Guide to Edgar Allan Poe*, ed. J. Gerald Kennedy (Oxford University Press, 2001): 21.

<sup>12</sup> *Ibid.*, 37

<sup>13</sup> David S. Reynolds, "The Sensational Press and the Rise of Subversive Literature," *Beneath the American Renaissance* (1988): 169.

<sup>14</sup> *Ibid.*, 169.

<sup>15</sup> *Ibid.*, 174.

<sup>16</sup> *Ibid.*, 174.

<sup>17</sup> Terence Whalen, "The Horrid Laws of Political Economy," *Edgar Allan Poe and the Masses: The Political Economy of Literature in Antebellum America* (1999): 25.

introduction of the self-made detective who single-handedly solves the case while outwitting local authorities. Other influences caused by the increasing popularity of sensationalist literature can be seen in Melville's *Moby-Dick*, and Hawthorne's *The Scarlet Letter*.

Poe would have recognized the importance of meeting the demand of the literary market and "the Panic of 1837 [would] therefore [have] sharpened Poe's understanding of the relation between literary production and production in general."<sup>17</sup> As mentioned above, Poe frequently gained story ideas from the popular morbid reports to be found in penny papers. Although he was conscious of the literary demands of the market and "decried genteel literature because of its distance from what he perceived as the tumultuous spirit of the age, he was not prepared to go as far as contemporary writers who dispensed with the rational altogether."<sup>18</sup> Poe's negative view of the people's demand for morbid, grisly tales, and his own wish to succeed as a writer resulted in tales that attempted to address issues of slavery and race in the "The Gold-Bug," popular adventure themes in *The Narrative of A. Gordon Pym*, crime in "Murders in the Rue Morgue," and unnatural obsessions in "Bernice." In *The Narrative of A. Gordon Pym*, Poe's struggles to uphold his own views while producing a novel length piece of fiction designed to sell are readily evident. This view can be seen in comparing his tale "The Gold-Bug" — which Poe himself "confessed to a friend that he wrote for the express purpose of running" — to "Bernice" — which he claimed, after its publishing, "was 'far too horrible' and 'on the very verge of bad-taste'."<sup>19</sup> These two tales, one, "The Gold-Bug," containing a story about a free slave still serving his master and his master's obsession with treasure, and the other, "Bernice," a morbid story about a man's infatuation with a woman's teeth, received very different reviews after publishing. While "Bernice" was highly debated but still frequently read, the "Gold-Bug" "sold some 300,000 copies"<sup>20</sup> and enjoyed high literary success.

Besides the obvious difference in plot choice from Poe's other works, *Pym* contains a different flavor of darkness than his other stories. The satirist humor to be seen in the text is a glaring example of Poe's disdain for the excessive exaggerations so popular in sensationalist literature, and his blatant commentary on "blackness" by his narrative double "Pym" is shockingly different from his earlier, comparatively gentle, discourse on slavery and race in tales such as "The Gold-Bug." Like the *Southern Literary Messenger*, he tried to avoid offending either side of the slavery debate and "the result was an anxious struggle against excessive sensationalism and the irrational style,"<sup>21</sup> and a text that would be analyzed, debated, and tossed aside as meaningless for years to come.

<sup>18</sup> David S. Reynolds, "Poe and Popular Irrationalism," *Beneath the American Renaissance* (1988): 227.

<sup>19</sup> *Ibid.*, 226

<sup>20</sup> *Ibid.*, 226

<sup>21</sup> *Ibid.*, 241.

**BACKGROUND AND HISTORY OF**  
**THE NARRATIVE OF A. GORDON PYM OF NANTUCKET**

In July of 1838, a year after its original scheduled release, *The Narrative of A. Gordon Pym* was published by Harper and Brothers. *Pym*, as Poe's only novel-length work of fiction, has enjoyed fluctuating success and failures, emerging as Poe's most confusing and most debated text.

Encouraged by Harper and Brothers in a letter between associates James K. Paulding and T.W. White, the editor of the *Southern Literary Messenger*, Paulding encouraged Poe to

lower himself a little to the ordinary comprehension of the generality of readers, and prepare a series of original Tales, or a single work... and to apply his fine humor, and his extensive acquirements... to the ridiculous affectations and extravagancies of the fashionable English literature of the day.<sup>22</sup>

Following this letter, Poe began *Pym*, his only novel, and included all of the things that Paulding encouraged him to, ranging from ridiculous exaggerations in the blackness of the natives on the polar island Tsalal, to the popular devices of sensationalist literature and the ever increasing interest in South Seas exploration and accounts from unknown and distant places.

While Poe wrote *Pym* for a national audience, there is sufficient evidence to prove that although he understood the importance of the national reader, he did not approve of their reading tastes. In the April 1836 issue of the *Southern Literary Messenger* (coincidentally the same issue containing the much debated "Paulding-Drayton" review), Poe "decried the 'misapplied patriotism' that caught American readers in 'the gross paradox of liking a stupid book the better, because, sure enough, its stupidity is American.'<sup>23</sup> Battling these opinions about the popular sensationalist literature that abounded in the early 1800's, Poe attempted to find a subject that he could write about that would not be too frivolous, but would capture the reading public's interests. With the taste of the times running to the grotesque and terrible, Poe chose instead the increasing interest of South Seas exploration, and "freely plagiarized extant accounts to give his story a ring of authenticity."<sup>24</sup> Subsequent investigations into this plagiarism have "helped to clarify the historical context while supporting the notion of an uninspired author ransacking contemporary travel accounts to pad his tale and achieve the requisite commercial length."<sup>25</sup>

<sup>22</sup> J. Kirke Paulding to T.W. White, 3 March 1836, *The Complete Works of Edgar Allen Poe: Letters of Poe and his Friends*, ed. James A. Harrison (New York: Thomas Y. Crowell and Company, 1902), 378.

<sup>23</sup> J. Gerald Kennedy, *The Narrative of Arthur Gordon Pym: An Abyss of Interpretation*, (New York: Twayne Publishers, 1995), 14.

<sup>24</sup> *Ibid.*, 14.

<sup>25</sup> *Ibid.*, 15.



This fact is most important to keep in mind while reading *Pym* with the purpose of gaining insight into Poe's views on race and slavery. The novel itself was written for a national audience, and after its publishing, quickly faded from view. As Kennedy mentions above, the author was "uninspired," so it is nearly impossible to claim that *Pym* was written to display the author's views of slavery. Instead, it can be seen as a text highlighting Poe's distaste of the public's reading demands, and a reflection of the national audience's desire for sensationalist tales of adventure, grotesque killings, strange new lands, and the traditional image of the black (mostly represented in *Pym* as the savages on the island of Tsalal).

## ANALYSIS OF TEXT IN PYM

From the very beginning of the tale, Poe's *Pym* is full of questionable themes and motives. Poe, casting A. Gordon Pym as a real person instead of a character in an attempt at a literary hoax, attempts to convince the reading audience that Pym actually exists and undertook the adventures seen in his fantastic narrative. This brand of literary hoax, a hobby of Poe's, was meant to intrigue the reader and lure them into believing that the incredible incidents that occurred in the tale were real. As there were many South Sea adventures taking place during the time that *Pym* was published, it is not too incredibly hard to believe that the tale could be true, as no one had ever seen the South Pole, and so couldn't, with any real authenticity, claim that Pym's account was false.

This said, Pym begins his series of stories and adventures. In the style of sensationalist literature, Pym's first adventure is full of danger and suspense in the form of a sea voyage with his intoxicated friend Augustus. By the time that Pym realizes he is in trouble, Augustus has passed out and Pym is left to the mercy of the elements in their slowly sinking boat. With the dramatic and exaggerated behavior common in sensationalist literature, Pym recounts the means of his rescue, "suddenly, a loud and long scream or yell, as if from the throats of a thousand demons, seemed to pervade the whole atmosphere around and above the boat."<sup>26</sup> This rather dramatic explanation is of the yelling of the crew on the boat that runs over their craft and then rescues them. Pym's active and oftentimes ridiculous imagination substituted the yells of the crew for the screaming of demons in his excited state.

Never while I live shall I forget the intense agony of terror I experienced at that moment. My hair stood erect on my head — I felt the blood congealing in my veins — my heart ceased utterly to beat, and without once having raised my eyes to learn the source of my alarm, I tumbled headlong and insensible upon the body of my fallen companion.<sup>27</sup>

<sup>26</sup> Edgar Allen Poe, "The Narrative of Arthur Gordon Pym of Nantucket," In *The Unabridged Edgar Allen Poe*, ed. Tam Mossman (1983): 331.

<sup>27</sup> *Ibid.*, 331.

This explanation of Pym's terror is almost comical. True to sensationalist style, Pym becomes so excited and alarmed by the sudden noise, he faints, falling dramatically across the body of his friend. This exaggeration of events is common in the literature of the period, and the overreaction to events on Pym's part can be seen throughout the tale.

As mentioned above, Pym may contain the most straightforward interpretation on race of all of Poe's works. What is seldom discussed however, are the disparities between traditionally racist themes and the actual text.

Upon beginning his adventure, Pym is hidden in the cargo hold of the ship, alone, in the dark, and helpless. While he has food, water, books, and a place to sleep, Pym's situation is ironic. Pym, the son of "a respectable trader in sea-stores at Nantucket," and "expected to inherit the most of his [wealthy grandfather's] property at his death"<sup>28</sup> is, like a slave, held under lock and key in the bowels of the ship along with the cargo. The suffering that rises from Pym's location is seen almost immediately as he grows ill from the fumes of fish oil and falls into a confused sleep. When he awakes, his situation is worsened, as much of his food is spoiled and his water has evaporated. Now, Pym, a free white man of good standing, is imprisoned in the hold of a ship, thirsty and starving.

This terrible situation runs almost immediately into the next as the crew on the schooner mutinies and takes over the ship. In claiming that Pym is the most racist text of all of Poe's works, what must be taken into account is the behavior of the white men and mixed men aboard the ship *Grampus*, as well as the behavior of the "savages" on the island of Tsalal. As recounted by Augustus after Pym has been saved, the behavior of the mutinous crew is fiendish and horrible. In one case, a man pleads for mercy and is answered with an axe to the head. Aboard the ship is only one black, the cook, and one man of mixed race, Peters. Compared with the slaughter aboard the *Grampus*, the treachery of the Tsalal natives is mild and much more civilized. If Poe intended Pym to be a statement on slavery and race, why would he include a mutiny among white men, with no excuse for their barbaric behavior? Furthermore, the one instance of cannibalism in the tale is performed not by the savages, but by Augustus, Pym, and Peters, long before they ever meet the savages. The idea itself is brought to attention by a white man, not the only mixed race man aboard the overturned ship, as one would expect from a "racist" text. Another interesting occurrence is the show of superstition by the mutinous sailors. To cause a distraction, Pym, Peters, and Augustus use the clothing of a recently deceased man to cause a distraction. The sailors, in their fear of the "ghost," are defeated and Pym's group retakes the ship.

While the Tsalal natives' show of superstition is much more dramatic, the sailors aboard the *Grampus* seem to be painted as less civilized. Their treachery and barbaric slaughter of their fellow crew was perpetrated on men of their own color, while the natives have the excuse of attacking a people different than them. The only show of cruelty the Tsalal natives show is their treachery and the destruction

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<sup>28</sup> *Ibid.*, 328.

of all but two of the crew of the *Jane Guy*. While Pym does not make it clear why the natives destroy the sailors and the ship, the end is quick and organized, lacking the bloody slaughter pleading sailors suffered at the hands of their fellow countrymen.

Throughout his stay on the island, Pym never encounters cannibalism or fiendish behavior. Before the treachery, the islanders are pleasant and peaceful. Even during the treachery, the natives execute their “enemies” quickly and efficiently, and no torture is involved. While this does not paint a peaceful picture of the Tsalal natives, it does highlight the differences between the white sailors and the black natives, showing the sailors to be much more cruel.

In sensationalist literature, shipwreck, cannibalism, and destruction were the norm, adding to exciting adventures. Poe would have found them necessary to include if he wanted Pym to be published and nationally read. It is curious that many of these devices are perpetrated not by the natives, but by the white sailors. If Poe was trying to make a statement about race, he seems to be making a statement about his own, and not the “savages” of Tsalal.

In *Pym*, issues of “whiteness” and “blackness” are frequent, leading to the opinion that Pym is Poe’s most racist work. The first appearance of the natives supports this view, as Pym makes it very clear that the natives are black, “they were about the ordinary stature of Europeans, but of a more muscular and brawny frame, their complexion a jet black, with thick and long wooly hair.”<sup>29</sup> This description, leaving no doubts as to the color of the natives, is only the first instance of blackness on the island of Tsalal. Following is Pym’s description of the island, in which the reader finds that the sand, livestock, birds, and canyons are all black. Even an albatross, naturally white and a traditional symbol of mariners, is black. Towards the end of the story the reader also learns that the blackness of Tsalal also extends to the native’s teeth. This unusual blackness is not explained, but seems to bring rise to the native’s fear of anything white, be it clothing, skin, or animals. Pym, upon escaping the island, claims, “in truth, from everything I could see of these wretches, they appeared to be the most wicked, hypocritical, vindictive, bloodthirsty, and altogether fiendish race of men upon the face of the globe.”<sup>30</sup> This view, complete with five vicious adjectives, seems overblown and exaggerated considering the behavior of Pym’s own countrymen months earlier aboard the *Grampus*, and his own behavior as he participated in eating one of his fellow survivors. This description, quoted by many scholars when speaking of Poe’s racism, in terms of sensationalist literature, is very appropriate. The character of Pym is painted as naive, foolish, pompous, and often aggrieved. He is angry at their narrow escape from the island, and so in typical overblown dramatic fashion, he curses his tormentors, much as he would have cursed the sailors participating in the mutiny.

These descriptions draw glaring boundaries through racial discourse. There is no in between. People are either white and civilized, or black and barbaric, even if

<sup>29</sup> *Ibid.*, 432.

<sup>30</sup> *Ibid.*, 462.

the text of the work does not support this view. This view plays a large role in the end of the book with the appearance of the “white shrouded figure, with skin the perfect whiteness of snow.” This cryptic and highly debated ending has plagued scholars for years.

The whiteness of the South Pole is the obvious reason for the captured Nu-Nu’s death, perhaps a belated excuse for the islander’s destruction of the sailors. This may represent, as seen in *Moby-Dick*, the corruption white men bring with them when they come to uncivilized territories. While some read the white figure at the end of the story as an obvious sign of racism on Poe’s part, the ending is far too random and mysterious to attribute any one meaning. Instead of reading it as an instance of racism, it should be read through the lens of popular sensationalist themes. Readers during the 1800’s craved mystery and excitement, and Pym’s cliff-hanger ending fulfills both, not simply a summation of racial views, but perhaps a bad ending for a writer who did not believe in or enjoy what he was writing.

Scholars on Poe frequently quote passages from *Pym*, claiming that every passage containing instances of race supports the view that Poe was racist and *Pym* is a text highlighting these views. A different opinion may rise, however, when reading *Pym* through the filter of sensationalist themes. If Poe intended *Pym* to be a racist text, it seems he was racist against his own countrymen and the readers of his work rather than the invented Tsalal natives. The natives are painted with a singular and focused theme. They are uncivilized, barbaric in their customs, and without education; they are the classic picture of a savage. The white men in the book are barbaric, savage, middle-class, and blood-thirsty. The comparison between the two is very close and does not support the idea of a racist text in which Poe was trying to make a statement about African Americans.

## SUMMARY

With the disputed “Paulding-Drayton” review now attributed to Beverly Tucker, it has become increasingly important to read Poe’s racist texts through alternate means. Evaluating the sensationalist literary devices of the time, one can see obvious parallels in theme in the text of *The Narrative of A. Gordon Pym of Nantucket*, with other popular topics of the early 1800’s, such as cannibalism, grotesque deaths, racism, slavery, and adventure. Because Poe wrote *Pym* to satisfy the demands of Harper and Brothers, and the national audience that he often deplored for its bad taste, *Pym* can offer an accurate view of sensationalist literature and the literary market of the 1800’s, as well as popular views on race and the general opinion of “blackness” in a culture just beginning to feel the negative effects of slavery in society.

Poe’s *Pym*, widely seen as his most racist text, has been hotly debated over the years as a text that offers the reader an accurate view of the author’s opinions on race. This view — depending on Poe’s authorship of the “Paulding-Drayton” review for its strength — is a narrow assumption to make, as there are many instances of other motives for the writing of Poe’s only novel length work. With the type of

literature enjoyed by the public undergoing a drastic change in the 1800's, native authors such as Poe, Hawthorne, Melville, Irving, and Cooper, would have seen the importance of producing literature that would be accepted by the publishing houses and profitable newspapers of the time. Competing against pirated European literature in local fiction contests in the local papers, Poe would have felt the need to conform to the themes of the time. While Poe wrote many sensationalist tales bordering on the edge of bad taste, his attempt at a novel, outside of his normal genre of short stories and poems, provides an exceptionally accurate view of sensationalist literature, and a useful view of an author struggling against the popular demand for works of literature that bordered on the ridiculous.

Writing in a time fraught with economical, social, and racial tensions, Poe's editorial work at the *Southern Literary Messenger*, his novel *Pym*, and letters between friends and associates offer a reflection of the 1800's that is not based on the debated "Paulding-Drayton" reviews or Poe's own personal political opinions. The importance of such a reflection in our culture's day and age is unparalleled, for to understand the culmination of years of racial tensions, it is necessary to first look at how these tensions developed.

# 2003-2004 Cohort



## Synthesis and Characterization of a Zirconium Phosphate/ Nicotine Intercalation Compound



### MURICE BETTS

College of Science  
Chemistry major

### ABSTRACT

We are interested in the use of layered materials as drug delivery host systems. We have successfully prepared a series of zirconium phosphate intercalation compounds in order to investigate the effect of ultrasound on the de-intercalation rate. Here we describe the successful preparation of a zirconium phosphate/nicotine intercalation compound. The synthesis and characterization of this new intercalation compound by powder X-ray diffraction (XRD) and Fourier transform infrared spectroscopy (FTIR) are reported.

Mentor: Lori Vermeulen  
Associate Professor and Chair  
Department of Chemistry

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## The Illinois Malpractice Crisis



### NATALIE BONNER

College of Liberal Arts  
Economics major

### ABSTRACT

The state of Illinois currently has no cap, an upper limit on what is allowed, on how much a person can receive for non-economic damages in a medical malpractice suit. The malpractice insurance rate in Illinois is so expensive because the state constitution finds caps unconstitutional. Illinois has been traumatically affected by the current crisis of expensive malpractice rates, Southern Illinois more specifically. The St. Clair Medical Society has predicted that by July 2004 the malpractice rates will have increased by 7.4% from last January. These rates have caused our doctors to retire early, go out of business, or in some cases “jump the border” to surrounding states. Doctors fear malpractice litigation and have begun to practice “defensive medicine,” meaning that they may perform more tests than may be needed because they do not want to be sued. Doctors have also begun to deny patients that may need complex treatment. Many people are suffering from the malpractice crisis. It has been as extreme as cities not having specialists that can



deliver babies or treat trauma cases. Here in Southern Illinois, there is not a single neurologist. Economically, the crisis among the U.S. deals with efficiency, and productivity. The research has focused on how other states' approach the medical malpractice crisis. The crisis states and the non-crisis states were looked at to attempt to find what works the best. Information from internet-sources, journals, and newspapers were used. I used surveys, reviewed litigation cases, and analyzed statistical data. The research found that costs incurred because of the malpractice crisis indirectly affect the cost of certain Government Programs. Doctors and consumers agree that awards for non-economical damages should be capped. Finally, the research found that states with caps on non-economic damages have a 12% increase in the supply of doctors over non-cap states. In conclusion, caps are beneficial. By enforcing caps, possibilities of lower health care and better access to care are within reach.

Mentor: Daniel Primont  
Professor  
Department of Economics

# The Effects of Ambient Colors of Light on Human Behaviors of the Attention Deficit/Hyperactive Disorder (ADHD) Type



## KANDACE FISHER

College of Applied Sciences and Arts  
Interior Design major

### ABSTRACT

The purpose of this pilot study was to 1) test research protocol on two participants, one with ADHD and one without ADHD, i.e., exposure length to specific color wavelengths, illumination levels, specialized light sources, and light measuring equipment; 2) recommend any necessary protocol revisions; and, from study data, 3) determine if the hypothesis can be supported, albeit with a sample of two. The research question is: does human exposure to specific ambient color wavelengths of light and white light affect behaviors of the ADHD type? The hypothesis is: specific ambient color wavelengths of light and white light have different effects on behaviors of the ADHD type. The issue is: if behaviors of the ADHD type increase or are intensified by specific color wavelengths of light, then those wavelengths could likely be eliminated from the ambient light in environments for those with ADHD. This study is unique in that it analyzes the effects of ambient color wavelengths of light and white light and not focused or point sources of intense light.

Two research participants of essentially the same age were exposed individually at five separate sessions for a period of three hours each to white light and four specific color wavelengths of light. Participants were videotaped during each session. Behaviors of the ADHD type were determined by review of the literature and from report of the ADHD participant's parents. Systematic observation of the videotapes will be made by trained observers to identify and tabulate behaviors. Comparative analyses will be made.

The two research participants have been videotaped for approximately fifteen hours each; observers/recorders of the participants' behaviors are about to be trained to perform the systematic observation; tabulation of the recorded behaviors will be made; comparative analyses will be made; and findings will be disseminated. The principal investigators for this behavioral observation study of ADHD behaviors are Kandace Fisher (McNair scholar) and Melinda La Garce (McNair mentor). This study is part of a larger pilot study that includes systematic behavioral observation and blood assays of participants of differing ages, gender, and health conditions. The principal investigators for the larger study are Melinda La Garce, Luciano Debeljuk, and Sharon Smaga

Mentor: Melinda La Garce  
Associate Professor

Department of Architecture and Interior Design

## Attitudes and Perceived Roles in AOD Prevention: Faculty and Staff as Agents of Change on College Campuses



### **DONNA GREAVES**

College of Education and Human Services  
Social Work major

### **ABSTRACT**

Alcohol and illicit drug use has been a growing problem on college campuses for many years. There have been several programs created and implemented to intervene with the “drinking tradition” seen on many campuses but the results have not been very promising. One overlooked and under estimated source for change is campus faculty and staff. These people, through their continuity on campuses and their constant interaction with the student population as well as the community at large, have the power to be highly influential in changing the campus attitudes concerning drinking and drug use. While many programs have been developed that do encourage involvement of the entire campus community, the emphasis is on student participation and students supporting each other. This study examined the attitudes and perceived roles of faculty and staff in prevention efforts on college campuses. Analyzing data from an aggregate sample of the 2003 Core Alcohol and Drug Survey we answered three questions pertaining to policy, perceptions of campus and willingness to be actively involved in prevention efforts. The results have led to several recommendations for improving prevention efforts.

Mentor: Cheryl Presley  
Director of Student Health Programs

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## A Point Mutation in the Single Chain Trimer Complex



### **CORTEZ MCBERRY**

College of Science  
Microbiology major

### **ABSTRACT**

The Major Histocompatibility complex (MHC) proteins are found on the surface of all nucleated cells. These proteins are involved in the presentation of peptide to the immune system through T-cells. Specifically, MHC class I presents endogenous peptide

to cytotoxic T-lymphocytes (CTL), eliciting an immune response. A MHC class I/peptide complex model has been constructed that encodes the MHC protein and peptide on the same strand of DNA. These model structures called Single Chain Trimers (SCT) are expressed as the complete MHC protein linked with a peptide sequence, this construct is designed to promote presentation of the desired peptide to CTL. Results show that the desired sequence was transformed into the chosen plasmid. This research will be continued through the academic school year and will be focused on the effects that a single amino acid change has on the binding of peptide to MHC class I and the presentation of antigen peptide to CTL. Future applications of this research could be the use of Single Chain Trimers as DNA based vaccines for viruses and cancers.

Mentor: John Martinko  
Associate Professor and Chair  
Department of Microbiology

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## The Generalization of Stereotypes of Black Women



### LAVON PETTIS

College of Liberal Arts  
Psychology and Sociology major

### ABSTRACT

Past research suggests a relationship between group membership and stereotype content. The purpose of this study was to find out what stereotypes are activated when people think of Black women and women. We hypothesized that there would be some but not total overlap in stereotype content about Black women and women. People of various ethnic backgrounds (49 females, 51 males, and 1 person of unknown gender) aged 18 to 78 were recruited from the summer Sunset Concert Series. Participants were asked to list whatever came to mind when thinking about either Black women or women. Consistent with past research and hypotheses, attractiveness was mentioned more often for women than for Black women and speaking loudly was mentioned more often for Black women than for women. Contrary to hypotheses, sensuality and sexuality were mentioned more often for women than for Black women. This research can help understand attitudes and behaviors directed towards Black women and women.

Mentor: Josephine Korchmaros  
Assistant Professor  
Department of Psychology

## Does Actin Play a Role in Fertilization in *Ceratopteris richardii*?



**RENEE LOPEZ SMITH**

College of Science  
Plant Biology major

### ABSTRACT

The few ultrastructural studies that have been conducted on fertilization in land plants focused on the union of the sperm and egg nuclei. Nothing is known about the role of the cytoskeleton in this complicated process. To determine whether or not actin, a cytoskeletal protein, is involved in fertilization in ferns, I conducted experimental studies on *Ceratopteris richardii*. Spores were sown on a nutrient medium and gametophyte growth was monitored for the presence of receptive sex organs. To release swimming sperm, each plate was flooded with one ml of one of the following four treatments: 1) 100ug/ml cytochalasin B, an actin inhibitor, in 1% DMSO, 2) 1 mg/ml cytochalasin B in DMSO; 3) distilled water (control), and 4) 1% DMSO. Cultures were harvested 4 and 8 minutes from flooding to examine the effects of cytochalasin B on fertilization, and 4 and 8 days from flooding to determine the influence on embryo development. Additional cultures were maintained and monitored until 17 days after flooding. The percent of embryo-producing gametophytes was calculated for each treatment. Morphological data were collected in the light, scanning, and transmission electron microscopes. Swimming gametes of this fern in the water and DMSO treatments contain a dense ridge that encircles the leading edge of the cell. While in the archegonial neck, the dense ridge expands and contains numerous actin-sized filaments. These 5-7 nm filaments are visible in the sperm near the egg nucleus after fertilization. Disruption of the integrity of the dense ridge is evident after treatment with cytochalasin B, suggesting that actin is a component of the dense ridge. Significantly fewer embryos occur on gametophytes treated with cytochalasin B than in the controls. No sporophytes are evident on 17-day cytochalasin B treated plants, while numerous, well-developed sporophytes are seen on control plates. These results support the speculation that actin is not only necessary for fertilization but it is also intimately involved in normal embryo and gametophyte development.

Mentor: Karen Renzaglia  
Research Professor  
Department of Plant Biology

# Impact of the Positive Behavior Implementation Support Program on Special Education Enrollment in Southern Illinois



**LATOYA WILLIAMS**

College of Liberal Arts  
Psychology major

## ABSTRACT

Schools are commonly faced with deficiencies in behavioral guidance and questions about the appropriateness of student placement in special education programs. This problem is especially pertinent in Illinois because the state has a special education enrollment of 14.70% compared to the national average of 11.55%. The Positive Behavior Intervention Supports (PBIS) program was developed in 1998 to bring focus and direction to students by training teachers to demonstrate positive behavior. This study examines the possible relationship between the implementation of PBIS and the percentage of students in Special Education programs. The researcher gathered data about the level of implementation of PBIS and the percent of students enrolled in special education programs in various southern Illinois schools. The results of the current study do not indicate a significant relationship. Implications for future research are discussed.

Mentor : Lyle White  
Professor & Chair  
Psychology Department

## The Phosphorylation of Tyrosine Hydroxylase Serines 19, 31, and 40 during Lactation



**ANDREA WILTON**

College of Science  
Physiology major

### **ABSTRACT**

Prolactin (PRL), an essential hormone of lactation, has a vital role in the continuation of mammalian species. Circulating PRL levels remain elevated in response to the suckling stimulus from the young as a result of a decrease in dopamine (DA) input from the brain to PRL-producing cells in the pituitary. During non-lactational states, PRL levels are suppressed by DA from tuberoinfundibular dopaminergic (TIDA) neurons in the brain. DA is synthesized from tyrosine in a pathway that is coordinated by the enzyme tyrosine hydroxylase (TH). This enzyme contains four identified regulatory phosphorylation sites, three of which are the focus of our work: Ser 19, Ser 31, and Ser 40. The objective for this study was to determine if the suckling stimulus alters the phosphorylation states of these three serines. One group of lactating rats remained with their pups, whereas another group was deprived of pups. Five groups of pup-deprived rats were subsequently reunited with their pups for durations of: 15-min, 30-min, 1-hr, 2-hr, and 4-hr. The stalk median eminence, where the TIDA nerve terminals are located, was then removed from the brain. The samples were analyzed with phosphorylation site-specific antibodies for TH using the Western blot technique and a densitometer was used to determine the degree of phosphorylation. Phosphorylation states of Ser 40 and Ser 31 were increased in pup-deprived dams, but were decreased within 30-min of suckling, and remained low. Ser 19 phosphorylation was not significantly different, but there was a tendency for reduced phosphorylation at 2 and 4-hr after the onset of suckling stimulus. TH protein quantity was unchanged as a result of the suckling stimulus. Dephosphorylation of TH may contribute to the decrease in DA, allowing PRL to rise in response to the suckling stimulus. This experiment will help define cell-signaling mechanisms important in the brain during lactation.

Mentor: Lydia Arbogast  
Associate Professor  
Department of Physiology

# 2004-2005 Cohort



## Color Reduction of Textile Industrial Dye Using Granular Activated Carbon



**CARL ALEXANDER**

College of Engineering  
Civil and Environmental Engineering major

### ABSTRACT

The concentration and physical qualities of four textile dyes are evaluated to test the adsorptive qualities of two samples of granular activated carbon. Langmuir, Freundlich and Redlich-Peterson isotherm equations are used to measure the adsorption efficiency. Spectrophotometer ultraviolet (UV) analysis was compared to the conventional total organic carbon (TOC) analysis. Experiments conducted study the effects of equilibrium times of the carbons. Batch isotherms monitored the effects of different concentrations and combinations of the dyes. The results indicate that adsorption qualities are controlled with the right specification of activated carbons, and correlates UV and TOC analysis are valid with adsorption.

Mentor: Lizette Chevalier  
Chairperson

Department of Civil and Environmental Engineering

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## Longitudinal Patterns of Racial Disproportionality in Prison Populations across States



**MARIA GUERRERO**

College of Liberal Arts  
Administration of Justice major

### ABSTRACT

African Americans in the United States represent a large portion of state and federal prison populations. There are two central explanations that are given to explain the large representation of African Americans in prison: (a) imprisonment rates are the result of bias in the system and (b) African Americans are involved in more serious crimes than other groups. Previous studies have tried to estimate which explanation is the strongest; however, important gaps in the understanding of this phenomenon still exist. The current analysis builds on the strengths of the previous research by using the most current data available to provide a more up to date and accurate test of these two claims. The study relies on longitudinal

data from 1980 to 2002; furthermore these data are disaggregated to the state level. The disaggregated data help in understanding trends in regional variation over time. Through the use of the disaggregated data, the researcher was able to conclude that the percent of African American imprisonment that can be explained by differential involvement in Index arrests has overall increased since 1996, with the North Central region consistently being the region with highest explained percent of racial disproportionality in prison populations.

Mentor: William Wells  
Assistant Professor  
Department of Administration of Justice

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## Stereotypes in the Workplace: Disabled Individuals' Reactions to Stereotypes about Disabled Individuals



**NICOLE M. HUFFMAN**

College of Liberal Arts  
Psychology and Sociology major

### ABSTRACT

This research examined how disabled individuals' perceptions of able-bodied individuals are affected by able-bodied individuals' stereotypes concerning disabled people.

It was expected that disabled individuals would be more willing to complete a task requested by an able-bodied individual who had a positive stereotype about disabled people than an individual who held a negative stereotype. Results of this research may be used to help improve relations between disabled workers and their employers.

Mentor: Josephine Korchmaros  
Assistant Professor  
Department of Psychology

## Examining Influences on Academic Motivation



### JAMI JACKSON

College of Liberal Arts  
Psychology major

#### ABSTRACT

The purpose of this investigation was to identify factors that influence adolescents' decisions to continue their education and also to assess the degree to which academic motivation in today's younger generation is influenced by (a) themselves (intrinsic) and/or (b) outside relationships (extrinsic). This study utilizes the Self Regulation Academic Questionnaire which differentiates types of behavioral regulations in terms of the degree to which they represent autonomy (intrinsic motivation) versus external influences (extrinsic motivation) (Ryan & Connell, 1989; SRQ-A). Thirty students ranging in age from 10 to 14 (53.3% male) were surveyed from a local youth center in Illinois. The hypothesis that extrinsic motivation is a greater motivating factor than intrinsic motivation for adolescent children was tested by comparing the means of the two factors. In addition, an analysis of difference in age and gender was conducted. The results were paralleled with the hypothesis; however there was a non-significant difference when considering gender and age.

Mentor: David DiLalla  
Associate Professor  
Department of Psychology

## Attitudes of College Educated Professionals and Students Toward the Usage of Proper Grammar Constructs



### DANITA LITTLE

College of Education and Human Services  
English Education major

#### ABSTRACT

Over the years, teachers in classrooms spend many hours on direct instruction in grammar constructs despite dismal results in student learning of grammar. With the wide variance in grammar instruction and usage, there is a need to discern what grammar constructs are most important for the successful transition from school into the workforce. This study is a replicate of a study conducted by Maxine Hairston in 1981. Hairston's survey instrument consists of 67 items and 1 open-ended question regarding the level of irritability [where respondents select from the following: 1) does not bother me, 2) bothers me a little, 3) bothers me a lot] for grammatical errors.

The survey was administered to a convenience sample of students and professors at a Midwestern university as well as personal contacts of whom are various professionals in the workforce. Results were tabulated and disaggregated by groups identifying the grammatical constructs deemed most important according to the responses of the participants.

Mentor: Susanne C. Ashby  
Doctoral Student  
Department of Curriculum and Instruction

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## Boob TV versus Boom-Boom TV: Why Congress and the FCC Have Attacked Televised Indecency yet Failed to Regulate Broadcast Violence



### ADEBOWALE OSISANYA

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### ABSTRACT

Under federal law—18 U.S.C. Section 1464—broadcasters can be fined if they air any “obscene, indecent, or profane language.” However, this statute says nothing about violence.

Since the late 1980s, the Federal Communications Commission has actively fined broadcasters for what the FCC concluded was “indecent.” Only recently have Congress and the FCC started focusing on violence on television, but so far, there is still no statute criminalizing violent broadcast. Using traditional legal research methods generally employed by legal scholars, this project analyzed FCC actions, congressional documents and a Supreme Court opinion. These primary materials suggested two possible reasons why Congress and the FCC have regulated televised indecency but not violence. One, as a former FCC chairman opined, indecent words and images are “not essential to the exposition of ideas.” However, at least some depictions of violence may seem essential to relaying the content and context of a realistic story. Two, Congress and the FCC seem to find it easier to define (and therefore regulate) “indecent” than “violent” content.

Mentor: Laura Hlavach  
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## Academic Self-Handicapping: Identifying the Motivation of Self-Defeating Students



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### ABSTRACT

The rationality of doing well in college and being rewarded with increased life opportunities is disrupted when students engage in self-defeating behavior. Students who practice self-handicapping tendencies, a form of self-defeating behavior characterized by an individual intentionally not doing as he or she could, irrationally limit the benefits that can be received from the endeavor of college. This study is an examination of college students' academic values and how these values predict self-handicapping behavior. Knowing the academic values of self-handicappers could allow the reinforcement of beneficial academic values in order to help students overcome self-handicapping tendencies. Students from Southern Illinois University Carbondale (N=159) participated in this study by completing Wong's (1998) Academic Attitude Scale and Jones and Rhodewalt's (1982) Self-Handicapping Scale. Academic motivators External Pressure from others and the belief that one has No Better Option significantly predicted self-handicapping behavior. Implications and future directions are discussed.

Mentor: Kathleen Chwalisz Rigney  
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## Priming and Stereotypes: Exploring Negative Associations Attributed to Ethnic Groups



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### ABSTRACT

This study examines priming and stereotypes by exploring the following research question "Are individuals more prone to attribute negative associations to African Americans compared to Caucasians and are these attributes influenced by friendly (smiling) versus unfriendly (angry) facial expressions?" The research was conducted using participants from Psychology 102 and a convenience sample. Participants completed a computer picture task. The pictures are designed to prime an

activation of positive or negative associations. The participant quickly identify whether the presented word is positive or negative by pressing the correct keys. The experiment uses priming theory and research participants' reaction times (measured in milliseconds) to determine whether there is an association toward that stimulus. Participants' data was rated in regards to how they respond to the pictures being presented.

Mentor: David Gilbert  
Assistant Professor  
Department of Psychology

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## News Media Framing of Chicago Public Housing: Does it Meet Ethical Standards for Journalists?



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### ABSTRACT

Historically, journalists have come from working-class backgrounds. As the press became more commercialized and reporters better educated, the gap in relating to underprivileged readers has widened. This study explores the premise that the solution to this problem is in diversifying news organizations, educating journalists about minority groups and their issues, and holding approaches to covering underprivileged communities to ethical standards required of news media. This research explores the importance of how information is presented by analyzing how the Chicago Tribune and Chicago Sun-Times reported public housing issues in 1998-2003. The study emphasizes how print news media framed coverage of Stateway Gardens and Robert Taylor Homes and their residents as the city pursued a policy of demolishing housing projects constructed in the 1950s and 1960s. These housing projects were selected for this study because the population reflects African-American families living below the poverty level. In examining newspaper coverage of this community, we can determine how well the community was served by comparing the nature of articles to ethical standards required of journalists when covering minority communities.

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