

The Middle Tennessee State University

McNair Research Review

Volume III, Summer 2005



A Tennessee Board of Regents University

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The Middle Tennessee State University Ronald E. McNair Post-Baccalaureate Program is a Federal TRiO Program that is funded by the U.S. Department of Education under a \$226,105 annual TRiO grant.



From the Director

The Ronald E. McNair Scholars Program is in its sixth year at MTSU. As a university community, we extend special thanks to the U.S. Department of Education for its continued support of the McNair Scholars Program.

During these six years we have had 54 scholars complete at least one intensive eight-week summer research program. Thirty-three scholars have earned a baccalaureate degree with the other 21 still working toward completion. Twenty-two scholars are currently enrolled in a post-baccalaureate program with five having completed a master's degree and four enrolled in Ph.D. programs. Another scholar is working on a Doctor of Divinity program. Clearly, the program has accomplished much this year and I'm proud of all the scholars, faculty mentors, and program staff for the time and effort they have invested in these accomplishments.

This is the third volume of McNair Research Review. Twenty-five scholars published papers in the first two volumes and the work of another ten student authors appear in volume three. I congratulate the scholars and thank the dedicated faculty mentors who supervised and guided the high-quality research projects found in this journal. Many hours have been committed to these impressive projects, and I believe readers will find the results and conclusions interesting.

Dr. Mary Enderson has completed her first year as academic coordinator. Dr. Enderson, an associate professor in the Department of Mathematical Sciences, has proven to be a valuable member of the McNair Management Team. She works with both students and members of the faculty to make sure that scholars and the university meet the responsibilities of the McNair Program's academic goals. Ms. Linda Brown, who had been with the program from its beginning, left in April 2004. Ms. Brown is missed, and everyone affiliated with McNair wishes her continued success in her endeavors.

This publication is a product of the efforts of many people. The scholars and their faculty mentors are co-authors of the papers. Ms. Becky Linville and Mr. Stephen Saunders, interim program co-coordinators, contributed editorial comments. Ms. Cindy Howell, the program's administrative assistant, is helpful with every task completed. The journal is designed, produced, and printed by Publications and Graphics and by Printing Services at Middle Tennessee State University. My sincere appreciation goes to everyone who helped in the production of McNair Research Review, Volume III, Summer 2005.

Sincerely,

L. Diane Miller

L. Diane Miller

Director, McNair Scholars Program



Ronald E. McNair Post-baccalaureate Achievement Program (McNair Scholars Program at MTSU)

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About McNair Scholars and Program

The following information was taken from <http://www.ed.gov/offices/OPE/HEP/trio/triohistory.html>

History of the Federal TRiO Programs

The history of TRiO is progressive. It began with Upward Bound, which emerged out of the Economic Opportunity Act of 1964 in response to the administration's War on Poverty. In 1965, Talent Search, the second outreach program, was created as part of the Higher Education Act. In 1968, Student Support Services, which was originally known as Special Services for Disadvantaged Students, was authorized by the Higher Education Amendments and became the third in a series of educational opportunity programs. By the late 1960s, the term "TRiO" was coined to describe these federal programs.

Over the years, the TRiO Programs have been expanded and improved to provide a wider range of services and to reach more students who need assistance. The Higher Education Amendments of 1972 added the fourth program to the TRiO group by authorizing the Educational Opportunity Centers. The 1976 Education Amendments authorized the Training Program for Federal TRiO Programs, initially known as the Training Program for Special Programs Staff and Leadership Personnel. Amendments in 1986 added the sixth program, the Ronald E. McNair Post-baccalaureate Achievement Program. Additionally, in 1990, the Department created the Upward Bound Math/Science program to address the need for specific instruction in the fields of math and science. The Upward Bound Math/Science program is administered under the same regulations as the regular Upward Bound program, but it must be applied for separately. The Higher Edu-

cation Amendments of 1998 authorized the TRiO Dissemination Partnership program to encourage the replication of successful practices of TRiO programs. Finally, the Omnibus Consolidated Appropriations Act of 2001 amended the Student Support Services (SSS) program to permit the use of program funds for direct financial assistance (Grant Aid) for current SSS participants who are receiving Federal Pell Grants.

The legislative requirements for all Federal TRiO Programs can be found in the Higher Education Act of 1965, Title IV, Part A, Subpart 2.

Ronald E. McNair, Ph.D.

Born October 21, 1950, in Lake City, South Carolina, Ronald McNair achieved early success as both a student and an athlete at Carver High School, Lake City, South Carolina. He graduated in 1967 as valedictorian of his high school class. Afterwards, he attended North Carolina A&T State University where he graduated magna cum laude in 1971 earning a B.S. degree in physics. He went on to earn a doctor of philosophy in physics from Massachusetts Institute of Technology (MIT) in 1976, where he specialized in quantum electronics and laser technology. As a student, he performed some of the earliest work on chemical HF/DF and high-pressure CO lasers, publishing path-breaking scientific papers on the subject.

After completing his Ph.D., he began working as a physicist at the Optical Physics Department of Hughes Research Laboratories in Malibu, California, and conducted research on electro-optic laser modulation for satellite-to-satellite space communications.

In January 1978, NASA selected him to enter the astronaut cadre, making him one of the first three Black Americans selected. Dr. McNair died on January 28, 1986, when the Space Shuttle *Chal-*

lenger exploded after launch from the Kennedy Space Center.

MTSU McNair Scholars Program

Middle Tennessee State University Ronald E. McNair Post-baccalaureate Achievement Program is designed to serve first-generation and low-income students as well as students from groups underrepresented in doctoral level studies. Our program encourages talented students to pursue a doctoral degree by providing participants with a mentored research experience, study groups for crucial areas of discipline, and seminars and workshops on topics germane to the pursuit of graduate education. Participants gain experience in presenting their research at professional conferences where they have the opportunity to meet others in their discipline and exchange ideas. Participants attend graduate school fairs and visit university campuses to gain information on the possibilities for future attendance in graduate school.

The MTSU McNair Program comprises academic year and summer research programs. Participants are required to complete a series of assignments and research that prepares them to be choice candidates for graduate schools. The MTSU McNair Scholars Program is funded through a grant from the U.S. Department of Education under the Higher Education Act of 1965, Title IV, Part A, Subpart 2 and Middle Tennessee State University.

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Caregivers' Attitudes Toward Augmentative and Alternative Communication: An Examination of Self-Efficacy and Training



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Abstract

The purpose of this study is to examine caregivers' attitudes toward augmentative and alternative communication (AAC) used by adults with mental retardation. Specifically, the study investigated the amount of training the caregivers received about their clients' AAC intervention plans and the caregivers' self-efficacy to facilitate communication from their clients. The survey was administered to four caregivers. Although the caregivers were confident in their own abilities and their clients' abilities, the results indicated that the caregivers were uncertain as to how the training they received improved their skills to implement their clients' communication plans. Benefits of the investigation included the identification of factors which may influence the design, development and implementation of future AAC training for caregivers.

Caregivers' Attitudes Toward Augmentative and Alternative Communication

Augmentative and alternative communication (AAC) is defined by the

American-Speech-Language-Hearing Association (1989) as "an area of clinical practice that attempts to compensate, (either temporarily or permanently) for the impairment and disability patterns of individuals with severe expressive communication disorders" (p. 107). According to Light and Kent-Walsh (2003), an estimated two million communicatively disordered Americans may require AAC. Many of these Americans are adults with mental retardation. AAC devices may help individuals with mental retardation to enhance their abilities to communicate functionally with others. For example, pointing to a picture of a cup on a communication board to indicate the individual is thirsty is known as functional communication (Parette, 1994).

There are two different categories of AAC devices: unaided and aided. Unaided AAC modes, including manual signs, graphic symbols, and object systems have been validated as effective communication options for people with mental retardation (Schepis & Reid, 2003). Aided devices include tangible objects, and representational symbols such as photographs, picture communication symbols, and pictogram ideogram communication.

Selection of an appropriate AAC device depends on a number of client factors such as (1) physical and cognitive abilities; (2) the social support system; (3) the daily routine; (4) cost; and (5) staff training (Schepis & Reid, 2003). Augmented language learning is a successful method for communicating with

persons having mental retardation. For example, a facilitator may say, "Let's get your gloves and go for a ride." The facilitator might then activate the symbol for "gloves" and "ride" (Beukelman & Mirenda, 1992). Overall, if the AAC device is to be useful, it must be easy to use, linguistically powerful, flexible, and consistent with the user's cognitive level (Beukelman & Mirenda, 1992). Lasker and Bedrosian (2000) defined the acceptance of AAC systems, as "how and to what degree an AAC system is integrated into the life of the user" (p.108). Communication partners provide social opportunities for AAC users (Huer & Lloyd, 1990).

Benefits of AAC use for adults with mental retardation include behavior management for externalized acts of aggression (Baumgart, Johnson, & Helmstetter, 1990). AAC can be used along with functional communication training, which is an intervention strategy used to support individuals with challenging behavior (Mirenda, 1997). Synthesized generated devices for non-verbal individuals may increase the number of opportunities for social interactions (Schepis & Reid, 2003). The synthesized speech device will provide a more natural form of output versus an unaided method. Yet another benefit of AAC intervention with adults with mental retardation is improved choice-making in the environment through vocabulary selection (Beukelman & Mirenda, 1992). Providing the individual with a choice is an important aspect of respecting the individual's rights. Providing

choices may give the individual power and may foster a sense of self-esteem.

A disadvantage to AAC use may be found in the case of synthesized speech output, a less natural and less intelligible AAC device. People who are unaware of the AAC user's mode of communication may be unable to decode the message (Higginbotham, Scally, Lundy, & Kowarsky, 1995; Schepis & Reid, 2003). AAC has been formally recognized as an area of clinical and scientific interest within the field of speech-language pathology and other fields for the past two decades (Gorenflo & Gorenflo, 1991; Huer & Lloyd, 1990). For more than a decade there has been a movement in the field of mental retardation to deinstitutionalize individuals with mental retardation to ensure they reside in the least restrictive environment. Since the deinstitutionalization of hospitals, there has been an increase in the number of community living homes. Thus, the need for individuals to develop functional communication skills in their environment has increased (American Speech-Language-Hearing Association, 1990).

"The ability to express feelings, interests, preferences, desires, and needs in some mode of communication is critical to the quality of life for all people" (McCarthy, McLean, Miller, Paul-Brown, Ponski, Rourke, & Yoder, 1998, p. 2). Historically, communication boards were viewed as a *last resort*, rather than a technique that would maximize the communication environment (Vanderheiden & Yoder, 1986). People with severe and profound mental retardation have only recently been recognized as appropriate candidates for AAC intervention (Beukelman & Mirenda, 1992). People with severe mental retardation were among the most devalued and disenfranchised citizens living in any country in the world. More recently, work from agencies such as the Association for Persons with Severe Handicaps and current legislation under the Americans with Disabilities Act of 1990 and the Assistive

Technology Act of 1998 have given individuals with severe and profound intellectual disabilities the opportunity to live with greater communication abilities. In the past, AAC intervention focused exclusively on the individual. However, it is now known that the communication plan needs to be used, facilitated, and understood by significant people and others in the client's life (e.g., caregivers, friends and family members). According to Schepis and Reid (2003), the AAC user's social support system must be able to interpret the communicative intent in order to interact effectively with the individual. Currently, the intervention strategies not only improve the communication skills of the individual, but also focus on the AAC user's speaking partners (Beukelman & Mirenda, 1992; Huer, & Lloyd, 1990; Light & Binger, 1998; Light, Dattilo, English, Gutierrez, & Hartz, 1992; Schepis & Reid, 2003).

As outlined by the American Speech-Language Association (1990), speech-language pathologists are required to provide training for family members, significant others and staff, which may include skilled trainers, communication assistants, paraprofessionals and other team members. The roles and responsibilities also include the identification of appropriate AAC candidates, determination of appropriate AAC systems for clients, development of extensive intervention plans for clients to achieve functional communication, implementation of intervention plans, evaluation of the intervention outcomes, evaluation and awareness of new AAC technology and strategies, advocacy in the AAC area, provisions of intervention to professionals and consumers, and coordination of AAC service. Thus, direct supervision and training from the speech-language pathologist is critical to the success of the individual's functional communication intervention plan. According to Kraat (1985), simply providing access to the AAC device will not ensure the development of communi-

cative competence by individuals. Training of the individual AAC user and the caregiver also must be completed.

Caregiver training ensures that the individual understands how to operate and maintain the device, understands body positioning and other physical considerations, and understands the applications in different settings. This leads to the selection of appropriate vocabulary, the knowledge of how to create and identify functional communication learning opportunities, the ability to use appropriate teaching strategies, and how and when to prompt and respond to individuals using AAC (Schepis & Reid, 2003).

Without adequate training, functional communication will not be enhanced (Schepis & Reid, 2003). Research by Reid and Parson (2002) contributed to two important factors that influence successful use of AAC. These factors are (1) basic knowledge about the rationale of the AAC use, specific to the individual, including understanding the importance of the device and/ or method used, and (2) hands-on training in the operation of the device.

Service providers should consider significant others in the AAC user's life to a greater degree in assessment and intervention (American Speech-Language-Hearing Association, 1990; Huer & Lloyd, 1990). In a study by Light *et al.* (1992) three adults who served as facilitators to persons with disabilities were studied. The results indicated that after approximately four hours of training, the caregivers were able to use new interaction strategies, modify their turn-taking, and initiate patterns of the dyads, resulting in more evenly balanced communication between the facilitator and the AAC user. Supervision and support are also important to ensure that caregivers effectively apply their knowledge and skills to different environments (Schepis & Reid, 2003). Staff's disregard of communication actions with individuals exhibiting severe mental retardation may reflect "a tendency which re-

sults, in part, from low expectations regarding communicative abilities and a lack of training on how to interpret communicative acts” (Schepis & Reid, 2003, p. 61).

Collier and Blackstien-Adler (1998) used information-based seminars along with peer coaching throughout joint client service with two agencies. The training was aimed to establish AAC knowledge and clinical competency. The results of the pretest indicated “average” scores to post-test scores of “above average” for each agency. They concluded that a holistic approach to developing new specialty AAC services should address the transdisciplinary training needs of the staff and the coupling of seminars and peer coaching via joint client services in order to effectively and efficiently develop specialized AAC services (Collier & Blackstien-Adler, 1998).

Several authors have studied attitudes toward people who use AAC (Gorenflo & Gorenflo, 1991; Lasker & Bedrosian, 2000; Light et al., 1992; Schepis & Reid, 2003; Soto, 1997; and Richer, Ball, Beukelman, Lasker, & Ullman, 2003). However, only three of these studies examined the attitudes of human resources staff (e.g., teachers and caregivers) with respect to people with severe disabilities (Lasker & Bedrosian, 2000; Schepis & Reid, 2003; Soto, 1997). Gorenflo and Gorenflo (1991) found that to increase communicative interactions between nonspeaking and able-bodied persons, known as the participation model, information about the person’s physical status, intelligence, academic achievement, and social activities would be needed. Lasker and Bedrosian (2000) asserted that the partner’s acceptance of the user’s AAC is directly related to the individuals who rely on these methods of communications.

AAC users rely on their communication partners more than those without disabilities. If their partners are uncomfortable with the form of communication, then the communicative inter-

action will not be successful (Richer et al., 2003). Communication partners may require instruction to support the communicative interactions of people using AAC systems (Light et al., 1992). The AAC user’s social support system should be informed by the communicative intent of the message. Specifically, the social support system must adequately incorporate the operations and applications of the device across a variety of settings in the client’s real life (Schepis & Reid, 2003).

AAC use for adults with mental retardation can be an effective method of communication intervention. However, as cited by Lasker and Bedrosian (2000) caregivers’ acceptance of the AAC device will directly impact the use of the device by the individual. Also, Schepis and Reid (2003) found that staff’s disregard of communication interaction with the client may result in low expectations of the client.

Attitude is defined by Oppenheim (1966) as “a state of readiness, a tendency to act or react in a certain manner when confronted with certain stimuli” (p. 105). Gorenflo and Gorenflo (1991) described three components of attitude: the cognitive component, the affective component and the behavioral component. “The cognitive component consists of the beliefs about the attitude objects; the affective component consists of the emotional feelings connected with the beliefs; and the behavioral tendency is the readiness to respond in a particular way” (Oppenheim, 1966, p. 19). Self-efficacy was originally defined by Bandura in 1977 as a belief in one’s capabilities or skills to bring about desired outcomes.

The purpose of this investigation is to examine (1) caregivers’ attitudes toward AAC used by adults with cognitive impairments in community living settings; (2) caregivers’ self-efficacy to understand the AAC device and help their clients communicate; and (c) staff’s training on the client’s AAC intervention. The

hypothesis to be tested is that with increased training of the client’s communication plan, caregivers of adults with cognitive impairments will improve in attitude and self-efficacy. Thus, the study is expected to help facilitate caregiver training and enhance the communication of adults with mental retardation.

Method

Data was collected from four caregivers working with adults with cognitive impairments from Tennessee Family Solutions, based in Nashville, Tenn. The participants were selected because of their assumed familiarity with the clients’ communication methods and needs. The survey that was used was adapted from Soto’s (1997) work (see Appendix) and was used as a framework for the research because of its inclusive content. The survey consisted of five demographic questions, including training-related questions, seven attitudinal questions, and five questions related to self-efficacy. Likert’s principles of attitude measurement were used to help formulate the attitudinal statements (Underwood, 2003). The participants marked their answers for the attitude and self-efficacy statements on a scale ranging from *strongly agree* to *strongly disagree* and each question was coded from 5 to 1 (5 being equivalent to *strongly agree* and 1 being equivalent to *strongly disagree*).

Results

The demographic characteristics of the respondents are summarized in Table 1. The survey was administered to two females and two males who had direct caregiver responsibilities to adults with mental retardation and who use AAC. The caregivers’ ages ranged from 21 to 36 with an average age of 30. Three of the four participants identified themselves as Caucasian, while one identified herself as African. Three participants were college educated and one was high school educated. None of the partici-

pants reported having any related relevant experience. The average amount of experience was 3.56 years. The greatest frequency of training was one hour and the average amount of training received for the sample was 45 minutes. None of the surveyed participants reported being trained by a certified speech-language pathologist, one reported being trained by a physical therapist, two by an occupational therapist, one by other program staff, and one survey participant indicated that she was not trained by anyone.

From a detailed examination of the mean scores for questions 1-4, 7, 9-12, related to efficacy (see Table 2, Section B), caregivers were confident in their own skills and were confident in their clients' communication abilities. However, mean scores for questions 5, 6, and 8, related to training, yielded uncertainty as to how their training influenced development of their skills while working with their clients' AAC intervention plans which were formulated by the Occupational Therapist.

Discussion

The survey results indicated the participants' uncertainty as to how the training improved their skills, and failed to find a relationship between the amounts of training the caregivers received and their attitudes and self-efficacy to facilitate communication with their clients or their attitudes regarding their clients' abilities. However, due to the limitations of this study including a small number of participants and the limited reliability of participants' self-measurement of their feelings and attitudes, a larger number of participants should be recruited in the future.

The uncertainty found in the mean scores of the AAC training related questions, (β indicating a response of *undecided*), may be due in part to the amount of training and/or vagueness of the purposes and objectives of AAC training itself. Collier and Blackstien-Adler (1998), Light et al. (1992), Reid and Parson (2002), and Schepis and Reid (2003) noted improvements in caregiver interactions with AAC users following training.

Direct training by the speech-language pathologist was not an element of this study. However, direct training will help to ensure that caregivers understand and use the AAC device as well as understand their role in the facilitation of the individual's communication. It is believed that implications for the current survey resulted in the need for trainers to set more clearly defined training goals and expected outcomes for caregivers of adults with mental retardation who use augmentative and alternative communication.

More research is needed in the areas of AAC training and its relationship to communication partners' attitudes and self-efficacy. Specifically, principles of AAC training for caregivers are yet to be developed. The involvement and training of significant others in a person's life who use AAC have been found to be critical to the successful use of the device by the individual (Lasker, & Bedrosian, 2000; Schepis, & Reid, 2003). Hence, direct training of caregivers needs to be addressed when AAC intervention is warranted.

Appendix

Section A: Demographic Information

Please answer the following four questions and continue to *Section B*.

1. Age: _____
2. Gender: _____
3. Ethnicity: _____
4. Education: _____
5. Years of experience: _____
6. Relevant/related experience: _____
(e.g. care for a loved one, hospice)
7. Amount of training on the client's communication: _____ (hours)
8. Who trained you on the client's communication plan?
 - A. Speech-language pathologist
 - B. Physical therapist
 - C. Occupational therapist
 - D. Other _____
 - E. Not sure

Section B: Survey

Please respond to the following questions by circling the responses that best match how you feel.

1. All clients regardless of the severity of their disability have the potential to learn to communicate more effectively.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------
 2. My clients can learn to communicate more effectively.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------
 3. Even the most severely impaired clients can improve their communication skills.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------
 4. Clients who do not show any motivation or interest in communicating cannot be helped.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
----------------	-------	-----------	----------	-------------------
 5. My training has given me the necessary skills to improve the communication skill of my clients who use augmentative and alternative communication.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
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 6. My experience has given me the necessary skills to improve the communication skill of my clients who use augmentative and alternative communication.

Strongly Agree	Agree	Undecided	Disagree	Strongly Disagree
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-

7. I feel my efforts directly affect my client’s communication progress.

Strongly Agree Agree Undecided Disagree Strongly Disagree

8. I feel that I have the skills to teach my clients how to communicate more effectively.

Strongly Agree Agree Undecided Disagree Strongly Disagree

9. I feel that part of my job responsibility is to work on improving the communication skills of my client.

Strongly Agree Agree Undecided Disagree Strongly Disagree

10. Adults with severe mental retardation need to be provided with socially acceptable ways to communicate in the community.

Strongly Agree Agree Undecided Disagree Strongly Disagree

11. Communication boards help adults with mental retardation.

Strongly Agree Agree Undecided Disagree Strongly Disagree

12. Adults with severe disabilities need more ways to communicate more effectively.

Strongly Agree Agree Undecided Disagree Strongly Disagree

13. Lack of time is an important reason why a staff member would not follow the client’s communication plan.

Strongly Agree Agree Undecided Disagree Strongly Disagree

Table 1: Sample Demographic Characteristics

Age Range: 21 to 36

Mean Age: 30

Gender Male: 2 Female: 2	Relevant experience: None Reported
Ethnicity White: 3 African: 1	Trained by Speech Language Pathologist: n/a Physical Therapist: 1 Occupational Therapist: 2 Other: program staff, none Not Sure: n/a
Experience (years) Less than 1: 1 2-5: 2 6-10: 1	

Table 2: Mean and Standard Deviation of Questions

	Mean	Standard Deviation
1. All clients regardless of the severity of their disability have the potential to learn to communicate more effectively.	4	1.414214
2. My clients can learn to communicate more effectively.	4.75	.5
3. Even the most severely impaired clients can improve their communication skills.	4.25	1.5
4. Clients who do not show any motivation or interest in communicating cannot be helped.	1.5	.57735
5. My training has given me the necessary skills to improve the communication skill of my clients who use augmentative and alternative communication.	3.5	.57735
6. My experience has given me the necessary skills to improve the communication skill of my clients who use augmentative and alternative communication.	3.25	.5
7. I feel my efforts directly affect my client's communication progress.	4.5	.57735
8. I feel that I have the skills to teach my clients how to communicate more effectively.	3.5	1
9. I feel that part of my job responsibility is to work on improving the communication skills of my client.	4.25	.5
10. Adults with severe mental retardation need to be provided with socially acceptable ways to communicate in the community.	4.75	.5
11. Communication boards help adults with mental retardation.	3.75	.957427
12. Adults with severe disabilities need more ways to communicate more effectively.	4	.816497
13. Lack of time is an important reason why a staff member would not follow the client's communication plan.	3	.816497

Acknowledgments

This research paper was made possible through federal funding from the Ronald E. McNair Program. This paper is dedicated to the memory of Dr. Ronald E. McNair. The author wishes to express gratitude to her faculty mentor, Dr. Bertha Clark, whose support, wisdom and encouragement were vital, and to her mother and father for helping her appreciate the precious value of higher education. Finally, the author wishes to express gratitude to the McNair program staff for their outstanding commitment to her future success.

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Interaction of Reovirus with a Human Monocyte Cell Line



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Abstract

Airway inflammation is observed when reovirus serotype 1 Lang (T1L) or serotype 3 Dearing (T3D) is administered in a reovirus pneumonia model in the rat; however, T3D causes more prominent inflammation than T1L while T1L grows to higher levels than T3D. Previous studies have shown that inflammatory molecules are stimulated in a rat alveolar macrophage cell line by reovirus with similar viral replication patterns. The goal of this study is to determine if virus serotype differences observed in rat models are seen in a human monocyte cell line, THP-1. This paper reports on the initial studies begun with T1L. Cells were treated with T1L at multiplicity of infection (MOI) of 10 and 100, as well as medium alone. After 24 and 48 hours, cell viabilities and viable cell number were determined and plaque assays were done to determine the effect of viral replication. Another set of THP-1 cells will be treated with T3D and observed in the same manner as the T1L. All data collected will be analyzed using an appropriate statistical analysis program. The results will provide further

insight into the host response to reovirus and may serve as a model for the interaction of viruses and human monocytes.

Introduction

Reovirus (respiratory enteric orphan virus) is so named because of its ability to infect the respiratory and enteric tracts without causing any observable disease. Because reovirus has not been associated with any disease in humans it has become an excellent system for studies of viral pathogenesis in animal models with minimal risk to experimenters (Fields, 1992). By observing the host response to this virus, new areas of research have been opened to better understand viral replication, viral growth, the ability of viruses to spread and infect other cells, and even the possibility of anti-cancer therapy (Farone, *et al.*, 1993; Fields, 1992).

Reovirus, a member of the family Reoviridae, is a double-stranded RNA (dsRNA), non-enveloped virus (Fields, 1992). Mammalian reoviruses have a genome of 10 discrete segments of dsRNA enclosed by an inner capsid with an icosahedral outer capsid (Tyler *et al.*, 1995). The gene segments are placed into three distinct groups, Large, Medium, and Small (L, M, S) based on the relative size of each segment. With the exception of the S1 gene, which encodes two proteins $\sigma 1$ and $\sigma 1s$, all reovirus genes are monocistronic (Rodgers *et al.*, 1998). Reovirus enters the cell via cell-mediated endocytosis (Weiner *et al.*,

1980). After endocytosis of the reovirus, host enzymes digest the outer capsid exposing the inner capsid and its contents (Fields *et al.*, 1987). From the digestion of the outer capsid and the $\sigma 1$ protein, the virion contents become activated and the RNA-dependent polymerase replicates the dsRNA segments (Fields *et al.*, 1987). The capsid arranges itself around the dsRNA segments that migrate into the cytoplasm from the original reovirus particle. Eventually, a large number of reovirus particles within the cell will strain the cell membrane and cell lysis will occur, releasing the reovirus progeny.

Inflammatory responses are vital initial indicators of many viral infections (Gallin *et al.*, 1992). The virus-mediated events as well as the lysis of the cell that occurs during viral infection often induce an inflammatory response (Paul, 1993). Therefore, the information gained from studies involving reovirus infection could also be of considerable relevance to understanding viral pathogenesis in other viral infections. Reovirus has been a focus for studying pathogenesis and immune response to viruses because previous results have shown that reovirus stimulates the production of immune mediators in mouse macrophage cultures (Farone *et al.*, 1993).

There are several different human serotypes of reovirus. This study focuses on two of the most studied: Type 1 Lang (T1L) and Type 3 Dearing (T3D). T1L and T3D reovirus both cause inflammatory response when administered in a

reovirus pneumonia model in the rat. T3D causes a more prominent response than does T1L. The purpose of this study is to further characterize replication patterns of reovirus in a human monocyte cell line, THP-1.

Materials and Methods

Cell Lines

The mouse L929 cell line (L-cells) were maintained in a monolayer culture of complete medium [RPMI 1640 (Sigma Chemical Co., St. Louis)] supplemented with 10 percent fetal bovine serum (FBS; Gibco, Gaithersburg, MD) and 100 Units/mL of penicillin and 100 µg/mL of streptomycin (Sigma Chemical) to be used for plaque assays to determine virus titers. Trypsin was used in 5 mL increments to liberate adherent cells from a 25 cm² tissue culture flask (Fisher, Pittsburgh) every five to six days.

The THP-1 cell line was obtained from American Type Culture Collection (45503 ATCC, Rockville, MD). The cells were maintained in suspension culture at 37 °C in 5 percent CO₂ (Isotemp CO₂ incubator, Fisher) in complete medium supplemented with 5 x 10⁻⁵ M 2-mercaptoethanol (Fisher) every five to six days.

Cell Viability

Prior to beginning all of the experiments and at all time points, THP-1 cell viability was determined by trypan blue exclusion. Briefly, 0.1 mL of 0.08 percent trypan blue (Sigma) was added to 0.1 mL of THP-1 cell culture. Cell viability was determined from a hemacytometer count as follows:

$$\% \text{ cell viability} = \frac{\# \text{ viable cells}}{\# \text{ total cells}} \times 100$$

Monocyte Stimulation

THP-1 cell cultures were adjusted to 1.5 x 10⁵ cells/treatment group. The cells were then resuspended in 0.3 mL complete medium (total volume) in five polypropylene, 50-mL centrifuge tubes

(Fisher). Reovirus T1L was added to the appropriate treatment groups at a multiplicity of infection (MOI) of 10 and 100. An uninoculated control tube was also incubated with the experimental tubes at 37 °C in 5 percent CO₂ during a 45-minute adsorption. The cells were then sedimented by centrifuging at 1000 x g for 5 minutes and washed to remove any unbound virus. The cells were resuspended in 5 ml complete medium to 1.5 x 10⁵ cells/mL and allowed to incubate at 37 °C in 5% CO₂. At 24 and 48 hours a 0.2 ml sample from each treatment group was removed and centrifuged at 2000 x g to sediment the THP-1 cells. The supernatants were collected and stored at -70 °C for later analysis. An additional 0.2 ml of the cell culture was collected from each treatment group and sonicated (Blackstone sonicator, Ultrasonics Inc., Sheffield, PA) at 60 Hz for 15 seconds to release any intracellular virus from the unlysed THP-1 cells in preparation for plaque assays.

Finally, 0.1 ml of the cell suspension was removed from all groups for cell viability studies.

Results

Through the course of the experiment, results of cell viability and viral plaque assays were recorded at both 24- and 48-hour time points. At 24 and 48 hours post-infection the uninfected control group had the highest cell viability. The MOI 10 treatment group had the second highest percent viability at both time points, and the 100 MOI group had the lowest percent of viable cells at both 24 and 48 hours.

During the experiment, plaque assays were performed to determine the levels of viral progeny. Plaque assay results showed that the viral titer of MOI 100 increased with time. As of the 48-hour time point, no viral plaques had been observed for the MOI 10 treatment group.

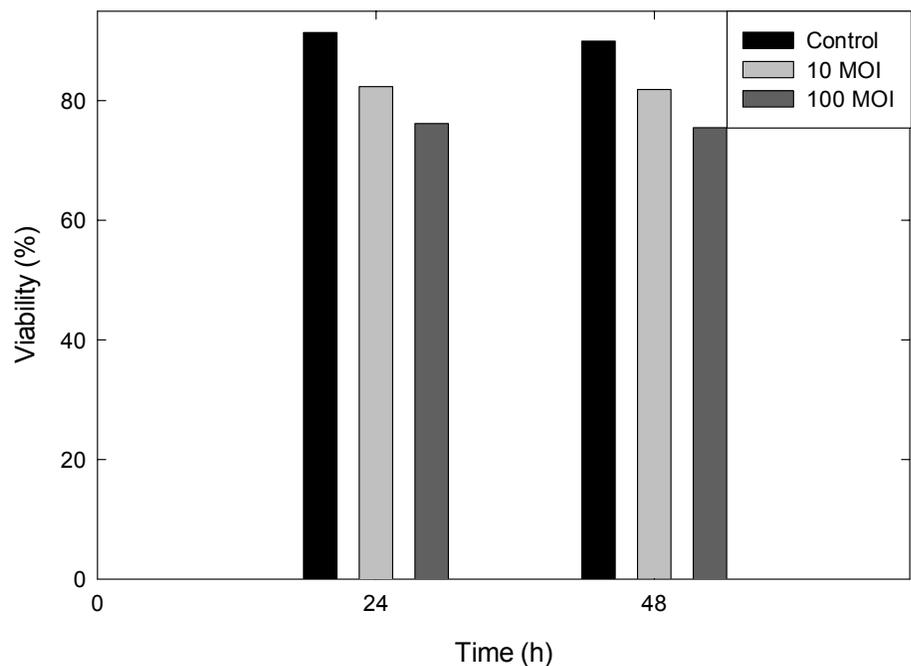


Figure 1. Percent cell viability at 24- and 48-hour time points for control, 10 MOI, and 100 MOI

THP-1 cells were treated *in vitro* with reovirus T1L at 10 and 100 MOI as well as an uninfected control group. At 24 and 48 hours, THP-1 cell samples were collected and enumerated by trypan blue exclusion for cell viability. Cell viability decreased in the presence of reovirus. The 100 MOI condition appeared to cause a greater decrease in viability than the 10 MOI condition.

THP-1 cells were treated *in vitro* with reovirus T1L at a MOI of 10 and 100. At 24 and 48 hours, infected THP-1 samples were sonicated and plaque assays were performed. For the 100 MOI condition, viral titer increased a hundred-fold between the two time periods. No plaques were observed for the 10 MOI condition.

Discussion

From this study, we were able to observe the behavior of T1L reovirus in a human monocyte cell line. The percent cell viabilities and viral titers were recorded at both 24- and 48-hour time points. As seen in Fig. 1, cell viabilities decreased in all conditions at both 24 and 48 hours. The condition with the most virus, MOI 100, had the largest percent decrease followed by the MOI 10. These results support the hypothesis that increases in the amount of virus resulted in decreased cell viability. The results of the plaque assays that were performed showed that the titer of the MOI 100 condition increased 100 times between the 24- and 48-hour time points (Fig. 2). These results again support the hypothesis that the virus replicates over a period of time when given the proper conditions.

The results of this experiment will be statistically analyzed when at least three replicates of the experiments are completed. These results will be compared to results with another reovirus serotype, Type 3 Dearing, in the same manner as we tested Type 1 Lang. Reovirus Type 3 Dearing has been shown to have differ-

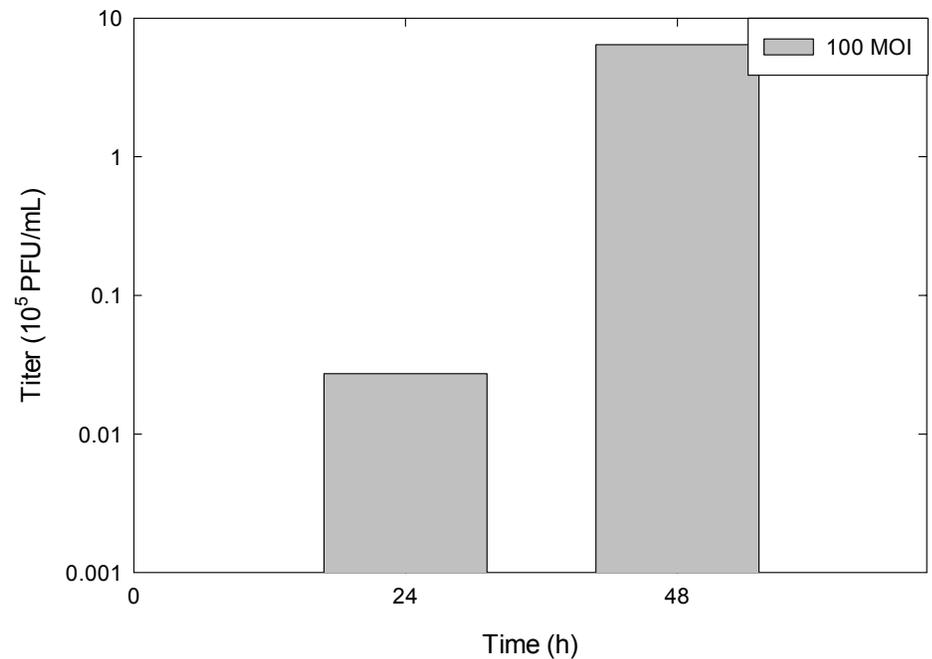


Figure 2. Viral titer for 100 MOI at 24 and 48-h time points

ent effects *in vivo* and *in vitro* compared to Type 1 Lang.

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“An Empty Pocket Is the Worst of Crimes”¹: How the Poor Are Depicted In European-American Women’s Fiction 1850-1959



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“There is no excuse for [poverty],” Miss Garnder scathingly admonishes Francie in *A Tree Grows in Brooklyn* while telling her not to write stories about poverty and starvation; “People are poor because they’re too lazy to work” (Smith 316). As Fanny Fern so succinctly (and satirically) says, “People shouldn’t *get* poor [...]. It is disagreeable [...].” (“Mistaken Philanthropy” 228). In *The Lamplighter*, Miss Pace declines to leave her worldly goods to anyone poor, reasoning, “I know there’s more than a sufficiency of pauper population, and plenty that would be glad of legacies; but I have no intention of bestowing on such. Why, sir, nine-tenths of them will always be poor. No, no! I shouldn’t give to such!” (Cummins 210). Fictional characters might express these opinions because, according to Nina Baym in her introduction to *The Lamplighter*, “By 1850, questions concerning poverty and the character of the urban poor [...] had become intensely important and interesting to the American public” (xviii). During this time, Baym points out, both conservatives and liberals insisted that “[n]obody in this country had to remain

poor, or become a criminal to get rich” (xviii).

Despite myths of abundance, poverty has long been a serious concern in America (Katz 4), and a careful examination of both popular texts and some works not as well-known and widely read will reveal, as Baym persuasively argues, that women writers were especially aware of the “specter of frightful poverty [...]” (*Woman’s Fiction* 46). Of the authors under consideration in *Woman’s Fiction*, Baym writes that “they abhorred and feared poverty. Not one of these novels is unaware of, or fails to devote some space to, poverty as the great slough into which the human spirit sinks and wherein it is destroyed” (48). A broad overview of texts by European-American women writers between 1850 and 1959 in terms of their depictions of poverty allows us to explore some of the ideologies and mythologies of poverty and how they are represented and replicated in literature. This study will focus only on the works of European-American women writers, for while it is obvious that women of all races wrote about poverty, to broaden the scope would bring in issues such as the institutions and effects of slavery, discrimination, and racism, which would be topics too immensely complicated to do justice to within the allotted space.¹

In her study of Canadian literature, Roxanne Rimstead proposes a “new category of analysis called ‘poverty narratives’ and oppositional reading practices which ask broad theoretical and social

questions such as what it might mean politically, ethically, and epistemologically to critique poverty in literature more rigorously” (23). Rimstead asserts that “[b]y reading oppositionally, we can expose the ideology behind images of poverty and trace how textual constructions not only are rooted in lived power relations but also may reproduce these power relations or challenge them significantly” (23). She suggests that we focus studies on poverty, not class, “in order to understand how images of poverty become currency, trading across cultural barriers from one social location to another” (40).

Such cultural images of poverty help explain why characters who are poor are often depicted as viewing poverty as shameful. For example, Mrs. Bart falls on hard times in *The House of Mirth*, and she avoids acquaintances who knew her in better times because “[t]o be poor seemed to her such a confession of failure that it amounted to disgrace [...]” (Wharton 34). When the heroine of the story, Lily Bart, finds herself in financial distress, she confides to her friend that she doesn’t know anything “more dreadful” than poverty (281). In *Bread Givers*, Sara sees her sister Mashah standing “[d]umb with the shame of her poverty [...]” before the unpitying milkman when she cannot pay the bill (Yeziarska 145), and Mashah confides to her sister that she is “dirt-poor” (147), cries because there is no one left to borrow from, and calls her life a “miserable existence” (148). This feeling of shame is

rooted in what Piven and Cloward label as “the strident American belief in economic individualism,” which they say is perpetuated by “the unshakable conviction held by poor and affluent alike that rags could indeed be converted into riches” (46).

Although dominant ideology implies that affluence should be possible for all under the American system, historical studies as well as works of fiction record what Vincent calls “the poignant tales of the countless number of immigrants who have looked upon America as the promised land and who have found in New York a city of shattered dreams” (338). With their dreams in tatters, many immigrants and non-immigrants conclude that their poverty must be of their own making, and this leads to feelings of shame. As Lily Bart realizes in *The House of Mirth*, “It is not always easy to be quite independent and self-respecting when one is poor [...]” (Wharton 187). Concomitantly, many individuals among both the poor and non-poor display a sense of futility that conditions will ever improve. Consider the pessimistic attitude voiced by a cotton farmer in Texas: “What’s the use o’ strivin’? Pore folks got to have pore folks’ ways” (Scarborough 74). Discouragement often wars with optimism, as is evidenced in Ellen Glasgow’s novel *Barren Ground*. To Dorinda, “poverty had been an inevitable condition of living, and to fight had seemed as natural as to suffer or endure” (88), but as her mother lies dying Dorinda acknowledges that “at the last she appeared to become completely reconciled to her twin enemies, poverty and dirt;” as Mrs. Oakley says on her deathbed, “There ain’t any use struggling, [...] It doesn’t seem just right that we have to be born. It ain’t worth all the trouble we go through” (264-65). Miss Thornton, the school teacher in *Peyton Place*, “felt that she fought a losing battle with ignorance and was overcome with a sense of futility and helplessness” and wonders, “Why

do I try? [...] What chance have any of these children to break out of the pattern in which they were born?” (Metalious 8). In the same novel, Selena is determined to escape poverty, “[b]ut hopelessness was always at her elbow, ready to nudge her and say, ‘Oh, yeah? How will you get out? Where could you go, and who would have you after you got there?’” (31).

Sylvia Jenkins Cook, in her study *From Tobacco Road to Route 66: The Southern Poor White in Fiction*, attributes scenes like these to authors almost as powerless as their characters to break out of the dominant ideology and bound by literary tradition to a certain formula for representing those in poverty: “But more ominously for the fictive future of the poor white, they were obliged to betray those qualities of character that had created the poor white’s fascination in the first place—the combination of violence, inertia, absurdity, and cunning that had incongruously made these poor people as grotesque and contemptible as their poverty” (30). Thus fiction helped perpetuate the ideological myths of American culture: literature not only confirmed some prevailing views toward the poor, it reproduced these values in the next generation of readers by presenting stereotypical attitudes as the norm.

The use of language helps to form readers’ conceptions of the characters and thus plays a part in this process. Linguistic markers are an important tool when delineating the poor from the non-poor. Authors often assign a rough dialect to poor characters, allowing them to speak in only simple words, while wealthy individuals use cultured tones and display a wider working vocabulary.² Grace Metalious emphasizes class divisions in *Peyton Place* by depicting first the discourse of a knowledgeable townsman and then that of an uneducated woodcutter. Seth Buswell is owner and editor of the town newspaper, the only son of a governor, having inherited the fam-

ily fortune, certainly qualifies as one of the town’s “elite.” Educated at Dartmouth, Buswell demonstrates he is capable of philosophizing in a cultured voice about the reasons a woodsman might drink—“One would surmise that he hasn’t the imagination to invent phantoms for himself from which he must escape”—then “consciously practice[s]” omitting r’s and dropping g’s and condescendingly concludes, “Mebbe they’re a harmless crew at that, our woodsmen, [...] sort of like tame animals” (30). Buswell is allowed the luxury of linguistic “slumming” because of his social position and education, but the poor are viewed in a negative light when speaking in the same vernacular.

For example, Lucas Cross is a “now-and-then” woodsman (28), a master carpenter and cabinet maker—a craft he only “practiced when coaxed with liquor or bribed with outrageous sums of money” (29)—and a drunken lout who physically abuses his wife and sexually assaults his stepdaughter. Lucas is depicted as being at the bottom of the social scale—even the lumbermen regard him with contempt. Returning home years after being run out of town for impregnating Selena, he bemoans joining the Navy in a speech wherein not only his typical avoidance of work and responsibility but also his native dialect direct the audience to think poorly of him: “Wish to hell I’d stayed in the woods, I can tell ya. Histin’ an ax is a lot easier than the things they can think up for a man to do in the Navy” (295). The text calls Lucas a woodsman but had he been born elsewhere, the narrator asserts, “he might have been called an Okie, or a hillbilly, or poor white trash” (29). Just in case the reader could possibly be lulled into a false sense that Lucas could have any shred of respectability, all such illusions are stripped away by these unfavorable comparisons. No matter where the reader is from, he or she is able to link Lucas to a group widely held to be contemptible.

Nor does this type of denigrating labeling occur only in *Peyton Place*; fiction is full of similar uses of stereotypes. *Bread Givers* refers to “dirty immigrants” (Yeziarska 17), *The House of Mirth* represents servants as “inhuman” (Wharton 41), and Chester Doble, speaking of his new neighbors in *The Devil’s Hand*, says, “I dunno haow they all manage to squeeze into that there little cookhouse, but they don’t aim to live no better’n hawgs. That’s haow Mexicans is” (Kelley 204). Cook lists a considerable number of other designations of poor whites in her work on the depiction of poverty in fiction, *From Tobacco Road to Route 66*; they include “lubbers, crackers, dirt eaters, woolhats, river rats, piney-woods tackies, po buckra, sandhillers, hillbillies, tarheels, lintheads, and factory rats” (ix). Rimstead labels such terms and others, like “welfare bums, the underclass, trailer trash, or child poverty,” as “insults, degrading paradigms, stereotypes, or euphemisms” (8). When considered individually, these terms may, at first, seem only slightly offensive or derogatory, or they may slip through the reader’s consciousness as just the accepted vocabulary of the time or place, but when a comprehensive list is compiled and considered, and such terms are read repeatedly, it can be concluded that these terms ultimately leave a negative impression of the poor in the mind of the reader. These negative impressions are particularly problematic because the texts also work to present a sympathetic view of the poor. Such contradictions are rife in European-American women’s fiction and result in internal tensions.

Even more interesting tensions occur when other prevailing attitudes are incorporated into a work without explanation of the resulting internal contradictions. An example of this phenomenon would be the incorporation of the idea that the poor are happy and contented to be poor, in texts that often present central characters who spend their lives trying to escape from pov-

erty. In *Can’t Get A Red Bird*,³ John Carr sees a wagonload of carefree African Americans, and he “envied them their freedom from sense of responsibility, their lack of worry over finances. [...] Niggers didn’t need money or ministers or even the justice of the peace to make them happy” (Scarborough 201). John is the son of Irish immigrants, a poor tenant farmer, and he dreams of changing the price-fixing system that leaves him in debt year after year, yet he apparently cannot credit this happy group with the same worries, dreams, struggles, and intelligence that he possesses, and the text seems unaware of the contradiction. John is working to get out of poverty, yet he does not attribute the same desire to African Americans.

Like John, characters frequently designate themselves as better than members of other groups (often with different racial or ethnic backgrounds), treating them with the same inequitable attitudes they themselves experience and resent. Any financial success by members of one of these “inferior” groups is regarded as suspicious and threatening. During a discussion of immigrants making money “hand over fist” in *The Devil’s Hand*, Kate actually points out this irony to Mr. Pruett when she says, “Well is it a sin to make money? It’s what we’re all trying to do isn’t it? [...] I can’t say I’m fond of either Japs or Hindus, but I believe in giving the Devil his due. [...] If Americans were willing to work as hard and live on as little as Japs they’d make money out of lettuce and cantaloupes too” (Kelley 57). Unfortunately, this myth that one group of people could live on less than another was well-entrenched in American culture. According to Linda Gordon, “A 1922 study showed that eleven of thirty agencies figured that minorities (for example, Mexicans, Italians, Czechs) needed less money to live on. In Washington, D.C., social workers had two standard budgets, a higher one for whites and a lower one for blacks [...] (47). This system of dis-

crimination helps perpetuate two vicious cycles, each working to reciprocally augment the other; ideology influences and enforces practice as well as influencing fiction, while in turn fiction influences ideology and practice.

Another internal contradiction in fiction is intimated in the idea that poorness is somehow beneficial, that doing without physical necessities and niceties makes one strong—yet those who are financially secure fear falling into poverty and gaining some of the same “benefits.” Indeed, *The House of Mirth*’s Lily Bart “had always accepted with philosophic calm the fact that such existences as hers were pedestalled on foundations of obscure humanity,” yet when faced with poverty herself, she realizes “it is one thing to live comfortably with the abstract concept of poverty, another to be brought in contact with its human embodiments” (Wharton 158). Lily is forced to live in a dismal boarding house and struggles desperately to survive on the little she earns as a millinery assistant, yet the narrator blithely describes her co-workers—twenty women with “sallow” faces and “fagged profiles” working with “subordinate fingers”—as “fairly well clothed and well-paid” (298-99). A “well-paid” job for these women translates into a meager existence for Lily. In her study *Woman’s Fiction*, Nina Baym confirms that “[a] temporary bout with poverty might have redemptive value for a pampered social butterfly, but a lifetime of poverty was earthly hell” (48).⁴

Even more puzzling is the attitude that the poor do not deserve to have more money because they cannot responsibly spend wisely, although, as we have seen, it is assumed that they could manage to exist on far less than the non-poor, often by practicing many small economies. This belief is articulated in *Fabulous Valley*. After years of eking out a living on used-up farms in the Allegheny River valley, poor farmers are rich overnight when oil is discovered. Ill-equipped for affluence, Davy Rinn, a

young newly rich farmer, goes to New York City and literally throws “greenbacks” away to a crowd on the sidewalk, spends wildly on banquets and parties, and wears “[d]iamonds in his shirt front, a diamond in his cravat, a diamond on his finger...” (Parker 260). Within a year he has lost all his money and returns home deeply in debt, full demonstration of the ill-advised wisdom of giving money to the poor. Again, this depiction is both informed by and a reinforcing of the attitude of American society. S. Humphreys Gurteen’s late nineteenth century *Handbook of Charity Organization* asserts that the poor “have neither the intelligence, the tact nor the opportunity to extract the maximum of good from their slender resources” (qtd. in Katz 76). Analyzing Gurteen’s discussion of poverty, Katz concludes that Gurteen believed that “[t]he real reason for the misery of the poor was their ignorance” (78). Gavin Jones, writing on “Poverty and the Limits of Literary Criticism,” notes that even Thoreau wrote, “Often the poor man is not so cold and hungry as he is dirty and ragged and gross. It is partly his taste, and not merely his misfortune. If you give him money, he will perhaps buy more rags with it” (Endnote 27).

These attitudes, demonstrated in texts that, in many ways, attempt to gain sympathy for the poor, actually reiterate questionable attitudes by perpetuating such ideological myths. As part of the larger group called “the poor,” women, in particular, face prohibitive attitudes in society which hinder them from escaping poverty.⁵ One problematic attitude often depicted in fiction is the expectation that women should and will confine their labor efforts to certain arenas. Domestic labor is seen as a natural extension of womanhood and is deemed “woman’s work.” Thus, it is suitable for a woman seeking to escape poverty to marry and perform unpaid labor taking care of her husband’s household, or to seek employment as a poorly paid house-

hold worker such as a cook, maid, or housekeeper. A more advantageous situation would be to find employment as a teacher, seamstress or milliner, or companion. These better paid and less physically demanding activities are also seen as extensions of the woman’s duties at home—providing useful services to children and other women—and are therefore suitable, especially for single women. For example, Gerty becomes qualified as a teacher in *The Lamplighter*, but she only teaches for a short time because she provides a more valuable service by acting as companion to her blind protectress, Emily. In *Peyton Place*, Miss Elsie Thornton can teach the town’s children, but when the school board considers letting her serve as principal they conclude that “being principal is no job for a woman” (Metalious 94). When the title character of *Ruth Hall* petitions her brother, a newspaper editor, to publish some of her work, he cruelly advises her to “seek some *unobtrusive* employment” (Fern 116).

Although some types of work were seen as acceptable, marriage was still often depicted as the ideal route out of poverty for women. Linda Gordon writes of single mothers without a male provider, “These women not only had the worst working conditions, grinding themselves through night and day, depriving themselves of sleep, but also frequently pressured their own children into long hours of work to ensure the food and rent money” (22). Anna Quindlen writes in her introduction to *The House of Mirth* that Lily “at twenty-nine...has waited too long to make the marriage that is the only vehicle to a safe and comfortable future—in truth, in her set, to any future at all” (vi). But marriage was not always the answer advice-givers, in whatever form they come, purported it to be. Jane Addams, talking about problems of poverty, describes “the poorest women of the neighborhood, many of whom were bearing the burden of dissolute and incompetent

husbands in addition to the support of their children” (128), giving instances of women supporting husbands who are drunkards, gamblers, and criminals.

These historical realities made their way into fiction. Literature sometimes depicted poor women striving to survive and failing to escape poverty due to meager resources, a lack of marketable skills, and marriage to a shiftless or unlucky “provider.” Of the texts she examines, Nina Baym writes, “Our authors were, naturally enough, particularly alive to the fact that so many of the indigent were women and children made poor by undependable males and denied the opportunity to climb out of the pit on their own” (*Women’s Fiction* 48). Thus Katie Nolan, in *A Tree Grows in Brooklyn*, scrubs floors while her children scrounge the city streets for rags and trash to sell to the neighborhood junk dealer even though Johnny Nolan, husband and father, is alive and working. And the family of a desperate cotton farmer in Texas is equally destitute, as described in *Can’t Get A Red Bird*:

The wife, Phrony, looked as if she had been out in a hard rain all night. Her stringy hair was faded, her eyes were dim and squinty, her face the color of whey. Her dress was drab and torn, and she had on a discouraged looking hat with faded, ragged flowers on its torn brim. Children clung to her, skulked behind her, slunk along in front of her, shy half-wild little creatures who had scarcely any separate identity. Slaves to a cotton row...That was what a cotton farm could do to a woman! A rented farm and no money. Children and no means to do for them with. (Scarborough 173-4)

The image of the poor woman as exhausted and powerless appears in many women’s texts. Many other women writers used their own grueling experiences with poverty in their texts, often including autobiographical sketches of their own lives to gain sympathy for the poor.⁶ In her introduction to *Ruth Hall*, Joyce W. Warren acknowledges that

“Fern’s own experience as a seamstress working long hours for a pittance gave her a lifelong sympathy with working women [...]. She felt strongly about the suffering she saw and believed society had a responsibility to the poor” (xxxiii). However, even sympathetic portraits can be complex and problematic. Because women are a complicated and diverse group, there are a myriad of internal inconsistencies and contradictions within books and between texts, as well as different outcomes for the characters in poverty. Fanny Fern’s heroine, according to Warren, “realizes the American Dream. She gains wealth and success by her own talents and industry” (xx). In *The Lamplighter*, Gerty is fortunate to get financial help and educational guidance from a rich benefactress and therefore escapes the drudgery of poverty, plus she ultimately marries a self-sufficient man. The text clearly indicates that she works hard and is virtuous, but also shows help is necessary to get out of poverty. But many others fail to escape poverty. Cook argues that for Judith Pippinger in *Weeds*, “little possibility is held out for relief from the dreary struggle of poverty,” so she settles for “the numbness of endurance” at the end of the novel (22). Even social reformers realized that, much as they wished otherwise, not every poor person they aided would have a success story. In fact, much the opposite was true: In his forward to *Twenty Years at Hull-House*, Henry Commager says of Addams “More and more she came to feel like Alice with the Red Queen: no matter how fast she ran, she was still in the same place; the poverty, the slums, the crime and vice... How futile was the cure, how imperative was the prevention!” (xiv).

Addams’ feelings of futility are relevant to the depiction of poverty in literature because ideas like hers are often represented in fiction. These texts raise a set of questions about the images of the poor; in fact, they may raise more questions than they answer, for contrast-

ing cultural images are both questioned and reinforced, resulting in contradictions within and between texts. A critical reading of fiction may help reveal the prevailing attitudes toward the poor and can shape our understanding of poverty and make us confront our own internal contradictions in our attitudes toward poverty. Contrary to what Miss Garnder told Francie in *A Tree Grows in Brooklyn*, poverty does *not* make a story sordid or ugly, and some authors *do* write about being poor. These texts challenge readers to make a critical examination of the depiction of poverty in literature and ask us to reconsider what we believe to be sordid and ugly—and *why*.

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Acknowledgments

I would like to thank the Middle Tennessee State University McNair Scholars Program for funding my research and Dr. Kathleen Therrien for her guidance and support as my faculty mentor.

Endnotes

¹ The title is taken from a verse in Fanny Fern's article entitled "Dollars and Dimes." The verse reads, "Dollars and dimes, dollars and dimes,/An empty pocket is the worst of crimes."

² These issues, as written about by African-American women, will be addressed

in a forthcoming paper by this author.

³ In *From Tobacco Road to Route 66: The Southern Poor White in Fiction*, Sylvia Cook lists another linguistic contradiction found in texts: "People whose oral language is restricted to terse, formulaic, ungrammatical, and almost wholly practical utterances are permitted in their mental language a range of philosophical speculation and colorful and complex imagery that emphasizes a degree of activity and sensitivity not to be expected from their actions and conversation alone" (44).

⁴ The title of the book is *Can't Get a Red Bird*. To maintain the original emphasis, I have unitalicized "Red" when italicizing the title.

⁵ Ardis Cameron, in her introduction to *Peyton Place*, quotes Grace Metalious on the effects of poverty: "I don't go along with all the claptrap about poverty being good for the soul and trouble and struggle being great strengtheners of character," Metalious wrote in 'All About Me.' 'It has been my experience that being poor makes people mean and grabby, and trouble makes them tight-lipped and whiny'" (xxvi).

⁶ For a discussion on the ideologies of women's labor and domesticity and how these ideologies affected fiction, read Laura Hapke's book *Tales of the Working Girl: Wage-Earning Women in American Literature, 1890-1925*. In the preface, Hapke discusses the unskilled jobs in

which women were expected to work, and says that traditionalists "held that all work outside the domestic sphere was unwomanly" (xiii). She lays the groundwork for discussing the "Victorian ideology of the woman's separate sphere" (xv), which included the concepts of the woman's "natural" role as mother and her interest in motherhood, and goes on to examine how this ideology is depicted in fiction.

⁷ Alice Kessler-Harris writes in her introduction to *Bread Givers* that "[a]ll of the six books Anzia Yeziarska published between 1920 and 1932 are in some sense autobiographical" [...] (xvi). In the introduction to *Ruth Hall*, Warren discusses at length how Fanny Fern so thinly disguised her own life experiences and her ill-treatment by her family that in her "satirical portrait" of her brother his "contemporaries apparently had no trouble in recognizing him" (xiv). Warren also says that "the critics castigated Fanny Fern for her negative treatment of her father, brother, and in-laws, whose uncharitableness toward her when she and her children were living in poverty she had sharply satirized in the novel" (xvii). And Edith Kelley and her husband "worked a tobacco farm in Kentucky" before she wrote *Weeds*, according to Matthew J. Bruccoli's afterword to the *The Devil's Hand* (292).

Schools Make Me Sick: A Correlation Between Classroom Allergens and Behaviors



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Imagine Mrs. Thompson, a second grade teacher, who headed to school one morning and noticed her car hood was covered with thick yellow pollen. Mrs. Thompson did not give much thought to the pollen, backed out of her driveway and drove to school. While Mrs. Thompson greeted her students at the classroom door, she noticed that Suzy held tissue in both hands, wiping her nose every time she sneezed. Following behind Suzy was Robby whose eyes were extremely red and puffy. After Suzy and Robby walked past, Mrs. Thompson thought about the thick pollen that had settled on her car hood and how the outdoor pollen had taken a toll on Suzy's and Robby's allergies. Wondering whether there were any other students in her class who suffered from allergies, Mrs. Thompson observed her students closely throughout the day to see which ones exhibited symptoms.

At the end of the day, Mrs. Thompson thought about her observations. Suzy, Molly, and Robby spent the whole day sneezing, rubbing their itchy watery eyes and wiping their runny noses. In addition to observing these students,

Mrs. Thompson noticed other behaviors in children she could not explain. Andy was extremely active after lunch and could not focus on his class work, Emily kept nodding off to sleep, and Josh seemed unusually irritable. Little did Mrs. Thompson know that the students who exhibited extreme activity, drowsiness and irritability could also be suffering from some type of allergic reaction.

Many individuals think of allergic reactions as itchy watery eyes, runny stuffy noses, rashes and hives. But allergic reactions can be exhibited through a wide range of symptoms. Children who are sensitive may exhibit mood swings, irritability, temper tantrums, decreased ability to concentrate, decreased handwriting legibility, hyperactivity, clumsiness, extreme silliness, vomiting, diarrhea, migraine headaches and a host of other symptoms (Rapp, 1996). These symptoms can affect children's performance in school and can interfere with their daily lives.

Allergies among children have become so prevalent today they may be labeled the "leading cause of poor health in children" (About, Inc., 2003, p.1). Allergies "account for more office visits to pediatricians than any other medical problem and they are responsible for more missed days of school than any other medical problem" (Gale Research, 1998, p. 1). Researchers have found that allergies caused students in the United States to miss a total of more than 2 million school days a year (Schering Corporation, 2003). As a result, teachers and

school personnel must become knowledgeable about the various substances that could trigger allergic reactions and how students may be assisted in coping with this condition.

Childhood Allergies and Sensitivities

Description and Background

Heredity plays a major role in determining whether a child develops allergies. A child having one parent with allergies and sensitivities has a 30–50 percent chance of also developing allergies, but "when both parents have allergies the chances increase for the child to 60–80 percent" (About, Inc., 2003, p.1). It is not uncommon for children who have no known family history of allergies to still develop the condition. Pediatric allergies "are more common in boys under the age of 10, while girls between the ages of 10 and 20 are more likely to be affected" (Cleveland Clinic Health System, 1999, p.1).

Individuals who are sensitive may react after being exposed to pollen, foods, chemicals, or some combination of all these. Those having essentially seasonal allergies usually sniff and sneeze during spring and/or fall, but the rest of the year feel reasonably well. Individuals with food allergies have no seasonal symptoms, but react when they eat certain foods. Those sensitive to chemicals react after being exposed to such substances as gasoline, perfume,

fabric softener, but may not have any symptoms due to pollen or foods. On the other hand, there are individuals who suffer from multiple allergy types. Those individuals are allergic to a combination of pollen, foods and chemicals that cause severe health problems which interfere with their daily lives (Krohn, Taylor, & Larson, 2000).

The majority of individuals who suffer from multiple allergies are women (Klotter, 2001), although there have been diagnoses of children suffering from the condition according to Pediatric Environmental Health Subspecialty Unit at Boston's Children Hospital (Woolf, 2000). The impact of multiple allergies is illustrated by a four-year-old child who was referred to the Pediatric Environmental Health Subspecialty Unit at Boston's Children Hospital after her pediatrician diagnosed her as having a milk allergy. The child's mother became very concerned after the diagnosis because her daughter began reacting to a variety of environmental triggers (such as chemicals, foods and other allergens) that caused an expanding list of symptoms. The child began to experience allergic reactions to "cleaning compounds, detergents, perfumes, cigarette smoke, dust and paints" that caused symptoms such as "headaches, fatigue, nausea, difficulty breathing, and malaise" (Woolf, 2000). The preschooler's life significantly changed as a result of her severe allergies.

After the child's diagnosis, her family allowed no tobacco smoke in the home, they had all carpet removed, and they covered the child's mattress on her bed in order to reduce the amount of dust mites that triggered allergic reactions. The child's mother no longer took her into public restrooms or grocery stores because the disinfectants used to clean and sanitize the buildings caused the child to experience "dizziness, fatigue, headaches, chest tightness, and nausea" (Woolf, 2000, p.1220). When visiting Boston's Children Hospital, the child

would have asthma attacks after being exposed to the freshly painted areas of the hospital. The mother feared that her child's transition into public kindergarten "would likely be sabotaged by the school's routine of pesticides and cleaning products" (Woolf, 2000, p.1220). The child missed 15 days of her half-day kindergarten due to her symptoms, after which the school promised to work with the parents to limit the child's contact with chemical exposures. The symptoms experienced by this child and countless others with allergies are caused by an "over functioning" immune system.

The Immune System Responses

The immune system works on a 24-hour basis to defend the body from substances that would harm or destroy it (Taylor, Krohn, & Larson, 2000). When the immune system perceives a substance as being harmful it releases antibodies to destroy that substance (Byrnie, 2000). Although the immune system serves to protect the body against harmful substances, it is capable "of acting in abnormal ways" (Wittenberg, 1996, p.13). During an allergic reaction, the immune system mistakenly identifies "safe" substances as "harmful" (Byrnie, 2000). For example, a person who is sensitive to peanuts may have an allergic reaction after eating a food containing peanuts because his/her immune system mistakenly detected the peanut as being a harmful substance and began fighting it as if it were a germ. Some common allergens (substances that cause allergic reactions) are foods, dust, pollen, and even chemicals.

When the immune system detects an allergen as being harmful it releases antibodies to attack and kill the harmful substance (Byrnie, 2000). Immediately after the immune system releases antibodies to attack the allergen, the body releases histamines to direct blood and extra antibodies to the effected area to

fight the invading substance. Histamines are responsible for causing itchy watery eyes, runny noses, hives, rashes and other symptoms the body may exhibit during an allergic reaction (Royston, 2003).

To reduce the effects of histamines, many individuals are prescribed antihistamines. For the millions of children with allergies, antihistamines can bring relief for their symptoms, but can also cause reduced performance in the classroom. For example, one of the most important aspects of learning is attentiveness. Children must be fully alert in order to gain the concepts being taught in class (Schering Corporation, 2003). Over-the-counter antihistamines can produce significant drowsiness in children. If the antihistamine is administered to the child shortly before or during school hours the "child's ability to remember facts and analyze concepts" may be affected (Schering Corporation, 2003, p.1).

According to Linda Wolfe, R.N., president of the National Association of School Nurses (NASN), many parents, teachers, and school nurses are concerned that "the allergy medications used to stop the sneezing, sniffing, and congestion, make children drowsy or affect their ability to concentrate" (Medical Network, Inc., 2003, p.1).

According to a survey given to the members of the National Association of School Nurses: "...75 percent agreed that the physical side effects of the medication used to treat nasal allergy symptoms interfered with school performance [and] 67 percent said a child's alertness and ability to concentrate are impacted. Also 68 percent said they thought drowsiness has the greatest impact on children's participation both in and out of the classroom" (Medical Network, Inc., 2003, p.1).

Antihistamines are not the only threat to children's performance in school; teachers must also examine the foods eaten by their students.

Food Allergies

For most, enjoying a peanut butter sandwich, shrimp or a tall glass of milk will have no ill effects. But some soon become aware of hives, abdominal cramps or a tingling sensation in the mouth. Some may vomit or experience severe shortness of breath. Some may even die (Putnam, 2002). For 8-year-old Johnny, such symptoms are a reality. On Christmas day Johnny decided to eat a chocolate peanut treat. He had had some difficulty with peanut allergies in the past. Once they gave him a rash and another time they made him wheeze, but this time was far worse. After Johnny ate the treat he immediately went into anaphylactic shock (Putnam, 2002). Anaphylactic shock is a "life-threatening allergic reaction that can constrict airways in the lungs, severely lower blood pressure, and [cause] suffocation by the swelling of the tongue or throat" (About, Inc., 2003, p.1). Unfortunately, Johnny never recovered from the impact of the shock and remains in a vegetative state (Putnam, 2002).

Anaphylactic shock is one of the most severe types of allergic reaction, but symptoms due to food allergies are widespread. In addition to those listed above, symptoms may include difficulty breathing and swallowing, diarrhea, intense skin itching, wheezing, and/or swelling of the eyelids and face (About, Inc., 2003; Putnam, 2003). Reaction to foods usually "begins within five to 30 minutes after the individual eats the offending food and symptoms may last for up to 72 hours or longer if not treated" (Putnam, p.2, 2002). Reactions can occur from the individual "eating, drinking, or smelling the offending foods" (Naturopathic Medicine, p.3, 2003).

Food allergies affect only 1.5 percent of adults in the United States while 6 percent of children are affected. According to Hugh A. Sampson, M.D., director of the Elliot and Roslyn Jaffe Food Allergy Institute at Mount Sinai School of Medicine in New York City,

"an estimated 150 Americans die each year from severe allergic reactions to food" (About, Inc., 2003, p.1). It is critical for individuals with food allergies to become aware of the foods that most commonly cause reactions. Eight foods account for nearly 90 percent of all food allergies: milk, eggs, peanuts, tree nuts (walnuts and cashews), fish, shellfish, soybeans and wheat are most commonly the cause of allergic reaction in individuals (Putnam, 2002). Most children outgrow milk and egg allergies; on the other hand, "allergies to peanuts, tree nuts, and shellfish are lifelong" (Putnam, 2002, p.2).

School officials at Elridge Elementary School "have banned all peanut products from one of the tables in the school's lunch room in an attempt to create a safe haven for a fourth grader with a severe peanut allergy" (Safer, 1998, p.1). Jackie Lisa, principal at Metcalf Elementary School, reported that a peanut-free table was created for a child, which "prompted his whole class to give up peanuts for the school year so they could sit together" (Safer, 1998, p.1). Teachers who have children with food allergies in their classes have to rethink traditional school projects that require the use of peanuts and other legumes (Safer, 1998). The concern about peanut allergies has extended beyond schools: "the U.S. Department of Transportation issued an order requiring airlines to set aside at least three rows where no peanuts can be served whenever a passenger with a peanut allergy makes an advance request" (Safer, 1998, p. 1). Peanuts and other foods are not the only substances that can be harmful to allergy sufferers. Airborne allergens can also pose a direct threat to those individuals who are sensitive.

Airborne Allergens

Airborne allergens include substances such as pollen, dust and mold. Airborne allergens cause allergic reactions in a susceptible individual by entering

through the nose and mouth (Alcon, Inc., 2003). Those who suffer from airborne allergens may experience sneezing; runny or clogged noses; coughing; itching eyes, nose and throat; dark circles under the eyes; watery eyes; and conjunctivitis ("Symptoms of Allergies to Airborne Substances," 2003). Airborne allergens can be found indoors or outdoors (Alcon, Inc., 2003). Numerous airborne allergens can be found in the home, the most common being dust mites.

Dust mites are tiny bugs that "feed off of our dead skin cells" (Alcon, Inc., 2003, p.1). These minute bugs live in "sofas, bed sheets, rugs, and other such places" (Alcon, Inc., 2003, p.1). Dust mites can be controlled by frequently vacuuming the areas where they are most common. It is essential to empty the vacuum bags after use because the tiny dust mites can seep through the bags. In addition, it is important to "frequently change the bed sheets and /or consider the use of dust-proof covers for mattresses and box springs" (Alcon, Inc., 2003, p.1). Dust mites are relatively easy to control; on the other hand, mold and pollen that are found outdoors are considered more difficult to control.

Pollen allergies usually occur during the spring, summer and fall seasons ("Pollen Allergy," 2003). Pollen comprises tiny particles that are released from trees, weeds and grass. Pollen is essential in fertilizing plants, but at times may enter the nose and throat in humans, causing allergic reactions in those who are sensitive ("Pollen Allergy," 2003). Pollen counts tend to be higher in the "morning on warm, dry, breezy days, and lowest during chilly, wet periods" ("Pollen Allergy," 2003, p.2). Although a pollen count is only an approximation of how intense the pollen is, "it is useful as a general guide for when it is advisable to stay indoors and avoid contact with the pollen" ("Pollen Allergy," 2003, p.2).

Another form of airborne allergen found outdoors is mold. Mold can be located on leaves, grass and hay. Like pollen, mold is carried by wind and, when inhaled by allergy sufferers, triggers reactions (Alcon, Inc., 2003). Individuals who suffer from reactions to mold may experience symptoms during spring to late fall. Mold season reaches its peak from July to late summer. Unlike pollen, molds can grow at subfreezing temperatures and may persist after the first frost ("Mold Allergy," 2003). Molds grow wherever there is moisture, oxygen and a source of other chemicals; molds can be found thriving on vegetation that has been killed by the winter cold ("Mold Allergy," 2003).

Although mold is typically found outdoors, it is not uncommon to find mold indoors. Mold can be found in damp basements and closets, bathrooms, refrigerator drip trays, air conditioners, and other places that are moist and dark ("Mold Allergy," 2003). In June, the McKinley Elementary School in Fairfield, Connecticut, made CBS evening news "when a number of teachers and kids reported a rash of unexplained symptoms" (CBS Evening News, June 5, 2002, p. 1). Dr. John Santilli, a local allergist, had the school tested and "they found the typical molds *aspergillus* [and] *penicillium*" that had been brought on by "some summer late flooding" (CBS Evening News, June 5, 2002, p.1). Santilli told reporters that once they began receiving the test results they realized that McKinley Elementary "was not [just] a problem, but a huge problem ... some 40 to 60 students and staff got sick from the mold" (CBS Evening News, June 5, 2002, p.1), and two students required hospitalization. This case becomes even more alarming when one realizes that approximately "14 million American children attend schools with poor environmental conditions" (CBS Evening News, June 5, 2002, p.1).

Chemical Allergens

Yet another source of allergic reactions, chemical contaminants from indoor air pollution mainly derive from sources inside the building. These contaminants, often found in the air of modern buildings, are from a group known as volatile organic compounds (VOC) (Chisholm & Wickens, 1993). These organic compounds are highly toxic which cause many allergy sufferers to become ill with exposure. VOCs are emitted from various chemicals such as toluene. Toluene, a form of glue, is used with floor coverings (e.g., contact cement) to help secure carpets. Toluene is not only used in securing carpets, but it is also used in many cleaning agents. Acetone is another VOC that is out-gassed from paints and caulking materials (Chisholm & Wickens, 1993). Formaldehyde, the most commonly used VOC, is found in many items such as "building materials, cosmetics, home furnishings, and textiles" (Formaldehyde, n.d., p. 1). Insulation used in buildings "can contain up to twelve percent formaldehyde by volume" (Scharabok, 1997, p.1).

Cleaning agents used in homes and schools often contain hazardous chemicals that could cause reactions in those who are sensitive. Solvents may contain benzene that can cause respiratory problems or trichloroethylene that can cause fatigue and dizziness (New, 1992). Harmful chemicals including alpha terpineol, benzyl acetate, benzyl alcohol, camphor, chloroform, ethyl acetate and pentane are found in fabric softeners/dryer sheets. Alpha terpineol may cause central nervous system disorders (CNS) resulting in loss of muscular coordination, excitement, respiratory problems, depression and headaches. Benzyl acetate can be absorbed through the skin, causing irritation to the eyes and respiratory passages. Benzyl alcohol, another substance found in dryer sheets and fabric softeners, may affect the upper res-

piratory tract causing "headaches, nausea, vomiting, dizziness, drop in blood pressure, CNS depression, and [in severe cases,] death due to respiratory failure" (Kendell, n.d., p. 2).

The literature review depicted a wide range of substances that can cause allergic reactions in children and adults alike. After reviewing possible allergens and the symptoms that can occur, it appeared that many schools harbor multiple causative agents that may trigger allergic reactions in children. To test this hypothesis, a survey was designed to determine how many causative agents were present in the Murfreesboro, Tennessee area schools and whether or not there was a correlation between the causative agents and children's recurring behaviors (see Appendix).

Methodology

Participants

Seventy-four teachers from three elementary schools volunteered to participate in this study. The schools were chosen based upon the principals' acceptance of the surveys to be administered to their teachers. There were two preschool teachers, 18 kindergarten teachers, 10 first grade teachers, seven second grade teachers, seven third grade teachers, seven fourth grade teachers, seven fifth grade teachers, eight sixth grade teachers, four seventh grade teachers, and four eighth grade teachers who participated in the study.

Apparatus

Materials used for this research were the cover letter and survey (see Appendix). The cover letter was intended to be read prior to completing the survey, as it introduced the researcher and her purpose for the study. The survey itself was compiled based on the knowledge gained from the literature review concerning allergies and the behaviors exhibited as allergic reactions. The survey asked basic demographic information

and covered behaviors teachers noticed in their classrooms and which allergens they had present in their classroom.

Procedure

The principal of each school was contacted and informed about the study. Upon approval from the principal, the surveys were delivered to the school and distributed to each teacher by school personnel. A survey was placed in every teacher’s mailbox and the teachers were given one week to complete the survey and return it to the main office of the school. All surveys were anonymous; teachers were asked not to place their names on the survey, but they were asked to list the grade they taught. The surveys were then collected and analyzed. The surveys were analyzed by correlating each potential allergen to the symptoms (see Appendix). From the surveys, the researcher was able to determine which causative agents were most prevalent in the classrooms. The researcher was also able to determine a correlation between causative agents and behaviors in students.

Results

Out of the 74 classrooms surveyed, 72 classrooms used dry erase markers; 60 of the classrooms had dust mites; 55 used cleaning agents with detectable odors; 53 had individuals who wore perfume inside the class; 52 used air fresheners; 49 used scented soaps; 43 used scented lotions; 25 had mold in their classrooms; 22 classrooms used peanut butter whether eaten in class or used for class projects; and 16 classrooms contained carpet.

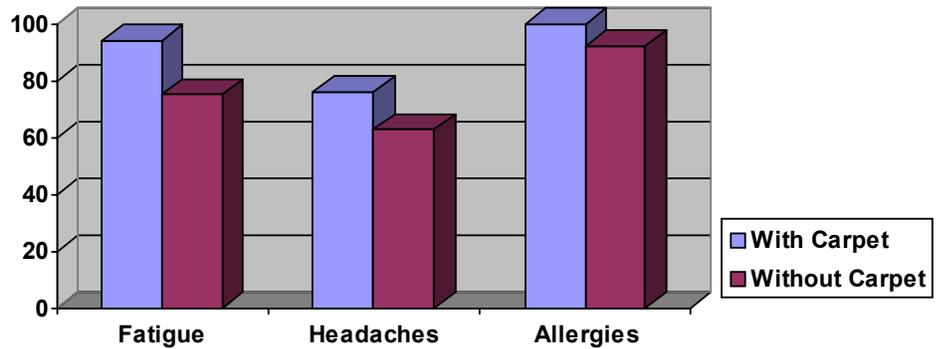
Of the 74 classrooms surveyed, all 74 teachers observed students who were easily distracted; 70 teachers observed students who experience allergy symptoms such as runny nose, sneezing, nasal congestion; 68 teachers observed children with hyperactivity; 59 teachers observed students who experienced fatigue and drowsiness; 50 teachers ob-

served students with asthma; and 49 teachers observed students with headaches in their classrooms.

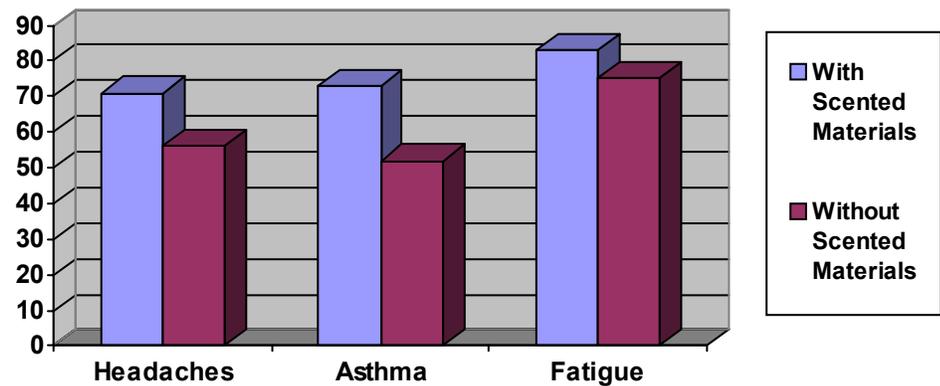
The study found a correlation between those classrooms containing potential allergens and the students within those classrooms exhibiting symptoms. The classrooms that contained causative agents showed a trend of having more children who exhibited symptoms. The following graphs depict some significant relationships between potential allergens in classrooms and children’s behaviors. Graph #1 shows the relationship between classrooms with wall-to-wall carpeting and children’s classroom behaviors. As mentioned, of the 74 classrooms surveyed, 16 contained wall-to-wall carpeting. Of these 16 classrooms, 93.7 percent had children who exhibited signs of fatigue while 75.8 percent of the

classrooms without wall-to-wall carpet reported students showing signs of fatigue.

Graph #1 also shows the correlation between classrooms with wall-to-wall carpeting and children exhibiting common allergy symptoms such as watery eyes, stuffy noses, sneezing. The results showed that every classroom containing wall-to-wall carpeting had children who exhibited common allergy symptoms while 93 percent of the classrooms without wall-to-wall carpet had children who exhibited allergy symptoms. In addition, this graph compares classrooms with and without wall-to-wall carpeting with respect to students within those classrooms having headaches. Headaches were found in 76 percent of classrooms with carpet and 63 percent of classrooms without carpet.



GRAPH #1: Wall-to-Wall Carpeting and Physical Symptoms



GRAPH #2: Scented Material and Physical Symptoms

Graph #2 compares scented materials such as soaps, perfumes and air fresheners used within classrooms to physical symptoms of headaches, asthma and fatigue. Scented soaps used within the classrooms were compared to headaches. A total of 49 classrooms were reported as having used scented soaps. Of those 49 classrooms, 71 percent had children who exhibited headaches; 56 percent of the classrooms without scented soaps contained children with headaches. Perfumes worn in the classrooms were compared to the physical symptom of asthma. Fifty-three teachers reported having perfume worn in their classrooms and of those 53 classrooms 73 percent contained students with signs of asthma while 52 percent of the classrooms without perfume contained children with asthmatic symptoms. Classrooms containing air fresheners were compared with signs of fatigue. Fifty-two teachers reported having used air fresheners within the classroom. Of those 52 classrooms, 81 percent contained children who exhibited fatigue while 77 percent of the classrooms without air fresheners reported children showing signs of fatigue.

Graph # 3 correlates cleaning agents with detectable odors to physical symptoms of asthma and allergies. Of the 74 teachers surveyed, 55 of them reported having cleaning agents with detectable odors used within their classrooms. Asthma seemed to be significantly higher

in classrooms with detectable odors. Of the classrooms with detectable odors, 91.8 percent had children who exhibited asthma while 67.5 percent of the classrooms without detectable odors had children with asthma. Every classroom that contained detectable odors had children who exhibited allergy symptoms while 89 percent of the classrooms without detectable odors had children who exhibited allergy symptoms.

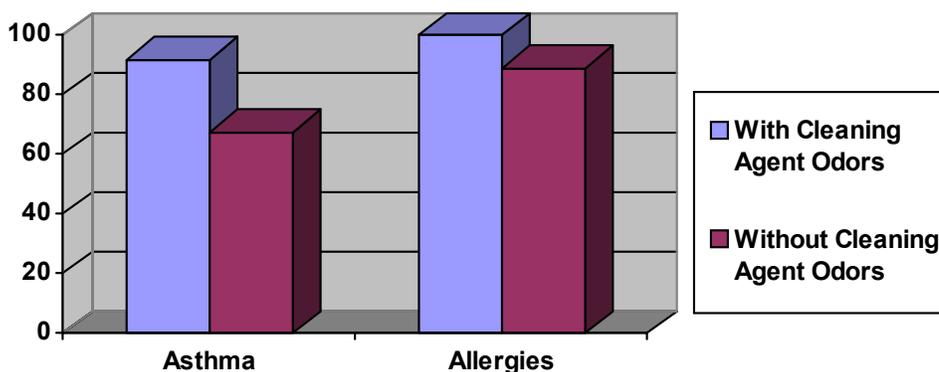
Discussion

This research shows many classrooms contain substances that can trigger allergic reactions in those that are sensitive. The classrooms containing causative agents often contained a higher percentage of students who exhibited physical symptoms when compared to the classrooms without causative agents. This survey did not measure whether or not the causative agents in the classrooms were a direct cause of the children's symptoms. All classrooms had multiple causative agents making it difficult to determine which ones were the primary cause of symptoms, so additional research is needed to determine specifically which causative agents have a major impact on children's behaviors. Further research should be conducted to determine whether certain schools have a higher percentage of behaviors and the cause of those behaviors. The material presented in this paper could

be generally helpful to classroom teachers and schools. Overall the results of the survey showed that classrooms with causative agents had higher percentages of children with behavior issues. Classrooms without specific causative agents tended to have a lower percentage of these same behaviors. This finding suggests that classrooms which are more environmentally clean are less likely to negatively impact students' behaviors.

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GRAPH #3: Cleaning Agents and Physical Symptoms

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Appendix

School _____

Grade _____

Please check all the following that apply to your classroom (these may or may not apply to other classrooms or areas in the school).

- Wall to wall carpeting
 nailed to floor
 glued to floor
- Area rugs
 nailed to floor
 glued to floor
 loose
- Dry erase markers
 regular
 low odor
 no odor
- Lotion used in classroom by students, teachers, aides, and/or parent volunteers
 scented
 unscented
- Soaps used in classroom by students, teachers, aides, and/or parent volunteers
 scented
 unscented
- Perfumes/Colognes/Aftershave
 worn by teacher
 worn by student(s)
 worn by aide
 worn by parent volunteers
- Air fresheners
 sprayed in classroom
 plug in
 potpourri
 scented candles
 other
- Cleaning agents with detectable odor
 used by custodial staff
 used by teacher or aide
- Peanut Butter, peanuts, or peanut shells
 eaten in class
 used for projects
- Other potential allergens:**
 Aware of mold or "musty" odor in classroom
 always
 occasionally

How often? _____

___ Aware of dust in classroom

Any not mentioned? Please list.

School _____ **Grade** _____

Throughout the summer I conducted a literature review over environmental illnesses – its causes and symptoms. Please check the following symptoms that you have noticed in your students.

___ Hyperactivity

- ___ 1-3 students
- ___ 4-6 students
- ___ 7-10 students
- ___ none

___ Easily distracted

- ___ 1-3 students
- ___ 4-6 students
- ___ 7-10 students
- ___ none

___ Fatigue, drowsy

- ___ 1-3 students
- ___ 4-6 students
- ___ 7-10 students
- ___ none

___ Asthma

- ___ 1-3 students
- ___ 4-6 students
- ___ 7-10 students
- ___ none

___ Headaches

- ___ 1-3 students
- ___ 4-6 students
- ___ 7-10 students
- ___ none

___ Allergy symptoms such as runny nose, sneezing, nasal congestion, etc.

- ___ 1-3 students
- ___ 4-6 students
- ___ 7-10 students
- ___ none

___ Other symptoms

Please explain _____

An Irish Legacy: The Privatization of Penance



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The Celts arrived in Ireland around 350 BC.¹ Their tribal culture and their shared ancestry with the Gauls, the Welsh, and the Britons² created the environment that through the sixth, seventh, and eighth centuries transformed the history of western Christianity. Through a fierce and feared slave trade,³ the Irish not only enslaved their future apostle, St. Patrick, but also set into motion the events that led to Patrick's spiritual awakening and acceptance of the Christian faith. Patrick's subsequent mission of conversion gave the Irish the "first de-Romanized Christianity in human history, a Christianity without the sociopolitical baggage of the Greco-Roman world, a Christianity that completely inculturated itself into the Irish scene."⁴ In addition, it inspired a flourishing of Christianity, monasticism, and theological scholarship that incorporated specifically Irish characteristics, some of which resulted in the popularization of private penance and penitential handbooks. The influential Irish Penitentials exemplify the way in which the uniqueness of Irish conversion left an indelible mark on continental Christianity.

The Christian conversion of the Irish, unparalleled in its peacefulness and lack of martyrs,⁵ began with the return to Ireland of the once enslaved Patrick. His unique "emotional grasp of Christian truth" gave Patrick a spiritual strength that convinced him that "even slave traders can turn into liberators."⁶ He showed a warrior people a "living alternative" to war and death in living as a man at peace—a peace that "issued from his person like a fragrance."⁷ Patrick revered both Irish courage and "the natural mysticism of the Irish, which already told them that the world was holy—all the world, not just parts of it."⁸ He showed the Irish a way of life that did not require the violent sacrifices of their pagan faith, teaching "Christ had died once for all."⁹ To this, the Irish responded by abandoning human sacrifice and accepting the sacrifice of Christ as a sign that God loved them.¹⁰ St. Patrick, who was in spirit an Irishman,¹¹ had converted enough of the Irish to Christianity by 431 to attract the attention of Rome and the appointment of a bishop to the Irish in that year.¹² His mission, unfettered by the legally oriented Roman Church, was customized for the Irish culture and worldview, and facilitated the persistence of the Irish psychological identity.¹³

By the year of Patrick's death in 493, while Christianity was fostering a new peace in Ireland, the Roman Empire was "careening in chaos, barely fifteen years away from the death of the last western emperor."¹⁴ The lack of Roman politi-

cal and cultural influence in Ireland forced Christianity to develop in a manner distinct from the course Christian development took in the Roman Empire.¹⁵ Beginning in the Ulidian country,¹⁶ St. Patrick established an Episcopal Church system modeled after the church structures he witnessed in Gaul and Britain, in which bishops presided over fixed sees and exercised authority over their own dioceses.¹⁷ Although the structure of the fifth-century Irish Church was similar to that of the remainder of the western world, by the seventh century the powers of jurisdiction had shifted to abbots, only some of whom were also bishops. Bishops began to serve strictly sacramental functions. By this time, the Church was "organized no longer in territorial dioceses but in a monastic *paruchia*, groups of widely scattered houses acknowledging a particular head"¹⁸—a uniquely Irish structure.

It is within this inherently Irish system that the penitentials arose as a vital facet of Celtic Christianity.¹⁹ The penitentials, which were schedules of penance designed for the use of the confessor,²⁰ arose in the sixth century and articulated a system of penance that had become increasingly systematic during the fifth century.²¹ Each included "long schedules, or tariffs, of specific penances for corresponding lists of sins."²² As the use of the penitentials became more widespread, so too did their production in Ireland. The Irish penitentials influenced later continental penitentials that

reflected the clash and melding of the Irish Church and the Roman Church.

In examining the oddity of written handbooks for penance, two interwoven factors help to explain their appearance in Ireland: a lack of written law and a lack of urbanization. The former is typical of a tribal culture characterized by the latter. In most tribal societies, the greatest obstacle to the maintenance of law and order during the early infusion of laws—as would have been the case in presenting the Irish with ecclesiastical laws—is the perpetuation of private vengeance. For the Irish, these types of unwritten law “endured alongside of more orderly methods of settling disputes and, in some cases, were recognized by law. But the penitential system set its face against such practices by providing penances for homicide committed in revenge, as well as for other forms.”²³ In the fifth and sixth centuries Christians were forbidden to solve disputes using Brehon Laws (Irish native laws). By the seventh and eight centuries “the Brehons had been converted, and the clergy, by reason of their orders, had been given a position among the noble grades of society.”²⁴ Consequently, secular and ecclesiastical law quickly began to work harmoniously to establish codified methods of maintaining peace and to eliminate the pre-Patrician methods of blood-vengeance. In fact, many provisions within the penitentials required additional penance for individuals who did not obey the sentences of secular authorities.²⁵ In addition, the Brehon Laws provided lighter sentences for perpetrators “who had gone to confession and were undergoing penance; demanded that criminals perform penance in addition to their other penalties; and visited them with partial outlawry until they completed the penances assigned by the clergy.”²⁶ The penitentials spawned a flourishing of written law—both ecclesiastical and secular—that, while novel to the Irish, had taken place centuries before in the

Roman provinces that had previously been spreading Christianity.

The lack of urbanization that characterized sixth century Ireland elevated kinship and kingship in the maintenance of law and was reflected in the monastic system which developed. Patrick had hoped that establishing ecclesiastical sees next to powerful kings would allow his bishops “to keep an eye on the most powerful raiders and rustlers and limit their depredations.”²⁷ Instead, he unwittingly facilitated the influence of kingship and kinship in the developing organization of the Irish church. As Christianity rapidly became the “exclusive faith of powerful royal clans,”²⁸ the relationship of the bishop to his diocese began to resemble the relationship of the petty king to his *tuath* (tribal structure).²⁹ The abbot, who was “the heir of the founder, sometimes of the same dynastic family”³⁰ and head of the monastic *paruchia* (monastic filiation), took on the ecclesiastical role of a king over kings.³¹ During the sixth and seventh centuries, certain kings and abbots were expanding their influence in tandem and creating large *tuatha* and *paruchiae*, respectively.³² Many of the Irish monasteries—including Armagh, Clonmacnoise, and Kildare—rose to positions of wealth and power.³³ As the *paruchiae*³⁴ grew, the relationship between the abbot and subordinate churches increasingly resembled overlordship.³⁵

The system of secular and ecclesiastical governments present in Ireland precluded the existence of crimes against the state as developed in the Roman world.³⁶ Consequently, sin which was “thought to be a public matter, a crime against the church, which was the Mystical Body of Christ”³⁷ in the Roman sphere, became a private matter between the sinner and God in Ireland just as crimes were matters to be handled between subject and king. This alteration in the definition of sin reflected the “Irish sense that personal conscience took precedence over public opinion or

church authority.”³⁸ In addition, it mandated private confession and necessitated the *soul-friend*, or a kind of mentor. For the Irish, the focus of prayers was “I” not “we” because it “was the individual, not the group that was saved or damned. On the basis of individual faith and action was the final judgment to be made.”³⁹ This stood in direct opposition to the Roman view that the church as a whole would suffer the repercussion of individual sin. While Romanized Christians demanded a public display of penance to the church, Irish Christians expected the individual to pay penance directly to God for his or her own sins.⁴⁰ By incorporating ancient social traditions, Irish monasticism also drew in the druidic traditions embodied in the saying, “Anyone without a soul--friend is like a body without a head.”⁴¹ The *anmchairdme*, or soul friendship, between an older and a younger monk became a crucial aspect of Irish monastic life. A monk’s *anmcharae* was his confessor and “performed a fosterer’s function, while the abbot filled a strictly paternal role.”⁴² This relationship was a private interaction in which the confessor replaced the abbot as a father figure to the monk.⁴³ The individual acting as confessor “knew that every confession was sealed forever by God himself. To break that seal was to imperil one’s salvation: it was practically the only sin the Irish considered unforgivable.”⁴⁴ The penitentials provided abbots with an avenue of inclusion in the otherwise exclusionary process of confession and penance. In addition, handbooks of penance distributed to confessors increased the likelihood of uniformity in the penances meted out within each monastery.

Irish monastic missions transported a “vibrant form of Christian life and culture” to Britain and continental Europe⁴⁵ through the efforts of Irish monks such as Columcille,⁴⁶ who established a monastery in Iona,⁴⁷ and Columbanus, who traveled throughout England, France, Belgium, Germany, Switzerland, Austria,

and Italy a generation later.⁴⁸ In doing so, Irish monks spread and popularized “the practice embodied in the penitentials.”⁴⁹ A shared Celtic ancestry and previous, inept Roman missions to such places as Northumbria⁵⁰ and Wales that left many “unresponsive to the advances” of the Romanized Church,⁵¹ facilitated the expanse of a distinct Celtic Christianity and the penitentials. Consequently, the early penitentials were repeatedly imitated throughout Western Europe from the seventh century onward.⁵²

Despite the popularity of the Celtic Church among the tribal people of Europe, the highly organized Roman Church provided a stronger structure that eventually absorbed the “relatively uncoordinated, dispersedly directed Celtic communities.”⁵³ Augustine’s missions to continental Europe and Britain in the late 590s established a Romanized seat in Canterbury that was later reinforced by the arrival of a second mission from Rome in 601—a mission that arrived “bearing with it letters from the Pope and a pallium for Augustine, who was consecrated archbishop.”⁵⁴ The arrival of Theodore of Tarsus, who “showed himself favorably disposed” to Celtic influences,⁵⁵ in England five years later both reinforced the Roman element⁵⁶ and set the tone for the future of a Romanized Church heavily influenced by Irish monks. The Irish penitential system exemplified this transition as it “came to be adopted widely in England, though, as might be expected, not without some ‘Roman’ censorship.”⁵⁷ Although Romanized, the use of written penitential handbooks endured throughout Europe until about 1100.⁵⁸ Two notable features of the penitentials embody the persistence of Irish influence in European Christianity: the prevalence of fasting as penance and alleviations of penitential sentences.⁵⁹ Although seemingly severe, fasting was actually a commonplace aspect of pre-Patrician Irish life necessitated by the economy’s inability “to cope with environmental

emergencies such as bad harvest, when peasant, monk, and lord all went hungry.”⁶⁰ For Irish monastic communities, “the monks’ regulation of their diets became a sophisticated tactic in interpersonal and intercommunity relations.”⁶¹ When harvests were good secular leaders indulged in luxury foods, such as roasted meats and imported drink, providing monks and nuns with an opportunity to assert their distinct spiritual identity by abstaining from the foods of the indulgent classes.⁶² Monks often fasted to provide food for their guests.⁶³ The tie to pre-Patrician Irish traditions arises in the resemblance between fasting for spiritual gain (*aíne*, from the Latin *ieiunium*) and a Brehon legal tradition (the *troscud*) in which individuals fasted in competition against one another.⁶⁴ Monks practiced both *aíne* and the *troscud* in an attempt to improve the status of monasteries because displays of spiritual superiority brought increased political leadership and more extensive patronage from secular leaders.⁶⁵

Based on the etymology of the Latin word for commutation,⁶⁶ there is little doubt that the system of commutation incorporated in the penitentials was a result of the infusion of ancient Irish traditions in Ireland’s growing Christianity. Incorporated to reduce the impracticability of penance, alleviations initially shortened penitential sentences⁶⁷ through “shorter periods of the intensified singing of psalms, cross-vigils, genuflections, prayers, prostrations, fasting, and the celebration of masses, each of them alone or in various combinations.”⁶⁸ This system of substituting ‘good works’ for penance was probably influenced by the Brehon tariffs of compensation that provided for compounding offences.⁶⁹ Although money was certainly a necessity in the survival and independence of a monastic community,⁷⁰ it is more likely that the later introduction to the penitentials of commutation through monetary substitution was prompted not by monetary needs but by the traditional

system of fines and recompenses based on honor-price, or *enech-lann*, which was measured by social rank, and body-price, or *éric*, which is common to all.⁷¹ The system of alleviations that developed clearly incorporated the growing infusion of tribal people into the church. Consequently, the commutation of penance and the prevalence of fasting as punishment endured long after the Romanization of the penitentials in the early seventh century.

The Synod of Whitby in 664 stands as a pivotal point in the history of the Celtic Church. Held just ten years after the defeat of a pagan revival in England,⁷² the meeting centered on two issues: the dating of Easter and tonsure. The synod became a resounding affirmation of the overarching authority of Roman Christianity when the Northumbrian king ruled in favor of the “Roman” party, “who were heirs to Augustine’s papal mission.”⁷³ Although the Synod of Whitby could be viewed as a victory for the Roman Church, Irish ecclesiastics continued to be an active presence throughout Europe.⁷⁴ While Roman Christians believed in the superiority of their church and its administrative techniques, the Roman Church recognized the need for additional manpower in the conversion and service of Western Europe. Irish monks continued to provide a willing and capable solution. Long after the majority of the Irish masters left Northumbria in 664, “their disciples continued to produce books which showed strong Irish influence”⁷⁵ and continued to be a force in Western Christendom.

Despite the absorption of the Celtic Churches by what was to become the Roman Catholic Church, Ireland maintained its position as a “resort of students anxious for advancement in the Christian Latin learning common to Western Europe, and also, of young monks eager to gain knowledge of the monastic training which had produced Columbanus and Aidan.”⁷⁶ In addition,

Irish influence continued to be an ever-present force throughout the later history of the Roman Catholic Church. To this day, while done without the assistance of written handbooks of penance, Catholic priests continue to serve as soul-friends in hearing private confessions, meting out penitential punishments, and respecting the sanctity of confessions. Private penance, which exists even today in the Roman Catholic Church,⁷⁷ testifies to the hardy survival of at least one pre-Patrician Irish belief.

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Endnotes

- ¹ Thomas Cahill, *How the Irish Saved Civilization: The Untold Story of Ireland's Heroic Role from the Fall of Rome to the Rise of Medieval Europe* (New York: Doubleday, 1995), 80.
- ² Ibid.
- ³ Ibid, 37.
- ⁴ Ibid, 148.
- ⁵ See Cahill, *How the Irish Saved Civilization* for an insightful opinion as to why there were no martyrs in the conversion of the Irish. Cahill attributes this to the uniqueness of Patrick's message. It is the deep understanding Patrick developed of the Irish culture during his captivity that allowed him to tailor the Christian method to the Irish. This opinion is shared by much of the historical community.
- ⁶ Cahill, *How the Irish Saved Civilization*, 115.
- ⁷ Ibid, 128.

- ⁸ Ibid, 135.
- ⁹ Ibid, 140.
- ¹⁰ Ibid, 141
- ¹¹ Ibid, 147.
- ¹² Tomás Cardinal Ó Fiaich, "The Beginnings of Christianity," in eds. T.W. Moody and F.X. Martin *The Course of Irish History* (New York: Weybright and Talley, 1967; reprint, Niwot, CO: Roberts Rineheart Pub, 1995), 61.
- ¹³ Cahill, *How the Irish Saved Civilization*, 148.
- ¹⁴ Ibid, 123.
- ¹⁵ J. N. Hillgarth, *Christianity and Paganism, 350-750: The Conversion of Western Europe* (Philadelphia: University of Pennsylvania Press, 1986), 119.
- ¹⁶ Eoin MacNeill, *Celtic Ireland* (Dublin: Academy Press, 1921), 12.
- ¹⁷ Ó Fiaich, "The Beginnings of Christianity," 64.
- ¹⁸ Kathleen Hughes, *Early Christian Ireland: Introduction to the Sources* (London: Hodder & Stoughton, 1972), 71.
- ¹⁹ A distinction is made here between the terms Irish and Celtic. Although the terms are often treated as interchangeable, the former refers specifically to Irish heritage while the latter refers to a culture shared throughout the British Isles. This distinction becomes crucial in understanding why Irish influences were avidly accepted in areas throughout Western Europe that share a common Celtic ancestry.
- ²⁰ Hughes, *Early Christian Ireland*, 83.
- ²¹ John T. McNeill and Helena M. Gamer, *Medieval Handbook of Penance* (New York: Octagon Books, 1965; reprint, New York: Columbia University Press, 1990), 7.
- ²² Thomas Oakley, "The Penitentials as Sources for Medieval History," *Speculum* 15.2 (Apr., 1940): 210-11
- ²³ Thomas Oakley, "The Cooperation of Medieval Penance and Secular Law," *Speculum* 7.4 (Oct., 1932): 522-23.
- ²⁴ Kathleen Hughes, "The Golden Age of Early Christian Ireland," in Moody and Martin, *Course of Irish History*, 78
- ²⁵ Oakley, "The Cooperation of Medieval Penance and Secular Law," 522.
- ²⁶ Ibid, 517.
- ²⁷ Cahill, *How the Irish Saved Civilization*, 110.
- ²⁸ Peter Brown, *The Rise of Western Christendom: Triumph and Diversity A.D. 200-1000* (Malden, MA: Blackwell Publishers, 1997), 200.
- ²⁹ Hughes, *Early Christian Ireland*, 73.
- ³⁰ Ibid.
- ³¹ Ibid.
- ³² Ibid, 74.
- ³³ Hughes, "The Golden Age of Early Christian Ireland," 82.
- ³⁴ See also Charles-Edwards, *Early Christian Ireland*, 243-7. Charles-Edwards disputes some of the specifics of Hughes theory. While her general premises are largely accepted, there are some linguistic and dating issues within specific areas of her research, one of which is a misunderstanding of the use of the word *paruchia*.
- ³⁵ Hughes, *Early Christian Ireland*, 74.
- ³⁶ Kathleen Hughes, *The Church in Early Irish Society* (Ithaca: Cornell University Press, 1966), 4.
- ³⁷ Cahill, *How the Irish Saved Civilization*, 176.
- ³⁸ Ibid, 176-77.
- ³⁹ Harold Mytum, *The Origins of Early Irish Christianity* (New York: Rutledge, 1992), 46.
- ⁴⁰ Ibid.
- ⁴¹ Cahill, *How the Irish Saved Civilization*, 177.
- ⁴² Lisa Bitel, *Isle of the Saints: Monastic Settlement and Christian Community in Early Ireland* (Ithaca: Cornell University Press, 1990), 92.
- ⁴³ Ibid.
- ⁴⁴ Cahill, *How the Irish Saved Civilization*, 177.
- ⁴⁵ Michael Staunton, *Voice of the Irish: The Story of Christian Ireland* (Mahwah, NJ: Hidden Spring, 2002), 46.
- ⁴⁶ Also, Colun Cille. Latinized to St. Columba.
- ⁴⁷ For addition information on Columcille, see Adomnán of Iona, *Life of St. Columba*, trans. Richard Sharpe (London: Penguin Books, 1995).
- ⁴⁸ Ó Fiaich, "The Beginnings of Christianity," 74-75.
- ⁴⁹ Hillgarth, *Christianity and Paganism*, 123.
- ⁵⁰ Ludwig Bieler, "Ireland's Contribution to the Culture of Northumbria," 210-30 in ed. Gerald Bonner, *Famulus Christi: Essays in Commemoration of the Thirtieth Centenary of the Birth of the Venerable Bede* (London: SPCK, 1976), 211.
- ⁵¹ John McNeill, *The Celtic Churches: A History A.D. 200 to 1200* (Chicago: The University of Chicago Press, 1974), 194.
- ⁵² Oakley, "The Penitentials as Sources for Medieval History," 211.
- ⁵³ McNeill, *The Celtic Churches*, 193.
- ⁵⁴ Peter Blair, *An Introduction to Anglo-Saxon England*, 2nd ed. (Cambridge: Cambridge University Press, 1977; reprint, 1983), 117.
- ⁵⁵ Bieler, "Ireland's Contribution to the Culture of Northumbria," 214.
- ⁵⁶ Ibid, 213.
- ⁵⁷ Ibid, 221.
- ⁵⁸ Oakley, "The Penitentials as Sources for Medieval History," 211.
- ⁵⁹ For a translation of the Irish Penitentials, see Bieler, Ludwig *The Irish Penitentials* Dublin: The Dublin Institute for Advanced Studies, 1963; reprint, Oxford: University Press, 1975.
- ⁶⁰ Bitel, *Isle of the Saints*, 207.
- ⁶¹ Ibid, 210.
- ⁶² Ibid, 207.
- ⁶³ Ibid, 210.
- ⁶⁴ Ibid, 213.
- ⁶⁵ Ibid, 214.
- ⁶⁶ "The word *arre*, Latinized *arreum*, means 'handing over on behalf of another', 'paying over something in place of something else',- and thus the meaning 'commutation.'" See Hughes, *Early Christian Ireland*, 84-85.
- ⁶⁷ Hughes, *Early Christian Ireland*, 85.

⁶⁸ Thomas Oakley, "Cultural Affiliations of Early Ireland in the Penitentials,"

Speculum 8.4 (Oct., 1933): 497

⁶⁹ Oakley, "Cultural Affiliations of Early Ireland in the Penitentials," 497.

⁷⁰ Ramsay MacMullen, *Christianizing the Roman Empire (A.D. 100-400)*

(New Haven: Yale University Press, 1984), 52.

⁷¹ McNeill, *The Celtic Churches*, 84.

⁷² Bieler, "Ireland's Contribution to the Culture of Northumbria," 212.

⁷³ Cahill, *How the Irish Saved Civilization*, 200.

⁷⁴ Bieler, "Ireland's Contribution to the Culture of Northumbria," 213.

⁷⁵ Hughes, "The Golden Age of Early Christian Ireland," 89.

⁷⁶ T. M. Charles-Edwards, *Early Christian Ireland* (Cambridge: Cambridge University Press, 2000), 9.

⁷⁷ Hughes, *Early Christian Ireland*, 84.

Effects of Taboo Words on Memory



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Abstract

To test the effects of emotion on memory, participants performed a word-coloring naming task, followed by a memory test. The results replicated a study by MacKay et al. (2004); slower reaction times to taboo words than to neutral words were found, and better recall of taboo words over neutral words. A second experiment tested whether MacKay et al.'s binding hypothesis (2004) or Schmidt's distinctiveness hypothesis (2002, 2004) is the cause of better memory for taboo words over neutral words. Unlike Experiment 1, a between-list manipulation of word type was employed. Once again, reaction times to taboo words was significantly slower than reaction time to neutral words, and significantly more taboo words were remembered than neutral words. These results support MacKay et al.'s hypothesis that emotional stimuli are bound to contextual information and are thus remembered better.

Effects of Taboo Words on Memory

According to Bower (1992), a major factor in attention is interestingness. A stimulus that is interesting causes us to narrow our attention in on that stimulus. Surrounding information therefore does not receive maximum processing because it is neglected for the interesting stimulus. Bower goes on to say that information is often interesting because it is either peculiar or arousing. Information that is peculiar, or distinctive, stands out from its neutral surroundings and grabs our attention. When information is arousing, it causes physiological responses that lead to increased attention. These two characteristics have formed the basis for two different hypotheses for explaining the effects of emotional stimuli, such as taboo words, on memory.

The first of these two hypotheses is the distinctiveness hypothesis (Schmidt 2002; 2004). The distinctiveness hypothesis builds on the idea of a stimulus standing out from other, equally represented stimuli. This distinctiveness can come in two different forms, either primary or secondary distinctiveness (Schmidt, 1991). Primary distinctiveness is present when the stimulus is different from the immediate, surrounding stimuli. Secondary distinctiveness occurs when a stimulus is different from other information stored in memory. In either case, even though the neutral and distinctive stimuli are all presented equally, the dis-

tinctive stimuli will stand out and grab our attention. This influences both the encoding and retrieval of the information and will, therefore, lead to better memory for the distinctive stimuli over the neutral stimuli.

Many researchers have studied distinctiveness, including one study on the effects of nudes on memory (Schmidt, 2002). In this study, Schmidt found that memory for nude pictures was better than memory for clothed pictures when nude pictures were presented within a series of clothed pictures. To support the idea that better memory for the nude pictures was a result of the distinctiveness and not the emotional content of the pictures, the conditions were reversed. Schmidt found that when clothed pictures were presented within a series of nude pictures, memory for the clothed pictures was better than memory for the nude pictures. Other researchers have found supporting evidence for distinctiveness as the cause of better memory for emotional stimuli. A study by Dewhurst and Parry (2000) used mixed and between-list designs followed by recognition test to test distinctiveness. This research was done with negative and positive emotional words as stimuli. Dewhurst and Parry found that "the effects of emotional stimuli were eliminated when participants studied pure lists of either all emotional or all neutral words" (p. 541). These researchers attributed these results to increased processing of the neutral stimuli when they were presented alone.

A hypothesis that takes a different view than that of distinctiveness is the binding hypothesis (MacKay et al., 2004). The binding hypothesis states that emotional words are better remembered than neutral words because connections are made within the amygdala between the emotional stimuli and surrounding contextual information when emotional words are presented. Contextual information is information such as when the stimulus was presented, where it was presented, the color of the stimuli, etc. The contextual information serve as retrieval cues for the emotional stimuli.

To test the binding hypothesis, MacKay and his colleagues performed a word-color naming task followed by a memory test. Taboo words were used to represent an emotional stimulus in this experiment. The results showed that the reaction time to the taboo words was significantly slower than the reaction time to the neutral words, and the recall of taboo words was significantly greater than recall of neutral words. MacKay et al. also found that participants could recognize font colors that had been paired often with taboo words better than they could do the same for neutral words. The researchers attributed these results to increased processing and attention of the taboo words over the neutral words through the binding of the emotional stimuli to the surrounding information. Because all attentional resources were being used to process the taboo words, memory for the neutral words was not able to reach its maximum potential.

The taboo experiment failed to show support for the binding hypothesis in two ways. First, the neutral words presented with the taboo words did not belong to a restricted category, as did the taboo words. A memory search set for taboo words is much smaller than a search set for all possible neutral words. Thus their results may be due to retrieval processes rather than encoding processes. A much smaller, more restricted category would need to be used for the neutral

words to yield results that could be viewed as supporting the binding hypothesis. Also, the MacKay experiments used a mixed-list design. The distinctiveness hypothesis would have predicted the same results as the MacKay results with a mixed-list design. The distinctiveness hypothesis would predict differently than the binding hypothesis for a between-list design. According to the binding hypothesis, taboo words should be better remembered than neutral words in any situation because of their emotional characteristics, while the distinctiveness hypothesis predicts equal memory for the two groups of words. Testing participants' memory for lists of either all taboo words or all neutral words would have shown further, solid support for the binding hypothesis.

The current experiment was conducted with three purposes in mind. First we hoped to replicate the taboo Stroop experiment performed by MacKay et al. Secondly we wanted to restrict the category of the neutral words to equate the search sets for the stimuli. Finally, we tested the distinctiveness and binding hypotheses through a between-list design. The first experiment focused on the first two objectives.

Experiment 1

Method

Participants. Thirty-four participants were recruited from the Middle Tennessee State University psychology research pool. Students received extra credit in their psychology class to participate.

Materials. An informed consent form, microphone, tape recorder, free recall sheet, and a Dell computer made up the materials for the first experiment. The computer presented five font colors (red, yellow, green, blue, and gray) for twenty taboo and twenty neutral words. These words can be found in Appendix A. The taboo words were identical to those used in the MacKay

study. The neutral words came from the category "clothing" and each was matched to a taboo word based on syllables and first letter.

Procedure. Participants started by filling out the informed consent form. After the participants had completed this and received directions on how to complete the experiment, they started the practice trials. The practice trials consisted of four words, each presented twice in each of the five font colors. Two words were clothing, and two words were taboo. A total of forty trials were used in this part of the experiment. A black cursor appeared in the center of a light gray screen for 1,000 msec to focus attention. Next one of the stimuli appeared in the center of the screen. The participant responded by saying the color of the word into the microphone; a voice key measured their reaction time. After the participant's response, the screen went blank for 2,000 msec., followed by the next trial. McKenna and Sharma (2004) have found in prior research that intervals of around 1,000 msec. keep the disruptive effects of negative stimuli minimal. Disruptive effects cause interference in the processing of following stimuli, which can prevent accurate results. For this reason, time intervals around 1,000 msec. were used in this study. This procedure was continued until all of the trials had been completed. After completing the practice trials, participants started the experimental trials. The experimental trials consisted on sixteen new words, each presented twice in each of the five font colors, for a total of 160 trials. Eight of the words were taboo, and eight were neutral. Two different lists of words were used. Each participant was presented with one of the two lists, with the words in the list presented in random order. Once the experimental trials were completed, participants were asked to spend three minutes trying to recall the words that had just been presented on the screen. Participants wrote all the words they could

recall on a recall sheet that was provided to them by the experimenter.

Results and Discussion

Reaction time to the trials was saved onto the computer as each participant completed the experiment. To determine which results could be used, the saved reaction times on the computer were compared to the taped responses. Any trial in which an error was made was excluded. An error included: saying or beginning to say the wrong color (green), speaking too quietly for the microphone to detect a response, or making noises that were recorded as responses (smacking lips, coughing). Participants that exceeded two standard deviations above the average number of errors (20 trials) were not used in the final analysis. No participants were excluded from the final analysis.

Reaction time to taboo words ($M=708.30$ msec) was significantly slower than reaction time to neutral words ($M=681.59$ msec), $t(33)=6.230$, $p<.001$. These results cannot be attributed to response errors, since the number of correct responses for taboo words equaled 76.56 and the number of correct responses for neutral words equaled 76.85, $t(33)=-.596$, non-significant. The number of taboo words recalled (5.35) was significantly greater than the number of neutral words recalled (3.12), $t(33)=7.268$, $p<.001$. These results replicate the MacKay study, showing slower reaction time to taboo words than to neutral words and superior recall of taboo words over neutral words in a mixed-list design.

Experiment 2

Our second experiment focused on testing the binding hypothesis and the distinctiveness hypothesis. To do this, a between-list design was used. Participants were presented with either all taboo words or all neutral words in this experiment.

The two hypotheses would predict different results for this experiment. The binding hypothesis would predict significantly slower reaction time to taboo words than to neutral words. Also, significantly more taboo words would be recalled than neutral words because the emotional taboo words are bound to the context in which they are presented, whereas the neutral words are not. The distinctiveness hypothesis makes no specific prediction concerning reaction times to taboo and neutral words. However, recall for taboo and neutral words should be roughly equivalent because the taboo words would no longer stand out in the homogenous lists.

Method

Participants. Sixty-six summer psychology class students at MTSU were used as participants. Participants received extra credit in their classes to participate in the research.

Materials. The same materials were used in the second experiment as were used in the first experiment.

Procedure. The procedure for the second experiment was similar to that used for the first experiment, except that in the second experiment a between-list design was used. Participants were presented with either all taboo or all neutral words. Sixteen of these words, plus four practice words, were presented to each participant in random order.

Results and Discussion

The results for reaction time were broken into two blocks. Block 1 represented trials 1-80, and block 2 represented trials 81-160. This type of analysis was used to match that used by MacKay et al. Six participants were not used in the final analysis because they exceeded 20 errors in their responses.

The results for reaction time were analyzed using a two-way ANOVA, treating condition (taboo versus neutral) and block as factors. These results showed a

non-significant effect of condition, $F(1, 58)=1.56$, $p=.217$. Analysis of block also showed a non-significant difference, $F(1, 58)=1.79$, $p=.186$. When the interaction of block and condition were analyzed, a significant difference emerged, $F(1, 58)=7.702$, $p<.007$. Subsequent t -tests showed a significant condition effect in block 1 but not in block 2. In block 1, reaction time to taboo words ($M=729.08$) was significantly slower than the reaction time to neutral words ($M=678.65$), $t(58)=1.89$, $p<.05$. In block 2, reaction time to taboo words ($M=721.21$) was not significantly slower than reaction time to neutral words ($M=701.20$), $t(58)=.651$. The number of taboo words recalled (9.07) was significantly greater than the number of neutral words recalled (6.97), $t(58)=3.12$, $p<.003$. Overall, these results support the binding hypothesis as the cause for better memory.

General Discussion

The results showed that even when a between-list design was used to isolate the taboo words, their emotional content caused them to be better remembered than neutral words. These results support the idea that, not only do emotional stimuli increase attention, but also they are bound to the context in which they are presented (i.e. the color of the stimulus, where it was presented, when it was presented). This contextual information later serves as a retrieval cue for the stimuli.

One important aspect to point out in the results is the disappearance of significant results for reaction time in block 2 of Experiment 2. McKenna and Sharma (1995) discussed this habituation over blocks in their own emotional Stroop experiments. McKenna and Sharma concluded that this effect occurred at the individual stimulus level of presentation as opposed to the overall category. Increased presentation for a specific stimulus leads to faster reaction

time for that stimulus as opposed to faster reaction time for the entire corresponding category.

One important problem should be addressed when looking at this research. Prior to testing participants' memory for taboo words, a simple experiment should have been conducted to test prior knowledge of the vocabulary used in these experiments. In order to have reliable results, participants would need to have equal access to the taboo and neutral words in their memory. If participants are not able to generate the vocabulary used in our experiment on their own, then their recall for these same words after a Stroop task may not accurately convey their memory for the words. This problem will be addressed in a future experiment.

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Appendix A: Stroop Experiment

Stimuli			
TABOO		NEUTRAL	
anus	bitch	apron	blouse
chink	cock	boots	cane
dick	dildo	cap	hat
dyke	fuck	coat	sweater
nigger	piss	dress	fur
pussy	queer	nylons	parka
rape	shit	purse	robe
slut	whore	shirt	shoe
cunt	fag	skirt	slip
scrotum	twat	sock	watch

Are Pre-Service Teacher Programs Effectively Considering Students from the Deaf Culture?



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Abstract

Current and future educators will teach a diverse population of students in American public schools. Cultural and linguistic diversity, varying socio-economic status of students, and students with physical or emotional challenges play a role in the classroom. Current teaching trends reflect the need for addressing multi-cultural diversity, social acceptance of bilingual students, and teaching to multiple intelligences or varying learning styles. However, there continue to be children who are “left behind”—in particular, those students coming from the culture of Deafness.

The Deaf, whose native tongue is Sign Language, (Stokoe, 1960, p.7) live in a distinct culture. This population of students does not receive education in a way that reflects this culture, or their multiple intelligences, and learning styles. The purpose of this study is to apply these four pedagogical methods to students from the Deaf Culture to determine if these techniques are being addressed in current teacher training programs to equip educators to teach students from this culture. Two survey instruments,

based upon the Likert Scale, have been prepared to answer these questions. The first instrument will be given to pre-service Middle Tennessee State University teachers who are juniors and seniors. The second instrument will be given to current teachers in both the Rutherford County, Tennessee and Murfreesboro, Tennessee City school systems. The findings of these two surveys should answer two main questions:

- 1) What do teachers know about deaf students and the ways in which they learn?
- 2) What are current pre-service preparatory programs doing to prepare teachers with regard to multicultural populations; in particular, the culture of the Deaf?

Introduction

The student population in the United States is increasingly more diverse while “the teaching force continues to be predominantly European-American, middle class, and female,” (Ward & Ward, 2003) as well as hearing. Currently, over five hundred distinct ethnic groups are represented in the U.S. (Ward et al.). Ethnicity alone, however, does not account entirely for the diversity that current and future teachers face in the classroom. Cultural distinctions, including native languages other than English, community, or tribal mores, various religious beliefs, socio-economic status, and family make-up contribute to the divergent classroom environment. Additionally, students possess distinct “funds of knowledge,” (McIntyre, Rosebery & Gonzalez, 2000), as well as multiple intelligences (Gardner, 1973, 1983) and varying learning styles (Keefe, 1987). Mainstream or inclusive classrooms also encompass children with special needs, from students with physical disabilities to those who exhibit emotional/behavioral disabilities. Federal and

Editor's Note:

Controversy exists when addressing the distinction between using the lowercase ‘deaf’ and the capitalized form ‘Deaf’. For the purposes of this paper, the word will be written in the lowercase form when referring to a person with a hearing impairment. When referring to a member of the Deaf Culture, or more specifically to a person who identifies themselves as belonging to Deaf Culture, the capitalized form is used.

The way in which the word ‘deaf’ or ‘Deaf’ is used in this paper was not the decision of the researcher, but of the editor.

state laws mandate “No Child Left Behind,” Public Law 94-142: Education for All Handicapped Children Act of 1975, the Individuals with Disabilities Education Act (IDEA) of 1997, and teacher accountability via ‘standardized’ testing—and all of this is to be achieved while under severe budget constraints. It is clear that the classroom of the twenty-first century bears little resemblance to the historical model of American schools. It is imperative that 21st century teachers are effectively prepared to teach each student that comes into their classroom, regardless of native language, cultural background, or disability.

According to Catherine Nathan and Lorna Woosnam (1992), children with special educational needs are increasingly deprived of an education. This exclusion stems from problems with school life in general and/or difficult social conditions. For instance, those students whose native language is not English can suffer from embarrassment, (Ernst-Slavit, Moore, Maloney, 2002), as well as social exclusion. Often, these students are labeled as disadvantaged and are regarded as having the probability of poor academic achievement (Gregory, 1996).

Lynn (1998) suggests that integrating diversity in the classroom process not only enhances learning, but it can increase motivation and facilitate the development of social, cognitive and communication skills necessary to enter today’s multicultural work force. “Cultural competence enables teachers to work with students of all cultures, ethnicities, races and linguistic backgrounds. It is grounded in awareness, understanding, acceptance, and appreciation of diversity among students,” (Ward et al., 2003). In a number of recent studies funded by the Center for Research on Education, Diversity, and Excellence, teachers from across the nation, in a variety of community/cultural environments, began connecting curriculum to their students’ existing “funds of knowledge”. These teachers found that using their

knowledge of the students’ communities (or obtaining knowledge through interaction with the students’ families), cultural preferences, and linguistic abilities created a classroom environment in which the students are comfortable and expected to achieve at high levels. Parent participation in learning activities coupled with classroom activities planned around the students’ knowledge or experiences, helped students to make connections between school, home, and community knowledge (McIntyre et al. 2000). These teachers found that their students, including members of a Zuni pueblo, eighth-grade Haitian students, African American students in rural Kentucky, and a diverse class of preschoolers all learned math and science in a way that is meaningful and relative to their lives when taught utilizing this socio-cultural approach.

As noted previously, linguistic differences may also abound in the classroom of today and will continue to increase in the future. Furthermore, a higher literacy level in all subjects is the expectation for all students (Grant & Wong, 2003). Teachers, administrators, and politicians are beginning to see the need for bilingual classrooms. English as a Second Language (ESL) and English as a Foreign Language (EFL) are currently taught to between 2.6 and 12 million children in the United States, (Ernst-Slavit et al., 2002). Children who acquire communication skills in their native language during the all important birth-two year window of life are shown to acquire the necessary English skills much easier and faster than children who have no knowledge of their mother tongue.

Teachers must be aware of the different learning styles and multiple intelligences utilized by their students, and modify lesson plans to accommodate these individual differences. According to the research organization National Association of Secondary School Principals (NASSP), “Learning styles are

characteristic, cognitive, affective, and physiological behaviors that serve as relatively stable indicators of how learners perceive, interact with, and respond to the learning environment”. The model of learning style proposed by the NASSP has three dimensions: 1) cognitive, 2) affective, and 3) physiological, (Keefe, 1987). Cognitive styles, while related to intellectual abilities, differ in several notable ways. Abilities deal with information that is processed by *which* operation in *what* form. Styles, however, illustrate *how* information is processed. (Keefe, 1987).

How is the information presented in a classroom perceived by the student and how is that student thinking, problem solving and remembering the information? (Keefe, 1987). Concurrently, how are teachers assessing their students’ learning styles? These questions suggest that teachers and administrators can no longer rely totally on IQ tests of the past.

“Most scholars within psychology, and nearly all scholars outside the field, are now convinced that enthusiasm over intelligence tests has been excessive, and that there are numerous limitations in the instruments themselves and in the uses to which they can (and should) be put. Among other considerations, the tasks are definitely skewed in favor of individuals in societies with schooling and particularly in favor of individuals who are accustomed to taking paper-and-pencil tests, featuring clearly delineated answers,” (Gardner, 1973, 1983).

However, there are a number of assessment tools that, when compared and contrasted with one another, give teachers a working base knowledge about their students’ learning styles.

Additionally, teachers must be cognizant of the multiple intelligences employed by their students. Howard Gardner, in his theory of multiple intelligences, has identified seven “core” forms of intelligence in which most human beings have the potential for solid

advancement (Gardner, 1973, 1983). He also points out that, “factors such as proper motivation, an affective state conducive to learning, a set of values that favors a particular kind of learning and a supporting cultural context are indispensable (though often elusive) factors in the educational process,” (Gardner).

The population of deaf students mainstreamed into public schools has traditionally been taught via the ‘oral’ method, and are not allowed to utilize their native language of Sign. Additionally, facts about deaf culture and deaf history are not included in either American History or Social Studies books or in classroom curriculum. There is an assumption by teachers that a deaf student utilizing hearing aids is an auditory learner, while few attempts are made to tap into the students’ other intelligences or learning styles. However, oralism and the suppression of Sign have resulted in a dramatic deterioration in the educational achievement of deaf children and in the literacy of the Deaf generally (Sacks, 1989). It is only in specialized education programs for teachers of the Deaf that these concerns are addressed. How, then, are General Education and/or Special Education Teacher Preparation programs preparing future educators to work with deaf students? Has the higher education system kept up with the changing needs of today’s students—both pre-service teachers and the students they will be teaching the classroom? Many institutions of higher learning have documented their students’ content knowledge and reflective abilities by utilizing portfolios, initiating capstone experiences, and adding various performance-based measures to assess student achievement, (Conderman; Katsiyannis; Franks, 2001). Despite these recent changes, K. Howey (1996) noted, “high-quality, comprehensive evaluation of teacher preparation is sadly lacking,” (Conderman, et al.).

This investigation is both timely and pertinent. As the student population continues to change, the primary and secondary education system must also change. As teachers and administrators evolve, so, too, must higher institutes of learning in their preparation of future teachers. The twenty-first century world is a global community. The next generation of teachers must be prepared to meet the needs of global students, both the hearing and the deaf.

Statement of the Problem

This study was designed to answer the question: “Are pre-service Teachers Programs effectively considering students from the Deaf Culture?”

Purpose of the Study

The purpose of the study was to determine the knowledge that veteran in-service teachers possess about deaf students as well as the information that pre-service teachers have been taught regarding deaf students. The over-arching consideration of this study is to determine if existing teacher education programs, exclusive of specialized Deaf Education programs, address the issue of deafness—both its physical and social/cultural dimensions. Additionally, if the teachers surveyed show an understanding of their deaf students, are they utilizing different pedagogical methods based on multiple intelligences and learning styles research? If teachers were unaware of the special attributes of deafness and the importance of seeking different methods of teaching, then teacher education programs are not sufficiently preparing teachers to work with deaf students. **The specific purposes of this study were to:**

Determine if teachers are aware of the cultural implications of deafness.

Secondly, are teachers aware of the learning styles/multiple intelligences that students (including deaf students) utilize? If so, are instructional activities being geared toward these differences?

Finally, how do teachers define the deaf student and how does that definition affect both teaching and learning.

Method

Participants

One-hundred forty-three in-Service teachers within Rutherford County and/or Murfreesboro City Schools in Tennessee and 105 Middle Tennessee State University pre-service teachers. Written permission was obtained from both the Rutherford County School Board and the Murfreesboro City School board prior to collection of the data. Additionally, verbal permission was obtained from the principal of each school.

Materials

Two Surveys, each designed to ascertain the participants’ knowledge and attitude about Deaf culture and deafness, learning styles and multiple intelligences. Answers were rated on a five point Likert scale.

Procedure

In-Service participants were surveyed during regularly scheduled teacher’s meetings, while pre-service participants were surveyed during a language seminar that they were compelled to attend at Middle Tennessee State University. In each session, a short presentation regarding the research was done, and participants were advised that they were under no obligation to complete the survey, nor were they to be compensated. Participation was strictly on a volunteer basis, and anyone could stop participating at any time.

Instrumentation

The In-Service teacher survey collected demographics regarding specialty, years teaching and level of education (table 1). The teachers were asked eleven questions regarding their attitudes about multiple cultures, Deaf students, multiple intelligences, and learning styles.

Pre-service teachers were asked to identify their class standing as well as their major (table 2). The questions on the pre-service survey included questions about the curriculum offered at Middle Tennessee State University and whether that curriculum included information about various cultures, curriculum design, deaf students, and learning styles. Both in-service and pre-service teachers were asked to agree or disagree with the following statement: "Learning is based, not only on cognition, but is also dependent upon the social and cultural situation of the student." Of 143 in-service and 105 pre-service teachers surveyed, approximately 92 percent (+/-) of each group either agreed or strongly agreed. Additionally, when asked if the students in a given classroom reflect a variety of cultures, almost 83 percent of in-service teachers agreed or strongly agreed (figure 1). Almost 70 percent of pre-service teachers agree that their major curriculum includes multicultural classes, however, 55 percent disagree or strongly disagree that Deaf culture was covered in those classes. Of the remaining 45 percent of pre-service teachers surveyed, 22 percent had no opinion or gave no answer, leaving 23 percent in agreement with the statement that Deaf culture was covered in their multicultural classes (figure 2).

Both groups of teachers were asked to agree/disagree with the statement "Deaf/Hearing-Impaired students with hearing aids are more likely to rely on their auditory system to learn." Of in-service teachers, 58 percent disagreed or strongly disagreed; however, 42 percent agreed or had no opinion. In the pre-service teacher population, 39 percent disagreed or strongly agreed, 41 percent did not know, 14 percent agreed, and almost six percent gave no answer. In other words, almost 60 percent of pre-service teachers, and 42 percent of in-service teachers are unaware that a deaf/hearing impaired student with hearing

aids does not rely on their auditory system to learn (figure 3).

In-service teachers were asked to agree or disagree that a Special Education environment was best for deaf/hearing impaired students. Of the 143 teachers surveyed, 10 percent agreed, 41 percent neither agreed nor disagreed and almost 43 percent disagreed or strongly disagreed. Again, we see a large percentage (41 percent) of in-service teachers who honestly do not know what environment is most suitable for the deaf/hearing impaired student (figure 4).

What conclusion can we draw from these surveys? Both in-service and pre-service teachers agree that cultural and social circumstances affect learning and cognition and in-service teachers recognize that their classrooms reflect a variety of cultures. However, it appears that Deaf culture is neither recognized nor taught in the college curriculum. An astonishing percentage of both in-service and pre-service teachers do not know if a deaf/hearing impaired student with hearing aids depends on their auditory system to learn or not. Additionally, a large percentage of in-service teachers are unsure which environment is most suitable for a deaf/hearing impaired student; the mainstream classroom or the Special Education classroom.

Additional, focused research must continue in order to determine ways that our Deaf students and their culture can be valued in the classroom. Deafness and Deaf culture must be addressed in multicultural classes, methods classes and special education classes. American Sign Language must be recognized as the "natural" language of the Deaf and its usage should be encouraged in classrooms that contain deaf students. Hearing students should be encouraged to learn Sign, so that they can converse with and assist in the socialization of their deaf peers. Our deaf students must be afforded every opportunity to learn and grow just as their hearing peers are.

**Participant Demographics:
In-Service Teachers: Table 1**

Years in Service	Number
Between 1-5	25
Between 6-10	24
Between 11-15	26
Between 16-20	26
More than 20	40
Level of Education	Number
Master's	69
Ed.D.	6
Bachelors	56
Certificates	3
Specialty	Number
Elementary Ed	108
Special Ed (mild/moderate)	11
Special Ed (severe/profound)	2
Reading Specialists	3
No response	17

Pre-Service Teachers: Table 2

Class Standing	Number
Seniors	95
Juniors	4
Graduate Students	3
No response	2
Major	Number
Early Childhood	18
Elementary Education	43
Spec Ed Mild/Moderate	6
Spec Ed Severe/Profound	4
High School	17
No response	15

Figure 1

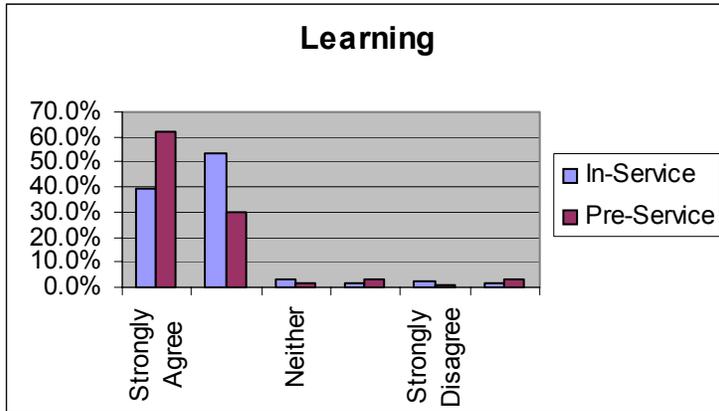


Figure 2

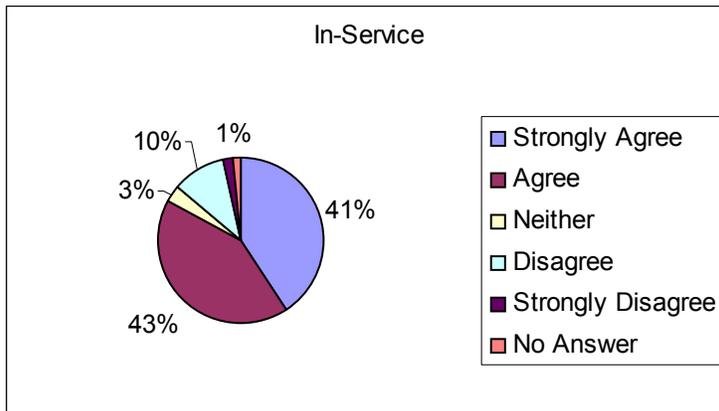


Figure 3

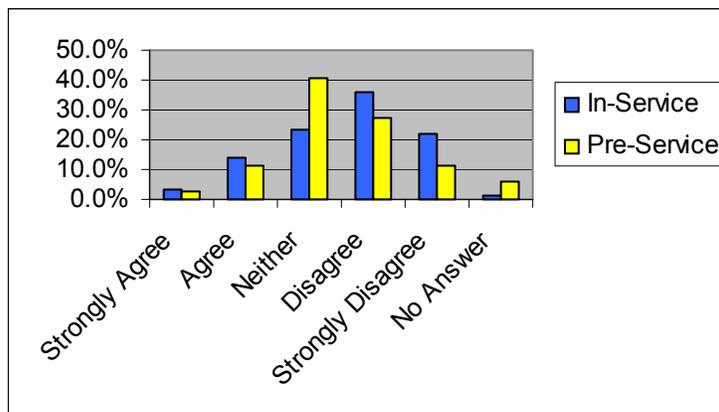
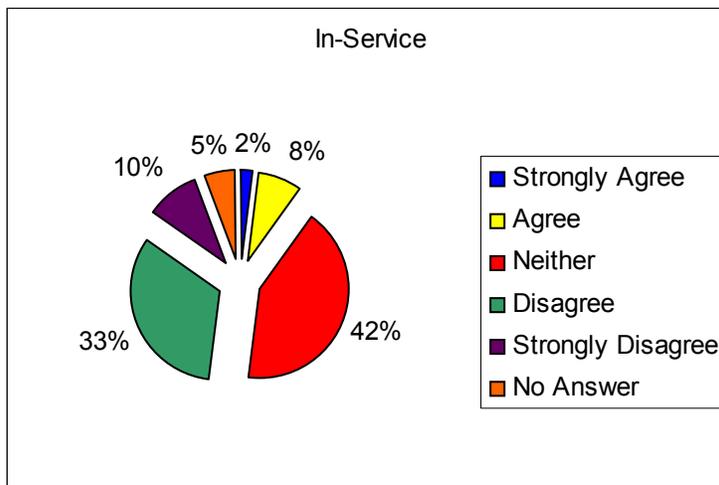


Figure 4



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Knowledge of Health Issues and Experiences in Seeking Healthcare within the African American Community



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Abstract

The purpose of this study is to examine the general health knowledge of African Americans in the Middle Tennessee area. The study explores the attitudes and experiences of African Americans regarding health-related issues; the sharing of information about health issues; the role of the African American church in providing health information; community health provisions; and the patient-physician relationship. Seventy adult African American participants, ranging in ages from 18 to 76 years, were drawn from a rural community in Middle Tennessee.

A survey consisting of a demographic section and a general knowledge section (healthcare, family, self-knowledge, church, physician and community) was developed and distributed to the participants. The results of the survey indicated that African Americans were generally satisfied with the patient-physician relationship. Survey results also demonstrated that African Americans were most knowledgeable about some health issues that are widespread among

this population, including diabetes, heart disease and high blood pressure.

Introduction

The United States is the world leader in healthcare expenditures, allotting nearly a trillion dollars annually for healthcare issues ("African American health," n.d.). Unfortunately, though, for a select U.S. population, high dollars does not equate to equal healthcare. According to Rich (2000), the health status of African Americans significantly lags behind that of whites in acquiring health services to address a myriad of health issues. As a result, health outcomes for this population are poorer (Collins, Tenney, & Hughes, 2002) when compared to that of whites. Despite the fact that death rates among whites and blacks were 40 percent lower in 1998 than 1950, the death rate of African Americans is still almost 1.5 times higher than that of whites (Caesar & Williams, n.d.). African Americans find themselves at a disadvantage when compared to whites in three major health categories: heart disease (Curry, 1994), cancer (Warner, 2002) and stroke ("Giving," n.d.).

Sharing of Information

Raising awareness within the African American community regarding specific health issues (Warner, 2003 & "African Americans unaware," 2004) is key to avoiding health conditions that greatly affect this population. In a survey by the American Heart Association, only three

percent of African American women were aware that heart disease and heart attack seriously threaten their health ("Heart disease," 2003). Communication between family members and among the African American community is important in raising awareness of medical issues that places this population's health at risk (Motamedi, 2000).

Acquisition of Healthcare Services

Cultural mistrust of the medical community (Napoles-Springer, Grumbach, Alexander, Moreno-John, Forte, Rangel-Lugo, & Perez-Stable, 2000; and Whaley, 2001); lack of research data (Treadwell & Ro, 2003); socioeconomic status (Becker & Newsom, 2003); lack of health insurance ("A Comparative," n.d.); the decline in minorities seeking healthcare careers (Hurst, 2003); and racial discrimination (Caesar & Williams, n.d.) have been identified in the literature as barriers that contribute to the continuing health inequities between African Americans and whites.

African Americans have long been the guinea pigs of the medical community. The Tuskegee Syphilis Experiment (Fairchild & Bayer, 1999) is most certainly not the first time that unethical and immoral practices have been carried out against African Americans (Semmes, 1996). In a study examining the attitudes of African Americans regarding clinical research (Napoles-Springer et al., 2000), one African American woman com-

mented, "They don't know if people are tellin' the truth. You know, they will tell you you're gonna get in this research. Well what is this research? Are you really gonna do what you say you're gonna do? Or are you then injectin' me with the AIDS virus, or a syphilis virus, or something else, and I'm not aware."

Cultural distrust has a domino effect on the overall health of African Americans. It discourages African Americans from participating in much needed research that in turn limits health improvements within a population whose health status is already poor (Satcher, 2003; and Treadwell & Ro, 2003).

Access to African Americans in health-care professions is another pressing issue. Levi Watkins, Jr., associate dean of John Hopkins University, commented, "The general trend of first-year, African American students coming into medical school is down eight percent to 14 percent per year" (Hurst, 2003). The availability of African American doctors within the African American community is essential for a population that often views whites as untrustworthy and insensitive to their cultural needs (Hurst, 2003).

Finally, discrimination within the healthcare profession seems to only add insult to injury. Whites generally view African Americans more negatively than any other minority group. For example, Caesar and Williams (n.d.) note that 56 percent of whites believe that African Americans prefer to live off welfare as compared to 4 percent of whites who believe that whites prefer to live off welfare; 29 percent of whites believe that African Americans are unintelligent versus 6 percent of whites who believe that whites are unintelligent.

Role of the Church

The local church has long been a staple of the African American community. "Throughout history, the black church served not only as a place of worship but also as a community 'bul-

letin board,' a credit union, a 'people's court' to solve disputes, a support group, and a center of political activism" ("The players," n.d.). There appears to be no better organization in place to advocate for the health of its members since 80 percent of African Americans attend church (Morphew, 1998).

African Americans' health status lags behind that of whites in addressing various health issues. Heart disease, cancer and stroke are widespread among this population. In order to bridge the gap of health disparities, specific measures should be taken to decrease barriers that African Americans face in accessing healthcare. The purpose of this study is to examine the general health knowledge of African Americans in the Middle Tennessee area. The study explores the attitudes and experiences of African Americans regarding health-related issues; the sharing of information about health issues; the role of the African American church in providing health information; community health provisions; and the patient-physician relationship.

Method

Participants

Seventy African-American participants (22 males; 48 females) were recruited from two African-American churches in a rural community in Middle Tennessee. The criteria determining eligible participants for the study included (1) ages 18-76 years; (2) member of the selected church; (3) sufficient literacy to read and/or comprehend the test instrument written in English; and (4) ability to complete the self-report instrument.

Procedure

Participants completed a 34-question survey divided into two sections: a demographic section and a general knowledge section (healthcare, family, self-knowledge, church, physician and community). Prior to completing the questionnaire, subjects were given an in-

formed consent document that detailed their rights regarding participation in the project. The entire questionnaire took approximately 20 minutes to complete.

Analysis

Descriptive statistics were computed to evaluate participants' responses. Means and medians were derived. Responses were analyzed with regard to the percentage of subjects answering each statement or question.

Results

Knowledge of Health Issues

The study indicated that the respondents knew "very much" about health issues that are widespread among this population: diabetes (61.4%), heart disease (44.3%), and high blood pressure (61.4%). Respondents stated that they knew "very little" regarding speech problems (40%); HIV/AIDS (38.6%); stuttering (42.9%); stroke (41.4%); hearing loss (42.9%); sickle cell disease (47.1%); and cancer (48.6%).

Sharing of Information

In response questions regarding the discussion of the diagnosis of a disease or illness of an immediate family member, 88.6 percent of the respondents "strongly agreed" or "agreed" that this information would be openly discussed within the family. Forty percent of the respondents indicated that they would feel comfortable with their family knowing about their diagnosis of a disease or illness while 5.7 percent indicated that they would not feel comfortable with anyone knowing about it. Sharing health information is crucial as it helps the patient to ask the physician the right questions and aids the physician in determining the appropriate treatment ("Questions all African-Americans," n.d.).

Role of the Church

The study indicated that more than half (57.1%) of the respondents were aware that there were one to three

healthcare professionals in their local church. Of the respondents, almost as many (55.7%) noted that within the last year the church shared specific health information at least one to three times, with the majority of the information being shared via meetings, seminars, and programs. A much smaller percentage (5.7%) indicated that they were not aware of any health information activities provided by their church.

In response to the statement “my local church is aware of health issues within the African American community,” 78.6 percent of the respondents “agreed” or “strongly agreed” while 12.9 percent “disagreed” or “strongly disagreed” with the statement.

Community

The majority of respondents “disagreed” or “strongly disagreed” with the statement “African Americans receive the same healthcare as a person of another race or ethnicity” (See Fig. 2). Of the respondents, 74.3 percent were aware of the healthcare facilities available in the community and 58.6 percent were generally satisfied that the health services in the community met their needs.

Physician

Most respondents (81.4 %) visited Caucasian physicians. Furthermore, 52.9 percent of the respondents noted that they had never seen a black doctor. For the respondents who indicated they had seen a black doctor, 20 percent indicated they had seen a black doctor one to three times. The race of the doctor was not important to 77.1 percent of the respondents; however, half of the respondents indicated that they would choose a black doctor over a white doctor if given the choice.

Overall, respondents were satisfied with the medical services provided by their physicians. Respondents indicated satisfaction with the manner in which the physician explained their health condi-

tions (92.9% “strongly agreed” or “agreed”); the choices of treatment options given by the physician (74.3%); the time spent with the physician to ask questions (88.6%); knowledge of physician regarding their health concerns (87.1%); and understanding of their health needs by the physician (84.3%). Only a small number of respondents indicated they felt rushed during their last office visit.

Discussion

The study explored the attitudes and experiences of rural African Americans in Middle Tennessee. Results indicated that the majority of the respondents would openly discuss an immediate family member’s diagnosis of disease and that they would feel comfortable sharing this information with their family. This finding is a positive indication that African Americans are communicating pertinent health information. This type of communication will make families more aware of health conditions that are detrimental to African Americans (Motamedi, 2000).

Results of this study indicated that African Americans are most knowledgeable about three of the health conditions that are prevalent among their population. Despite this finding, there is still a need for greater awareness of these conditions and others (Warner, 2003) in order to control risk factors.

Findings suggested that the African American churches in this study were playing a significant role in providing health information through meetings, seminars, programs, and health screenings. According to the Centers for Disease Control and Prevention, “There is a faith and health movement spreading across the nation. It can be seen in the growth of congregation-based nurse programs, health ministries, and interfaith service organizations engaging in health-related activities” (Engaging faith,” 1999). The churches surveyed in this study appear to be a part of this growth.

Their members are receiving the advantages of health education and a wide array of assistance promoting the health of church membership. Since a majority of African Americans attend church, the church can be used as a vehicle to provide health education to its membership (“Despite declines in,” 2002).

The survey also revealed that respondents were satisfied with the health facilities available in their community. Surprisingly, a significant number of respondents also noted that they believed African Americans did not receive the same healthcare as a person of another race or ethnicity. Perhaps this differing opinion derives from African Americans not challenging the services provided by the health facilities, as shown by Jackson and George (1998). They discuss the association of race and satisfaction among a sample of community-dwelling white and African American older adults. One of the findings from their study suggested that older blacks may be less likely to challenge the competence of the physician when compared to older whites.

Although a number of the respondents believed there was a difference in healthcare between African Americans and persons from another race or ethnicity, the majority in the current study were satisfied with their patient-physician relationship. This finding differs from previous studies, which suggested that when compared to whites African Americans are less satisfied with the manner in which their physician treated and communicated with them. One study found that patients were more satisfied with visits to a doctor of the same race than visits to a doctor of a different race (“New study finds,” 1999). Shared attitudes and values have been noted as key factors in patient-physician satisfaction (“Attitudes may explain,” n.d.). Other literature also points to African Americans’ dissatisfaction with patient-physician relationship, especially with regards to communication barriers.

ers ("Minority Americans lag," 2002). This does not appear to be the case in the present study.

For future research, it would be beneficial to conduct a qualitative research study regarding the underlying answers given by the participants. In-depth interviews could possibly reveal that because the study involved a rural population, participants were familiar with their physician on a more personal level. Perhaps this familiarity could explain the overall satisfaction of their patient-physician relationship. Furthermore, interviews could reveal that the participants were most knowledgeable about health conditions with which they or a family member had been diagnosed. It should also be noted that a relatively high number of participants did not answer all of the questions from the survey. This suggests that the survey may have been too long and that a future survey should focus on a specific health issue.

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Christian Broadcasting in the Nashville Area: Part I



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Purpose

The purpose of this study is to identify programming options appropriate for Christian television and radio networks in the Nashville Metropolitan area. This information will consist of the following: (1) types of shows that invite Christian audiences, (2) types of shows that alienate Christian audiences, and (3) types of shows Christian viewers would like to see but which are not available. The results of this study can assist the Christian television and radio networks in providing programs most likely to be of interest to their audiences.

Introduction

How does one attract an audience to a network? Public relations departments want to know the answer to this question. The process of discovering how to appeal to consumers involves trial and error, research, and a bit of good luck. Christian stations face the same challenge as secular stations. There must be a constant effort to improve programming in order to remain com-

petitive in today's market (Miller, 2004). In the Nashville Metropolitan area, 20 churches with congregation sizes between 1000 and 2000 members were asked to participate in surveys designed to cater to Christians (Burns, 1999; Nashville, 2004). Every television and radio station that reaches the Nashville Metropolitan area had an opportunity to classify their programming and to yield previews of coming attractions. This survey will reveal the following: (1) types of shows that invite Christian audiences, (2) types of shows that alienate Christian audiences, and (3) types of shows Christian viewers would like to see but which are not available.

1) This study focuses on station executives and church congregations in the Nashville Metropolitan area.

Review of Literature

Leventhal and Mears (2002) studied the involvement of church congregations, which is of great importance to the current study because it helps determine the kind of responses the new surveys will generate. Religious organizations are assuming greater responsibilities for providing and promoting social services. The main question is to what extent are religious organizations willing to help with social services. The Leventhal and Meyers (2002) study focuses on the Catholic denomination and the results showed that churchgoers are

responsive to research projects and are involved in promoting social services.

Ellison, Krause and Marcum (2002) found that responses to surveys may vary by gender. Gender preferences may also exist for media programming. The Ellison *et al.* (2002) findings indicate that women receive more emotional support from church than men. This may affect the amount of involvement within the church according to gender.

In the Begue (2001) study, determining the issues of priority within the church was of primary importance. According to Begue, two important issues among Christians are healing and prosperity. Religious affiliation and social commitment are determinants of moral attitudes in the prevention of illness, such as AIDS and the fight against poverty. Begue focused on the morality of each group in regards to their response to these causes. Also of importance were issues of priority in the eyes of the church. That is, would Christians rather see shows that deal with divine healing and health maintenance or shows centered on supernatural prosperity that help the less fortunate?

The Begue (2001) study results indicate that the fight against AIDS is more of a moral concern to the church than the fight against poverty. The results also indicate no gender effect. In addition, religiously affiliated groups were more committed to the fight on AIDS and poverty from a moral standpoint than secular groups (Begue, 2001).

The constant changing of denominations among Christians was a focus of the Lincoln (1998) study. These changes could cause blended responses among the different denominations or discontent among the church congregations in the Nashville area. According to Lincoln, denominational switching is not a sign of dissatisfaction but a change in theological convergence and the views of society. Lincoln's (1998) research will assist in determining how much of a difference denominations might cause in this research. The main question this essay helps to answer is how significant are the differences between the denominations in today's society. Lincoln's (1998) results display the diversity of the church congregations based on influences of other denominations as well as financial and geographical factors. The challenge of many pastors is to blend these members from other previous denominations into the lifestyle of their churches.

Gibbs and Goff (1993) focus on religious affiliation changes viewed from a consumer decision perspective. Their study included 14 denominations, considered as brands of religion: (1) Assembly of God, (2) Atheism, (3) Baptist, (4) Catholic, (5) Church of Christ, (6) Episcopal, (7) Jehovah Witness, (8) Latter Day Saint, (9) Lutheran, (10) Methodist, (11) Nondenominational, (12) Presbyterian, (13) Satanism, and (14) Unification Church. The study examined the rapid and extensive change in consumer preferences concerning denominational affiliation. The key research question is how knowledge of competing brands influences consumers' beliefs, attitudes and evolving sets of brands. This helps determine what Christians look for in a church and could be very beneficial in discovering what type of broadcasts churchgoers would or would not like to see. Religion is a nondurable good frequently purchased by many consumers. Beliefs and attitudes change. Therefore, Christian television broad-

casters must change their programming in order to keep up with the trends of churchgoers.

The Joseph, Moberg, Schimmel and Webb (1998) study of continuous changing of denominations shows that church membership has been declining since the early 1970s. The ability to attract and maintain members is a challenge many pastors face. The Joseph *et al.* (1998) study surveyed three Protestant denominations: (1) Presbyterian, (2) Lutheran, and (3) Episcopalian. The study evaluated the effectiveness of their marketing communications efforts for retaining and attracting members. The results showed that personal contact through referrals and direct mail are the most effective in appealing to members. The types of media that were ineffective included television, community cable access and door-to-door canvassing. The study's results suggest a need for change in Christian programming to make it more effective.

In the Everton and Innaccone (2004) study, congregational data about weekly attendance was used to provide information about denominations, worshippers and congregations such as opportunity cost and measures of commitment. Americans approach religious observance as an activity skipped or scheduled along with all other time-consuming activities that fill their days. Never before have so many people been free to choose their religion or had such a range from which to choose. The Everton and Innaccone (2004) study suggests a need for Christian programming to appeal to several activities that consume the lives of today's Christians.

Christian Principles

The principles of Christians will influence the outcome of this study. Two factors are especially important: (1) Jesus as a cultural icon and (2) codes of ethics among Christian audiences. These factors help establish the extent to which

future programming will appeal to Christian audiences.

Welker (2002) discusses Jesus' status as a cultural icon, which is weakening throughout society. According to Welker, the main question is how the teachings of Jesus Christ apply to Christians today. Many American beliefs come from the teachings of Jesus and therefore society has a traditional view of Christianity. However, members of society have also become weary of this cultural icon and have become alienated from Christian teachings. Yet Christian organizations have joined with the secular professions in creating detailed ethical codes. The use of these Christian principles determine what is morally right or wrong in the workplace (Hathaway, 2001).

Television Broadcasting

The majority of the Christian media outlets that reach Nashville are television networks (Yahoo!, 2004). They are examined in reference to the following: (1) the current impact of televangelism, (2) the issue of digital cable, (3) future programming, (4) the success of Trinity Broadcasting Network (TBN), and (5) TBN's approach toward new audiences.

Current Impact of Televangelism

Televangelism is the main focus of Christian programming (Haley, 2003b). At the forefront of televangelism today is Bishop T.D. Jakes. According to Van Biema (2001), Bishop Jakes is a true testament to the impact televangelism has on Christians today, and is one of the top televangelists in the world today.

Bishop T.D. Jakes addresses taboo issues, imprisonment and sexual abuse. Jakes appeals to men and women who are seeking emotional support through a spiritual relationship with God (Van Biema, 2001). Not only that, but Bishop Jakes discusses such sensitive issues as

money and parental psychological nightmares that Christians find of interest. Van Biema's (2001) discussion is helpful in determining what types of shows invite Christians to view the programming, and what type of future shows Christians want to view.

Issues of Digital Cable

Trinity Broadcasting is shifting its distribution focus to digital cable. According to Bob Higley, TBN's vice president of affiliate sales and relations, eventually most homes will have digital cable so there is no reason to invest in VHF stations. Currently, almost 6,300 cable systems carry TBN's signal (Haley, 2003a).

Higley is focusing on the company's three newer networks, all of which are seeking distribution through digital cable packages. The three new networks are The Church Channel, JCTV, and TBN Enlace USA. Church services represent the most popular programming on Christian television and that is the idea behind The Church Channel. TBN Enlace USA is the only Spanish language Christian network in the country. JCTV, the newest network launched late in 2002, targets teenagers. Nearly half of its programming is music-oriented and the rest gears toward teenagers' lifestyles and the latest trends (Haley, 2003a). TBN's strategy is that an effective way to appeal to Christian viewership is to acquire digital cable stations and to provide specialized 24-hour programming.

Future Programming

TBN is also shifting the focus of the company's programming. A new reality series, *Travel the Road*, is a show about the adventures of a pair of young missionaries who traveled for 18 months throughout Africa and Asia. Trinity Broadcasting has plans for an extreme sports show and a drama series based on Tim LaHaye's *Left Behind* best-selling book series about how cur-

rent events mirror biblical prophecies of the end of the world (Haley, 2003b).

An important development in TBN's new program development is the connection with Matt Crouch, the second son of TBN founders Paul and Jan Crouch. His production company produces movies that are mainly aired on TBN. Three of his new movies include: *The Prodigal*, *Blessed Child*, and a third film traces the story of Esther (Haley, 2003b). Historically, TBN has primarily included two kinds of programs, those produced or acquired by either Trinity Broadcasting or television ministries. Eventually, TBN would like to add dramas and sitcoms to the lineup. These types of shows would require a different type of funding. The viewers normally give direct donations for the expansion of the company's broadcasting stations and TBN believes that viewers may not financially support the shift toward programming because of the risk involved in creating scripted entertainment (2003b).

Haley's (2003b) second article provides insight into what types of new shows are feasible for Christian television. Marketers are beginning to look for new Christian music acts to sponsor and ways to appeal to an underserved group that was not previously considered a market. Christian broadcasters, Trinity Broadcasting among them, are considering allowing advertisers to provide commercials for the new programs. Commercials are currently aired on the youth network, JCTV (Haley, 2003b).

Traditionally, Christian networks have focused on televangelists and talk shows to support the broadcasts. Both have dual benefits because they are simple and cheap to produce. Now, the more established networks are focusing on providing more viewer-friendly programs that may attract a broader, younger audience (Miller, 2004). Miller's (2004) study was done to assist in determining different methods Christian television networks should use in

appealing to the Christian viewership. The industry is looking for a new surge of creativity. Television cannot only be a medium for evangelism; it must provide programming that is entertaining as well (Miller, 2004).

Success of Trinity Broadcasting

Trinity Broadcasting Network is the world's largest religious television network ("Heavenly Success," 2003). The influence and the success of this network exhibit the potential for new horizons in Christian broadcasting. Traditionally, TBN focused on televangelism (Haley, 2003b). "Heavenly Success" mentions that the sudden rise in popularity with the Reverend Paula White is partially because of the electronic pulpit that only Trinity Broadcasting can offer. TBN reaches 91 percent of TV households, but for those who cannot get access to any of TBN's networks, TBN.org, which receives 300 million hits a year, streams the TV signal 24 hours a day. The network does not buy a national rating from Nielsen, but its analysis indicates that TBN averages a .35 to .4 rating in primetime. When it airs a movie or special the ratings can top 1.0. These ratings are small compared to secular stations, but are huge for Christian networks. Other research indicates that TBN is by far the preferred religious network and that it ranks fourth among mid-sized networks that cable subscribers consider most valuable. Now, with The Church Channel, TBN Enlace and JCTV, Christian audiences have more opportunities to watch TBN programming. According to Paul Crouch Jr., someone may flip by, see a televangelist, and decide that he or she may not want to be sermonized at that time. However, that same person may see a movie or drama series and he or she may stick around to see more. According to Glenn Plummer, the chairman and CEO of the National Religious Broadcasters Association and the Christian TV Network,

TBN has millions of loyal viewers who give money ("A Different," 2004).

TBN's Approach Toward New Audiences

Christian television is facing a new kind of reality. To attract a broader, younger audience, Christian broadcasters are experimenting with reality television. On network reality shows, contestants lie, cheat and connive in order to achieve their goals. However, on Christian television these actions do not take place. Like the network television reality shows, the religious versions draw a crowd of viewers that cable operators want. According to Patti Crouch Jr., TBN Vice President of Administration, TBN is attempting to reach the younger generation. Knowing that voting enemies off an island is not the way to go, Christian television executives are reinventing the genre for their audiences. The most common approach is musical competitions, but several reality series are in Christian broadcasting ("Different," 2004).

FamilyNet's *TruthQuest: California* followed a group of teenagers on a journey that involved spending time at the beach with a 'surfing ministry,' hiking in Yosemite National Park, refurbishing homes in the heat of the San Bernardino Valley and meeting Gothic 'vampires' in a coffeehouse near Haight-Asbury. TBN's *Travel the Road* tracked a couple of photogenic young missionaries as they traveled through 25 countries throughout Africa and Asia encountering everything from lions and leeches to malaria to hostile natives and militants. According to Patti Crouch Jr. *Travel the Road* has averaged 400,000 to 500,000 households per episode, far more than TBN's average programs ("Different," 2004).

Radio Broadcasting

Christian radio is the next form of media covered in this study. The three

main issues for this section are: (1) political influence, (2) Christian contemporary music and (3) the formats of the stations.

Political Influence

"Stations of the Cross" (Finbarr, 2001) is an analysis of contemporary American right-wing Christian radio. Finbarr's study focuses on James Dobson, a Christian psychologist with a syndicated radio program, *Focus on the Family*, which has four million daily listeners whose conservative positions on issues have significant cultural influence. Alexander-Moegerle (1997), in his article about the influence of James Dobson as a Christian Right lobbyist, claims that Dobson is one of the most powerful men in the country. James Dobson is, in fact, treated as if he were a powerful lobbyist by those on Capitol Hill, yet to many Americans he is unknown. Alexander-Moegerle also quoted Barry Lynn, executive director of Americans United for the Separation of Church and State, who said, in a 1996 ABC television interview just before the 1996 Republican Convention:

"In many ways James Dobson is the ultimate stealth campaigner. He is a person who likes power, who likes to be a kingmaker. I think you could make a strong case that if you had a deadlocked Republican convention, if you were a candidate you'd be more interested in getting the support of James Dobson than the support of Jerry Falwell and Pat Robertson combined" (Alexander-Moegerle, 1997, pp.1 - 2).

Not all Christian radio personalities have a positive influence on their audience, however.

"Christian evangelist Harold Camping is known for his failed prophecy concerning the Sec-

ond Coming or the end of the world, which was to occur in September 1994 according to his study of the Bible. Camping, manager of 39 Christian radio stations was unlike others of his kind whose motives were dictated by the greed for money and power. He erred by risking his reputation on too literal an interpretation of the Bible. At least, he was instrumental in rousing Christians from their gullibility. ... All of the programming on Family Radio is designed to keep the self-indoctrination of the Christian ongoing." (Cohen, 1994, pp. 1 -2).

Christian Contemporary Music

Besides the influence of radio personalities, recording artists are attracting audiences to Christian media networks. There are five radio stations in the Nashville area that feature Christian music. Four of these stations focus on Contemporary Christian Music (CCM) (SHG Resources, 2004; Yahoo, 2004). Christian music videos are becoming popular as demonstrated by the establishment of the cable TV channel, Z Music Television. This channel embraces the appeal of CCM by using a blend of images that can be enjoyed by both Christian and secular audiences. Some of the most popular artists in CCM have been featured on Z Music Television. They include Kirk Franklin, Carmen, and Jaci Valesquez. Gow (1998) says that contemporary Christian music is the fastest growing form of popular music in the United States today. Unconfined to the house of worship, the new sound contains secular styles, including hip-hop, country, hard rock and pop to reach a more mainstream audience. This type of music has the same appeal as the music on VH-1 and MTV. Already Christian

bookstores along with secular retailers such as K-Mart and Wal-Mart are giving CCM more shelf space.

Formats of the Stations

Along with the influence of Christian radio personalities and recording artists, station formats may be a factor when considering the influence of radio with Christian audiences. Rogers and Woodbury (1996) examine the relationships among radio station listenership, the number of program formats and the number of stations. The results imply that proposals by the Federal Communications Commission and Congress to relax ownership restrictions must induce substantial changes in station numbers increasing programming diversity.

In advertiser-supported media, the primary incentive is to deliver the largest possible audience to the client. Consequently, even though a small group may place a much higher total value on its preferred programming than does a large group, the media firms will cater to the latter. With advertiser-supported media, the profitability of reaching a small audience with a 'minority' taste may be greater than that of reaching a small portion of a large audience with more 'common' preferences. Increasing the number of stations within a market may increase programming diversity, thereby raising the likelihood that 'minority' demands will be met (Rogers & Woodbury, 1996).

These results suggest that the number of formats offered is not highly responsive to the number of stations within a market and that listenership is only slightly more responsive to the number of formats than to the number of stations. Additionally, the distribution of listenership across formats is insensitive to the number of stations offering each format (Rogers & Woodbury, 1996).

These findings also could lead one to conclude that having multiple stations broadcast the same format yields no gains related to program choice. If the

programming of each station within a format were equally attractive to listeners, then the Federal Communications Commission (FCC) could merely select one station at random to broadcast that format (Rogers & Woodbury, 1996).

Releasing the amount of spectrum available for more highly valued uses may be welfare improving. This could be accomplished by modifying the licenses of existing stations to permit them to offer non-radio services, something which they cannot do now, except in a very limited way. Of course, in dealing with such a change, the FCC likely would consider the effects of those modifications on the availability of radio in less populated areas. According to Rogers and Woodbury (1996), it may be better for radio stations to be more specialized in their formats than to attempt to appeal to general audiences with multiple formats. Christian radio broadcasters may want to develop stations based on one format, like hip-hop music or political analysis.

Interview Analysis

The Kerpelman, Shoffner, and Ross-Griffin (2002) study, contains examples of the use of open-ended questions divided into three topics: (1) expectations, (2) plans for expectations, and (3) perceptions. These topics provide questions that deal with three areas for network executives to consider: (1) expectations of the future shows, (2) plans for expectations of the future shows, and (3) the perception of the network.

Single-bounded dichotomous questions, situational questions, and past behavioral questions provide for analysis of the network executives' response to the success or failure of the new programming based on past and possible outcomes. The use of these questions generate responses based on experience and expertise in the industry (Boyle, Johnson, & McCollum, 1997; Small & Taylor, 2002).

Content analysis of weekly samples of prime-time network dramatic programs broadcast between the fall of 1967 and the spring of 1998 found that women consistently receive less recognition than men on television. While programs broadcast in the 1990's had more women than those broadcast in the 1960's and early 1970's, the women were still under represented in relation to their numbers in the U.S. population. There has been some change in the amount and degree of respect given to women on prime time (Alison, Benjamin, Hoerrner & Roe, 1998). Like the Alison *et al.* work, the present study will code the length of the shows as follows: (1) length, (2) target audience/appeal, (3) category, (4) content and other variables. There were four coders trained to analyze the data. The use of multiple coders for the current study will serve to eliminate any discrepancies in the results. (Alison, et al., 1999).

Methodology

The selection of churches was made by the congregation population of religious denominations in the Nashville area (Nashville, 2004). Christian television and radio stations that have a presence in the Nashville area were included in the study (Yahoo, 2004a, Yahoo, 2004b). Interviews of the station representatives classified the current shows, described for future programming, and determined target markets.

Population

The following steps were used in determining the population for this study: (1) the geographical area for the study, (2) church denomination, (3) church size, and (4) selected test population. The Nashville area was selected because it is the largest metropolitan area in Middle Tennessee (CBER, 2000). The largest Christian denominations in the Nashville area were also chosen. Table 1 lists the four largest denominations by total congregational population.

Table 1: Congregational Populations

Denomination <i>(Ranked by population)</i>	Total Population <i>(In hundreds)</i>
Baptist	546.87
Baptist ~ Southern	347.17
Church of Christ	319.04
Methodist ~ United	229.58

Table 2: Denominations by Population

Denomination	Church	Congregational Population
Baptist	Long Hollow Baptist Church	1600
	Mt. Calvary Baptist Church	1500
	Criewood Baptist Church	1300
	Lockeland Baptist Church	1243
	First Baptist Church–South Inglewood	1200
Baptist–Southern	First Baptist Church of Donelson	1505
	First Baptist Church–Joelton	1500
	Inglewood Baptist Church	1500
	Tulip Grove Baptist Church	1500
	Haywood Hills Baptist Church	1322
Church of Christ	Woodmont Hills Church of Christ	1400
	Schrader Lane Church of Christ	1300
	Jackson Street Church of Christ	1280
	Brentwood Hills Church of Christ	1250
	Hillsboro Church of Christ	1023
Methodist–United	Hermitage United Methodist Church	1700
	Belmont United Methodist Church	1600
	Forest Hills United Methodist Church	1325
	Calvary United Methodist Church	1280
	City Road Chapel United Methodist Church	1000

There are five churches in each of the four denominations with the population size greater than 1000 and less than 2000 as shown in Table 2 (Nashville, 2004). Churches that have 2000 or more members are considered to be ‘megachurches.’ To avoid being undue influence by the Baptist denomination, the population was reduced to 1000 (Burns, 1999).

The selected population was a purposeful sample (Borg, Gall & Gall, 1996). Within each of the churches that chose to participate in the study, a questionnaire was distributed to the members that attend the Bible study nights, because avid churchgoers attend church more than once a week (Ben Tankard, personal communication, July 11, 2004). Each church listed in Table 2 received the instrument.

Television and Radio Christian Networks

This study used the Christian stations with a primary audience in the Nashville area (SHG Resources, 2004; Yahoo, 2004a, Yahoo, 2004b). The Nashville area consists of seven Christian television stations, five service providers for these Christian television stations, and eleven Christian radio stations as shown in Table 3 (Alison, et al., 1998).

Table 3: Stations and Service Providers

Station	TV/Radio	Service Provider/Radio Frequency
TBN	TV	Local Station/Comcast/Dish/DirecTV/Digital Comcast
CTN	TV	Local Station/Comcast/Dish/DirecTV/Digital Comcast
INSP	TV	Digital Comcast
Daystar	TV	DirecTV
The Word Network	TV	DirecTV
Sky Angel One	TV	Dish Network
The Church Channel	TV	DirecTV
The Way FM	Radio	88.7 FM
Solid Gospel	Radio	104.9/105.1 FM
The Fish	Radio	94.1/93.7 FM
Christian Talk	Radio	WENO 760 AM
Moody Bible Inst	Radio	WFCM 710 AM/91.7 FM
WMDB	Radio	880 AM
WNAH	Radio	1360 AM
Trebecca Nazarene	Radio	81.1 FM
Nashville Quality	Radio	WNQM 1300 AM
WNSG	Radio	1240 AM
Bible Broadcasting	Radio	WYFN 980 AM

Open-ended questions asked of media executives are listed in Table 4.

Table 4: Executive Interview Questions

No.	Network Administrator Interview Questions
1.	What do you expect your network to become during the next 5 years? Or, Tell me what you think will be true for your network in the next 5 years.
2.	What are you doing or planning to do to help your network reach these goals?
3.	What type of shows does your network currently broadcast?
4.	Which shows do you currently broadcast that are the most successful in terms of audience attention?
5.	Which shows do you currently broadcast that are the least successful in terms of audience attention?
6.	How do you determine the extent of the audience for your shows? Or, Tell me how your network verifies the ratings for its shows.
7.	What type(s) of new shows does your network plan to broadcast in the future?
8.	What type(s) of audience(s) do you expect your network to attract through these new shows?
9.	What would your network do if these shows alienated audience(s)? Or, Tell me if your network would attempt to either improve the quality of the shows or cancel the shows.
10.	What would your network do if these shows were successful in attracting audience(s)? Or, Tell me if your network would either experiment with producing different types of shows or continue to produce more of these new types of shows.
11.	What has your network previously done when shows have alienated or attracted audience(s)?
12.	In what media collaborations are your networks currently involved? Or, Tell me if your network contains both television and radio outlets.

Answers were hand-written and not recorded. Using content analysis, the answers were categorized into themes and these themes will be used to construct the questionnaire presented to the congregational participants (Chander & Griffiths, 2000). *The exact questions for Part II of the study have not yet been determined.*

As mentioned, network representatives classified the shows. The Current Classifications of the Christian Programming are shown in Table 5 (Bacue & Signorielli, 1999).

Table 5: Current Classifications of Christian Programming

Political/News
Supernatural Debt-Freedom/Prosperity
Music Videos/Gospel Showcases
Apocalyptic
TV Movies
Documentaries/Informational
Televangelists
Talk Shows
Healing/Health and Wellness
Children/Teen and Young Adults

Future classifications of the shows are as shown in Table 6 (Bacue & Signorielli, 1999).

Table 6: Future Classifications of Christian Programming

Reality TV
Sit-Coms
Drama
Professional Sports News
Extreme Sports Shows
Social Lifestyle Shows

Interview Analysis

The answers will be analyzed using content analysis to determine the composition of the study questionnaire (Alexander, *et al.*, 1999). The coding of the data is as follows: (1) length, (2) category, (3) content, and (4) target audience/appeal (Alison *et al.*, 1998). Then the responses will be analyzed via the Delphi test (Chan, Kamnetz, McMahon, & Rubin, 1998).

Before the instrument is distributed to the churches, a pilot questionnaire will be given to a pastor of a church for approval. The churches of the sample will receive the instrument once approved.

Instruments will be developed and administered over the 2004-05 school year with analysis being conducted during Summer 2005.

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Preliminary Investigation of Timber Rattlesnake Thermoregulation in Middle Tennessee



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Abstract

The thermoregulatory behavior of free-ranging gravid and non-gravid timber rattlesnakes, *Crotalus horridus*, was studied during June and July of 2003. As a preliminary investigation, two snakes were monitored in the field using a surgically implanted transmitter and snake body temperatures were recorded every 30 minutes for 40 days using a miniature temperature logger. Data indicate that pregnancy does influence thermoregulatory behavior in timber rattlesnakes; the gravid individual maintained a warmer (day $T_b = 30.1^\circ\text{C}$, gravid; \bar{x} day $T_b = 27.6^\circ\text{C}$, non-gravid) body temperature during the day, but at night, body temperatures were more similar (\bar{x} night $T_b = 22.1^\circ\text{C}$, gravid; \bar{x} night $T_b = 20.8^\circ\text{C}$, non-gravid). Data also indicate that the gravid snake warmed up earlier during day and maintained a warm temperature longer than the non-gravid individual. A weather station was erected nearby for the monitoring of environmental temperatures and determining what temperatures were available for the snakes. Variation in climatic conditions and environmental tem-

perature appear to have noticeable effects on snake body temperature selection.

Introduction

Snakes play an important ecological role in many vertebrate ecosystems in several ways, ranging from high level consumer to important prey sources (Vitt, 1987). Reptiles make excellent models for explaining mechanistic relationships between physiology and ecology due to the fact that their biology is so closely linked to variation in resource availability and physical environment, and among reptiles, the rattlesnake has recently emerged as an important model in physiological ecology (Beaupre and Duvall, 1998). The timber rattlesnake is listed as endangered or threatened along much of its range. The majority of its decline can be directly attributed to habitat encroachment and wanton killing for sport or out of fear (Brown, 1993).

The timber rattlesnake has a late age of first reproduction and a low reproductive rate (Brown, 1992), and maternal thermoregulation is thought to facilitate development and promote viability in some viviparous reptile species (Shine and Harlow, 1992). Preferential thermoregulation of gravid, viviparous reptiles has been the subject of previous studies (Stewart, 1984; Beuchat, 1986; Daut and Andrews, 1993). While higher incubation temperatures have been found to shorten the gestation period, extremely high or low incubation temperatures have been linked to abnor-

mal morphological responses and increased mortality of offspring (Beuchat, 1988). Different physiological functions take place under differing optimal conditions with respect to temperature (Stevenson et al., 1985), and it is likely that in conjunction with pregnancy these functions result in differences in the thermal profile between gravid and non-gravid individuals (Hutchison and Tu, 1994). The costs incurred as a result of the behavioral thermoregulation, including increased energy consumption and the higher risk of predation associated with increased exposure (Huey, 1982), may also be a factor in an individual compromising between optimal temperature and a temperature that falls within an acceptable range. Oviparous species do not carry the eggs long enough to impart any thermal benefit, but viviparous species can increase fitness by shifting their selected body temperature toward the thermal optima for embryogenesis (Hutchison and Tu, 1994). This means that viviparous species are well suited to studies of the relationship between pregnancy and temperature selection. The thermal environment of viviparous embryos can be modified by the behavioral thermoregulation of the mother, and due to the close correlation between temperature and fitness (Burger, 1989), natural selection should favor adaptations that allow mothers to incubate their embryos at the optimal temperature (Beuchat, 1988). This is one of the leading hypotheses regarding the variation in body temperature regulation in gravid

females. Several studies have been done on the prairie rattlesnake, *Crotalus viridis*, and how its' thermoregulation is effected by pregnancy (Gier et al., 1989; Charland and Gregory, 1990; Graves and Duvall, 1993), but there has been much less done with the timber rattlesnake.

Materials and Methods

Study Site

The study site is Flat Rock Nature Preserve in Murfreesboro TN. The Nature Conservancy of Tennessee and the Tennessee Department of Environment and Conservation have been working together to protect Flat Rock since 1994. The preserve is now the largest cedar glade preserve in Tennessee with over 1,000 acres protected as a State Natural Area. The area consists of a diverse habitat including old fields, cedar fields, mixed cedar and hardwood, and cedar glade, a habitat design unique to the middle Tennessee area.

Study Species

Crotalus horridus is a pit viper that ranges from extreme sw. Maine south to n. Florida and west into se. Minnesota and c. Texas. This species is viviparous (i.e. live bearing) and throughout much of its' southern range it was classified as *C. b. atricaudatus*, the canebrake rattlesnake, until recently (Clark et al., 2003). The timber is diurnally active and feeds upon small vertebrates (e.g., mice, ground-squirrels). Many aspects of this species' natural history have been studied (Brown, 1993; Martin, 1993), but there has been little done in the area of thermoregulation (Brown et al., 1982).

Telemetry and Thermal Data

Snakes were collected in June and transported back to the lab at Middle Tennessee State University where radio transmitters (Holohil, Inc. model SB-2) were surgically implanted into their body cavity. The snakes were also implanted with miniature data loggers that were

set to record body temperatures every 30 minutes until their memory was full; this yielded 2048 data points per snake. There were 37 days where there was data for both the gravid and non-gravid snakes, and that translated into 1776 data points for each snake. A weather station, using seventeen snake models located in various positions from two centimeters in the air to 20 centimeters under forest soil, was erected nearby for the monitoring of environmental temperatures and determining what temperatures were available for the snakes to choose from. The weather station was also equipped to monitor short wave radiation.

Next, the daily temperatures were separated into three groups consisting of night, warm up/cool down, and daytime. This was done by taking the mid-point of the slope on either side of the daytime high temperatures and connect-

ing those points. Everything above the line created was recorded as daytime temperatures; everything between this line and the nighttime baseline temperatures was determined to be warm up and cool down time. The remaining temperatures making up the nighttime data set.

The weather station provided the data necessary to work up a thermal profile of the unique cedar glade environment including T_c max and T_c min. This was done by overlaying the daily temperatures recorded for all seventeen snake models and defining the highest and lowest temperature at any time as the T_c max and T_c min respectively.

By plotting the snakes thermal profiles along with the plots of the T_c max and T_c min, it is possible to make some assumptions about the way snakes are using the temperature gradient available to them.

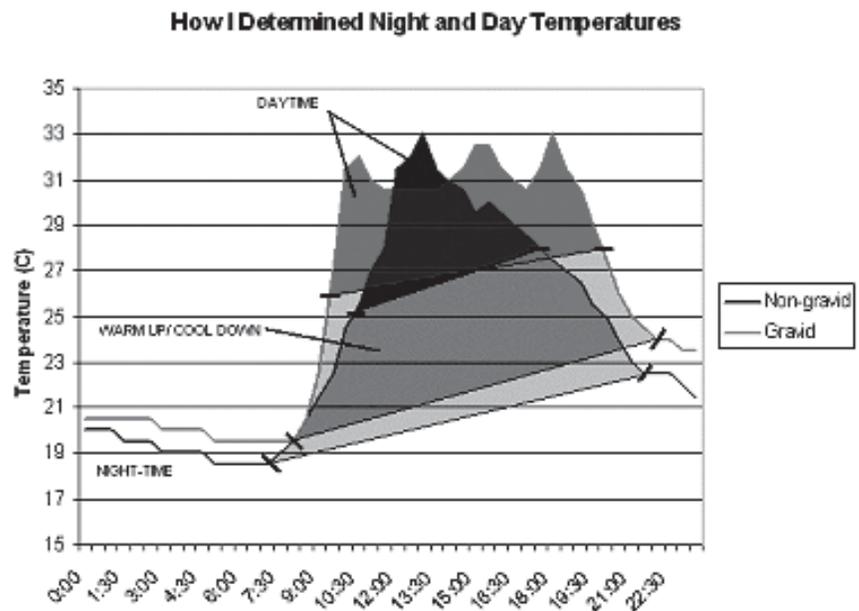


Figure 1. Explanation of how daily temperatures were separated into nighttime and daytime temperatures.

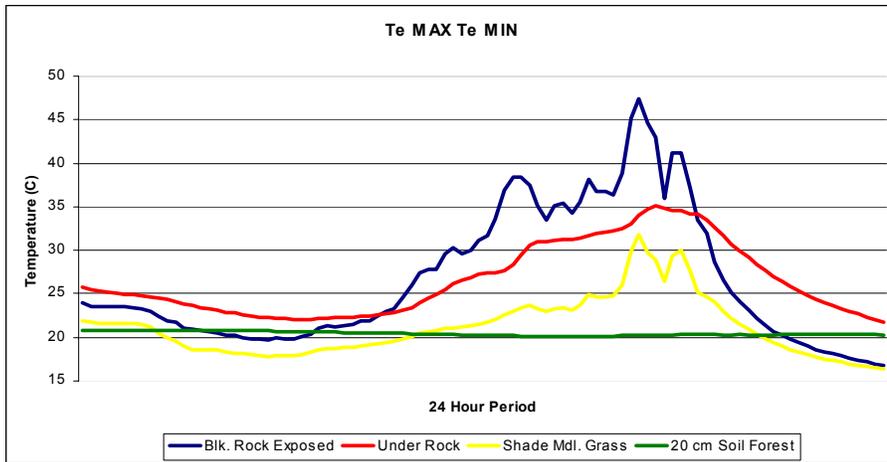


Figure 3. An illustration of how four of the snake model profiles combine to form fluent maximum and minimum temperatures.

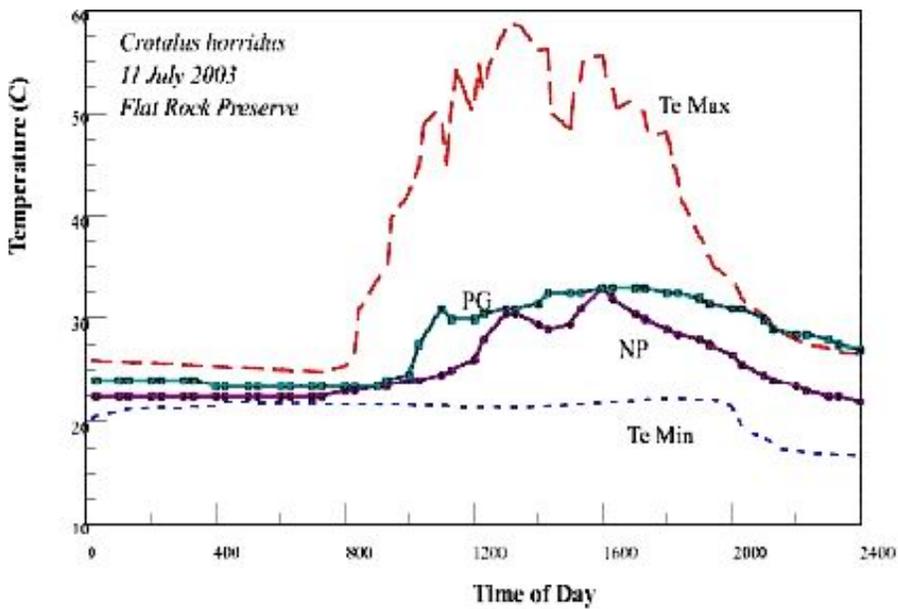


Figure 4. The T_c max and T_c min plotted along with a daily thermal profile of both snakes. As you can see, at ~ 2200 hours the pregnant snakes temperature actually exceeds the predicted T_c max which demon-strates how these models are meant to approximate, not duplicate, what is occurring in nature.

Results

There were 37 days of concurrent data for both snakes that were recorded as body temperatures in degrees (C) every 30 minutes. The mean for the gravid snake was 25.6 with a standard error of 0.087. The non-gravid snake had a mean temperature of 23.4 with a standard error of 0.11.

Snake	n	\bar{x} (SEM)	Range
1 NP	37	23.4(0.087)	16.5-35.0
2 PG	37	25.6(0.11)	12.5-34.5

Table 1. Mean body temperatures including standard error of the mean and ranges for gravid and non-gravid female timber rattlesnakes over 37 concurrent days.

While the gravid snake's mean temperatures for both night and day were higher (\bar{x} night $T_b = 22.1^\circ\text{C}$, gravid; \bar{x} night $T_b = 20.8^\circ\text{C}$, non-gravid; \bar{x} day $T_b = 30.1^\circ\text{C}$, gravid; \bar{x} day $T_b = 27.6^\circ\text{C}$, non-gravid), the daytime mean showed the greatest separation at 2.5°C .

The amount of time spent actively thermoregulating also appears to be affected by pregnancy. The data was separated into the three thermal groups and analyzed as a percentage of total time in the study. The gravid snake spent a greater portion of her time maintaining the higher daytime temperatures and less time in both warm up/cool down and nighttime patterns than the non-gravid female. This was due to both an earlier egress to begin thermo regulating and a more rapid increase in body temperature most likely due to exposing more surface area to more direct sunlight, but the short wave radiation readings from the weather station showed that even on days with very little short wave emissions, the gravid snake was able to consistently maintain a higher body temperature.

Discussion

This was a preliminary investigation into the behavioral thermoregulation of timber rattlesnakes as a function of pregnancy. Pregnancy appears to influence the thermoregulatory pattern of rattlesnakes in many ways including mean body temperature and aspects of behavioral thermoregulation. By compromising between physiological needs and the optimal temperature for embryo development (Beuchat, 1986), the pregnant snake was able to provide her offspring with increased fitness that should translate into increased survivorship (Burger, 1989). The benefits of this increased fitness must be weighed against the costs associated with providing it (Hutchison and Tu, 1994). The pregnant snake must alter her normal behavior, and natural selection would only favor traits that facilitate this behavioral shift if they resulted in an increase in fecundity.

The timber rattlesnake has nearly been eliminated in many areas where it once was plentiful, and man has been

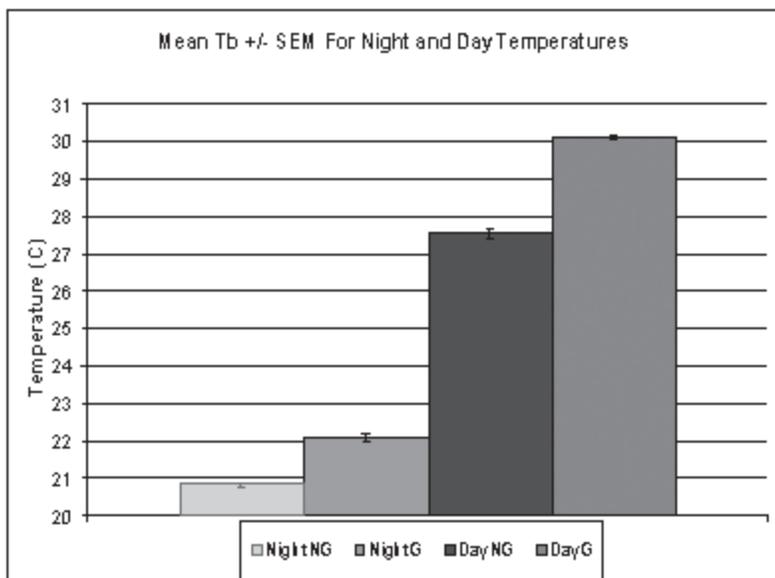


Figure 5. Average night and daytime temperatures for both gravid and non-gravid rattlesnakes.

the driving force in this (Brown, 1993). Fear, profit, sport, and urban sprawl are just a few of the motivations that have caused mankind to have such a negative impact on this reclusive species. The relatively low birth numbers and late age of sexual maturity make timbers especially susceptible to the pressures of over harvesting and wanton killing (Brown, 1992). With increased habitat fragmentation and the encroachment of housing construction into areas that have traditionally served as hibernacula and birthing sites, it is increasingly important for the pregnant females to be able to provide offspring with any increase in fitness possible.

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