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EDITOR'S INTRODUCTION

The Wagner Forum for Undergraduate Research is an interdisciplinary journal which provides an arena where students can publish their research. Papers are reviewed with respect to their intellectual merit and scope of contribution to a given field. To enhance readability the journal is typically subdivided into three sections entitled *The Natural Sciences*, *The Social Sciences* and *Critical Essays*. The first two of these sections are limited to papers and abstracts dealing with scientific investigations (experimental, theoretical and empirical). The third section is reserved for speculative papers based on the scholarly review and critical examination of previous works.

As has become a tradition, the fall edition commences with a reprint of the abstracts of papers and posters presented at the Eastern Colleges Science Conference. The interested reader will then encounter a research endeavor aimed at determining whether exposure to low frequency oscillating electromagnetic fields (EMFs) can be used to excite a hazardous response in the microorganism *Staphylococcus aureus*. Moving on, one will explore the increased prevalence of cardiovascular disease in low socioeconomic populations and see how nursing initiatives made through the Wagner College Port Richmond Partnership are tackling this problem in one local community. This is followed by an investigation into the Dakota Access Pipeline that calls to attention often overlooked details. Be sure not to miss factors influencing school readiness and an examination of the therapeutic effects of adult focused therapy for survivors of domestic violence and human trafficking.

Read on and enjoy!

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**Section I: Eastern Colleges
Science Conference**

The Effect of *Listeria Monocytogenes* on Amyloid Plaques Build Up and Neurofibrillary Tangle Formation in the Brains of Adult Zebrafish (*Danio rerio*)¹

Monica Cipriani (Microbiology)

In this experiment, adult zebrafish were infected with *L. monocytogenes* to test its role in neurodegeneration of brain tissue and build-up of both amyloid beta plaques and neurofibrillary tangles. Following infection, the zebrafish were taken, anesthetized, and brains were extracted at 24h, 96h, and 7 days. The Gallyas silver staining technique was used to detect both neuropathological abnormalities after each brain was sectioned using ultramicrotomy. Upon observation, an abundance of neurofibrillary tangles were seen in the brain sections of each zebrafish however no amyloid plaques were seen in any of the brain sections taken.

Traumatic Brain Injury as a Disorder of the Connectome²

Merrysha Castillo (Biology), Dr. Nikolaos Ziogas³, Dr. Vassilis E. Koliatsos⁴

Traumatic brain injury (TBI) is associated with a variety of primary and secondary lesions such as contusions and diffuse axonal injury. Although diffuse axonal injury is by definition a network problem contusions are viewed strictly as a focal pathology without the consideration of related connections and circuits. Post-mortem human brains with orbitofrontal contusions or diffuse axonal injury were examined immunohistochemically to detect the presence of phosphorylated epitopes of heavy and medium-molecular weight neurofilament proteins (NF-H/NF-M). Damaged neurons in interconnected neocortical, limbic, and subcortical areas were marked. Large numbers of phosphorylated NF-H/NF-M-immunoreactive, SMI 310 (+) neuronal cell bodies were found in the ventral group of the lateral nucleus, specifically in the ventral anterior nucleus and ventral lateral nucleus of thalamus for each contusion case. Neuronal cell bodies with p-NF (+) were also identified in the hippocampus, but fewer were identified. In contrast, frontal sections did not show

¹ Research conducted under the direction of Dr. Christopher Corbo.

² Received an award of excellence for outstanding presentation.

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any p-NF (+) cell bodies. In the diffuse axonal injury case, frontal sections showed robust p-NF (+) cells throughout the cortex. After orbitofrontal contusion, transneuronal degeneration is profound in the thalamus, but less so in the hippocampus, and none in the interconnected frontal cortex. These investigations lay the foundations for elucidation of the neuropathology of traumatic contusions and diffuse axonal injury on the basis of impaired neocortical and limbic connectivity, and promote understanding of behavioral and cognitive changes in patients with TBI.

Fluoride in Groundwater in South Eastern Bangladesh

Regina Ismaili (Chemistry), Prof. Sarah Alauddin (Chemistry and Physics) and Dr. Mohammad Alauddin (Chemistry and Physics)

Fluoride in drinking water in excess of 1.5 ppm poses a health hazard. In Bangladesh flood plains and part of table lands containing Holocene sediments are rich in arsenic bearing minerals while the hill tracts containing Pliocene sandstone are not rich in arsenic minerals but may be rich in fluoride, another toxic element. Our recent study involving analysis of about 100 groundwater samples from hill tracts area revealed that 20 percent of samples have fluoride (F-) levels much higher than the World Health Organization (WHO) guideline value. Through our current study we are trying to characterize the fluoride bearing mineral and understand the mechanism of mobilization of fluoride from these minerals.

Grafting Organic Molecules to Metal Surfaces through the Reduction of Aryl Diazonium Salts

Helema Tayeh (Chemistry), Anna Cios (Chemistry) and Dr. Racquel C. DeCicco (Chemistry and Physics)

Energy demands are increasing worldwide and the effects on the environment cannot be overlooked. Recent developments in energy storage have involved the use of conducting polymers as a means of electron transfer. Some applications of these conducting polymers include lightweight and rechargeable batteries, light emitting diodes, sensors and molecular electronics, among others. The reduction of diazonium salts is one of the known methods for chemically modifying electrode surfaces. This is achieved by grafting molecular chains onto the surface of materials through covalent bonding. Various monomers can be employed to provide distinctive electronic properties. We explored the reaction of various aromatic amines with nickel foam surfaces via diazonium chemistry. The reduction of aryl diazonium salts allows for the grafting of different aryl groups on the metal surface. In the

first step, several aromatic amines were added to an acidic medium, generating the diazonium salt. Grafting was then achieved by simply dipping the metal into the salt solution. Samples were analyzed using Scanning Electron Microscopy, with 4-bromoaniline yielding the most significant visual surface change. Sonication served as an indirect method of assessing surface modification, as the interaction between diazonium derived films and metallic substrates are stable enough to withstand ultrasonic treatment, boiling in solvents, and prolonged exposure to various temperature conditions.

In Vitro Antibacterial Activity of Essential Oils on *Escherichia coli*, *Pseudomonas aeruginosa*, and *Staphylococcus aureus*⁵

Alexis Dispensa (Microbiology)

The oils of basil, cinnamon and oregano were tested against *Escherichia coli*, *Pseudomonas aeruginosa* and *Staphylococcus aureus* using agar-well diffusion, broth dilution and agar dilution methods to assess antibacterial activity. All extracts exhibited antibacterial activity, with oregano having the most potent bactericidal properties followed by cinnamon and basil having similar effects based on minimum inhibitory concentration and minimum lethal concentration values.

Computational Investigation of the Pyrolysis of Polyethylene⁶

Lejla Bolevic (Chemistry) and Domenick Palmieri (Chemistry)

Knowledge of pyrolysis is crucial for the understanding of the chemistry behind polymer combustion and flammability of plastics, which is vital to the scientific contributions toward fire safety. Polyethylene, being the most common plastic, has been most frequently involved in various kinetic studies consisting of different elementary reactions. Such chemical processes have achieved considerable success in recent studies. Computational research has been conducted on the pyrolysis of polyethylene with both methyl end groups as well as CH₂ radical end groups. Pyrolysis is the dissociation of bonds at high temperatures in the absence of oxygen. However, the temperatures are high enough to supply the energy needed to separate the bonds. We plan to computationally investigate the dissociation of various polyethylene chains at multiple temperatures to study the dissociation of the chains themselves. The dissociation of C-C bonds in various polyethylene chains were studied using reactive molecular dynamics simulations in vacuum. Three types of polyethylene chains were simulated under both constant density and constant pressure. These chains consisted of 500 molecules of PE-1 (ethane), 250

⁵ Research conducted under the direction of Dr. Kathleen Bobbitt.

⁶ Research conducted under the direction of Dr. Arun Sharma.

molecules of PE-2 (butane), and 200 molecules of PE-2.5 (pentane). These polyethylene chains ended in methyl groups rather than leaving the terminal carbon as a radical. We will report rate constants and mechanistic details for the pyrolysis of molecules under investigation.

Detection of a MET Transcript in the Flatworm *Girardia dorocephala*

Theresa Mustacchio (Biology) and Dr. Jonathan Blaize (Biological Sciences)

Regeneration is a multi-faceted process by which organisms recruit stem cells to repair or replace compromised tissue. In humans this process is limited, however, planaria have the ability to recover from as little as 1/300 of their body. The proto-oncogene MET is involved in cell proliferation, motility and growth in mammalian tissue capable of self-repair, though a homolog has not yet been identified in flatworms. Our preliminary data suggest that a protein homolog of MET is expressed by *Girardia dorocephala* and new evidence of a mRNA homolog in the same species corroborates this finding.

Characterizing the Role of O-GlcNAcylation in Cardiomyopathy: Constructing a Transgenic Mouse Model

Anthony Tucker-Bartley(Biology), Dr. Olurotimi Mesubi⁷, Dr. Mark Anderson⁸

Cardiac disease is currently one of the leading causes of mortality in the United States. The onset and proliferation of cardiomyopathy is influenced by the co-morbidity of disease such as diabetes. Prior research suggests that O-GlcNAcylation, a form of glycosylation, is increased in individuals who suffer from diabetes. The two enzymes controlling this process, O-GlcNAc Transferase (OGT) and O-GlcNAcase (OGA) have become targets of genetic engineering in order to study the relationship between altered O-GlcNAcylation and the emergence of disease. This paper describes the process of Mark Anderson's research group at Johns Hopkins University School of Medicine cloning the human variant of OGT and OGA into a mouse expression vector with the ultimately goal of developing a transgenic mouse to study in vivo dysregulation of O-GlcNAcylation. The Anderson lab developed two unique plasmid constructs of OGT and OGA containing a Myc epitope tag and His epitope tag respectively to subsequently measure gene expression. Due to their

⁷ Basic Science Institute, Johns Hopkins University School of Medicine, Baltimore, MD, 21205.

⁸ Basic Science Institute, Johns Hopkins University School of Medicine, Baltimore, MD, 21205.

interest in heart related diseases, the Anderson Lab aimed to localized gene expression to cardiac specific tissue by cloning both genes into their own mouse alpha myosin heavy chain expression vector. Successful creation of the two constructs was followed by external submission of each vector for microinjection into embryonic cells.

The Behavioral Effects of Caffeine on Zebrafish (*Danio rerio*)⁹

Michelle DeTomaso (Biology)

Caffeine activates dopamine by acting as an antagonist on adenosine receptors and affects behavior by increasing locomotion indirectly through this mechanism. Caffeine affects zebrafish (*Danio rerio*) in various ways, such as increasing latency to explore the top of the tank, reduced time on top of the tank, erratic swimming and increased freezing time. This study aimed to test adult zebrafish under an acute condition of caffeine exposure. Each fish was tested for forty seconds in a 0.008% concentration of caffeine or a control (no caffeine). Their activity levels were quantified by counting the number of lines crossed on a grid using digital videos. There was a significant difference between the control and the treatment groups. The number of times crossed over for the treatment group ranged from 0-65 while the control varied from 23-110. The treatment group had three trials where the zebrafish crossed zero lines, which does not support the hypothesis that the zebrafish would have more erratic and active behavior. Other studies have tested varying concentrations of caffeine which had a more dramatic result. We will also test a higher concentration (8%). The concentration of the caffeine along with the differences in anxiety levels between wild type and mutant strains may affect the data.

Gallyas Staining Method Used to Detect the Presence of Neurofibrillary Tangles and Beta Amyloid Plaques After Traumatic Brain Injury in Adult Zebrafish (*Danio rerio*)¹⁰

Nicole Bell (Microbiology) and Dr. Christopher Corbo (Biological Sciences)

Previous work has focused on detection and documentation of cell survival, migration and reorganization after brain injury and the proliferation of the embryoid-like structures within the optic tectum explants. The goal of this study was to determine the presence of neurofibrillary tangles and beta amyloid plaques after traumatic brain injury is induced. It

⁹ Research conducted under the direction of Dr. Brian Palestis

¹⁰ Received an award of excellence for outstanding presentation.

has been shown that brain damage makes patients more prone to various forms of dementia, which itself is often linked to the presence of neurofibrillary tangles and amyloid beta. The presence of neurofibrillary tangles and beta amyloid plaques were identified in surviving zebrafish optic tectum maintained in organotypic culture. Morphological data was collected after one day, four day and seven days in culture. The detection of these pathologies was made using Gallyas silver staining method and thioflavin t fluorescence microscopy. This allows for the confirmation of neurofibrillary tangles and beta amyloid plaque presence. Additionally, the presence of these neuropathologies were analyzed using transmission electron microscopy.

Section II:
The Natural Sciences

The Effect of Oscillating Electromagnetic Fields on the Microorganism *Staphylococcus aureus*

Shannon Cedeno (Microbiology)¹

This research aims to determine whether the exposure to low frequency oscillating electromagnetic fields (EMFs) can be used to excite a hazardous response in the microorganism *Staphylococcus aureus*. The microorganism was exposed to the EMFs at 25 Hz, 50 Hz, 100 Hz, 150 Hz, and 250 Hz, to potentially initiate a resonant response delivering enough energy to the bacteria to create detrimental electrochemical imbalances within the cell. Colony forming units per mL (CFU/mL) of exposed and control cultures were determined for each frequency. The fields that had the most effect on the organism were those oscillating at the frequencies 25 Hz and 250 Hz. At 25 Hz, *S. aureus*' growth was diminished while at 250 Hz the organism's growth was stimulated. Microscopic analysis showed potential cell wall disruption within the organisms at both frequencies. Currently the effects on the *S. aureus* can only be hypothesized, and further research is needed.

I. Introduction

Characteristics of *Staphylococcus aureus*

Staphylococcus aureus is a gram positive, nonmotile, non-spore forming, facultative anaerobe which belongs to the *Micrococcaceae* family (Granato et al. 2014). *Micrococcaceae* tend to not be pathogenic to humans but are often problematic within the food industry. *Staphylococcus aureus*, when in comparison to other *Staphylococcus* species, including *Staphylococcus epidermidis*, and *Staphylococcus saprophyticus*, is the most virulent (Granato et al., 2014). The microbe is coagulase positive, meaning it produces hemolysins, or proteins, capable of coagulating human serum (Evans, 2013). While researchers remain unsure why the organism has the capability to coagulate blood, the microorganism can be easily determined from the other *Staphylococcus* species because of this characteristic (Evans, 2013). *Staphylococcus aureus* are cocci that are often seen in grape-like, cluster formations. From an epidemiological standpoint, *S.*

¹ Written under the direction of Dr. Kathleen Bobbitt and Dr. Gregory Falabella in partial fulfillment of the Senior Program requirements.

aureus survives clinically undetected within 30% of the population, belonging within the normal flora of the host's epidermis and nasal cavity (Tong, et. al, 2015). Being an opportunistic pathogen, the once harmless organism can become pathogenic under the appropriate conditions.

Staphylococcus aureus is often isolated using the selective and differential media, mannitol salt agar. The agar typically consists of 7.5 % NaCl, mannitol, and the indicator phenol red, for the isolation and identification of most *S. aureus* strains (Granato et al., 2014). With the presence of *S. aureus*, as opposed to other *Staphylococcal* species, the once red agar turns yellow in response to the fermentation of mannitol (Granato et al., 2014). Because of the fermentation of mannitol, an acidic byproduct is formed, causing a change in pH indicated by the phenol red, which in turn changes the color of the agar to yellow (Granto et al., 2014).

Virulence Factors of *Staphylococcus aureus*

Staphylococcus aureus produces various toxins and enzymes that cause harm to the infected host. Strains of *S. aureus* expel poisonous proteins such as enterotoxins that are extremely harmful to the host (Granato et al., 2014). Enterotoxin, if found in contaminated food, results in the toxic effect of nausea, vomiting and diarrhea, which is the result of severe gastroenteritis or staphylococcal food poisoning (Granato et al., 2014). Through past analysis of the organism, it was determined that specific strains of *S. aureus* produce enterotoxins A and D, both of which are resistant to the gastrointestinal acid of human stomachs (Evans, 2013). Another enterotoxin, enterotoxin F, or TSST-1, has been associated with thousands of cases of Toxic Shock Syndrome, the disease which is often seen in correlation with menstruating women and super absorbent tampons (Granato et al., 2014). *Staphylococcus aureus*, also has the capability of producing hyaluronidase, an enzyme which degrades hyaluronic acid, allowing for the movement throughout connective tissue and the further spread of infection (Granato et al., 2014).

The opportunistic pathogen is commonly seen within the population, resulting in minor skin infections such as pimples, boils, and highly contagious rashes such as impetigo (Granato et al., 2014). With the combination of both enzymes and toxins, *S. aureus* has the capability to cause severe harm to its host. Some serious systemic infections that are caused by *S. aureus* are pneumonia, meningitis and endocarditis, each of which can result in death (Granato et al., 2014). *Staphylococcus aureus* is an organism that should not be left untreated because of the serious infections that can result from the once harmless opportunistic pathogen.

Prevalence in Nosocomial and Community Acquired Infections

When the host's immune system is compromised, *Staphylococcus aureus* can cause many infections to both the skin and other organs which is problematic within both health care and community settings. Nosocomial, or healthcare acquired, outbreaks commonly related to *S. aureus* infections have been reported in both acute and chronic care settings (Evans, 2013). High risk areas within the hospital setting include areas in which patients are extremely immunocompromised. These areas include burn units, nurseries, dialysis units, intensive care units, transplantation units, and oncology units (Evans, 2013). Nosocomial infections are also a result of the host's response to normal flora. Because of the suppression of the host's innate immune response, changes within the anatomical barriers, such as breaking of skin from surgical or accidental trauma, which once protected the host from infection now becomes compromised (Evans, 2013). As stated, immunosuppressed patients are at high risk of *S. aureus* infections because hospital staff is also at fault for nosocomial outbreaks. Because of insufficient handwashing and proper donning and doffing techniques by clinical professionals between patients, the organism is easily transferred to immunocompromised patients within the healthcare facility.

Nosocomial *Staphylococcus aureus* infections have been an issue for decades, yet community acquired *S. aureus* infections have recently become problematic especially within urban, low income areas. A retrospective case study done by Huang et al. (2006), focused on community acquired strains of *S. aureus*. It was concluded that community acquired *S. aureus* is predominantly associated with skin and soft tissue infections (Huang et al., 2006). The easily transferable infection is often seen in intravenous drug users, a reservoir of community acquired *S. aureus*, and can be transmitted within the community through close contact (Huang et al., 2006). Other increased risk factors of community acquired infections of *S. aureus* are typically associated with poor hygiene, age, and the HIV-infected population (Tong et al., 2015).

Staphylococcus aureus infections and Antibiotic Resistance

Throughout the years, outbreaks and epidemics of *Staphylococcus aureus* have been witnessed in diseases such as staphylococcal diarrhea and staphylococcal pneumonia (Granato et al., 2014). Currently the most prevalent issue with *S. aureus* today is methicillin resistant *Staphylococcus aureus* (MRSA) (Evans, 2013). Because of the over-prescription of antibiotics, strains of *S. aureus* have been able to adapt and

become resistant to the once effective form of treatment (Evans, 2013). While new antibiotics are constantly in development, organisms such as *S. aureus* have the ability to become resistant to multiple microbial agents (Granato et al., 2014). Methicillin resistant *Staphylococcus aureus* (MRSA) is thought to be most commonly associated with healthcare settings, but emerging strains are being isolated within the community as well. Both nosocomial and community acquired strains of MRSA are slightly different. Community acquired MRSA is currently more susceptible to antibiotics in comparison to nosocomial strains, but resistance continues to rise (Granato et al., 2014).

To this day, nosocomial MRSA, a globally prevalent issue within hospitals, has been treated with the antibiotic vancomycin (Granato et al., 2014). Recent studies show that the once susceptible strain of MRSA has become resistant to its past form of treatment (Granato et al., 2014). Vancomycin resistant *Staphylococcus aureus* (VRSA) is now another complication with treating *S. aureus* infections. Currently, antibiotic resistance is a serious topic in both microbiology and healthcare. While the production of antibiotics continue to thrive, microorganisms continue to become resistant. This distressing concern has prompted clinicians and researchers to study and promote new methods for eliminating microorganisms. This research studies the effects of exposure to oscillating electromagnetic fields in hope to find a potential new method for treating *S. aureus* infections.

Electromagnetic Fields

Continuous advancements in microbiology are being constantly discovered and manufactured to fight the ongoing issue of antibiotic resistance. Electromagnetic fields have been used in previous research to stimulate or inhibit the growth of prokaryotic cells. Studies show that when an external electromagnetic field is applied to cells, it generates a cellular response (Panagopoulos et al., 2000). The idea behind this research is a hypothesis entitled electromagnetic pollution and is seen constantly within our society (Panagopoulos et al., 2000). The hypothesis is often seen throughout media and news coverage, concerning the possible health effects caused by the exposure of electromagnetic fields radiating from electronic devices such as cell phones and transmission lines (Garip et al., 2011). Electromagnetic pollution suggests that oscillating electric fields will exert a force which effects the permeability of the ionic channels within the membrane (Fojit et al., 2003). The exposure from the oscillating electromagnetic fields would potentially exert upon the organism forced vibrations, based

upon the specificity of its natural frequency ultimately leading to detrimental electrochemical imbalances necessary for survival (Panagopoulos et al., 2000).

Resonance

The atoms and molecules of all objects above absolute zero are in constant motion. The frequency at which they oscillate in the absence of external forces is known as the natural frequency. When energy is delivered to a system by a non-steady, external force the response depends upon the relationship between the driving frequency and the natural frequency. A succession of small impulses applied close to the natural frequency can have a significant effect (Halliday and Resnick, 1977).

Ultimately, the goal of exposure to the oscillating wave is to promote forced vibrations up to the critical value within the cell, resulting in false signaling of transmembrane channels (Fojt et al., 2003). The free ion gradient that cells generate is fundamental for metabolic processes within the cell. With improper gradients produced in response to the oscillations, the cell will ultimately die (Bayir et al., 2013). The free ions located on both sides of the plasma membrane and the inner cell membranes, including K^+ , Na^+ , Cl^- and Ca^{2+} control the cell volume by regulating the osmotic pressure within the cell and other metabolic processes (Panagopoulos et al., 2000). Hypotheses promote the idea that electromagnetic fields will stimulate ion influx through the cell membrane generating a potential difference, or voltage, between both sides of the membrane (Panagopoulos et al., 2000). Past research also suggests that the exposure to electromagnetic fields could potentially enhance free radical production, promote oxidative stress upon the cell, and genetically mutate the microorganisms' DNA (Bayir et al., 2013).

Previous Research of Electric Fields on Cells

The use of electromagnetic fields in microbiology made an entrance into scientific journals in 1961 with the work of biologist, Barnett Rosenberg (Kennesaw, 2008). His area of study focused on the in-depth process of cell division and mitosis. Rosenberg hypothesized that the shape of the cell during mitosis was due to an induced dipole (Kennesaw, 2008). Rosenberg expanded upon his theory by exposing the dipole to electromagnetic radiation of a resonant frequency, in order to observe the effects of the cell after absorption (Kennesaw, 2008). Because of his interest in mitosis, Rosenberg's goal was to focus on eukaryotic cells. When testing the continuous exposure apparatus

that was created to expose the cells to an external electromagnetic field, Rosenberg chose to use the prokaryote *Escherichia coli*. (Kennesaw, 2008).

The apparatus consisted of two chambers in which the *Escherichia coli* was placed and stored at a controlled temperature of 37° C. After determining the steady state of the continuous culture (approximately 10 days after inoculation), Rosenberg exposed the culture to an audio oscillator which provided the sinusoidal voltages, which were amplified by an amplifier to create the desired field within the chambers (Kennesaw, 2008). After one hour of exposure to the oscillating electromagnetic field, the turbidity decreased within the culture, and after two hours, the turbidity was almost completely gone (Kennesaw, 2008). Once the voltage was turned off, after eight hours, the turbidity levels returned back to their original density (Kennesaw, 2008).

Since 1961, there have been many advancements and research initiatives within the field of biophysics, specifically with the idea of using oscillating electromagnetic fields for its antimicrobial properties. Some successful examples include Fojt et al. (2004) and Garip et al. (2011). Fojt et al. (2004) observed decreased growth in three organisms, *Escherichia coli*, *Leclercia adecarboxylata*, and *Staphylococcus aureus* when exposed to an oscillating electromagnetic field at 50Hz. Garip et al. (2011) showed that when exposed to extremely low frequency electromagnetic fields (ELF-EMF), both the gram positive and gram negative bacterial growth rates were slowed and morphological changes were ensued in comparison to the control cultures. When analyzed microscopy via transmission electron microscopy, morphological changes consisted of disintegration of the cell wall, expulsion of the cytoplasm from the cell, clumping of the cytoplasm, and the overall standard shape of the microorganism changed (Garip et al., 2011). By exposing *S. aureus* to similar ELF-EMF, this research aims to find a resonant frequency which will excite a hazardous response within *S. aureus* to ultimately diminish the ongoing clinical issue and relevance of antibiotic resistance.

Objective

The objective of this research was to expose the microorganism *Staphylococcus aureus* to extremely low frequency oscillating electromagnetic fields (EMFs) to excite a hazardous response within the cell. Exposure to the EMFs would potentially initiate a resonant response delivering enough energy to the bacteria to create detrimental electrochemical imbalances while leaving the surroundings unaffected. Currently, targeted frequencies that could excite a resonant response in *S. aureus* are unknown, but this research should shed light on potentially hazardous frequencies. Electromagnetic

control of *S. aureus* is the first step towards a potential alternative to the pharmacological approach and the need for antibiotics.

II. Materials and Methods

Collection and Storage of *Staphylococcus Aureus*

The microorganism, *Staphylococcus aureus* was purchased from DIFCO. The organism used was *Staphylococcus aureus* Bactrol Disks, ATCC #25923, and was retrieved from the Wagner College Department of Biological Sciences. The disks were stored in a controlled environment at 2- 8 ° C. The microorganism was placed into nutrient broth and incubated at 37 ° C. Once cultured, it was plated directly on mannitol salt agar and incubated at 37° C for 24 hours. When visible colonies were formed, the plate was sealed with parafilm and placed in the refrigerator for storage and continued use.

Mannitol Salt Agar

Carolina® mannitol salt (lot#160602021906) was made for the selective isolation and differentiation of *Staphylococcus aureus*. The broth powder consisted of approximately 5.0 g of enzymatic digest of casein, 5.0 g of meat peptone, 1.0 g of beef extract, 75.0 g, 10.0 g of D- mannitol, phenol red, .025 g of sodium salt, and 15.0 g of agar, per 1L of water. The agar was made by suspending 111 g of the medium into 1 L of purified water. The mixture was then heated and stirred until completely dissolved. After, the mixture was then autoclaved on a wet cycle for 15 minutes at 121° C. After sterilization was complete, approximately 20 ml of agar was pour-plated. The mannitol salt agar was used multiple times throughout the experiment, for its major purpose of cultivating *S. aureus*.

Nutrient Broth

Difco™ nutrient broth, Lot number 0089012, was made for the cultivation of *Staphylococcus aureus* for the analysis of its growth phase. The broth powder consisted approximately of 3.0 g of beef extract, and 5.0 g of peptone, per 1L of water. Eight grams of pre-made broth powder were suspended into 1 L of purified water. The mixture was heated and stirred with frequent agitation for approximately five minutes, and boiled for one minute. The broth was then autoclaved on the wet cycle for 15 minutes at 121°C.

Spectrophotometer

The spectrophotometer which determined the optical density within a sample was a Spectronic 20D+ manufactured by ThermoSpectronic. The spectrophotometer was used to determine the growth phases of *Staphylococcus aureus* over time. Specifically, the log phase was desired for experimentation. The reason for determining the log phase for experimentation was to know that the microorganism was at an optimal growth rate with no other reason for potential death, such as nutrient expulsion. Before use, the spectrophotometer was turned on, because it required 15 minutes of warm-up time. The wavelength used was 600 nm.

Approximately 14 minutes after turning on the spectrophotometer, previously isolated *Staphylococcus aureus* was inoculated into a labeled and sterilized nephelo flask filled with 10 ml of nutrient broth, while another sterilized nephelo flask filled with 10 ml of pure nutrient broth acted as a blank. Once the spectrophotometer was ready for use, the wavelength was set to zero. The mode was then switched to absorbance, and the blank nephelo flask was carefully inserted into the spectrophotometer. The 100% T was then set to zero, and the blank was removed. The nephelo flask containing *S. aureus* was inserted, and the optical density reading was recorded. Spectrophotometer readings were taken every two hours and the optical density readings were recorded from 11:30 am until 9:30 pm, and recorded once again at 11:30 am the following day. The spectrophotometer readings were duplicated to ensure accuracy. It was determined, after graphical analysis, that the log phase began approximately eight hours (figure1).

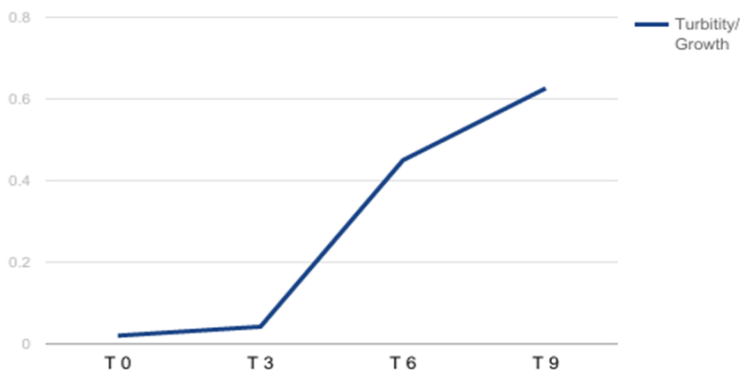


Figure 1: Spectrophotometer readings of *Staphylococcus aureus* over a nine hour period at a 600 nm wavelength.

Mannitol Salt Broth

The HIMEDIA mannitol salt broth (MSB), REF # M383-500G was made as per manufacturer guidelines in order to isolate *Staphylococcus aureus*. The broth powder consisted of 10 g of protease peptone, 1 g of meat extract B#, 75 g of sodium chloride, 10 g of D-mannitol, and 0.025 g of phenol red. The broth was made by suspending 96.02 g in 1000 ml of distilled water. The broth was then heated and stirred for approximately 5 minutes, until completely dissolved. After heating, 10 ml of broth was pipetted into small test tubes. The filled tubes were then autoclaved for 15 minutes on a wet cycle, at 121° C, to ensure sterilization. The sterilized MSB tubes were then stored capped for future experimental use. At the start of experimentation, a colony from the stored, refrigerated MSA plate harboring *S. aureus* was picked up via an inoculating loop and placed into two mannitol salt broth test tubes - one labeled test and one labeled control, and placed in the incubator set at 37° C. After eight hours, the tubes were removed from the incubator and placed into the oscillating electromagnetic field.

Oscillating Electrical Field

A Goldstar FG-2002C Frequency Generator² (figure 2) was used to initiate a sinusoidally varying voltage output in the frequency range 25-250 Hz. The signal was then amplified using a seven watt oscillator amplifier (figure 3) purchased from Sargent Welch (item#CP36891-10). Next the voltage was stepped up using a transformer made up of a 200-turn coil and a 3200-turn coil placed on a U-shaped iron core (figure 4). These items came from the SF-8617 complete coil set from Pasco Scientific.



Figure 2: The function generator used to initiate the sinusoidally varying voltage.

² Note that the GoldStar corporate name was changed to LG Electronics in 1995.



Figure 3: The oscillator amplifier used to boost the signal.

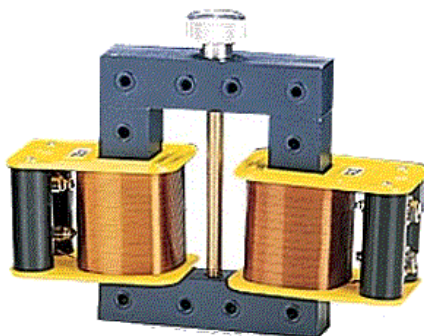


Figure 4: The transformer that further stepped up the voltage.

The enhanced voltage was sent from the transformer to two steel 175 cm² parallel plates separated by 4 cm to create the oscillating field. The plate capacitor used was manufactured by American 3B scientific (item#CP-U30040). It proved quite useful as it kept the plates aligned and allowed one to slide the plates for easy loading and unloading (figure 5).



Figure 5: The parallel plates used to create the field.

A handcrafted wooden apparatus was used to hold the test tubes containing the specimen stably in the field. To keep the bacteria at a constant 37° C during the experiment, the parallel plate apparatus was placed in a VWR 15000E Science Education incubator (figures 6 and 7) manufactured by Sargent-Welch (item# WLS43668-20).



Figure 6: The incubator

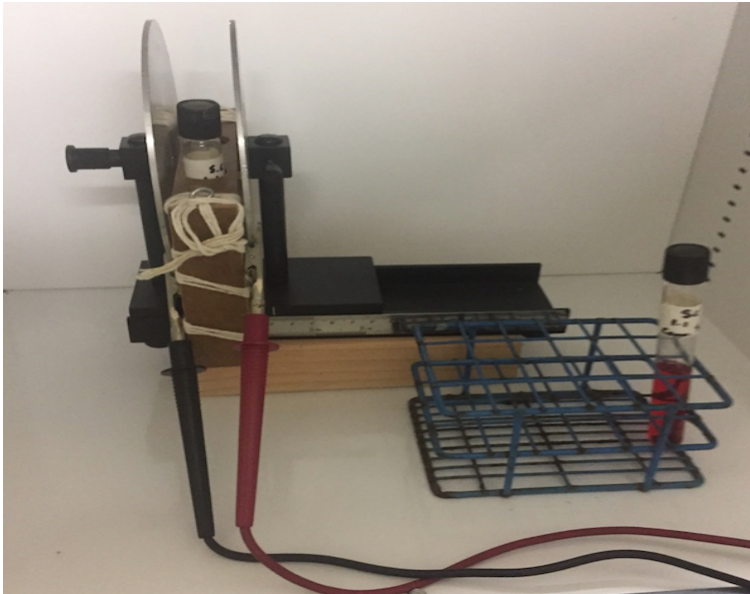


Figure 7: Plate capacitor with the test tube stabilizing apparatus within the incubator before initiating testing. See above with MSB tubes, one being tested within the field and one acting as a control.

Calibration and Testing of the Electronic Equipment

The incubator has a graduated manual dial marked with 10 major and 50 minor increments. The appropriate temperature for optimal growth of *Staphylococcus aureus*, 37° C, was achieved when the dial was placed on setting five. Daily testing with a real time digital interface (Pasco Xplorer GLX PS-2002) and stainless steel probe connected to a temperature sensor (Pasco PS-2125), for data acquisition, ensured a stable temperature. The wires attaching the plate apparatus to the power source amplifier and transformer were sealed within the incubator through the suction closure of the incubator.

In order to ensure a desired rms voltage of 80 volts yielding an electric field strength of 2000 V/m, an Edmund Scientific's Dual Range AC Voltmeter was connected to the parallel plates each time before placing them inside the incubator. To obtain confirmation that the voltage was in the form of a true sine wave, the signal from the function generator was sent to an oscilloscope (Pasco Scientific SB-9699).

Exposure to Oscillating Electrical Field

After eight hours, the inoculated MSB tube was removed from the incubator and transferred into the test tube holding apparatus that existed between the parallel plates of the electric field apparatus. The incubator was shut and the function generator was switched on to the appropriate frequency. The frequencies used during experimentation consisted of 25 Hz, 50 Hz, 100 Hz, 150 Hz, 200 Hz, and 250 Hz. After 24 hours, the tubes were removed and plated on mannitol salt agar plates via the serial dilution method. Results were recorded 24 hours after plating.

Serial Dilutions

Both the control and the test MSB tubes were diluted up to 10^{-8} via serial dilutions. Dilutions required sterilized water blanks, eight tubes per MSB tube, totaling 16 test tubes per frequency. Following appropriate aseptic technique, 1 ml of cultivated and exposed MSB was pipetted into 9 ml of sterilized water (10^{-1}). After manually mixing the totaled 10 ml of broth and sterilized water, 1 ml was then taken from the solution and placed in a new sterilized 9 ml water blank (10^{-2}). This process was repeated until the 10^{-8} dilution was reached. After completing the serial dilutions, 1 ml of 10^{-6} , 10^{-7} , and 10^{-8} of both the test and control cultures were individually plated on Mannitol Salt Agar and incubated for 24 hours at 37°C . Colonies were then counted and analyzed for electromagnetic effects. Frequencies with promising results, which included 25 Hz, 50 Hz, and 250 Hz were chosen for further testing. Each promising frequency was tested and plated two more times each, and the average colony forming units per mL (CFUs/mL) were calculated.

Gram Stain and Microscopy

After analyzing plate counts and color changes in the MSB tubes, two frequencies consisting of 25 Hz and 250 Hz were chosen for further analysis. *Staphylococcus aureus* were exposed for 24 hours to the electromagnetic field at both 25 Hz and 250 Hz. Immediately after exposure, the organisms were gram stained and analyzed microscopically with an Olympus BX 40 at 100x magnification. Using the ToupView camera control software on a Windows operating system, pictures were taken of both the control and exposed cultures.

III. Results

Trial 1 Exposure of *Staphylococcus aureus* to the Oscillating Electromagnetic Field at 25 Hz, 50 Hz, 100 Hz, 150 Hz, 200 Hz and 250 Hz

After the exposure of *Staphylococcus aureus* to the electromagnetic field at 25 Hz, 50 Hz, 100 Hz, 150 Hz, 200 Hz, and 250 Hz, the culture was removed from the field, serially diluted, and plated to determine colony forming units per 1 mL (CFU/mL). Based on the colony counts, analysis of the color change in the mannitol salt broth tubes, and a literature search, it was decided to proceed forward with additional trials at 25 Hz, 50 Hz, and 250 Hz. Figure eight shows the first trial results for all the tested frequencies

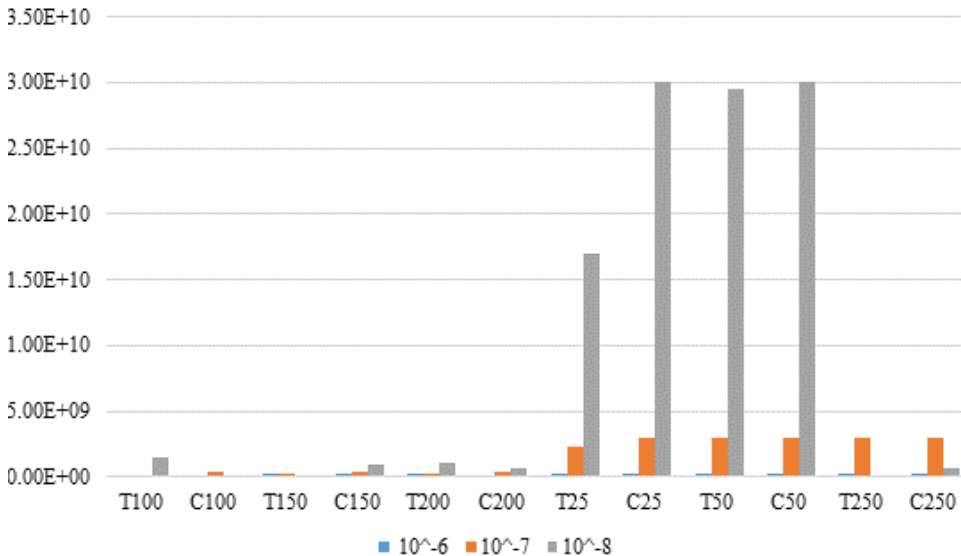


Figure 8: Line graph depicting CFU/mL per plated dilution of the first trial of tested cultures and control cultures of frequencies all tested frequencies.

The exposure of *Staphylococcus aureus* to an oscillating electromagnetic field at 25 Hz showed promising results. It appeared that the growth of the organism was decreased in comparison to the control culture. This favorable result was accompanied with an abnormal indication within the mannitol salt broth tubes. The test culture remained red, an indication that the fermentation of mannitol did not transpire. The control culture turned bright yellow in response to the sugar fermentation, which is a prominent characteristic of *S. aureus*. The aforementioned potential electromagnetic

effects stimulated by the oscillating field at 25 Hz, contributed to the decision to progress into further trials using this frequency.

The effects on *Staphylococcus aureus* during the first trial of using a 50 Hz electromagnetic field yielded unexceptional results. The colony counts were indistinguishable between the first two plated dilutions, both exhibiting greater than 300 colonies each (TNTC). When further diluted (10^{-8}), the test culture showed slightly less growth than the control. Similar colony counts for both the test and control cultures potentially indicated minimal electromagnetic impact on the organism. The use of an oscillating electromagnetic field at 50 Hz to inhibit the growth of *S. aureus* has been noted in multiple research articles, and because of this past success, it was decided to continue trials using this frequency.

Inconclusive results were obtained during the exposure of *Staphylococcus aureus* to the oscillating electromagnetic field at 100 Hz. The control at the 10^{-6} dilution had an abundant amount of growth totaling 160 colonies or 1.6×10^8 CFU/mL while the test sample exhibited 3.6×10^7 CFU/mL. As the dilutions continued, plate counts showed similar amount of growth as depicted in the graph, but this varied unfavorably when diluted further. At the 10^{-8} dilution, the CFU/ml was much greater for the test (1.5×10^9 CFU/mL) than the control (2.0×10^8 CFU/mL), rendering the results inconclusive. The oscillating field exposure at the frequency of 150 Hz, yielded initial dilutions (10^{-6} and 10^{-7}) with similar colony counts for both the test and control cultures. As the dilutions continued, the test culture expressed no visible growth at the final dilution, while the control had an abundant amount of growth totaling 9.0×10^8 CFU/mL. The results for this frequency remain inconclusive because of the inconsistent final dilution of the test culture.

Post exposure to the electromagnetic field oscillating at 200 Hz, the test culture exhibited an abundant amount of growth in comparison to the control culture. After colony counts were determined, the test culture exhibited 2.7×10^8 CFU/mL, 2.7×10^8 CFU/mL, and 1.1×10^9 CFU/mL at each plated dilution, while the control culture had 6.2×10^7 CFU/mL, 3.9×10^8 CFU/mL, and 7.0×10^9 CFU/mL per plated dilution. When the frequency increased to 250 Hz, results indicated the potential inhibition growth. Similar to what was seen at the 25 Hz trial, mannitol fermentation was inhibited in the test culture. The aforementioned potential electromagnetic effects stimulated by the oscillating field at 250 Hz, contributed to the decision to progress into further trials using this frequency.

The inconsistencies and unfavorable outcomes associated with the 100Hz, 150Hz, and 200Hz trials lead to the decision to proceed further with trials using an oscillating electromagnetic field at 25 Hz, 50 Hz, and 250 Hz.

Three Trials of Exposure to the Oscillating Electric field at 25 Hz

As previously stated, when cultures were exposed to the electromagnetic field oscillating at 25 Hz, the test cultures lacked the ability to ferment mannitol within the broth tubes, ultimately indicated through the unchanged pH (Figure 9). The averaged test cultures post exposure to the field oscillating at 25 Hz, indicate potential electromagnetic control on the organism. The test cultures grew less than the control (Figure 10), with results consisting of 2.12×10^8 vs. 2.45×10^8 , 1.30×10^9 vs 2.03×10^9 , 6.53×10^9 vs 1.46×10^{10} . For visual analysis, figure 11 shows the diluted test and control cultures from the second trial plated on mannitol salt agar. The diluted control culture exhibits an abundant amount of growth in comparison to the test culture, which is expressed through the yellowing of the mannitol salt agar.

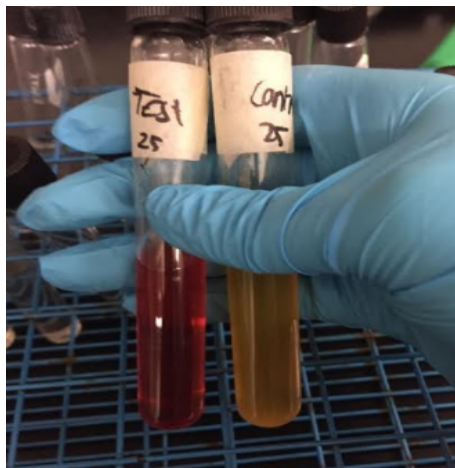


Figure 9: 25 Hz exposed culture did not exhibit a color change, a key indicator of *Staphylococcus aureus*' capability of mannitol fermentation

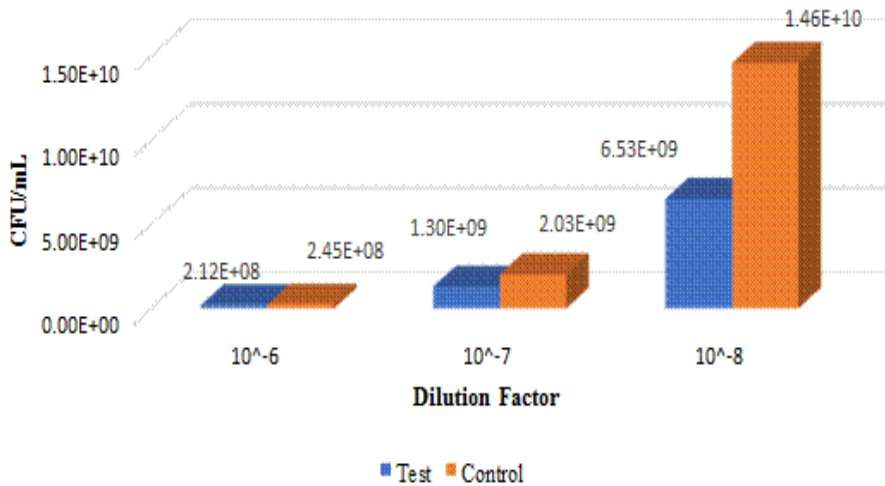


Figure 10: Graphical analysis of the three averaged trials of *Staphylococcus aureus* exposed to an oscillating electromagnetic field at 25 Hz. Note that plate counts >300 colonies were considered too numerous to count and inputted into the average as 300.

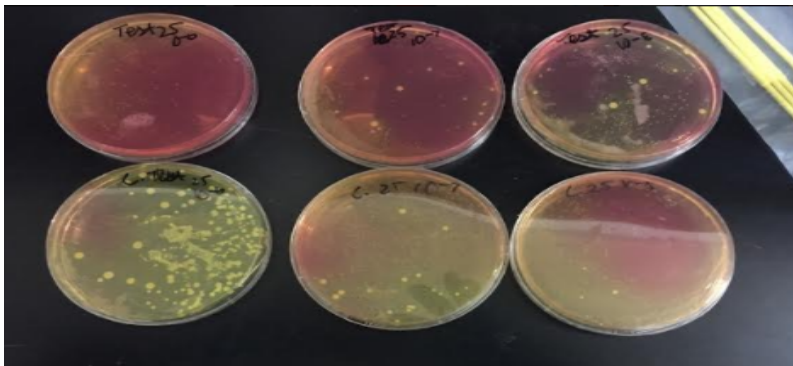


Figure 11: Plated diluted cultures post 24 hour exposure to the oscillating electric field at 25 Hz (top) compared to the diluted control (bottom). Left to right: 10^{-6} , 10^{-7} , 10^{-8} .

Three Trials of Exposure to the Oscillating Electric field at 50 Hz

As previously discussed, the effects on *Staphylococcus aureus* during the first trial of using a 50 Hz electromagnetic field yielded unremarkable results. The trials at this frequency progressed because of past research successes determined through a literature

search. The remaining trials exhibited similar outcomes as the first. The graphical analysis of CFU/mL (figure 12) of the averaged trials suggests that the electromagnetic field oscillating at 50 Hz had little effect on *S. aureus* as compared to the control, with results consisting of 3.0×10^8 vs. 3.0×10^8 , 4.50×10^9 vs. 4.50×10^9 , and 2.98×10^{10} vs. 3.0×10^{10} . Visually, there were similar colony counts and comparable yellow coloration on the mannitol salt agar plates of both the test and control cultures. (Figure 13).

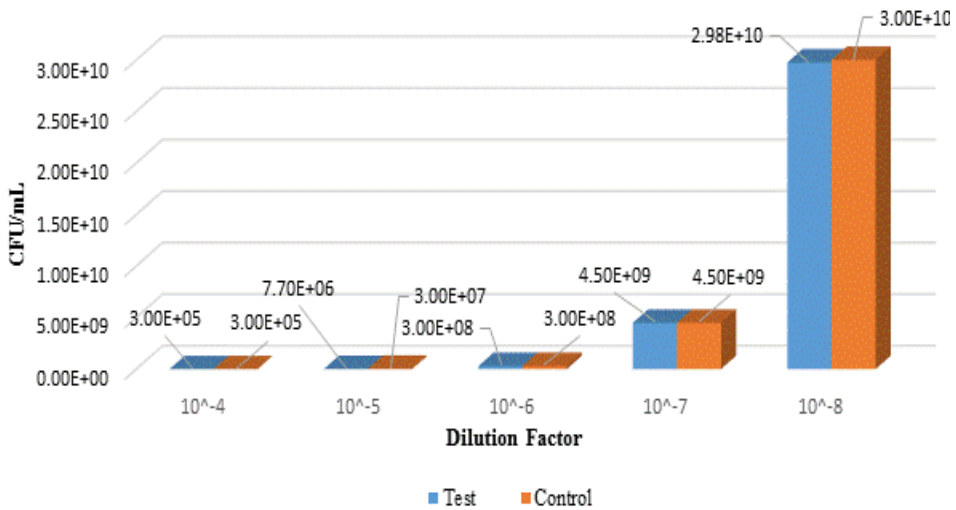


Figure 12: Graphical analysis of the averaged three trials of *Staphylococcus aureus* exposed to the electromagnetic field at 50 Hz. Note plate counts >300 colonies were considered too numerous to count and inputted into the average as 300.

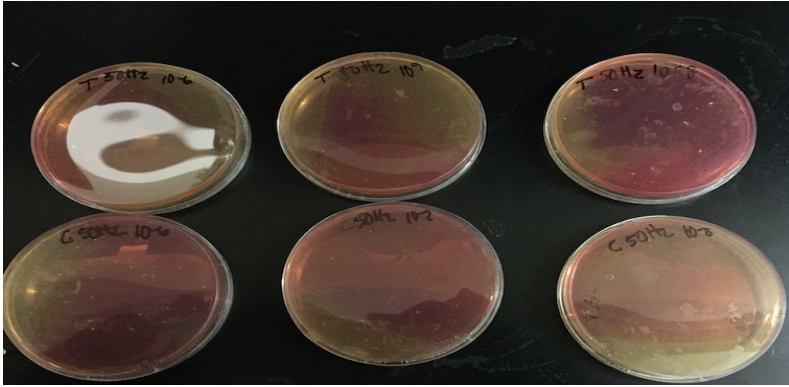


Figure 13: Plated diluted cultures post 24 hour exposure to the oscillating electric field at 50 Hz (top) compared to the diluted control (bottom). Left to right: 10^{-6} , 10^{-7} , 10^{-8} .

Three Trials of Exposure to the Oscillating Electric field at 250 Hz

The first trial exposure of *Staphylococcus aureus* to an oscillating electromagnetic field at 25 Hz showed promising results. It appeared that the growth of the organism was decreased in comparison to the control culture, and exhibited potential electromagnetic effects similar to the 25 Hz trial. The test culture exhibited a lack of color change within the mannitol salt broth, presenting with a more red/orange color in comparison to the expected yellow color, which was expressed within the control. As trials proceeded, the colony counts inferred a potential stimulation of growth of *S. aureus*. A graphical analysis (figure 14) of CFU/mL of the averaged three trials suggests that the

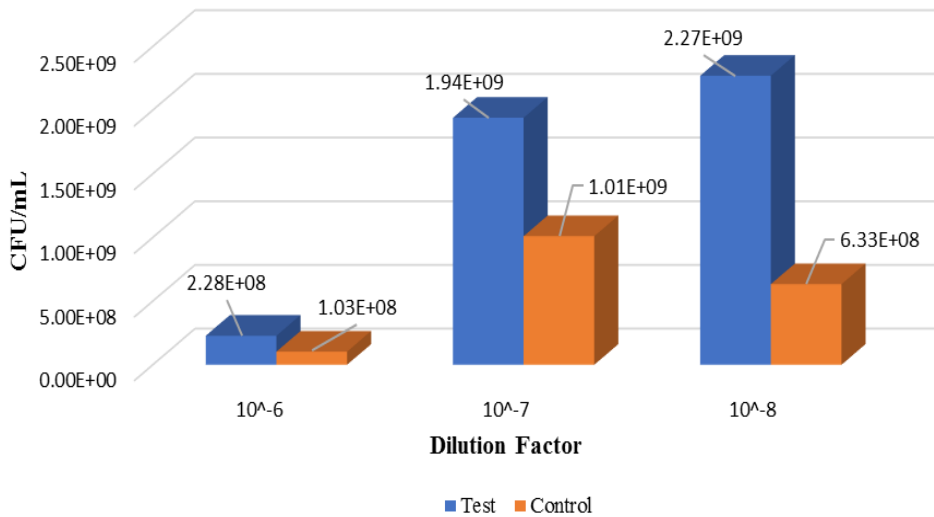


Figure 14: Graphical analysis of the averaged three trials of *Staphylococcus aureus* exposed to the electromagnetic field at 250 Hz. Note plate counts >300 colonies were considered too numerous to count and inputted into the average as 300.

250 Hz oscillating electro-magnetic field had a stimulating quality. The averaged test cultures when exposed to 250 Hz suggests potential stimulation in comparison to the control, with results consisting of 2.28×10^8 vs. 1.03×10^8 , 1.94×10^9 vs. 1.01×10^9 , 2.27×10^9 vs. 6.33×10^8 . Serially diluted test and control cultures from the third trial plated on mannitol salt agar can be seen in figure 15. The intense yellow color within the test culture suggests an abundance of growth compared to the control plates.

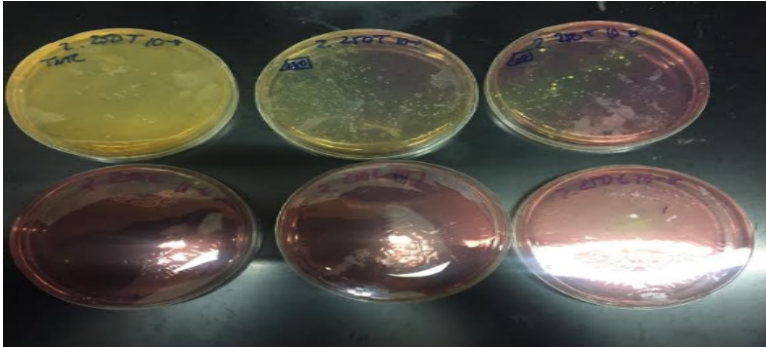


Figure 15: Plated diluted cultures post 24 hour exposure to the oscillating electric field at 250 Hz (top) compared to the diluted control (bottom). Left to right: 10^{-6} , 10^{-7} , 10^{-8} .

Gram Stain and Microscopy

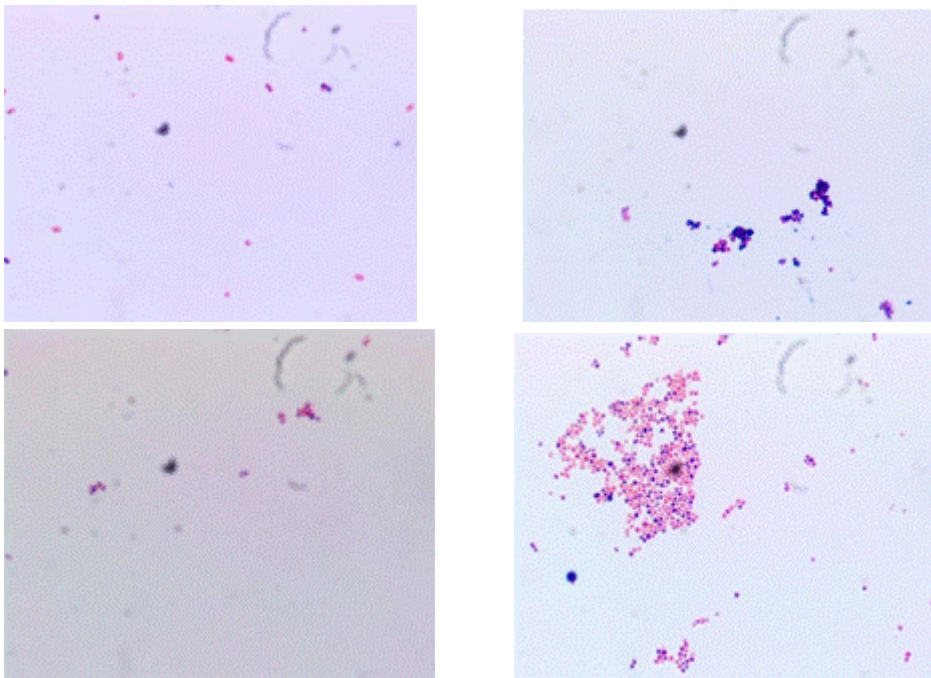


Figure 16: Gram stain analysis using 100x magnification light microscopy of *Staphylococcus aureus* exposed to 250 Hz (upper left) and control *S. aureus* (upper right). The gram stain of *S. aureus* exposed to 25 Hz is denoted by picture (lower left) and the control is the last image, (lower right).

The results of both the 25 Hz and 250 Hz frequencies were further examined microscopically. The above microscopic images show the post exposure effects (24 hours) of the test and control cultures of *Staphylococcus aureus* through 100x magnification with the use of the Olympus BX 40 and the Toup View computer software. *S. aureus*, a gram positive organism, naturally retains the initial crystal violet stain, appearing purple when microscopically analyzed. As seen in both the control and the test cultures, the gram positive organism presents as gram variable, indicating the organism's inability to retain the crystal violet stain (Figure 16).

IV. Discussion

The objective of this research was to expose the microorganism *Staphylococcus aureus* to extremely low frequency oscillating electromagnetic fields (EMFs) to excite a hazardous response within the cell. *Staphylococcus aureus* was chosen because of its clinical relevance and pathogenesis, along with the continuous emergence of antibiotic resistant strains both in healthcare and in the community. Exposure to the EMFs would potentially initiate a resonant response delivering enough energy to the bacteria to create detrimental electrochemical imbalances while leaving its surroundings unaffected. By determining resonant frequencies which negatively affect the natural metabolic processes within *S. aureus*, electromagnetic fields could potentially solve the unwanted effects of antibiotics. Therefore, finding the natural frequency of *S. aureus* is the first step towards a potential alternative to the pharmacological approach and the need for antibiotics.

After exposing *Staphylococcus aureus* to extremely low frequency (<300Hz) oscillating electromagnetic fields at varying frequencies (figure 8), it was decided to proceed forward in trials using electromagnetic fields at 25 Hz, 50Hz, and 250 Hz. The decision to use the aforementioned frequencies was made through the analysis of colony counts per plated dilution, potential sugar fermentation inhibition, and a literature search. As seen graphically (figure 8), other frequencies remain promising. Specially, the oscillating electromagnetic field at 150 Hz yielded zero CFU/mL at the final plated serial dilution, potentially indicating the generation of detrimental oscillations within *S. aureus* in response to a resonant frequency. This frequency, because of the inability to potentially inhibit sugar fermentation and the lack of notable success in past research, was not chosen for future trials, but should be considered for future research. Another frequency of interest for future trials is 200 Hz. This frequency had comparable results to the averaged colony forming units (CFU/mL) calculated after exposure to the oscillating electromagnetic field at 250 Hz. It appears that the organism's growth increased in

response to the exposure of electromagnetic fields at the higher tested frequencies. Graphical and visual analysis (figure 14) of CFU/mL of the averaged three trials suggests that the 250 Hz oscillating electromagnetic field had a stimulating quality in comparison to the control. These results potentially suggest that the growth of *S. aureus* is stimulated when exposed to oscillating fields at 200-250 Hz, and future trials are necessary to explore this hypothesis.

Past research, such as a study conducted by Garip et al. (2011) suggested that when exposed to an electromagnetic field at 50 Hz, growth of *S. aureus* was inhibited both during and post exposure. This research contributed to the decision to proceed forward in trials for the 50 Hz frequency because of the potential ability to promote detrimental effects within the organism. Unfortunately, my results proceeding the 50 Hz exposure were not as conclusive as past research. When the average of the three trials were taken, the control and the exposed cultures had comparable colony counts and sugar fermentation ability (figure 12). In this stage of this research, the magnetic component of the field was not altered. This may potentially contribute to the inconsistent results of this research and past studies. Further testing on this frequency is definitely required for future research, along with potentially altering the magnetic component of the field.

After the average of the three trials was determined, it can be suggested that the growth of *Staphylococcus aureus* decreases substantially in response to the electromagnetic field at 25 Hz. Similar results were achieved in past research. Obermeier et al. (2009) found that when exposed to the electromagnetic field at 0-30 Hz, there was a significant decrease in growth of *S. aureus*. Bayir et al. (2013) also concluded that an oscillating electromagnetic field at 20 Hz, decreased colony forming units in broth cultures significantly. This research proposes that the exposure to 25Hz, not only decreases growth, but it also inhibits the organism's ability to ferment mannitol (figure 9). This effect was visually seen and recorded directly after removing the culture from the incubator post 24 hours of exposure. Despite its inability to ferment the sugars within the broth cultures during the exposure to the electromagnetic field, after serially diluting and plating the test and control cultures on fresh mannitol salt agar, *S. aureus* did ferment the mannitol (figure 11) as visually seen by the yellow coloration of the media. This finding suggests that the stress of the external field may have caused metabolic effects on the organism during exposure, which are not necessarily irreversible or detrimental. Because of this finding, future research should analyze and record growth and other inherent characteristics of the organism during the 24 hour exposure time at hourly intervals, as this research currently focused on post exposure growth inhibition.

Because of the inhibiting and stimulating qualities of the oscillating electromagnetic fields at 25Hz and 250 Hz, it was decided to do a simple microscopic analysis (figure 16) of the post exposure *Staphylococcus aureus* cultures to observe morphological changes. The results were extremely interesting in that the once gram positive *S. aureus* species, turned gram variable, meaning the gram negative characteristic of retaining the safranin stain was also visible within the cells. During the gram staining procedure, gram positive cells, because of their thick layer of peptidoglycan retain the initial crystal violet stain fixed by the iodine mordant, while a gram negative organism, because of their thin peptidoglycan layer, stain pink in response to the decolorizing agent (Granato et al., 2013). This finding suggests that the peptidoglycan layer within the *S. aureus*' cell wall was somehow affected by the stress of the oscillating electromagnetic field in both frequencies. While older cultures of microorganisms tend to stain incorrectly, the gram stain was done immediately after exposure to the field for 24 hours, and is unlikely that age resulted in the current findings. In past research done by Garip et al. (2011), the exposure to an oscillating electromagnetic field resulted in the disintegration of the cell wall in *S. aureus*, which was microscopically analyzed through transmission electron microscopy (TEM). This could support the cause of the gram variable stain that was seen in this research.

As seen in figure 16, the control cultures expressed a gram variable stain as well. In past, related research, it was common for the experimenters to place the control in a completely separate incubator in fear of electromagnetic pollution from the generated electromagnetic field. In this research, the control and the test culture remained within the same incubator during the time of exposure for 24 hours, which could suggest a possible explanation as to why the control seemed to be effected.

For the purpose of future research, each frequency should be tested again for further accuracy of the results obtained, focusing on the effects of the oscillating electromagnetic field at 25 Hz. Furthermore, implementation of a standard for the exact amount of cells per culture should be executed, rather than the current practice of visual estimation, to ensure an accurate comparison of colony forming units between the control and test cultures. In addition, control and test cultures should be incubated in separate incubators to eliminate the possibility of electromagnetic pollution.

The results of this research suggest that oscillating electromagnetic fields excite both positive and negative effects on the microorganism *Staphylococcus aureus*. Unfortunately, at this stage in the research it cannot be concluded as to why the effects within the cell are occurring, or what specific metabolic functions are being effected.

This research remains in the elementary stages of determining potential resonant frequencies of *S. aureus* and can only suggest potential resonant frequencies and possible effects the oscillating electromagnetic fields have on the microorganism. This study intends to contribute in finding a resonant frequency which will excite a hazardous response within *S. aureus* and aid in the direction of antibiotic alleviation and future research in the field of biophysics.

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Section III: The Social Sciences

The Prevalence of Cardiovascular Disease in Port Richmond

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I. Overview

Cardiovascular disease, heart disease, is an umbrella term used to describe diseases of the blood vessels, dysrhythmias of the heart, and congenital heart disease (Mayo Foundation for Medical Education and Research, 2014). According to the Centers for Disease Control and Prevention (CDC), approximately 610,000 people die of heart disease in the United States each year (CDC, 2015). In the United States, heart disease is the leading cause of death for most individuals of the following ethnicities: African American, Hispanics, and Caucasians (CDC, 2015). In addition to ethnicity, other risk factors of cardiovascular disease include age, family history, unhealthy diet, lack of physical activity/exercise, obesity, use of tobacco and alcohol, high blood pressure, and diabetes (Hinkle & Cheever, 2014). Socioeconomic status plays a role in whether or not a person develops cardiovascular disease. Unfortunately, individuals who do not have the monetary means tend to choose unhealthy food and drink that are cheaper than healthier options. As a result, people gain weight and develop comorbidities that increase the chance of developing heart disease. One community in Staten Island, New York that has been identified as having a high cardiovascular disease rate is Port Richmond. This community is also classified as a low socioeconomic area.

Low socioeconomic populations are at risk for health issues. Low socioeconomic status can lead to an increased risk for cardiovascular disease in many different ways. People with low socioeconomic status usually cannot afford health care visits that may help prevent cardiovascular disease, such as going to a primary care provider regularly. According to The Behavioral Risk Factor Surveillance System (2014), individuals who have an annual income of less than \$30,000 are twice more likely to have a heart attack than those who make at least \$65,000. There is also research showing that cardiovascular disease is more prevalent among places with big gaps between the wealthy and the poor. New York City ranks at the top in income inequality (New York

¹ Written under the direction of Prof. Tinamarie Petrizzo-Hughes for NR400: *Techniques of Nursing Research*.

Times, 2015). While Staten Island's median income is high, poverty prevails in the Port Richmond Community (New York Times, 2015).

According to the 2010-2014 American Community Survey 5-Year Estimates, it is estimated that 471,522 people currently live in Staten Island, New York. Of these residents, 18,043 of them reside in Port Richmond. Approximately 51% of the community is female and 49% is male. The age group varies from under 5 years old to 85 years old and over. The largest age group is 25 to 34 years old, 16.6% of residents. Port Richmond is a diverse community of individuals from various ethnic backgrounds: 38.9% Hispanic or Latino descent, 32.7% Caucasian, 18.7% African American, 6.4% Asian, 1.9% mixed race, and 1.3% other (2010-2014 American Community Survey 5-Year Estimates, 2015).

Reviewing the New York City censuses from earlier years one can compare how the population of Port Richmond has changed. In 1980, 14,256 people were living in Port Richmond and the population was divided as follows: 87.7% Caucasian, 9.6% African American, 1.6% Asian descent, 1% Spanish origin, and 0.1% American Indian (Bureau of the Census, 1980). Prior to 2010, Hispanics were counted among 'other'. In 1990, 'other' comprised 13% of the Port Richmond community (Bureau of the Census 1990). When reviewing and analyzing these statistics, a population increase of 3,787 people was seen between 1980 and 2014. Currently, the population of Hispanics or Latinos is now the dominant cultural group in Port Richmond. Other ethnicities, such as African American and Asian, have grown over the years as well, while the percentage of Caucasian living in the community has decreased by 55%. The fact that Hispanic, African American, and Caucasian populations represent the predominant ethnicities, it is essential to address cardiovascular disease, because all three of these groups are at an increased risk (CDC, 2015).

As previously stated, Port Richmond is considered a low socioeconomic community. Approximately 57.6% of the population 16 and older is employed (2010-2014 American Community Survey 5-Year Estimates, 2015). The average annual family income is \$68,842 (2010-2014 American Community Survey 5-Year Estimates, 2015). After taxes there is not a sufficient amount of money to pay bills and buy healthy groceries. This sum of money is especially not enough if they are supporting significant others, children, and extended family. About 34.9% of this community receives some form of governmental assistance, such as food stamps (2010-2014 American Community Survey 5-Year Estimates, 2015). These facts further support that individuals living in the Port Richmond community are not able to afford nutritious food because of its high cost

and their low income. Therefore, they buy cheaper, unhealthy food. An unhealthy fatty diet increases the risk of developing cardiovascular disease, and associated comorbidities, diabetes and obesity (Hinkle & Cheever, 2014).

II. Evaluating the Social Determinants of Health and Risk Factors

Healthy People 2020 defines social determinants of health (SDOH) as “conditions in the environments in which people are born, live, learn, work, play, worship, and age that affect a wide range of health, functioning, and quality-of-life outcomes and risks” (2016). SDOH substantially impact the health of individuals, such as access to jobs, education, and health care, as well as, socioeconomic status, residential segregation, culture, and public safety (Healthy People 2020, 2016). For example, the less education an individual has the more likely they are to have health issues (CDC, 2016). In New York State, adults with less than a high school education are more likely to report having a heart attack than those who have a high school education (Fessenden, 2005). Many people within the Port Richmond community do not have education at the high school level, which predisposes them to health issues, such as cardiovascular disease. Education is one modifiable risk factor.

Modifiable risk factors, unlike non-modifiable ones, are ones that are amendable to intervention in order to reduce the likelihood of coming down with a certain condition. Targeting the leading modifiable risk factors in the Port Richmond community - high blood pressure (hypertension), high cholesterol, cigarette smoking, diabetes, an unhealthy diet, decreased physical activity, and obesity – is essential in order to decrease changes within the heart and blood vessels that lead to heart disease. Approximately 75 million, or 1 in 3 adult Americans, live with hypertension with just over half (54%) having it under control (CDC, 2016). A high sodium diet can cause hypertension, yet 90% of Americans exceed the daily-recommended intake of sodium (CDC, 2016). Unfortunately, many low-cost foods are high in sodium, which is problematic in communities like Port Richmond.

Hypertension can be caused by another major risk factor of cardiovascular disease, obesity. Within the United States, 66.3% of adults are overweight or obese, which represents a major public health concern (Swift et al., 2016). Obesity puts a strain on the heart and blood vessels, which can lead to cardiovascular disease. In 2016, the CDC stated that within the United States, “Blacks have the highest age-adjusted rates of obesity (48.1%) followed by Hispanics (42.5%), non-Hispanic Whites (34.5%) ...”, which mirrors the ethnicity of Port Richmond. Also, similar to Port Richmond is the fact that women with a lower income are more likely to be obese than women of a higher

income (CDC, 2016).

Obesity and physical inactivity are closely linked together. In 2016, Americans did not meet CDC guidelines for aerobic and muscle strengthening exercises. According to the CDC, “Regular physical activity can improve the health and quality of life of Americans of all ages, regardless of the presence of a chronic disease or disability” (2016). The American Heart Association suggests weight loss in overweight and obese patients to reduce the risk of getting cardiovascular disease. According to Swift, “Weight loss in these patients has been associated with improvements in many cardio-metabolic risk factors such as prevalence of the metabolic syndrome, insulin resistance, type 2 diabetes, dyslipidemia, hypertension, pulmonary disease, and CVD” (2016, p. 441-447). Clinically significant weight loss, 5%-10% of baseline body weight, reduces the prevalence of cardiovascular disease (Apovian, 2012; Swift, 2016). According to the CDC, factors that positively affect physical activity are: postsecondary education, higher income, history of physical activity, access to facilities, and safe neighborhoods. A study conducted by the American Heart Association in 2012 demonstrated an average 7% weight loss, done by intensive lifestyle modifications of diet and exercise among those with pre-diabetes delayed its progression to type 2 diabetes mellitus (Apovian, 2012). Obesity is prevalent among Hispanics, which comprises a major portion of the Port Richmond community (CDC, 2016). Understanding the barriers to and facilitators of physical activity is important to improve and maintain physical activities among the people living in Port Richmond.

After assessing the statistics, it is clear to see that the three largest groups in Port Richmond are Hispanics or Latinos, Caucasians, and African Americans. All three of these groups have an increased risk of developing heart disease, when compared to other ethnicities (CDC, 2015). Although this information suggests that there is a high incident for cardiovascular disease in the Port Richmond community, there is no available data on the health of the Port Richmond community itself. However, examining the Community Health Profile of District 1 that consists of St. George, Stapleton, and Port Richmond. St. George and Stapleton communities, all of which are similar areas to Port Richmond, it is clear that heart disease is the leading cause of death, killing 2,295 people each year (King et al., 2015).

When comparing to the other districts on Staten Island, District 1 has the highest rate of smoking and obesity; yet, has the lowest rate of diabetes (King et al., 2015). Twenty-two percent of District 1 smokes and individuals are twice as likely to smoke as all other areas citywide (King et al., 2015). These individuals are more prone to tobacco

use due to their occupations and the large number of delis and bodegas in these areas that sell cigarettes (King et al., 2015). The adult obesity rate in this district is 33% and 9% for diabetes (King et al., 2015). Although the rate of diabetes is low, it could increase due to individuals developing type 2 diabetes if the obesity rate continues to rise.

One way to decrease risk factors such as obesity is through exercise. Federal guidelines suggest that children exercise 60 minutes per day and adults should exercise 150 minutes each week (King et al., 2015). This community profile suggests that cardiovascular disease is an epidemic in low socioeconomic areas due to the various previously mentioned risk factors present in these communities. Even though this data is not specific to Port Richmond itself it can be inferred that cardiovascular disease is a problem in this community. Overall, poor eating habits and suboptimal physical health are largely responsible for obesity, which is a major risk factor of cardiovascular disease. Through proper nutrition, diet, exercise and living a healthy lifestyle, individuals can decrease the incidences of cardiovascular disease within the areas they live in.

III. Community-focused Interventions

The literature encourages nurses and other health care providers to identify various resources in the community that can foster its health. Such resources are available through schools, churches, media, and clinics. Identification is the first step and then there is the need to assess how they are or, are not, being properly accessed (Hinkle & Cheever, 2014). Broad examples include, how churches could hold information sessions teaching about what cardiovascular disease is and ways to decrease the risk; media could make public service announcements raising awareness about cardiovascular disease; and, clinics could provide information to patients about cardiovascular disease and preventative measures (Hinkle & Cheever, 2014).

Specific to Port Richmond, The Community Health Center of Richmond is a facility that offers many resources to educate community members about how to decrease the modifiable risks factors that contribute to cardiovascular disease. These resources include insurance enrollment assistance, nutritional counseling, diabetes care management, and primary care (Community Health Center of Richmond, 2016).

Churches, media, and clinical are the more traditional community-based resources. A contemporary approach to building a model to enhance community health is the Port Richmond Partnership. This is a formalized partnership lead by Wagner College and a memorandum of record with key resources in Port Richmond community. The Partnership focuses on addressing significant challenges and establishing measurable

impacts in five high need areas, one of them being health (Center for Leadership & Community Engagement, 2016). If media along with churches and clinics start to take an active role in the health of the community and individuals start to utilize the resources available to them it is possible to reduce cardiovascular disease in Port Richmond. The target goal is for local media and community resource to come together with a common goal of reducing the risk factors that play a role in the development of cardiovascular disease.

IV. Theoretical Framework

Dorothy Johnson's behavioral system provides a framework to address community-based interventions in Port Richmond. According to Johnson, "constancy is maintained through biological, psychological, and sociological factors" (Alligood, 2002). Johnson's concepts focus on the person, the environment, health, and nursing. By examining each concept in relevance to the Port Richmond Community, viable solutions are proposed to reduce the occurrence of heart disease. A nursing assessment of the community can be obtained through the integration of the statistical data analysis collected and the interrelated concepts of the person, environment, and health. The concept of nursing, as an "external regulatory force that is indicated only when there is instability," allows for the proper interventions to be implemented allowing for change to occur (Alligood, 2002). Nurses act as the external regulatory force to assess Dorothy Johnson's concept of the person and environment relevant to port Richmond. Based on a concrete definition of health and nursing assessment, interventions can be put into place to properly address the prevalence of cardiovascular disease in this community.

The Person

Johnson's theory defined the concept of the human being as a "behavioral system that strives to make continual adjustments to achieve, maintain, or regain balance to the steady-state that is adaptation (Gonzalo, 2011). Focusing on who "The person" is in the Port Richmond community that is most at risk for cardiovascular disease provides clarification. Age and culture are key contributors to the increasing rate of heart disease. An estimated 10.6 percent of the Port Richmond population is over the age of 65. There is a direct correlation between an increase in age and heart disease, placing this group of individuals within the "at risk" population. According to our collected statistics, the two top ethnicities that are at high risk for cardiovascular disease are Hispanics and

Caucasians, comprising 81.6 percent of the Port Richmond Community. Risk factors for heart disease include hypertension, diabetes, and obesity (CDC, 2015a). The listed morbidities are common in both Hispanics and Caucasians and predispose both populations to heart disease if not properly maintained and monitored. Heart disease is the leading cause of death in nonwhites, and the second leading cause of death in Hispanics across the nation (CDC, 2015). For Hispanics, the proper care necessary to address the risk factors of heart disease is caused by barriers such as a language barrier, and poor access to health care, and lack of health insurance coverage (Escarce, 2006).

The Environment

Based on Dorothy Johnson's behavioral system theory, the environment is "all elements of the surroundings of the human system and includes interior stressors" (Gonzalo, 2011). Based on previously collected statistics, Port Richmond is a community of low socioeconomic status. There is a direct relationship between heart disease and low socioeconomic status. According to previous studies, there is a "dominance within the lower socioeconomic groups" when it comes to the prevalence of heart disease (White, 2016). Low socioeconomic status in itself is a risk factor for disease since the "less well-off have fewer opportunities to undergo regular preventive medical checkups and screenings, to work at jobs with low physical danger or contact with hazardous materials, to live in well-built housing in safe neighborhoods with low pollution, and to drive safe cars" (Pampel, Krueger, and Denney, 2011). A community's lack of resources, whether it be money to purchase healthy food, (which is significantly more expensive than fast food), recreational areas that allow for a person to become active, and steady access to health care, all contribute to a community that is more likely to fall susceptible to disease; in this case heart disease.

Health: Balance and Stability

Dorothy Johnson defines health as "some degree of regularity and constancy in behavior, the behavioral system reflects adjustments and adaptations that are successful in some way and to some degree... adaptation is functionally efficient and effective" (Gonzalo, 2011) Therefore, to maintain a degree of "constancy in behavior" and successful adaptation as highlighted in Dorothy Johnson's health definition, a healthy lifestyle needs to be maintained to prevent cardiovascular disease. In relevance to heart disease, "a healthy lifestyle is defined as consuming a healthy diet, maintaining a healthy weight, exercising regularly, having low to moderate stress levels, not smoking and

limited alcohol use” (Hutchins, Melancon, Sneed, & Nunning, 2015, p. 721-734). Through this definition a construct can be created to provide the necessary measures to tackle this conflict.

Nursing

By defining the person, environment, and health concepts, clear parameters have been created to allow for an initiative plan to address heart disease in Port Richmond. These parameters are self-care, which is a “set of behaviors or activities that patients are asked to engage in to promote health and well-being” (Dickson et al. 2013, p.1-16). Therefore, the plan created is structured around primary and secondary care. Through primary prevention, care will be provided in the form of education. Secondary care will be provided through screening.

Primary Prevention

Through our predefined definition of health in relation to heart disease, the following must be addressed to the Port Richmond Community: alcohol intake, smoking, weight, diet and activity. Education will be centered on how to manage these four categories in the practice of everyday life. For alcohol intake and smoking, there needs to be an emphasis to decrease both practices. According to the CDC (2015), alcohol, a hypertensive agent, should be limited to two drinks for men per day and one drink for women per day. Smoking must be encouraged to stop; it was found that “a key contributory factor in the decline of deaths was the individual reduction behaviors, especially the elimination of smoking” (White, 2016). A discussion on how to quit should be started with a primary care provider. A healthy diet should consist of low sodium, to decrease blood pressure, and low trans/saturated fat to decrease high cholesterol and the buildup of plaque in the arteries (CDC, 2015). Foods high in fruit, vegetables, and fiber, are encouraged; “a healthy diet consists of a balance of essential nutrients, calories, carbohydrates, fats, and proteins and has been associated with lower risk for heart disease” (Hutchins, Melancon, Sneed, & Nunning, 2015). Activity can also significantly reduce the risk of heart disease. A recent study has shown that “accumulating 150 minutes of moderate intensity physical activity per week can reduce risk of heart disease and blood pressure and improve cholesterol levels” (Hutchins, Melancon, Sneed, & Nunning, 2015). Suggestions on how to become active could include having daily walks or morning exercises at home. It is important to emphasize that the smoking cessation,

limiting alcohol consumption, diet, and exercise will significantly lower the risks of heart disease in the Port Richmond community.

Secondary Prevention

Secondary prevention is done via screening of: blood pressure, cholesterol and triglycerides, body weight, and glucose levels (Heart-Health Screening, 2016). To allow for the proper cardiovascular monitoring it is important to emphasize regular appointments with the appropriate healthcare providers. Most regular cardiovascular screening tests should begin at age 20 (Heart-Health Screening, 2016). In a community of low socioeconomic status, such as Port Richmond, it is important to educate on the help Medicare and Medicaid can provide, and make referrals to healthcare providers within a proper radius to allow for easy access.

V. The Wagner College Port Richmond Partnership: Health and Wellness Program

Nursing faculty and student nurses from Wagner College started an initiative to enter the Port Richmond Community and reach out to the targeted population. Meetings at schools were held to encourage a proper learning environment. Collaborating with schools in Port Richmond, informational pamphlets targeted both the students and the parents to advocate healthy lifestyle choices. Student nurses discussed guidelines for healthy habits. Surveys after each informational session were distributed to determine the effectiveness of the teaching, and to determine if modifications should be put in place. Taking into consideration the possibility of a language barrier, surveys were distributed in both English and Spanish

Dr. Nancy Cherofsky was the 2013-2016 Fellow of Health in the Wagner College Port Richmond Partnership, Health and Wellness Program. She launched the “Eat well, Be well” initiative in Port Richmond High School in 2015. The culinary classes at Port Richmond allowed nursing students to hold educational seminars to educate the high school students about healthy food alternatives. They learned to substitute ingredients that allow for desirability and taste while remaining healthy. Collaboratively, Suzanne Woodman, Assistant Principal of Port Richmond High School, Mr. James Ryan, Culinary Teacher, Mr. Neil Soto, Health & Wellness Teacher, and Dr. Cherofsky successfully planted three gardens at the school. Funding for the gardens to be planted at Port Richmond High School was provided by Grow to Learn NYC. The organization’s mission is “the creation of a sustainable school garden in each and every public school across New York City” (Grow to Learn NYC, 2017).



Students grow their own food, such as kale, carrots, potatoes, and tomatoes.



Dr. Nancy Cherofsky and Mr. James Ryan with nursing students from the Evelyn L. Spiro School of Nursing.

This experiential learning allowed for students to learn how to harvest their own food, and, therefore, make healthier choices. Planting the gardens at Port Richmond High School, allowed for further validation of the education provided by Wagner nursing faculty and students through application in a real-life setting. This sustainable program has been found to be effective in its teachings and students' weight maintenance. Three months after the initiative started, eighty-five culinary students participated in a survey to evaluate student feedback. After various presentations held by the Nursing Students at Wagner College, results indicated that 51.6% of students were now more capable of choosing a healthier life style; 65.53% felt more knowledgeable about healthy eating habits; and 52.94% of students agreed that they are more likely to incorporate healthy ingredients in their food (N. Cherofsky, Personal Communication October 1, 2017).

Building on this program, Dr. Edna Aurelus, the 2017 Fellow of Health, is leading a screening and educational program. Dr. Aurelus started weekly visits to Port Richmond High School, to educate on proper diet and exercise. The program will consist of once a week meetings on education, an exercise regimen and blood pressure screenings, as well as monthly measures of body mass index. With the help of nursing students, she will be recruiting at least fifty high-school students to measure the effectiveness of this initiative, on BMI and blood pressure. The monthly measurements will be compared to evaluate the program. In addition, surveys to gain participant feedback will be collected (E. Aurelus, Personal Communication, October 1, 2017).

These holistic approaches to address the prevention of cardiovascular disease encompass Johnson's concepts of the person, the environment, health, and nursing, in order to provide effective strategies for a healthier lifestyle in the Port Richmond community. "It is important to ensure that patients are fully informed as to how to reduce further decline and advancement of their disease and to educate as to how to make these changes" (White, 2015). Initiatives of the Health and Wellness Program have the potential to include other facilities in the Port Richmond Community and target a larger population. Informational sessions can be held that enlist the help of guest speakers. Including a Spanish liaison will address the language barrier among the Hispanic population, as will any distributed information being made available in both English and Spanish. It is an important duty of nurses and other healthcare professionals to partake in community education to encourage preventative care measures to diminish the onslaught of disease.

VI. Exposition

A collaboration among and between nurses and the community can help facilitate action and, therefore, change. At the Collaborative Research/Evidenced Based Nursing Practice Expo, held at the College of Staten Island on April 24, 2017, we were able to showcase our proposal in an effort to illustrate the prevalence of cardiovascular disease in Port Richmond. We found Dorothy Johnson's behavioral system theory effective in addressing this problem. In presenting her theory we inspired other nurses to use it in reference to other community concerns. We wanted to present our approach to how we can tackle cardiovascular disease in Port Richmond, and the importance of the role of nursing in primary and secondary prevention. We emphasized the importance of nursing research and nursing interventions based on evidenced based practice.

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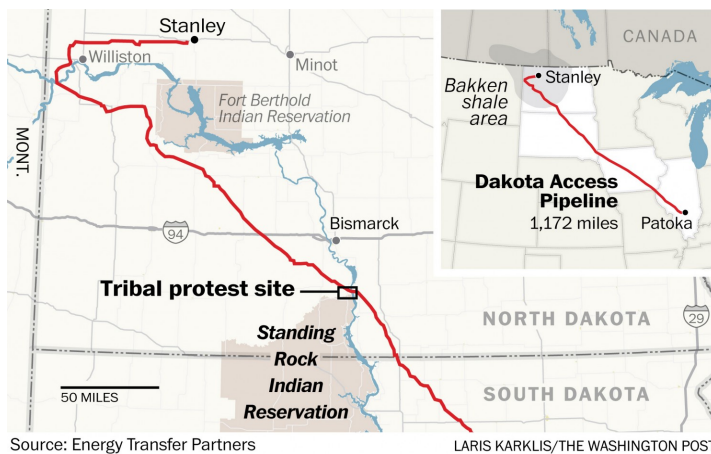
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The Dakota Access Pipeline: Litigating the Dispute

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The purpose of this research is to identify all the details of the Dakota Access Pipeline and to call attention to what might be overlooked among the enormous uproar that has ensued to stop the construction process. The aspects explored are who the proponents and opponents are, the politicians involved, what laws were utilized to make the construction up and fully operating, how the media covered the whole situation, and the possible solutions to the dispute of whether or not the pipeline should be finished. Upon examination of these events, it becomes clear that a lot more is involved in the underlying details of the Dakota Access Pipeline and the protocols that have been carefully followed to make crude oil transporting pipeline a success compared to the Keystone Pipeline XL that was turned down by President Barack Obama. Through analyzing all the logistics of this pipeline and the stakeholders involved, this research highlights the need for possible alternatives to the pipeline as well as the importance of being politically aware in the American society.



Source: <https://stemit.com>

I. Introduction

¹ Written under the direction of Dr. Abraham Unger in partial fulfillment of the Senior Program requirements.

This essay contends that the Dakota Access Pipeline (DAPL), a crude oil pipe that is proposed to be finished by early 2017 contravenes with the ‘sacred’ land of Native Americans, particularly the Sioux Tribe whose land it runs through. The \$3.78 billion pipeline will span approximately 1,172 miles from North Dakota to Illinois (Nemec 16). It is projected to run through the Standing Rock Sioux Tribe’s reservation and is feared to leak or spill and contaminate their water supply. The natural gas and propane company, Energy Transfer Partners (ETP), argues that the pipeline is beneficial to the economy and will pump millions of dollars into local economies as well as create 8,000 to 12,000 construction jobs (Nemec 17). Both sides have erupted into an impassioned fight on whether or not to build this enormous, crude oil transporting pipeline. Although the protesters claim they are peaceful, there have been reports of heated confrontations with law officers and construction workers (“Police Remove Pipeline Protesters in North Dakota” 2016). Many people have been arrested and ETP has sued several protesters. Most politicians including the 2016 presidential contenders as well as the presidential elect have remained silent on this issue. President Barack Obama had just recently spoke upon delaying the construction of DAPL while a minority of politicians such as Green Party presidential nominee, Jill Stein, and the Senator of Vermont and former presidential nominee, Bernie Sanders have been consistently vocal on the situation (“Is decision a brief timeout or a game-changer for Standing Rock? 2016). As for the media, it had received little to no coverage during early September; a lot having to do with the law enforcement officers arresting reporters on site. Even celebrities such as actress Shailene Woodley have been arrested for peacefully protesting with the Native Americans and Jill Stein has been charged for “rioting” (“Is decision a brief timeout or a game-changer for Standing Rock? 2016). However, the media did connect internationally creating an uproar abroad and through various platforms of social media such as YouTube, Facebook, and other forms, people in the United States were able to see what was going on at the Dakota Access Pipeline and have also taken action by protesting against the construction of this pipeline (“Standing Rock protest grows with thousands opposing North Dakota pipeline 2016). The questions that arise with the construction of the Dakota Access Pipeline are: Will this pipeline be as beneficial to the economy as Energy Transfer Partners claims it will be? How much is actually at stake with the Sioux Tribe’s land? And what is a possible solution to all of this?

II. Literature Review

In the Article, *North Dakota Oil Pipeline Battle: Who's Fighting and Why* by Jack Healy, he describes the whole situation at hand with the protestors, why they're protesting, what Energy Transfer Partner is, what will go into the construction of the Dakota Access Pipeline, and how the government is handling the whole situation. While in the article, *Dakota Access Pipeline: A New Artery for Bakken Crude* by Richard Nemec is about the logistics of the construction of the Dakota Access Pipeline instead of focusing on the protestors and who is affected. Nemec goes into detail on who is in charge of what for the operation process, how this pipeline will be implemented, how the pipeline will affect the national and local economy, what states the pipeline will be built through, and how've they've strategically employed their workers. Another source that directly explains what the Dakota Access Pipeline is being installed for is from the direct website of DAPL, <http://www.daplpipelinefacts.com>, where Energy Transfer Partners explains where the pipeline is going to transverse through, the width and length of the pipeline, how many barrels a day the pipeline can produce, how they claim that it will protect land and farmland, the technology in place for the pipeline, and the national & local economic impact. The economic impact that DAPL will have on a national and state level is also illustrated in the article by J. Thompson, *The Dakota Access Pipeline Will Simply Create Profits. Not Jobs or Energy Independence*. He argues that the economic impact isn't large enough to make this project worthwhile.

Then for the legality of the pipeline as well as sections highlighting property laws, a couple of sources were used. In the journal, *National Security Complex National Historic Preservation Act Historic Preservation Plan*, it is elaborated on what Section 106 of the National Historic Preservation Act 1966 and why it is important when it comes to Dakota Access LLC constructing its pipeline on the grounds of the Standing Rock Sioux Tribe's sacred land. In addition, the source: www.achp.gov, is also an outline of Section 106 of the National Historic Preservation Act 1966. Another source used for the legality of land is the book, *Takings: Private property and the power of eminent domain* by Richard Epstein, which describes how eminent domain is used in the court as well as without the court and what the process is in order for a government, state, or private operation to take private property from the landowner for public use. In addition, another article of use for legal terms on all about the 1851 Treaty of Traverse des Sioux is *The Sioux Treaties and the Traders* by Lucile Kane. It explains how the United States government and Sioux Indians signed an agreement that the Sioux tribe would move onto reservations along the Minnesota River in exchange for cash and goods. Showing that the

land that Dakota Access wants to operate on isn't technically legal. For farmers, particularly in Iowa, the article *296 Iowa landowners decline Bakken Pipeline* by W. Petroski talks about how multiple people in Iowa never gave permission for Dakota Access to take their land, but it was taken anyway under eminent domain.

As for keeping up with the protestors and media, included in this essay is multiple Newspaper articles reporting on what has happened from early October to late early December of 2016. I have used the article, *Scientists stand with Standing Rock* by multiple authors and edited by Jennifer Sills, which covers how scientists feel about the construction of the Dakota Access Pipeline and how they are concerned about its possible detrimental effects on the environment. Some articles that go over the possible hazardous outcomes of an oil or crude spill that could impact the environment. These include: *Protectors vs. Pipelines* by M. Engler, *A Sustainability Dialogue: The Dakota Access Pipeline and Subjugation of Native Americans*, *Pick Your Poison-Oil Transportation*, and *Environmental signatures and effects of an oil and gas wastewater spill in the Williston Basin, North Dakota* by multiple authors. For what is happening on the ground level with the protesters, articles such as *16 Arrested at North Dakota Pipeline Protest* by J.E. Bromwich which is about police force and the dog cages they supposedly keep the protesters in as well as *What to Know About the Dakota Access Pipeline Protests* from TIME magazine which is about an overview about the whole situation. CBC's article *Standing Rock protest grows with thousands opposing North Dakota pipeline* touches upon how expansive the protest has become to not only nationwide, but internationally. The CBS News article, *Dakota Access pipeline protest costs mount, along with pressure on President Obama to end standoff* reports on President Barack Obama's decision to temporarily halt the construction of the Dakota Access Pipeline.

The essay is up to date with articles of what is happening currently with Standing Rock and DAPL. The Star Tribune article, *Is this decision a brief timeout or a game-changer for Standing Rock?* talks about what the strategies will be for the protesters even though the Army Corps has denied the permit for the construction of DAPL. The decision is further explained in the article *U.S. Army Denies Dakota Access Pipeline to Cross Through Standing Rock*.

The Logistics of the Dakota Access Pipeline

The Dakota Access Pipeline (DAPL) is a \$3.78 billion project that was first announced publicly in July 2014 and ran informational hearings for landowners between August 2014 and January 2015. Dakota Access submitted its plan to the Iowa Utilities

Board (IUB) on October 29, 2014 and applied for permit in January 2015 (“296 Iowa landowners decline Bakken pipeline” 2016). The IUB was the last state of the four states involved, which are North Dakota, South Dakota, Iowa, and Illinois, to grant the permit in March 2016, including the use of eminent domain, after some public controversy (296 “Iowa landowners decline Bakken pipeline” 2016). The Pipeline will range 1,172 miles from the Bakken oil fields in northwest North Dakota and travels in a somewhat straight line south-east, through South Dakota and Iowa, and ends at the oil tank farm near Patoka, Illinois. The pipeline is anticipated to be fully functional by January 1, 2017, but as of now, the construction has been brought to a halt under president Barack Obama. However, as of November 26th, 2016, the project was reported to be 87% completed and what is currently being debated over is on the pipeline’s final 1,100 feet in North Dakota over concerns about water quality and historic relics (“What to Know About the Dakota Access Pipeline Protests” 2016).

Although at a halt, the construction of the pipeline is currently run by Dakota Access, LLC, a subsidiary of the Dallas, Texas Corporation Energy Transfer Partners, LP. For ownership over the pipeline, Dakota Access owns 75% of the pipeline, while Houston-based Phillips 66 owns a 25% share. The \$3.78 billion pipeline project, of which \$2.5 billion was subsidized by loans while the rest of the capital would be raised by the sale of a 49% share in Dakota Access, LLC (36.8% indirect stake in the pipeline) to Enbridge and Marathon Petroleum. The loans were provided by a group of 17 banks (Nemec 2016). The Energy Transfer Partners, which is a United States Fortune 500 natural gas and propane company, proposed that the pipeline will transport 450,000 bpd (barrels per day) with a capacity as high as 570,000 bpd or more (“Dakota Access Pipeline” 2015). The committed volume rates of the pipeline project have already created historically high shipment ratios, with the pipeline projected to carry half of the Bakken’s current daily crude oil production. In addition, the shippers will be able to access various markets, including the Midwest and East Coast via the Nederland, Texas crude oil terminal facility of Sunoco Logistics Partners (Nemec 2016).

In the United States a statistic taken in 2014 reported that 70% of crude oil and petroleum products are shipped by pipeline, 23% by tankers and barges over water, 4% of trucking, and 3% of railroad (Conca 2014). A major point for the production of the Dakota Access Pipeline is to use less railroads and trucks to transport crude oil from one location to another. And by constructing a pipeline and using less of the railroads, farmers will be able to ship more Midwest grain through train transportation. However, pipelines leak more than by railroad which could be concerning to the environment

(Conca 2014). It is also contended that by using a pipeline to transport oil rather than by trucks is it will free up the highways. Because the same amounts of water need hauling as barrels of oil produced, so the truck traffic will never disappear (Conca 2014). This is particularly important because the truck is worse than the pipeline in spills. However, both trucks and railroads are the least concerning factors of oil spills due to the fact that they both make up such a miniscule percentage in oil transportation.

According to engineers of the Dakota Access Pipeline it will transport so called “clean barrels”, which means that “What is put in the system in the Bakken is what the refiners get at the other end” say the senior vice president for engineering at the project sponsor, Energy Transfer Partners (ETP), Joey Mahmoud (Nemec 2016). Mahmoud also stated that through the pipeline, the barrels will be able to transport from the Bakken formation to the Gulf as clean barrels. One of the ways oil can become unclean is by being shipped dirty by the supplier and that is through becoming contaminated by tobacco smoke, bacteria, salt, coal dust, human hair, and pollen. All of which the naked eye can only see up to 40 μm , which allows it to only see human hair at 70 μm and salt at 100 μm . The rest is undetectable and is why the ability to transport clean oil is impressive. Usually such contaminates oil through outside forces in storage or during the transport process to the machine (Conca 2014).

There is economic gain to building the Dakota Pipeline and that is through the \$3.7 billion being spent on the project, \$189 million will be paid to the landowners as well as the investment made into the United States directly locally and nationally with a labor force by creating 8,000 to 12,000 construction jobs and 40 permanent operating jobs. The economic impact of the project will also transverse through the \$1 billion pipe being constructed currently in 2016 as well as other related equipment. Most of the equipment is made in the United States except for a couple of pumps and a little bit of the pipe (Nemec 2016). All the materials that could be sourced here were, so it is estimated that the overall \$3-4 billion job has a total impact of \$20 billion on the economy. In addition, the project will need about 12,000 construction workers by the time it’s finished in early 2017 (“Dakota Access Pipeline” 2015).

For the workers, the Dakota Access L.L.C hired 100% union labor. This is notably important because the ETP took provisional actions in order to not get shut down like Barack Obama turned down the Keystone Pipeline XL on account that it wouldn’t create that many jobs. The issue with the Keystone Pipeline XL is that, although it would create up to 20,000 jobs, \$1.9 billion had already been spent by TransCanada and would reduce the number of supply chain jobs that could be created in the future

(Nemec 2016). For the Dakota Access Pipeline, it will create 8,000 to 12,000 temporary construction jobs and 40 permanent operating jobs once the pipeline is finished. Although the Keystone Pipeline XL would create more jobs than the Dakota Access Pipeline, the use of union organized workers is the key factor to their success.

How the pipeline was constructed is also a key factor to its success with being passed by legislation. For starters, the Dakota Access Pipeline will meet or exceed state and federal safety requirements and at a minimum will be designed in accordance with 49 Code of Federal Regulation Part 195 (Nemec 2016). This code summarized means that DAPL will follow the protocols concerning using computation pipeline monitoring which is a software-based monitoring tool that alerts the pipeline dispatcher of a possible pipeline leak, to make sure that the construction of the pipeline complies with the protocols in that if a pipeline must be built underwater then it cannot protrude into the water and should be built underground, and that the pipeline follows the safety standards on transporting hazardous liquids or carbon dioxide (Nemec 2016). To meet these requirements, the pipes in the Dakota Access Pipeline have leak detection and remote control valve systems and that ETP operates 71,000 miles of other various energy pipelines across the nation, so this is not a new phenomena. In addition, ETP claims that the pipe is all brand new and all the materials that went into making it are of the highest quality (Nemec 2016).

Land Claim

The Dakota Access Pipeline is a 1,772 miles, 30-inch diameter pipeline that will start in the Bakken, a huge rock formation in North Dakota, and moves in a somewhat straight line through South Dakota and Iowa, and ends at the main oil hub near Patoka, Illinois (“Dakota Access Pipeline” 2015). Eminent domain was used in order for Dakota Access L.L.C to annex it and build this crude oil pipeline. Backed by the Fifth Amendment to the U.S. Constitution, eminent domain is the power a government or state has to seize private property for public use, in exchange for payment of fair market value. Some examples that are typically used to make with eminent domain are roads, courthouses, schools and utilities. Sometimes it can be used to make private commercial development such as the Dakota Access Pipeline if it is considered a benefit to the community (Epstein 1985).

It is also stated in the Fifth Amendment that private property can’t be taken for public use without just compensation, but the catch is that private land can be taken without the landowner’s consent just as long as they are fairly compensated. The legal

process of eminent domain, formerly known as condemnation, starts out with the government or state deciding that they need a parcel or sometimes miles of land and then contacts the owner to work out a selling price. If the property owner agrees with the sale price then the government pays them and the landowner gives up the deed to the land. However, this isn't as usual as cases where a landowner is not willing to give up their land. For this instance, the two parties must proceed to a hearing where a "fair value" is established (Epstein 1985). Sometimes the landowner refuses sale entirely and in that case, the government issues a public notice of the hearing. In this hearing the government must prove that it attempted negotiate the sale and that the land is for public use. If the government wins then an appraiser is setup to establish the fair market value. If the landowner wins then the land remains their private property. Both sides are allowed to appeal the decision. And if the government does not follow through with compensation then the landowner has the right to sue for the money (Epstein 1985).

In the case of Iowa for the Dakota Access Pipeline, ETP claims that it legally obtained the land through eminent domain. However, state utility regulators in Iowa had received notice that 300 parcels of land had been taken without consent from the landowners while the supposed pipeline would run diagonally through 18 Iowa counties. The Iowa Utilities Board was unable to reach a decision regarding the permit requested by Dakota Access LLC to build the 30 inch diameter pipeline along 346 miles in Iowa (Petroski 2016). Another concern the residents of Iowa had was that the pipeline would not directly benefit any public contributions to Iowa. In a March 2015 *Des Moines Register* poll, it was reported that 57% of Iowans supported the Dakota Access Pipeline, but 74% were opposed to the use of eminent domain on behalf of a private corporation. And in a February 2016 *Des Moines Register* article, Dakota Access LLC said it had voluntarily obtained signed easements for roughly 80% of the Iowa land parcels, which is primarily farmland. There was, however a remaining 296 parcels that could've faced condemnation proceedings if the pipeline was approved by state regulators who conclude eminent domain was justified under Iowa law (Petroski 2016).

Most of the Dakota Access Pipeline is finished and what is being protested on today is the remaining 1,100 feet in North Dakota. The pipeline as of now, is 87% complete. Some of the concerns that are similar to those of standing rock was from the farmers in Iowa. Farmers feared for their land like the Sioux tribe fears for its water supply and historic relics. The farmers were particularly worried about the diagonal path of the project's route because it would interfere with farm tile drainage lines. The Dakota Access LLC had promised it would repair and damage to tile lands and the pipeline will

be far enough under ground that they would still be able to raise crops above the buried pipeline (“Dakota Access Pipeline” 2015).

The pipeline has also caused extensive controversy because it would travel directly underneath the Missouri River, the primary water source for the Standing Rock Sioux tribe. The Standing Rock Sioux tribe has a population of around 10,000 and has a reservation in the central part of North Dakota and South Dakota (“What to Know About the Dakota Access Pipeline Protest” 2016). ETP insisted that they had taken extraordinary measures to prevent any sort of disaster the pipeline might cause, but opponents point out that even the safest pipelines leak. The Pipeline and Hazardous Materials Safety Administration (PHMSA) has reported that there have been more than 3,300 incidents of leaks and ruptures of oil and gas pipelines since 2010 (Cozzarelli, Skalak, Kent, Benthem, Mumford, Jolly 2016). Even if one leak or a minor incident did occur, the spill could damage the entire tribe’s water supply. In addition, the pipeline would run through the tribe’s sacred burial ground. And even though the land that will be used for the pipeline is not directly on the reservation of the Standing Rock Sioux tribe, tribal leaders contend that the federal government did not sufficiently engage the tribe during the permitting process, which is a requirement under federal law (Healy 2016).

The Standing Rock Sioux tribe has been continuously vocal about opposing the construction of the Dakota Access Pipeline, which has a lot to do with their drinking water supply as said before, but also because it will be built over, and thus ultimately destroying, sacred, centuries old land. Not only is this inhumane, but it could also be potentially illegal. In Section 106 of the National Historic Preservation Act 1966 (NHPA), the Standing Rock Sioux tribe were not adequately consulted on the pipeline’s potential impact on these cultural and ancestral sites. To summarize Section 106 of the NHPA, it is required for Federal agencies to take into account the effects of their endeavors on historic properties, and afford the Advisory Council on Historic Preservation a reasonable opportunity to offer a statement of opinion (N.G. 2003). Without this, the whole process of the pipeline concerning the land that affects the Standing Rock Sioux tribe could be illegal and therefore it would be unlawful to continue construction on that land.

Legal Context

As far as the legal matters go, the Standing Rock Sioux tribe sued the Army Corps of Engineers, which permitted the project, for violating the National Historic Preservation Act and the National Environmental Policy Act (NEPA). NHPA requires

that the Army Corps of Engineers have to regard the cultural significance of federally permitted sites and NEPA needs to be considered on the account of the implications for the waterways. The process was ongoing about what the final decision should be. On December 4th, 2016 the agency decided to not grant the permit for construction on the site and suggested that the pipeline be routed for an alternative route. However, ETP has decided to continue construction without a permit (“Is Decision a brief timeout or a game changer for Standing Rock?” 2016).

It was declared a victory for the protesters after the Army’s Assistant Secretary for Civil Works, Jo-Ellen Darcy, announced that she would not grant a permit to Dakota Access LLC. Her decision was based on a need to explore alternate routes for the Dakota Access pipeline. Darcy also suggested that the discussion should continue on where the alternative routes would be best for everyone through an Environmental Impact Statement with full input and analysis. After this announcement, it was unclear how durable the government’s decision would be. Especially since now there are news reporting that Energy Transfer has stated that they will continue to drill at the current location, despite having no permit, under the Missouri River (“Is Decision a brief timeout or a game changer for Standing Rock?” 2016).

On top of the debate of whether or not the Dakota Access Pipeline will be legally constructed, the police also have a force to be reckoned with. Many of the security officers had used pepper spray, rubber bullets and concussion cannons, security dogs, as well as many other uses of force on the peaceful protestors at Standing Rock. On a night later in November, 21-year-old Sophia Wilansky had her arm seriously injured from a concussion grenade that the police threw at her (Engler 2016). There is a continuous debate on whether or not the police actually did throw the concussion at her, but Wilansky holds her ground as well as the many other witnesses that say they saw the incident.

Police have also used water cannons to fight off the protesters that have now reached around 2,000 people. It was on the night of November 21st that the police and protesters epically clashed. The protesters set fire to the police barricade Backwater Bridge, which has for months been the site of a protest against the pipeline. The police responded to this by shooting water cannons into the crowd of protesters in 23-degree weather. That night it was reported by the New York Times that the Oceti Sakowin medical team stated that nearly 200 people were injured and 12 people were hospitalized for head injuries. Hypothermia was additionally a problem due to the freezing climate (“Police Remove Pipeline Protesters in North Dakota” 2016).

Many people have been arrested for protesting the pipeline including actress Shailene Woodley. She had become a major advocate for the Standing Rock Sioux tribe since late September and after being sent to Morton County jail with 26 other protesters, she publicly voiced the situation with what was happening in North Dakota. These arrests have been ongoing and since August, a total of 575 arrests have been counted. It has come to the point that the state's court system is now facing huge cost overruns and doesn't have enough judges, lawyers and clerks to handle this situation. The cost of this overpopulated protest based court issue is going to be around \$1.5 million extra next year, which is about 1 ½% of its current two-year budget. There are also problems concerning public defenders. They are experiencing an imbalance of public defenders for the influx of protesters, which will cost them an additional \$670,000 from the Legislature. This amounts to about 3-½ % of its current two-year budget (Bromwich 2016). As for the police force guarding the pipeline, the state of North Dakota has paid more than \$11.8 million and the department will seek another \$7 million in emergency borrowing on top of the \$10 million borrowed earlier this year. Morton County has also spent more than \$8 million in policing the protests (Engler 2016). It is clear that the state is running out of funds to keep the police force present in order to protect the pipeline.

The conditions of the jails are also an issue legally. Activists of the protest described the jail cells being similar to dog kennels and they had been labeled by numbers when taken in. One of the activists, Floris White, said she was arrested and then transported by bus to the Morton County Correctional Center, where her and other protest detainees were locked in cages in the facility's garage (Bromwich 2016). Another organizer, Mekasi Camp-Horinek said that he and his mother were arrested and then placed in one of the metal enclosures together and wrote a number on his arm. There are no beds in these facilities where they've placed the protesters. The Morton County Sheriff's Department said in a statement that the enclosures were "temporary holding cells" that are composed of chain link fence and were only used when police made mass arrests. The cells have also been permitted by the North Dakota Department of Corrections. The department also claims that prisoners have access to bathrooms, meals and drinking water. However, the protesters have called on the U.S. Department of Justice to investigate the tactics used by authorities (Bromwich 2016).

Proponents

Proponents for the Dakota Access Pipeline are composed of the people constructing the pipeline since they were employed to do so, Energy Transfer Partners,

and the people who currently own a share in stock in the operation like Donald Trump. The argument is that the pipeline will contribute to the national economy as well as local by its employment of 8,000 to 12,000 temporary construction workers and 40 permanent operating jobs. The \$3.78 billion job is proposed to spend \$189 million out of that to pay landowners as well. ETP also states that this pipeline will make the United States less energy dependent even though we are the third largest producer of oil energy in the world (Nemec 2016).

On the national level, Dakota Access LLC has stated that the increased domestic crude oil production will translate into more energy independence for the United States. Dakota Access also states that even though the United States is the third largest producer in the world, it is as well the number one consumer of crude oil in the world. With this pipeline they aim to close the gap between those two findings. The wish is to make the United States less of an importer for crude oil because although in 2013, the U.S. produced 7.5 million barrels of crude oil per day it had simultaneously still imported 7.7 million barrels per day in order to meet consumer demands. The goal is to eliminate the middle-man of purchasing crude oil abroad and become a larger producer in oil. The Bakken oil has been a goldmine for crude oil. It went from 309,000 barrels of oil a day into 2010 to 1 million barrels a day in 2014. That is a significant increase and ETP wants to build this pipeline because it is the most efficient way of reaching multiple U.S. markets (“Dakota Access Pipeline” 2015).

For global economic impact, Dakota Access says the \$3.78 billion investment will create 8,000 to 12,000 jobs including 40 permanent. The construction phase required millions of hours of labor for welders, mechanics, electricians, pipefitters, heavy equipment operators, and others within the heavy construction industry. There is also a demand for those who manufacture the steel pipes, fittings, valves, pumps and control devices necessary for a major pipeline. Everything that could be made in the United States was and that is mostly everything except for a couple of pumps and a little bit of the pipe. This overall \$3-4 billion project will translate into \$20 billion in the economy according to Dakota Access. In addition, the construction on the pipeline will boost local economies through expanded use of hotels, motels, restaurants, and other services by the workers (“Dakota Access Pipeline” 2016).

The pipeline will also convert into millions in state and local profits during the construction phase and an estimated \$129 million yearly in property and income taxes. To the states of North Dakota, South Dakota, Iowa and Illinois, Dakota Access stated that the pipeline will generate about \$50 million yearly in property taxes and nearly \$74

million in sales taxes. This money translates into contributing to schools, roads, emergency services, and more (“Dakota Access Pipeline” 2015). These are the arguments used when Dakota Access LLC appealed to landowners as well in order to produce evidence that it would boost their local economies as well as the national & global economy.

The project will additionally aid farmers by lessening the strains in the Upper Midwest railroads. Instead of using the railroads for transporting clean crude oil, the pipeline will become the main use of transportation. Currently there is a lack of rail carts to move grain out of South Dakota and the tariffs on the grain have increased from \$50 to almost \$1,400 per car. These increases in cost can mean up to \$1.00 from every bushel of corn shipped, so The Bakken Pipeline will relieve transportation shortages for agriculture and other industries (“Dakota Access Pipeline” 2015).

Opponents

Those who oppose the Dakota Access Pipeline include: environmentalists, conservationists, scientists, celebrities, veterans, some farmers, and the Native Americans. The main concern is about what is at stake with the environment if the pipeline does leak or break. Greenpeace, a non-governmental environmental organization, and a group of 160+ scientists dedicated to conservation and preservation of threatened natural resources & endangered species have openly expressed their opposition to the pipeline. In addition, the Science & Environmental Health Network has also publicly spoken out against the pipeline (“A Sustainability Dialogue: The Dakota Access Pipeline and subjugation of Native Americans” 2016).

Why exactly do over 160 scientists oppose the Dakota Access Pipeline? That is because DAPL had not thoroughly assessed the negative ecological, cultural, socioeconomic, and public health impacts of the people and animals in the surrounding area. It appears that DAPL had haphazardly approached the extraction of natural resources without going over the consequences of oil development. Pipelines do break and there have been a reported 3,300 pipeline leaks in just the past six years (Januchowski 2016). And in a Wall Street Journal review, it was reported that four in every five-pipeline accidents were discovered by local residents, not the companies that own the pipelines (“High-Tech Monitors Often Miss Oil Pipeline Leaks” 2016). The practices that DAPL took to build the pipeline through these four states and their land does not comply with recent Paris Agreement commitments to cut fossil fuel emissions by 2030. In order to show their dissent on the matter, many scientists have signed a

resolution in support of halting all construction on the DAPL unit until revised environmental and cultural assessments are executed as requested by the Standing Rock Sioux Tribe (Januchowski 2016).

Conservationists and environmentalists worry about safety, and the impacts on air, water, wildlife and farming because pipeline lines do break. Environmentalists and Native Americans have articulated their fears that the Missouri River might become contaminated in the event of a spill or leak, jeopardizing a source of drinking and irrigation water that affect thousands of people who depend on clean water (“A Sustainability Dialogue: The Dakota Access Pipeline and subjugation of Native Americans” 2016). Just in early December a pipeline, luckily with water, did leak due to equipment failure. It leaked approximately 84,000 gallons of source water into Skull Creek, in Bowman County, North Dakota. And in another incident in 2013 concerning North Dakota, a pipeline owned by a subsidiary of US refiner Tesoro had leaked 20,000 barrels of crude oil into a wheat field, which equaled 10 years’ worth of onshore spilled in just one incident according to data from the US Department of Transport (“Huge Oil leak in North Dakota” 2013). Now these occurrences are just in North Dakota, but the amount of pipeline leaks/oil spills in total and as stated before add up to 3,300 in just six years.

The Standing Rock Sioux Tribe as well as being concerned about their water drinking supply, are worried about the destruction of their sites that hold historic, religious, and cultural significance. They say that this is where their ancestors hunted, fished, and were buried. Protests at pipeline construction sites in North Dakota started in early spring 2016 and drew the largest gathering of indigenous people throughout North America in the last 100 years as well as many other supporters. They call themselves the water protectors and land defenders. The Missouri River, more specifically Lake Oahe, is where the Standing Rock Sioux Tribe gets their water supply and that is the exact location where the rest of the 1,100 parcels of pipeline are to be finished (“A Sustainability Dialogue: The Dakota Access Pipeline and subjugation of Native Americans” 2016). And even with the harsh weather coming its way to North Dakota, leaders of the Sioux Tribe said they will not leave their protest campsites near construction zones, regardless of an order to do so from North Dakota Governor Jack Dalrymple (Richardson 2016).

Veterans have also come into the mix of opposing the construction of the Dakota Access Pipeline. On December 4th, throngs of about 2,000 veterans from the group “Veterans Stand for Standing Rock” came to join the fight for Standing Rock’s

water supply as well as the indigenous peoples' sacred land (Engler 2016). The veterans announced that they would serve as human shields for the protestors and will protect the innocent people. On this past Sunday, December 4th, 2016, veterans have done just that by shutting down the 'Standing Rock' Bridge with their cars to protect protesters. And just yesterday, December 5th, 2016, Michael Wood Jr., a Marine Corps veteran and the organizer of the veterans for Standing Rock, and Wes Clark Jr., an Army vet, made a formal apology to Native Elders for war and genocide by U.S. military (Engler 2016).

Celebrities such as Mark Ruffalo, Shailene Woodley, and Jane Fonda have also publicly voiced their opposition of the Dakota Access Pipeline. Actor Mark Ruffalo spent time in early November to join the protest at Standing Rock and was invited by Wahleah Johns, founder of Native Renewables. Together, they delivered Navajo-made portable solar panels to provide clean energy to power medical tents and other camp facilities as winter approaches (Engler 2016). Actress Shailene Woodley also participated in the Standing Rock protests and was arrested in October charged with trespassing and engaging in a riot, both misdemeanors that carry a maximum punishment of a month in jail and a \$1,500 fine (Engler 2016). She will stand trial on February 22nd. Actress Jane Fonda has also been actively participating in the fight on DAPL and the dangers surrounding the construction. On Thanksgiving, Jane Fonda and Shailene Woodley served dinner at the Oceti Sakowin camp for the protesters calling it an "Appreciation Dinner" instead ("Is decision a brief timeout or a game-changer for Standing Rock? 2016). It is now stated that any contributions made to the protesters could be fined up to \$1,000, which is a message from the local sheriff's office ("Is decision a brief timeout or a game-changer for Standing Rock? 2016).

Media Coverage

The media coverage of the Dakota Access Pipeline had not covered the protests in early September in the United States. However, there was International coverage and it created uproar that would only get larger when protests started to erupt in the U.S. At the time, construction workers bulldozed a section of land that tribal historic preservation officers had documented as a historic, sacred site, and when protesters filled the area security workers used attack dogs, which bit at least 5 of the people protesting. This event was filmed and viewed by several million people on different social media platforms such as YouTube and Facebook ("Is decision a brief timeout or a game-changer for Standing Rock? 2016).



Source: <https://www.clutchmagonline.com>

Later in October, armed soldiers and police with riot gear and military equipment cleared an encampment that was directly in the proposed pipeline's path. Many celebrities such as Mark Ruffalo, Shailene Woodley, and Jane Fonda brought light to the issue even further to the general public ("Is decision a brief timeout or a game-changer for Standing Rock? 2016). And on November 15th, protesters in Chicago, Los Angeles, Manhattan, Denver, and other cities held protests against the pipeline in a coordinated protest which organizers called a "National Day of Action" (Healy 2016).

The lack of coverage from the media might have something to do with a lot of journalists being arrested. Amy Goodman, a journalist with the *Democracy Now!* program, was arrested while covering the protest for allegedly trespassing. Footage she captured showed police officers allowing their dogs to charge protesters (Martindale 2016). She stated on October 17th that "[These charges are] a complete vindication of my right as a journalist to cover the attack on the protesters, and of the public's right to know what is happening with the Dakota Access pipeline" (Martindale 2016). As of now, she is still fighting those charges, so it is clear how hostile this environment is to conventional journalists.

Politicians Involved

The politicians involved in this dispute are both politically active and vocal or completely silent on the matter, there is no in between. Politicians such as Green Party Jill Stein as well as Vermont Senator Bernie Sanders have continuously been outspoken against the construction of the pipeline while former presidential nominee Hillary Clinton and President-elect Donald Trump have remained silent on the issue. President Barack Obama had issued a halt on the construction of the pipeline, but many including Bernie Sanders feel that this is not enough and he needs to talk action to stop the construction permanently (“Is decision a brief timeout or a game-changer for Standing Rock? 2016). Many other politicians have just become active in the DAPL protest such as Hawaiian congresswoman, Tulsi Gabbard, as well as the senior Democrat on the Public Resources Committee, Raul Grijalva (“Is decision a brief timeout or a game-changer for Standing Rock? 2016).

Senator and former Presidential nominee, Bernie Sanders, has remained continuously vocal against the construction of the Dakota Access Pipeline. He even joined a protest in Washington, DC early in September to raise awareness on the pressing issue of this pipeline possibly contaminating a whole drinking supply of millions of people. In early October, Sanders and five other US lawmakers sent President Barack Obama a letter asking him to shut down the pipeline all together and end the construction, calling it an imperative measure for Indigenous rights and the climate (“Dakota Access Pipeline Mounts 2016). On the National Day of Action, November 15th, Sanders stood outside the White House demanding that we start fighting for our indigenous people and that their sovereign right be honored. He also proclaimed that it is time for politicians to stand up and protect access to clean water and push towards greener energy sources (“Is decision a brief timeout or a game-changer for Standing Rock? 2016).

Green Party candidate and political activist, Jill Stein, has also participated in the protests against the construction of the Dakota Access Pipeline. She is currently facing charges from writing on one of the bulldozers saying, “I approve this message” with other messages left by the protesters. This was after the protesters’ victory on stopping the bulldozers that were trying to dismantle the native’s sacred land (“Is decision a brief timeout or a game-changer for Standing Rock? 2016). She continues to voice the concerns and opposition of the construction of the Dakota Access Pipeline.

Former presidential candidate, Hillary Clinton, had written a statement that said, “We received a letter today from representatives of the tribes protesting the construction of the Dakota Access Pipeline. From the beginning of this campaign, Secretary Clinton

has been clear that she thinks all voices should be heard and all views considered in federal infrastructure projects. Now, all of the parties involved—including the federal government, the pipeline company and contractors, the state of North Dakota, and the tribes—need to find a path forward that serves the broadest public interest. As that happens, it's important that on the ground in North Dakota, everyone respects demonstrators' rights to protest peacefully, and workers' rights to do their jobs safely.” (“Is decision a brief timeout or a game-changer for Standing Rock?” 2016).

This statement doesn't voice any concern for action, and she has remained silent before and after she released this. Many of the youth protesting DAPL came to her headquarters and demanded some sort of response, but with no prevail. She has been useless as far as contributing to the protesters.

Presidential-elect Donald Trump has for the most part remained silent as well, but has finally made a statement on December 2nd, 2016. He announced that he supports the construction of the pipeline. This is probably because in May 2016, his federal disclosure forms showed that he held between \$15,000 and \$50,000 in stock in Energy Transfer Partners and around \$100,000 to \$250,000 in Phillips 66 (“Is decision a brief timeout or a game-changer for Standing Rock? 2016). In addition, ETP had donated \$100,000 to a Trump Victory Fund before the election in the hopes that he'd support it (“Is decision a brief timeout or a game-changer for Standing Rock? 2016). This makes a conflict of interest when making presidential decisions affecting the pipeline, which is why president Obama is being pursued even more to make a move to end the construction.

Other politicians such as the senior Democrat on the Public Resources Committee, Raul Grijalva, have publically proclaimed that this appearance of conflict of interest is “disturbing” when it comes to Donald Trump. He also went to Standing Rock in order to support the protesters and continues to voice his opposition to the construction. Congresswoman, Tulsi Gabbard, will also be joining thousands of military veterans and is a huge advocate for protecting our water sources for current and future generations (“Is decision a brief timeout or a game-changer for Standing Rock? 2016).

III. Analysis

Although the United States will benefit economically from the Dakota Access Pipeline, a lot of this is only temporary. Dakota Access LLC has employed 8,000 to 12,000 temporary jobs, but much fewer permanent jobs coming to about 40. The numbers such as \$189 million to landowners is essentially nothing because they are still left with

\$3.5 billion in profit as well as the \$20 billion that will go into the economy is not explained. I am not sure how they've made these estimates and where they've gotten these numbers or what will come out of the proposed pipeline.

Furthermore, ETP explains how important the pipeline is to the United States due to us being the number one consumer in the world and how they want to match that demand. However, this goes against the Paris Agreement commitments to cut fossil fuel emissions by 2030. I see how oil is very important to our economy, but we are only focusing on temporary energy sources and need to be focusing on something long term such as green energy sources. Oil will eventually run out and it will most likely not happen in our lifetime, but we really need to start planning for future generations.

In addition, the Missouri river, specifically Lake Oahe, is at stake as well as the Standing Rock Sioux tribe's sacred land. If the pipeline does burst it will affect millions of peoples' drinking water. There have been 3,300 oil leaks in the past 6 years and they have all been detrimental to the surrounding community. In the incident that I included where Tesoro leaked 20,000 bbl of crude oil into a wheat field, it cost \$4 million to clean up and was detrimental to the wheat fields it encompassed ("Huge Oil leak in North Dakota" 2013). ETP tried to reassure the tribe and farmers that the land the pipeline transverses is of the highest quality and has a slim chance of leaking, but the number of leaks that happened in the last 6 years say otherwise. I think it is time to stand up for the Native Americans and put people ahead of corporate profit.

The Energy Transfer Partners CEO, Kelcy Warren, argues that this does not traverse the land of the Standing Rock Sioux Tribe and they have every right to do construction, but 1851 Treaty of Traverse des Sioux says differently. This treaty was signed on July 23, 1851 and was between the United States government and Sioux Indians for the agreement that the Sioux tribe would move onto reservations along the Minnesota River in exchange for cash and goods (Kane 1951). With this treaty, it is clear that Dakota Access LLC is not following former US signed documents and is technically working against the law in order to build this billion dollar pipeline.

It is also unclear with what specifically happens if the pipeline does leak, how the residents would know of a leak, why the company seeks for permanent right of way of farmland when these oil rights can only be obtained for 25 years at a time, who the majority of stock investors of Dakota Access are, and where the liability lies if the pipeline does burst (Nemec 2016). The Iowa Environmental Council is concerned as to whether or not the state has enough protections such as oversight on the company to ensure it has enough money to address any harm caused by a spill. Iowa only requires

pipeline owners to have \$250,000 reserve fund, which will not be able to sufficiently and thoroughly address the damage (“What to Know About the Dakota Access Pipeline Protests” 2016). There are too many open ends to this pipeline, which is alarming.

Crude is a nasty material that is extremely destructive to environments as well as highly toxic to human or animals if it should spill. It is not useful for energy or anything else until it’s chemically processed or refined into commodities like naphtha, gasoline, heating oil, kerosene, and many other forms. The water of the Standing Rock Sioux Tribe is in critical danger and since it is apparent that ETP does not wish to stop construction and the people in power are not making critical moves, it would be beneficial to map out an alternative route much like what the Army’s Assistant Secretary for Civil Works, Jo-Ellen Darcy, decided. I think it would be entirely more beneficial for not only us, but also for the future if we started looking into greener energy sources that will not destroy the environment. Moreover, there is an ambiguity regarding the amount of money put into this pipeline and the \$15 million spent on law enforcement to fight off the protesters could be put to use in other things such as roads, schools, and other public entities.

IV. Conclusion

The \$3.78 billion pipeline will no doubt produce millions, potentially billions of dollars in revenue, but it is at the expense of the Standing Rock Sioux Tribe and millions of others’ water supply and environment. Not to mention the land taken under eminent domain with some having their land taken without consent. It is a tricky situation when so much money is on the line, but it would be beneficial in the long run to focus this energy on greener energy sources that will produce high amounts of energy without taking a toll on the environment and it’s living organisms. It’s time to stand up for the Native Americans and put people ahead of corporate profit.

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Section IV: Critical Essays

Luca Pacioli, The Father of Accounting

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The history of accounting traces back centuries, to a time when it was just part of business and not a field of study. The study of the historiography of accounting involves the study of how and why accounting had been written, how historical writing on accounting had developed and the main topics and themes presented ². Accounting was born before it was a research field, and it was born because of Luca Pacioli. A humanist, Pacioli extended his knowledge of mathematics in his complex work, *Summa De Arithmetica*, that includes a treatise on book-keeping, ultimately altering the future of accounting. The 27-page treatise is considered to be Pacioli's greatest accomplishment since it is still used in the same manner as presented years ago. There is a part of Pacioli that fails to be comprehended. Pacioli not only set the principles of double-entry bookkeeping but also gave an approach to teaching the subject in a unique way that forever changed the history of accounting. Luca Pacioli was a man of pedagogic insight with an expertise in attempting to grab the audience's attention to maximize their attempts of learning the material. He brought a subject of journal-entry bookkeeping to life that is still taught today. Through the study of Pacioli's childhood education, lifetime encounters and professional successes, he emerged as the father of accounting.

"The father of accounting", Luca Pacioli was born in 1445 around the eastern border of the Florentine state.³ There is not much recorded information on Pacioli's early childhood but is thought that he spent most of his time in Venice.⁴ As a child, Pacioli grew up in *abbaco*⁵ schooling, where he was given the foundation that he built on later in

¹ Written under the direction of Dr. Alison Smith for HI362: *Renaissance Italy*.

² def. Teodora Viorica Fărcaș and Adriana Tiron Tudor. "An Overlook into the Accounting History Evolution from a Romanian Point of View. A Literature Review." *Economia Aziendale Online* 2000 Web 7, no. 1 (January 2016):. doi:10.6092/2038-5498/7.1.72.

³ Martin Shubik. *Proceedings of the Conference Accounting and Economics: In Honour of the 500th Anniversary of the Publication of Luca Pacioli's Summa de Arithmetica, Geometria, Proportioni et Propotionalita*, Siena, 18-19 November 1992. Routledge, 2014:162.

⁴ Ibid.

⁵ A school for sons of merchants. Ibid.

life. Abbaco schools that Pacioli attended as a young child were schools attended by only the sons of merchants and craftsman.⁶ These schools were established through the financial power of merchants for their offspring. This enhanced the curriculum to only focus on the needs of merchants, since most of these children or young adults were destined to be merchants like their fathers. Around 1460, Pacioli was under the guidance of a famous merchant Antonio Rompiasi.⁷ Together they grew into better businessmen and Pacioli was able to learn the ropes of the business realm from Rompiasi.⁸ During this time, Pacioli was attending abbaco classes at the Rialto School under master Domenico Bragadin. Here, he was able to study geometry, algebra and theology, all of which is later seen in his work, *Summa De Arithmetica*. While attending to his educational studies, Pacioli was living with a prestigious mathematician, Leon Battista Alberti.

Young Pacioli gleaned much insight from the relationship formed from Alberti and Rompiasi.⁹ Pacioli furthered his studies in the mathematical approach to business from these very reliable scholarly mentors. Beginning in 1475, Pacioli moved to Perugia where he began his profession in teaching. He started sharing his knowledge in teaching but before long he carried on traditional behaviors of not staying put in a place for a substantial amount of time. Pacioli left Perugia in desire to reflect on his religion and become evolved in his different religious movements.¹⁰ During the Renaissance, Italy's Catholic Church had considerable wealth and had control over vast territories.¹¹ The fall of the Roman Empire led to the growing political and economic power of the church, giving them the need for Pacioli's intelligent mind for business and accounting.¹² The church wanted Pacioli's help in its business aspects and that is exactly what he did when

⁶ Alan Sangster, Gregory N. Stoner, and Patricia A. McCarthy. "Lessons for the Classroom from Luca Pacioli." *Issues in Accounting Education* 22, no. 3 (August 2007): 447-57.

⁷ Ibid.

⁸ Rompiasi was a man of the current business world in regards to merchants. Martin Shubik. *Proceedings of the Conference Accounting and Economics: In Honour of the 500th Anniversary of the Publication of Luca Pacioli's Summa de Arithmetica, Geometria, Proportioni et Propotionalita*, Siena, 18-19 November 1992. Routledge, 2014:169.

⁹ Ibid,170.

¹⁰ Ibid.

¹¹ Valerio Antonelli. and Raffaele D'Alessio. "Accounting History as a Local Discipline: The Case of the Italian-Speaking Literature (1869-2008)." *Accounting Historians Journal* 41, no. 1 (June 2014): 93-94.

¹² Ibid

he returned to Perugia in 1477 and began the preparation to share his knowledge.¹³

Pacioli received his honor and fame during the Renaissance era because of his profound teaching abilities and study of works. When Pacioli returned to the university from his religious mission in Perugia, he taught students the application of mathematics in everyday life.¹⁴ Pacioli learned from one of the best abbaco professors, Leonardo Pisano Fibonacci,¹⁵ giving him the ability to demonstrate the “problem based learning”¹⁶ for business merchants. The approach presented the goal to establish general cases to all and present transferable knowledge, applying mathematical skills (arithmetic, algebra, geometry and trigonometry) to all merchandising situations, involving manufacturing and exchange.¹⁷ Pacioli expressed Fibonacci’s mathematical concepts that included, using the Arabic numerals 1-9, the ninth century algebra of Persian including the value of zero, a number place value system, and how to perform calculations without the use of abacus.¹⁸ This is where Pacioli got some of his motivation from and during this era created his outstanding piece of work that reshaped the world of business for generations to come.

In 1494, Pacioli used his previous education and mentorships to create his groundbreaking masterpiece. Pacioli expressed his humanist morals through his work, *Summa de Arithmetica*, intending to “extend knowledge to everyone, not just those with the wealth to afford it”.¹⁹ He wrote in northern Italian dialect²⁰ in hopes to make it

¹³ Martin Shubik. Proceedings of the Conference Accounting and Economics: In Honour of the 500th Anniversary of the Publication of Luca Pacioli’s *Summa de Arithmetica*, *Geometria, Proportioni et Propotionalita*, Siena, 18-19 November 1992. Routledge, 2014.

¹⁴ Martin Shubik. Proceedings of the Conference Accounting and Economics: In Honour of the 500th Anniversary of the Publication of Luca Pacioli’s *Summa de Arithmetica*, *Geometria, Proportioni et Propotionalita*, Siena, 18-19 November 1992. Routledge, 2014:168.

¹⁵ Alan Sangster. and Giovanna Scataglinibelghitar. “Luca Pacioli: The Father of Accounting Education.” *Accounting Education* 19, no. 4 (August 2010): 425. doi:10.1080/09639284.2010.501955.

¹⁶ Alan Sangster. Gregory N. Stoner, and Patricia A. McCarthy. “Lessons for the Classroom from Luca Pacioli.” *Issues in Accounting Education* 22, no. 3 (August 2007): 449.

¹⁷ Ibid.

¹⁸ Alan Sangster. and Giovanna Scataglinibelghitar. “Luca Pacioli: The Father of Accounting Education.” *Accounting Education* 19, no. 4 (August 2010): 425. doi:10.1080/09639284.2010.501955.

¹⁹ Ibid.,426

²⁰ The *Summa de Arthemitca* was written in vernacular language of the day and in script which was the form of writing taught in the abbaco schools during the time period.

accessible to all who traded in those markets across Europe. As mentioned before, Pacioli was known for consistently being on the move and never being in one place for a substantial amount of time. It has been said that Pacioli spent more than 30 years gathering material that would be used within his writing of the *Summa*.²¹ He traveled widely, starting as a young boy, and saw a variety of styles of teaching. He recorded the material in manuscript texts, all being completed leading up to the final publishing of *Summa*. Throughout his piece of work, he included commercial arithmetic; algebra; weights and measures; barter; currency exchange; geometry; gauging²², the legal framework of business; how to conduct a business; business ethics; record keeping; business letter writing; and double-entry bookkeeping.²³ He provided a 27- page treatise on double-entry bookkeeping, which has been known to be the earliest evidence we have on the subject of accounting and has stuck around.²⁴

Pacioli created the *Summa* for what it is believed to be used primarily as a text in all abbaco schools.²⁵ As previously noted, Pacioli received an abbaco education and later on in life taught the abbaco education to fellow merchants and craftsmen. It was said that within abbaco learning and a traditional abbaco education bookkeeping was not taught and there was no such department as accounting.²⁶ Pacioli was the first to change this for merchants but also allowed not only merchants to be able to abide and learn from these new findings he had discovered. Pacioli embellished his teaching techniques and abbaco education through his work of *Summa de Arithmetica*. It was written in a way that Pacioli is now known for teaching. It enlightened and informed in the didactic style it was

Ibid,425.

²¹ Alan Sangster. Gregory N. Stoner, and Patricia A. McCarthy. "Lessons for the Classroom from Luca Pacioli." *Issues in Accounting Education* 22, no. 3 (August 2007): 450.

²² how to determine the capacity, volume, or contents of an object; and precise measurement of an object. Alan Sangster. and Giovanna Scataglinibelghitar. "Luca Pacioli: The Father of Accounting Education." *Accounting Education* 19, no. 4 (August 2010): 424. doi:10.1080/09639284.2010.501955.

²³ Ibid.

²⁴ Ibid.

²⁵ Alan Sangster. Gregory N. Stoner, and Patricia A. McCarthy. "Lessons for the Classroom from Luca Pacioli." *Issues in Accounting Education* 22, no. 3 (August 2007): 451.

²⁶ Alan Sangster. and Giovanna Scataglinibelghitar. "Luca Pacioli: The Father of Accounting Education." *Accounting Education* 19, no. 4 (August 2010): 427. doi:10.1080/09639284.2010.501955.

written, to instruct the audience. He reveals that he guided the audience to do as asked, for it is what is “best” and he explained why this was so important to follow.²⁷ For example, in the introduction of *Summa de Arithmetica*, Pacioli states his “things are necessary to the real merchant and the method of keeping a ledger and its journal well”.²⁸ He also states that he did not write any of the *Summa* from scratch, rather he got practical examples to demonstrate all concepts.²⁹ He wanted to ensure not just how to do double-entry and bookkeeping, but make sure it was performed appropriately. He provides examples and instructions on how to record transactions using three primary books known as the Memorandum, journal entry and the ledger.³⁰

He split up his treatise into three different books for students to truly learn the fundamentals of bookkeeping and the overall idea. The first book presented in the *Summa*, includes the Memorandum, also known as the household expense book. Pacioli states “it is meant by how it must be written up and by whom”.³¹ This included any purchase made or anything sold for a household or business, Pacioli commands that all must be recorded. He explained the urgency of this task through the style of his writing. He uses pedagogical devices to drive home the understanding of the purpose of the Memorandum.³² He describes at the beginning what is going to be covered and why it is relevant and then also ties in the same key elements again at the very end of discussing the first book to his treatise. For example, in the beginning he discusses the importance and why the Memorandum is necessary and in the final pages of the explanation he stresses, “but first [always] listen to what is customary to enter in the Memorandum”.³³ Pacioli presents the idea to record everything in an orderly and very organized manner. This was the first time this concept was developed and presented to the public, Pacioli knew this and for this

²⁷ Ibid.

²⁸ Lucas Pacioli. *Double-Entry Book Keeping*. London, United Kingdom: The Institute of Book-Keepers, LTD, 1, 1924.

²⁹ Alan Sangster, Gregory N. Stoner, and Patricia A. McCarthy. “Lessons for the Classroom from Luca Pacioli.” *Issues in Accounting Education* 22, no. 3 (August 2007): 448.

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³¹ Lucas Pacioli. *Double-Entry Book Keeping*. London, United Kingdom: The Institute of Book-Keepers, LTD, 14, 1924.

³² Alan Sangster, and Giovanna Scataglinibelghitar. “Luca Pacioli: The Father of Accounting Education.” *Accounting Education* 19, no. 4 (August 2010): 428. doi:10.1080/09639284.2010.501955.

³³ Lucas Pacioli. *Double-Entry Book Keeping*. London, United Kingdom: The Institute of Book-Keepers, LTD, 18, 1924.

reason divided his treatise as mentioned. He summarized the most important principles at the very end and sequenced the contents so that everything leading up builds onto what was just presented. Starting with the Memorandum, Pacioli moves to the next step in the idea of bookkeeping.

The second book that Pacioli provides insight on builds off of the Memorandum book, called the journal entry. This begins the process of when mathematical values start to play into effect, according to Pacioli.³⁴ The importance of dates is stated, so that one can always go back and look to find the exact day the transaction was made. Pacioli states before anything how important it is that “those who have the habit of keeping three books, as described, must never enter a thing into the journal entry before having it first entered it in the Memorandum”.³⁵ Pacioli uses his previous knowledge and experience to complete the following style he wrote his book in. At this point, the audience should understand the idea of simply recording what purchase or sale was made in the Memorandum and following it with the Journal entry, including the date. Pacioli also made clear that all entries must include one credit and one debit as he shows through numerous examples. He explains how each entry has something that is gained and lost (in possession or value depending on the situation). He presents how to prepare the entry, showing the credit and debit, in a subtle approach not creating monetary value until it increasingly get harder, then he adds the monetary values. This is done because it is said that the material is hard enough and since not everyone has a merchant background, he wanted to introduce the format concept before adding numbers. He explains how to set the columns as if a monetary value was present, although in the beginning it was not. He uses four money columns, one for each common used coin, Lire, Soldi, Grossi, Picioli.³⁶ He does not put a zero in these spots but rather leaves them blank, with no value to ease into the theory of Journal Entries. The students, or whatever audience was using this informational book, learn how to prepare the entire document before values are included and it becomes more complicated. Pacioli uses his abbaco education and teaching habits in this aspect by easing the students through the material with consent examples, allowing the material to get progressively harder. By the end of the chapter he begins introducing

³⁴ Lucas Pacioli. *Double-Entry Book Keeping*. London, United Kingdom: The Institute of Book-Keepers, LTD, 1924.

³⁵ *Ibid.*, 22

³⁶ Alan Sangster. and Giovanna Scataglinibelghitar. “Luca Pacioli: The Father of Accounting Education.” *Accounting Education* 19, no. 4 (August 2010): 430. doi:10.1080/09639284.2010.501955.

numeric values and establishes the Ducat³⁷ value. The values are not difficult, rather Pacioli wanted to drive home the importance and difficulty of the entry for book-keeping.³⁸

The final part to Pacioli's treatise continues building off each book and this final stage connects all parts to book-keeping. This final stage, also known as the ledger, allows the audience to take the monetary value and add it to the journal entry to make it into a complete action. At this time, different aspects are introduced that, a merchant would understand, but any other citizen would regard as new concepts. Pacioli explains the interpretation of the ledger to be a double account of the journal entry to first identify the date and second have all the debtors and creditors.³⁹ In this section, the comparison between capital and cash is discussed and their differences and importance identified. Pacioli, again, uses his background *abbaco* education to provide those who are not merchant families, an insight on how to keep track of their finances through the many examples shown. Continuing, Pacioli touches on each different ledger, explaining which elements would be categorized under each account. As he exemplified before, he starts off by explaining and then providing practical examples for the audience to fully learn. By the end of this segment, Pacioli talks about closing the ledger and the preparation that is needed for the trial balance. He uses monetary values at this point, since he believes the audience should have a substantial grasp on the theory of bookkeeping.⁴⁰

It has obviously been expressed that Pacioli's *Summa* was directed to merchants but it certainly reached far more than just that audience. His writing has laid the foundation for double-entry bookkeeping as it is practiced today. Over the last 150 years, it has been translated into English five times and into at least 13 other languages⁴¹, showing the impact of his work on society. One important element that played a huge factor in the process of allowing Pacioli to reach the audience he did was through the establishment of the printing press. The first known example of printing in Europe was published in Mainz,

³⁷ Another important currency during this era. *Ibid.*

³⁸ *Ibid.*

³⁹ Lucas Pacioli. *Double-Entry Book Keeping*. London, United Kingdom: The Institute of Book-Keepers, LTD, 1924.

⁴⁰ Alan Sangster. and Giovanna Scataglinibelghitar. "Luca Pacioli: The Father of Accounting Education." *Accounting Education* 19, no. 4 (August 2010): 432-35. doi:10.1080/09639284.2010.501955.

⁴¹ Alan Sangster. "The Printing of Pacioli's *Summa* in 1494: How Many Copies Were Printed?" *The Printing of Pacioli's Summa in 1494: How Many Copies Were Printed?* Accessed December 14, 2016.

Germany in 1454⁴². The first book, commonly referred to as the “Gutenberg Bible,” printed 150 copies and was a very valued text⁴³. By 1482, Venice had become the headquarters for the printing press, mainly for the fact of having the cheapest paper available.⁴⁴ When 1494 came around, Paganino de’ Paganini took the credit for printing the first of Pacioli’s *Summa*.⁴⁵ In 1494, there is an estimate that around 500 copies were printed, but many believe this number to be substantially higher. By the end of 1523 there were 1,500 copies printed, reaching countries past Italy⁴⁶. The establishment of the printing press gave Pacioli the opportunity to reach the spectrum of people as he did and essentially transform the history of accounting.

Pacioli, a man of many important tactics shaped the world of business and everyday living, creating a masterpiece for all to benefit from. The *Summa de Arithmetica* brought order to a chaotic world and measured the glory of all men and women.⁴⁷ Being born in the northern part of Italy and imminently starting his constant movement around Italy, he benefitted from different mentors and influences, all of whom affected his work. Pacioli held on to his childhood education views, attending an abbaco school made for all sons of merchants and later on teaching these same views at the university level. He always showed his humanist side by providing all with access to his knowledgeable findings and ideas. Pacioli was one of the first to study the application of mathematics and further these studies with practical examples he experienced throughout his life. His life encounters, experiences and findings all led up to his *Summa de Arithmetica*. With thousands of copies printed into multiple languages, Pacioli’s treatise explained the importance of bookkeeping through three different books. Starting from theory and conceptual to monetary values, each builds off the previous providing the audience with an opportunity to fully understand the business world. Pacioli shaped the history of accounting for all to come and was a true historical professor and publisher, documenting one of the most complex works the field has seen.

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⁴² Ibid.

⁴³ Ibid.

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⁴⁵ Ibid.

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Factors Influencing School Readiness

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This paper examines preschool and kindergarten children, to gain insight on their learning environments, the quality of those environments, and the environments' influence on school readiness. Learning environments have gained attention in recent years due to the correlation between school readiness and early childhood care quality. Research suggests that school readiness is an important predictor of later school outcomes. Which may perhaps mean, children who start or transition into formal schooling with stronger reading and math skills, tend to have higher achievement scores in elementary school. Are all children, across the board, who transition into formal schooling well equipped with school readiness skills? There are multiple factors that encompass children having strong school readiness skills when transitioning into formal schooling. This research will explore some important factors including the quality of care facilities, childhood development, testing, and lastly students of color (minority students).

I. Introduction

Early childhood is a time of remarkable brain growth. These years lay the foundation for successive learning and development. These foundational years are important because this is the time where children are growing. They are also learning to flourish socially, physically, mentally, emotionally, spiritually and morally. The first five years of a child's life are critical for development. The experiences children have during this time help shape the adults they will become. More than anything else, a relationship with a child can shape the way that a child learns, grows and develops. Development is a term used to describe the changes in a child's physical growth, as well as their ability to learn the social, emotional, behavioral, thinking and communication skills one needs for life. These areas are linked, and each depend on the influences of others, or rather who they spend their time with (Keys, Farkas, Burchinal. 2013).

Children spend most of their time in child care facilities during development years, or early childhood. Child care quality is often positively associated with child

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outcomes. And the quality of those settings is thought to be an important factor in young children's development. According to Pianta, Burchinal, Barnett, and Thornburg, high quality settings for 3- to 5-year-olds include frequent warm and stimulating interactions between caregivers and children and clear intentional instruction. When explored further, child-care quality and relation to developmental outcomes will determine school readiness. School readiness encompasses physical, cognitive, language, and behavioral aspects of development (Keys, Farkas, Burchinal. 2013). Another perspective on school readiness, is that it tends to focus on five domains: physical well-being, social and emotional development, approaches to learning, language usage, and lastly cognition and general knowledge (Kagan, 1992). National attention to "school readiness" was spurred by a 1991 report of the Education Goals Panel, which established the goal that "all children shall enter school ready to learn. The notion of "ready to learn" has since been met with criticism and the argument that all children are ready to learn; the emphasis should be on the degree to which a child is "ready for school," or even whether the school itself is "ready" to meet the needs of all children (Kagan, 1990).

Are school readiness skills dependent upon the quality of preschools? Keys, Farkas, Burchinal raised similar questions; "to what extent are children's school readiness skills higher when they experience higher quality preschools? Do the effects of preschool center quality on school readiness skills differ by child demographic background or child entry characteristics such as cognitive skills, attention skills, and problem behaviors?" It is important to note before developing answers that both federal and state governments invest heavily in providing (presumably high quality) child care as a means to improve school readiness skills for children (Comber, 2014). This implies that child care quality is significant to our education system. The current investigation will look at the factors that involve: school readiness, early care quality, transitions from informal to formal education and importance of testing, and lastly students of color.

II. Review of Literature

Since the 1950s, researchers have investigated how external factors can influence or predict student success in school, and particularly school readiness (Milner, 1951). Readiness is a term used to describe preparation for what comes next. As stated above, school readiness encompasses physical, cognitive, language, and behavioral aspects of development (Keys, Farkas, Burchinal, 2013). Many other definitions of school readiness can be found in the research literature. For some, school readiness relates to students' cognitive abilities (Nobel, Tottenham, & Casey, 2005). For others,

readiness is more related to maturational, social, and emotional domains of development (Ray & Smith, 2010) or to whether students have the tools necessary to work effectively in a classroom setting (Carlton & Winsler, 1999). This paper defines school readiness as how prepared a child is for what they are expected to know and do in academic settings.

Children spend most of their time in child care facilities during development years, or early childhood. In addition to this, children experience socialization through encounters with other people. Through daily interactions over many years, acceptable social customs are taught and fostered. Other children as well as adults can have a great impact on a broad range of issues in the child's life, including achievement in school. What is important to note is that schools and teachers are held accountable for student achievements. Due to this, preschool programs are widely seen as an important and cost-effective means of getting children ready for school, especially children at risk for academic difficulties (Reynolds & Temple, 2008). Children who enter school not ready for typical learning experiences continue to have difficulties in later school years. Research suggests that academic school readiness is an important predictor of later school outcomes. Children who start formal schooling with stronger skills tend to have higher achievement scores in elementary school.

Young children are increasingly entering academically demanding school settings where an emphasis on accountability and standards has replaced an emphasis on child development. However, many young children enter school unprepared for both academic and social expectations. Research suggests (Aunola, Leskinen, Lerkkanen, & Nurmi, 2004) that if students enter kindergarten at a disadvantage, early gaps in understandings of literacy or mathematics tend to be sustained or widened over time; this appears to be particularly true for children of poverty (McLoyd & Purtell, 2008). Identifying strategies that move young children toward becoming independent learners, to increase the likelihood of their school success in later years is imperative.

In order to achieve this vision, we must first identify the specific characteristics or factors that enable certain children to enter formal schooling at an advantage while others enter at a disadvantage. It has been well established that early exposure to poverty is linked to children's future functioning along multiple domains, including behavior problems, self-regulatory skill, and academic performance (Linver, Brooks-Gunn, & Kohen, 2002). There is a clear, detrimental relationship between growing up in a poor family and children's cognitive functioning and academic performance. Prior research has found negative life events to be related to children's cognitive skills and behavior problems (Roy, & Raver, 2014). Children living in poverty also have higher levels of

behavior problems than more privileged children. One might ask how this research connects with preschool quality and school readiness. Thus, there is this pending question of how outside factors effect children's social emotional health and school readiness.

Children raised in poverty are less likely to have crucial needs met than their more affluent peers are and, as a result, are subject to some grave consequences. And those same impoverished children are those that attend lower quality early care programs. It is truly central to note, experimental literature suggests that higher quality care can have a lasting impact on development when that care begins during the early childhood years (Belfield, Nores, Barnett, & Schweinhart, 2005). With the knowledge that higher quality early care and education programs expect to close the gaps in children's school readiness; it is crucial to understand the ways in which social settings can affect academic achievement. Essentially, the inquiry revolves around defining quality and child care. But ultimately, figuring out what is the concerning differences and factors among low/poor quality and high quality early care programs.

Defining Quality and Child Care

Quality, most broadly, includes attributes of caregiver/child interactions, the degree of developmental stimulation in the physical and social environment, how time is spent, and structural domains such as amount of space for play and educational status of the caregiver (Dowsett, Huston, Imes, & Gennetian, 2008). These attributes are important for child care, as they are a part of the foundation of childhood development. The literature on child-care environmental quality is primarily based on both constructivist theory, in which the adults' role is to provide children with rich materials that promote child-initiated exploration, and sociocultural theory, in which the adults' role is to provide frequent sensitive and responsive interactions with children (Vygotsky, 1962). These attributes go hand in hand with non-parental child care.

McCarthy and colleagues (2007), said that children participate in different types of non-parental care at different moments in their years before starting kindergarten, often for different reasons. A parent returning to work, tends to be the primary reason for non-parental care, before or within the first year or two of a child's life. However, there are negative effects in children who begin non-parental care before one or two years of age. Those children who begin non-parental care at very early ages, generally are those from low-income families...and unfortunately those children later demonstrate the largest behavioral and socioemotional deficits. The beneficial effects of care are associated with later experiences. Children who begin center-based care between the ages of 2 and 3

years demonstrate the largest cognitive/school readiness gains (Loeb, Bridges, Bassok, Fuller, & Rumberger, 2007). Understanding how different care arrangements at different developmental moments influence children's growth is important for enforcing child care policy. It is also important for informing the broader range of social and economic policies that shape family life at the interconnection of work and child rearing.

The Concerning Differences in Low/Poor Quality Care

Low quality care involves a setting in which the caregiver does not interact often with the children, and when said caregiver does, care at times can be harsh and critical. Children prosper cognitively, emotionally, and socially in programs with fewer children per group or per adult staff member, with caregivers who are sensitive and responsive to children, with well-educated and well-paid staff, and with low staff turnover. Unfortunately, child care programs with these characteristics are rare (McCartney et al., 2007). Among children of all income levels in child care centers, about 15% are thought to be in child care centers of such poor quality that their health or development is threatened. Such settings might have clear safety hazards such as broken glass on the floor, poor sanitation practices, unresponsive caregivers, or few toys for the children. About the same percentage of children are thought to be in child care centers that actually promote child development—that is, they are in programs that have the positive characteristics described above. The remaining 70% are in centers that are only mediocre—neither helpful nor harmful (Votruba-Drzal et al., 2004).

In general, the extant research suggests that children benefit from time in non-parental care when the quality of the child care environment is high. Particularly so for children in low-income households, where child care quality appears both to buffer against the negative effects of a resource-poor home environment, and potentially tries to improve the quality of the home environment by decreasing parental stress and enhancing parenting knowledge and skills. Some of the differences in child care effects may be attributable to differences in the quality of care children receive both in child care and when they are at home (Votruba-Drzal et al., 2004). Research suggests that child-care programs can benefit children's socioemotional development, especially when quality is high and among children from low-income families (Votruba-Drzal et al., 2004). Fortunately, depending on settings and situations, high quality preschool experiences for children from low-income families are more cost efficient than any interventions delivered later in their lives (Jeon, Langill, Peterson, Luze, Carta, & Atwater, 2010).

The Concerning Differences in High Quality Care

High quality care is characterized by sensitivity and responsiveness, generous amounts of attention and support, and high levels of verbal and cognitive stimulation. Compared to children in settings with less engaged caregivers, children with high quality daily interactions tend to display stronger cognitive and language development, school readiness, and early school achievement. High quality care has been found to be especially effective in improving academic outcomes for children growing up in poverty or facing other risks at home. Higher quality prekindergarten programs are associated with more positive child outcomes (Burchinal, et al. 2000). Preschool children in classrooms that are characterized by warmth and high instructional support display better development of language and behavioral skills than children in lower quality classrooms. The higher the quality, the greater the short and long-term positive impact on children's development.

Transitions

Maher, & Bellen (2015) stated that, the transition to the first year of formal schooling is multidimensional and complex; it also involves a major change and period of adjustment in children's lives. In order to understand transitions, one must understand the difference between formal and informal education. Groobman, Forward, & Peterson, state that formal education is providing an education that includes and determines a rigid and strict working plan and procedure that has the least possibility of deviating from the set procedures. These plans and procedures are classified in such a way that the achievement of pre-determined objectives of education can be evaluated at the end of the entire educational process. In simple words, formal education includes a strict and well planned method to provide essential educational experience to students so that the desired educational objectives may be achieved. Educative agencies like school, library, recreation centers, reading rooms, religious institutions come under the heading of formal agencies to provide education as they always follow a defined and particular method to provide educational experience to the people who come in contact with them.

On a similar note, informal education, or agencies of education, includes unpremeditated or non-definite method to provide education to students. The informal education system does not contain any strict or rigid plan to reach a desired and pre-determined educational objective. Just the same as formal education, informal education has clear educational objectives. However, those educational objectives are defined on the wide connotative range. It is very much dependent upon the person who experiences

these objectives (Groobman, Forward, & Peterson, 1976). Informal education does not follow any specific or particular method to convey educational experience to their students but provide education in some form which is distinctly absorbed by its students. There is a pressing question of, does informal education, or informal agencies of education effect transitions positively or negatively?

To make the transition from preschool or kindergarten to formal school. This involves a ‘significant ecological shift’, with children having to navigate increased academic social demands, as well as physical changes in their learning environments (Ladd, 1996). The transition to school marks a change in their identity and status—that being the shift from a child to a pupil. With this new identity, children need to negotiate all the intricacies of a school’s culture, particularly the ways in which teaching and learning is conducted. There is a significant shift from a play-based pedagogy in prior-to-school settings to a more structured, cognitive learning environment in formal schooling (Maher, & Bellen, 2015).

Research has indicated that only 32% of fourth-graders in the United States have met literacy proficiency standards. Furthermore, minority children have disproportionately performed below minimum proficiency standards in both literacy and mathematics (Reyna, 2005). There is this fear that is “supported by national surveys of kindergarten teachers who report that their primary concern is that children—particularly those living in poverty—are not entering kindergarten with the basic learning behaviors and social-emotional competencies that they need to transition successfully into a formal learning environment” (Rimm-Kaufman, Pianta, & Cox, 2000). This then affirms the significance of early childhood education and the necessity of effective early identification and intervention.

Young children exposed to social and biological risk factors are at greater risk for not developing foundational competencies, placing them at future risk of poor school performance (Sameroff & Fiese, 2000). Furthermore, “quality early care and education have been found to promote positive school outcomes, particularly for vulnerable young children living in poverty” (Kolker, Osborne, & Schnurer, 2004). There is a growing awareness that some children transition into formal schooling more readily than others. Compelling evidence indicates that children familiar with the skills and knowledge associated with the dominant practices of literacy teaching in schools have an advantage...there is often a disjuncture between the literacy experiences of children from minority backgrounds and those they encounter on entry into formal schooling.

Are those who receive low/poor quality care put at a disadvantage, when it comes to transitioning into formal school settings? Does the start of a child transitioning into formal schooling, determine where they end up? A positive start has the potential not only to assist children's future academic and social competence, but also to ensure that families and children feel valued and comfortable in school (Dockett et al. 2010). The time is ripe to strengthen efforts in early education, during the primary grades, to support kindergarten transition and the school years.

III. Observations

In an effort to gain further insight on the importance of school readiness in preschool and kindergarten children, I decided to dedicate my time and field work to the Early Childhood Center. I worked with Mrs. Rucci and the two-year old children. My focus was on factors that determine preschool and prekindergarten classroom quality. I observed firsthand how being active with the children, continuously keeping them involved, teaching them how to constructively follow rules, and supporting them promoted positive results.

The Early Childhood center is split into four classes, the classes range in ages from 2-5 (preschool to kindergarten age). Although there are four different classrooms, the children benefit from their teachers keeping them all connected with having visit days. A visit day is a special day. During visit days, at least two teachers combine their classrooms. This allows the children to interact with their peers that are at different levels. Which is imperative because when these students transition from early care into formal schooling, they will encounter students who have different types of capabilities or succession rates. However, because children at this Early Childhood Center are experiencing high quality care, they are more likely to have positive child outcomes.

A Typical Day at the Early Childhood Center

School starts at 9am every Monday through Friday, unless there is a holiday. The children are eager to play, (and when I say play I do mean learn). Every morning starts the same. The children fill the gazebo next to Parker Hall, as they wait for their fellow classmates to exit their parent vehicles. Once every child that is supposed to be at school for the day arrives, they grab a hand of a teacher and walk to the classrooms in campus hall. Once in their designated classrooms, children place their belongings into their assigned cubbies. Mrs. Rucci encourages the children to be independent, which enhances decision making. The teachers also feel that it is important for the children to

practice facial recognition, so the children are told to grab their picture person and place themselves on the wall near their cubbies; as a way of checking into school!

After that, the children are taken to the bathroom and wash their hands. After clean hands, they “choga-choo-choo” train back to the classroom for circle time! During circle, the children sing songs, identify what day, month and year it is. They also determine what the weather is like outside. Another big part of circle time is getting each child to say their name. Mrs. Rucci goes around and asks the children to introduce themselves to the class by saying their name. Of course, this is done in a song. After the introductions, each child is given a specific job to do throughout the day. The children then listen or read along during story time. Following circle time is playtime, along with an arts and craft activity. Since I started at the Early Childhood Center all the arts and craft activities have been Halloween or Fall themed. The teachers and graduate assistants facilitate each arts and crafts activity. It can be anything from painting to gluing or pasting.

During playtime, I observed how the children play and use their imaginations. They play with playdoh, dolls, cars/trucks, all kinds of toys! They build Legos, very tall up and pretend they are construction workers and crash the Legos down. They also have a classroom sandbox, that they love to play in. There is also a kitchen set and play food, that the children are very interested in. I personally think their favorite playtime activities are the sandbox, Legos, and the kitchen set. When playtime has come to an end, the child that was chosen to conclude playtime at the beginning of the day during job distributions, rings a bell to end playtime. I get to observe these children play, and be creative. This is my favorite part of my day.

I am almost positive that snack time is every child’s favorite part of the day. Snack time would be equivalent to the time of day when we adults eat lunch. In each classroom at the Early Childhood Center, snack time is done the same across the board. Directly after the bell rings to conclude playtime. The teachers (in my case Mrs. Rucci), play instrumental music to bring the children to a calm. The teachers do this so that they can transition into snacks. During the music, the children are asked to put their heads on the table and relax. While this is happening, the graduate assistants are preparing snacks for the children, such as: goldfish, cookies, animal crackers and water or juice. Again, Mrs. Rucci is big on allowing the children to be independent so they get to choose between water and or juice (usually apple). But, in order to receive snacks each child must say please and thank you, as this teaches social awareness “Do’s and Don’ts!”

After snack time, there is another circle time, full of more book reading/listening and activities. Before the conclusion of the day, the children either have another playtime inside or on the playground. To conclude the day the children grab their belongings, check themselves out of school (facial recognition) and go back to the gazebo to await their parent's arrival!

Dissection of My Placement

While discussing the specifics of everyday life at the Early Childhood Center is important. I must note what I have observed in regards to my research. There are several things that I have witnessed at The Early Childhood Center that I'd like to touch base on. There are the quality of care, the importance of routines and the importance of play.

- 1) I truly believe that children who attend the Early Childhood Center receive high quality care. The teachers and graduate assistants that work at the Early Childhood center, are very involved. The kids leave their homes with their families, and come to school to gain and join another family. The teachers are very respectful of each child's needs. No matter any differences or no matter at what rate a student learns, teachers consistently support each student. There is a need to give the children of the Early Childhood center undivided attention and respectful sensitivity.

A specific case: There is a child who from first glance seems to struggle. She struggles with speech, responsiveness, listening, comprehension, instruction, and basic communication skills. She truly lacks social cues. The teachers noticed fairly quickly, her dissimilarities from a "normal" child at her age. Mrs. Rucci, immediately pulled her file, to search for an explanation as to why there is a gap. While waiting on her file, we continued to observe this child's actions. Some of her actions:

- Delayed Responses to Questions. For example, if she were asked multiple times to sit down, she will either stare at you blankly, or say thank you and not sit down. Someone will physically have to pick her up and sit her down, in order for her to follow instructions.
- Listening. For example, a bell is rung every day to conclude playtime, and every child knows this. A perfect example of her not knowing how to follow instructions or follow social cues, is when a teacher rings the bell to conclude playtime, and she continues to play, although all the

students around her are picking up the toys, placing the toys where they belong, and where they originally found the toys.

- Self-Awareness. For example, when children are walking to the playground or even on the playground they are all very independent. She, however, is wailing and is afraid of walking across the play set at the playground. She constantly needs assistance in regards to certain activities.
- Social Cues. For example, when she is either told to play or sit down, she will continuously either sit in a chair where a child is currently already sitting in, or try to play with a toy that a child is already playing with.

There is a plethora of outstanding factors that grasped our attention, and they have continued. But as her teachers continue to work with her, those factors have improved. She is gaining self-awareness, communicating better and gaining social cues. And lastly, she is actually listening and responding at a greater speed. This for me is why quality care is so incredibly important. Imagine if she went to a center where teachers have so many other children to look after and cannot pay attention to her needs. Which most likely would mean that she would not have gotten the attention she needed in order to progress.

- 2) In the Early Childhood Center, there is such a stress on routines during this period in their lives. Specifically, in regards to the structure and layout of their day. These children encounter the same activities every single day. Each activity is held to such importance, which can be helpful to the children. I feel children should be exploring and encountering different activities and lessons daily. Instead children are performing the same tasks, and activities every day. Children are not broadening their horizons, so in what regard can this be harmful? A specific case: There is a specific child who has been in the same classroom since he arrived at the Early Childhood Center. He is a year older than the rest of the children in his class, he is three. This child has been active in basically the same routines for about a year and a half now. Is this child growing? Now what is important to note, is that he is a leader in his classroom. He is very energetic in every activity. But, personally I feel as if he is stagnating. He answers all the questions during circle time and story time. His teachers have to ask him not to speak to give other students a chance to engage. Even when he doesn't speak,

the other students either do not feel comfortable enough yet, as they are two years old, or they truly do not know the answer. At what point does this continued silencing of this child interfere with his growth?

- 3) Lastly, in the Early Childhood Center play is important. Especially play of the children, where they are learning how to be independent. Being independent is important because it gives children a chance to make their own decisions and gain self-awareness.

A specific case: There is a child that is not independent. She always asks for help, no matter what the task is. Even as small as picking up a piece of chalk, she will ask someone to hold her hand, and come with her. She is an only child, thus the teachers feel as if her parents cater to her every need. They have stressed allowing her to make her own decisions. By allowing her to be independent, especially through play, we have observed a switch in her wanting to do more for herself. She now says these phrases: “I’m a big girl, and I can.”

IV. Discussions

When I first started at the Early Childhood Center I was unsure of the route that I wanted to take, in regards to research and any resulting publications. But as I continued my observations, I noticed an emphasis on routines and schedules; specifically with preschool and prekindergarten children. I am aware that some routines at this age are vital, for example: hygiene training, social awareness Do’s and Don’ts, and following rules. However, these children execute the same activities everyday around the exact same time. As it should be for children this age, their activities mostly revolve around play. On the other hand, I’m wondering how these environments better prepare children for first through third grade, and essentially onward. Children in preschool and kindergarten are learning their ABC’s, how to count, how to interact with individuals their age, how to listen, how to follow restrictions or rules, and lastly genuinely playing and learning to identify with their own interests. Which are all great skills for children at this age, but starting at first grade children will be heavily tested on literacy, mathematics and language skills. In some states, e.g. New York, preschoolers are mandated to take exams concerning each child’s future needs (Early Screening Inventory-Revised, ESI-R²) and each child’s progress (The Iowa Test of Basic Skills, ITBS³). However, preschoolers

² More detailed information on the ESI-R can be found in Appendix A.

³ More detailed information on the ITBS can be found in Appendix B.

are not being tested on the material learned in classrooms and receiving feedback in the form of a grade or percentage. Consequently, most children that come out of preschool and kindergarten have limited experience with written, individual environments that focus on testing the new subject matter that they have studied.

My observations have gone into figuring out if preschools and kindergartens are at fault or is the education plan through first and third grade at fault. There is an additional pending question of should children be tested, to be placed into levels based on their intelligence of subject matter, at this age. From my observations, children are not ready for testing environments, based on their day to day tasks. Furthermore, I believe that tests on material studied does not accurately indicate a student's full potential. Currently in our education system, grades are weighed so heavily in predicting a student's future, and success. That measurement is too often misread. The types of tests given do not reveal important details regarding an individual's true capabilities. They are subject to previous influences, and factors at hand during the testing process. In addition, they in no way show learning styles, creativity, personality, or individuality; these are key elements in assessment, especially in children. Our education system pushes children too quickly. As said above "Research has indicated that only 32% of fourth-graders in the United States have met literacy proficiency standards (Reyna, 2005)." More and more teachers are concerned for the students that are entering into formal schooling. One may ask why? Children "are not entering kindergarten with the basic learning behaviors and social- emotional competencies that they need to transition successfully into a formal learning environment" (Rimm-Kaufman, Pianta, & Cox, 2000).

Another issue we need to study, is complex social problems. Such as poverty and unequal educational outcomes to be well-versed in how to approach such issues. It is imperative to take into account the countless issues that influence school readiness in children. Some problems, as I stated above, in short are: the quality of care facilities, low income families versus affluent families; and the care that children receive because of those factors (either at home or in early care). Child care is increasingly viewed as an opportunity to enhance children's development and school readiness. Because of this there is a high correlation between child care, later success, and the grave detriments of low/poor quality facilities.

While compiling my research, I noticed a plethora of issues and immense problems in our education system that I'd like to introduce: 1) the education system needs to recognize student capabilities (positive or negative) and the rates at which students

succeed. 2) There are general biases that tend to effect students of color (specifically African American or Black boys).

- 1) There is an excess of students who are capable of succeeding and exceeding their peers. Luckily in New York City, Gifted and Talented (G&T) programs are one way that the New York City Department of Education supports the needs of exceptional students. G&T programs aim to deliver accelerated, rigorous, and specialized instruction aligned to Common Core Learning Standards (Gifted & Talented, 2016). Yet, in some school systems these students are not being recognized, which creates a lag in their learning. The school system needs to distinguish these students and their capabilities of excelling at faster rates. But to identify that students learn at different rates, either positively or negatively, would create a separation between assessing students. When there are situations where students are recognized for exceeding their peers, in some school systems, parents are convinced that their child's social upbringing could be effected. Furthermore, that learning things at a higher capacity and level, would push their child too fast, and ultimately stunt their growth. Personally, I feel a healthy push is always necessary in a classroom setting. Most students who should move up a year or grade level who do not, end up not being challenged, which could eventually be a detriment on the child's grades. And, unfortunately in our education system, grades are weighed so heavily and are used to measure intelligence. If a child is capable, they should be pushed in these types of situations.
- 2) "In spite of the advancements of the civil rights movements, black boys and men generally remain excluded from good jobs, schools, and neighborhoods" (Brown, Dancy, & Davis, 2013). Thus, the practice of de facto racial segregation is one strategy of control that illustrates how politics of containment persist amid societal laws that abolish such maneuvers. For instance, formal desegregation in schools gave African American boys and men access to educational attainment; however, possessing the right to be in a public space, such as schools, did not necessarily translate into the right of equitable treatment in those public spaces (Brown, Dancy, & Davis, 2013).

There are numerous studies and education policy reports that have documented the lower school readiness skills, both in terms of achievement and social competence, of Black children compared to their White peers (Aud, Fox,

& KewalRamani, 2010). Especially for black boys, “black males remain one of the most socially and academically marginalized student groups in US schools” (Brown, Dancy, & Davis, 2013). This group is put at a disadvantage because most teachers are unsure of how to identify a healthy way of advocating and or dealing with students of color. Most teachers assume because of behavioral issues or repetitive situations of acting out, that there are early childhood deficits like special needs or ADHD. As a result, these boys are labeled at a young age for disorders that they most likely do not have. Which then places them into classroom that unfortunately are not challenging them enough. Thus these males are bored in class, not caring, and end up being trouble makers. Which in some cases can lead to them being kicked out of school and on the street, and most likely in jail, i.e., the school to prison pipeline. “The school-to-prison pipeline refers to the disturbing national trend in which children are funneled out of public schools and into juvenile and criminal justice systems” (Brown, Dancy, & Davis, 2013). But we tend to disregard the fact that these teachers simply do not understand these students and how to deal or find ways to help them cope. “For instance, disparate learning and discipline trends flow from assumptions that black males are ‘unteachable’ and ‘up-to-no good’” (Brown, Dancy, & Davis, 2013). The “black males misbehaving” narrative (Clarke, 1991), which expresses, affirms, and authorizes popular fears and anxieties around raced bodies, intersects with school sanction.

In regards to formal learning, I’d like to discuss classroom quality and quality care. I will be introducing two quotes that I will compare to my observations of the Early Childhood Center.

1. Classroom quality is increasingly seen as a critical aspect of a child’s preschool experience (Howes et al., 2008). Quality is so imperative it can determine multiple factors for children outcomes. Thankfully at the Early Childhood Center, children are receiving high quality care. Children have caregivers who are very much engaged. The children are receiving generous amounts of attention and support. No matter the level or difficulty that it takes, the children always come first. The children are being pushed to think for themselves.
2. High quality care is characterized by sensitivity and responsiveness, generous amounts of attention and support, and high levels of verbal and cognitive stimulation. Compared to children in settings with less engaged caregivers,

children with high quality daily interactions tend to display stronger cognitive and language development, school readiness, and early school achievement (Burchinal, et al. 2000).

Thankfully at the Early Childhood Center, children are receiving high quality care. Children have caregivers who are very much engaged. The children are receiving generous amounts of attention and support. No matter the level or difficulty that it takes, the children always come first. The children are being pushed to think for themselves. “High quality care has been found to be especially effective in improving academic outcomes for children...Higher quality prekindergarten programs are associated with more positive child outcomes (Burchinal, et al. 2000). Preschool children in classrooms that are characterized by warmth and high instructional support display better development of language and behavioral skills than children in lower quality classrooms. The higher the quality, the greater the short and long-term positive impact on children’s development.”

Finally, while conducting my research, a point of interest are the types of engagement that children in the Early Childhood Center encounter. They will most definitely be encountering free play, group or individual instruction. As the research concluded, high quality care is imperative for the success during later years for children. As I stated in my observations, the Early Childhood Center is a high care quality facility. However, are they types of engagement that the children at the Early Childhood Center are encountering, helpful or harmful? Chein et al. 2010, have helped draw conclusions to this question. “The assessment of quality is typically at the classroom level and involves global assessments across all activities. Chien and colleagues (2010) investigated the types of engagement young children could encounter in child care settings (free play, group or individual instruction, and scaffolded learning). Children in settings with more free play showed smaller gains than their peers on literacy and mathematics indicators at the preschool level” (Chien, Howes, Burchinal, Pianta, Ritchie, Bryant, Clifford, Early, & Barbarin, 2010).

V. Summary and Conclusions

A plethora of questions and statements have been raised that need to be answered, and addressed in order to draw conclusions to the influencing factors of childhood school readiness. This research discussed school readiness, early care quality, transitions from informal to formal education and importance of testing, and lastly

students of color. All of these factors go into determining school readiness of a child. As the research continued there is one undecided question in regard to school readiness. Should a child be ready for school or should the school be ready for a child? There is an argument that all children are ready to learn; the emphasis should be on the degree to which a child is “ready for school,” or even whether the school itself is “ready” to meet the needs of all children. These statements begin to draw some conclusions in regards to school readiness factors.

I'm hoping that this thesis will spark conversation and cause others to conduct further research in regards to the betterment of care quality, school readiness of preschoolers or kindergarteners, their transitions from early care to formal schooling, testing measurements, the overwhelming biases towards students of color, and lastly school readiness. As stated above, early childhood is a time of remarkable brain growth. Children at this age are in the prime of their developmental years. These years lay the foundation for successive learning and development. These foundational years are important because it is the time when children are undergoing rapid development. The experiences that these children have will shape the adults they will become.

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Appendix A: Mandated Test for Preschoolers in New York City

The Early Screening Inventory-Revised, ESI-R, provides a brief developmental screening instrument designed to be individually administered to children from 3 to 5 years of age. It identifies children who may need special education services in order to perform successfully in school. Research has shown the ESI-R to be highly reliable and valid. The instrument addresses developmental, sensory, and behavioral concerns in the following areas: Visual Motor/Adaptive, Language and Cognition, and Gross Motor Skills. The focus under Visual Motor/Adaptive skills: fine motor skills, eye-hand coordination, short term memory, and ability to reproduce two and three dimensional forms and structures. The focus under Language and Cognition: language comprehension, verbal expression, ability to reason and accountability to remember and repeat auditory sequence. The focus under Gross Motor Skills: gross motor coordination, and the ability to imitate body positions from visual cues. Ultimately the ESI-R identifies children who may need further evaluation to determine if they have a condition that may place them at risk for school failure. It samples domains of developmental tasks, rather than the domain of specific accomplishments that indicate academic readiness. Finally, it survey's a child's ability to acquire skills rather than child's current level of skill achievement and performance (Early Childhood, 2017).

Appendix B: The Iowa Test of Basic Skills

The ITBS is a standardized achievement test for students in kindergarten through eighth grade. The test is tailored specifically for different grade levels. Developed by the College of Education at the University of Iowa, the ITBS is used to monitor year-to-year progress and can help supplement teachers in their observations about student capabilities, such as what a student's most and least developed skills are. The ITBS has been in use since 1935. The test is available at different levels for students at different grade levels. The batteries aim to help determine how prepared students are for academic instruction, what individual accommodations may be necessary, which students may require early intervention, and to determine each student's individual baseline of achievement. Questions are delivered orally by the teacher and response options are pictures, words or numerals, as appropriate. Approximately 30 minutes are given for each test. The Level 5 Battery is given to children in kindergarten. It emphasizes early childhood academic skills, such as listening vocabulary and math, and assesses how prepared a child is cognitively to begin the academic curriculum. Level 6 is given to students in the fall and midyear of first grade and is similar to Level 5, though it also includes an optional reading test for those students who are ready to have their literacy skills assessed (Erin Hasinger, 2009-2016).

Internalized Racism and Indoctrinated Religion: Alice Walker’s “Convergence” and *The Color Purple*

Madison J. Ruff (English)¹

In Alice Walker’s novel, *The Color Purple*, and short story, “Convergence,” she seeks to give her readers insight into the complex spiritual identities of American black women. In both stories she addresses how internalized racism and indoctrinated religion are inextricably linked and, though Walker does not explicitly condemn religion (or the Judeo-Christian God), she explores the racism innate to many of the images and assumptions surrounding these religious institutions. Through these two narratives, Walker reveals how being a part of an oppressed people can add further layers of complexity to an already multifaceted personal religious/spiritual identity. While Walker’s characters illustrate some positive aspects of formal religion, her narratives primarily work to expose the Western appropriation of Christianity and identify the sexist and racist implications of said appropriation. She also implies through these narratives that in order for her characters to fully develop their racial and spiritual identities, they must separate themselves from the indoctrinated religion they internalized, take a few steps back to gain new perspective, and shape their own spirituality.

In the Western tradition, white men have overly shaped biblical interpretation resulting in a biased and jaundiced teaching. Such bias contributes to the internalization of racist attitudes/beliefs in non-white communities, towards members of one’s own ethnic group, including oneself (internalized racism). Those in power often subconsciously project their own agendas, biases, and superiority complexes onto its message and then convey this distorted message to those below them as pure, honest-to-God truth. In order to confirm themselves as authoritative, those in power maintain specific agendas and biases. Such understandings are distorted views of reality in which they are “rightly” or “naturally” in power. The powerless, the disenfranchised, and the oppressed are often told that this distorted reality is simple pure, honest-to-God truth. As a result of this process of naturalizing an artificial power structure, the oppressed people can develop a deep, formidable, and insidious double consciousness. When Shug explains why she and Celie pictured God as an old white man, saying, “[...] that’s the [God] that’s

¹ Written under the direction of Dr. Alison Arant for EN 342: *The Contested South*.

in the white folks' white bible", Celie vehemently responds, "Shug! [...] God wrote the bible, white folks had nothing to do with it" (Walker 35). Celie, like so many others, bought the story that the Bible's message has gone untampered with by those who teach it. The challenge of living with this internalized racism and double consciousness is, as W.E.B Du Bois puts it in his book, *The Souls of Black Folk*, "always looking at one's self through the eyes" of a racist white society, and "measuring oneself by the means of a nation that looked back in contempt" (Du Bois 3). This kind of religion-induced double consciousness penetrates deeper than that perpetuated by secular societal discrimination because people believe these principles come from God himself, springing from a spiritual truth. In the same way people are assigned and blindly accept an "innate" (entirely arbitrary) value based on skin color, many people also blindly accept the racism, sexism, and other farces of religious teachings in that the same unquestioning manner because the preacher-man said so.

While some of Walker's characters fall prey to internalized racism, others resist it by parodying and exposing it. In *Subjectivity in the American Protest Novel*, Kimberly Drake describes double consciousness as being split between the, "[...] limiting racial identity and an unlimited 'human' identity, so that to be 'raced' in the United States is in practice to be viewed categorically, through the lens of stereotype, which dehumanizes the individual being viewed" (2). In Walker's stories we witness the protagonists wrestle with their racial identities and the stereotypes their societies have assigned them. In "Convergence" Adrienne is frustrated with the condescending manner in which Mrs. Thomson speaks to her and her mother, so she rebelliously adopts an exaggerated "Southern, uneducated, Black" accent to demonstrate her frustration and highlight the absurdity of the condescension: "The't's jest zackly whut ah mean to say, mz Thomson" (Walker 5). Adrienne exposes and parodies what Mrs. Taylor expects of her by using subversion. As Drake writes, the heart of this double consciousness is, "inhabiting both identities: not simply "American" and "Negro," but American observing subject and Negro object of observation" (Drake 2). Walker's protagonists are not free to simply be individuals (observers) but are also aware of *being* observed (and judged/stereotyped); this is a heavy awareness to operate under. Adrienne is aware of Mrs. Thomson's gaze, she recognizes the injustice at work, and uses subversion to play this White woman's condescension against her.

Drake explains that double consciousness is both a psychological disorder *and* a survival strategy, a fact explicitly exposed in both *The Color Purple* and "Convergence". As a result of this double consciousness, the women in these stories both reject and cling

to their assigned racial, religious, and gender identities. While Adrienne and Shug reject the stereotypes being projected on them, Celie initially retreats into the stereotypes she has been forced to embody. Drake suggests that, “constructing [a] kind of therapeutic mirror” (Drake 15) helps in the process of deconstructing double consciousness and reconstructing a positive personal identity. We see Celie do this kind of deconstruction and reconstruction in *The Color Purple* and Adrienne in “Convergence”. They attempt to take a step back, take apart, reevaluate, and reconstruct their views of themselves, trying to identify and disempower the lies that have been projected on them—and their spirituality— by society. Celie writes, “Well, us talk and talk about God, but I’m still adrift. Trying to chase that old white man out of my head. I been so busy thinking bout him I never truly notice nothing God make. Not a blade of corn (how it do that?) not the color purple (where it come from?)” (Walker). She struggles to let go of the deeply internalized racial fabrications she has been trained to believe, demonstrating how deeply these beliefs are ingrained into one’s psyche as a child. Adrienne thinks to herself, “She wondered if she would ever recover from her mother’s faith? She thought not” (Walker 6). Although Adrienne is referring to her ability to let go her mother’s faith, Walker intentionally parallels this statement with all the racial/political conversation in the short story. Though they struggle with finding a complete release from these institutions and beliefs, these women are freeing themselves, to an extent, simply by reevaluating such structures, so while they can’t totally undo the way double consciousness shapes them, they are not totally controlled by it either.

This race-based double consciousness is inextricably related to the religious structures within these two Walker stories. Indoctrinated religion can be defined as uncritical, unquestioning acceptance of religious doctrine. This kind of indoctrination implies forcibly or coercively causing people to act and think on the basis of a certain ideology— or in other words, brainwashing in the name of Jesus. Walker highlights a distinct difference between this kind of blind conditioning and personal spirituality. The protagonists in Walker’s novel and short story resist the clutches of white-run, patriarchal, organized religion and instead they seek a spirituality apart from those racist and sexist institutions. Other authors have also captured this relationship between internalized racism and indoctrinated religion in a similar fashion; in Maya Angelou’s autobiographical novel, *I Know Why the Caged Bird Sing*, she writes of her younger self perceiving racism and injustice through the eyes of a (Black) child: “Of course I knew God was white too, but no one could make me believe He was prejudiced” (Angelou 49-50). This quote captures a certain irony— she believes God is not prejudiced, but her

very perception of Him as White exposes prejudice and internalized racism. *The Color Purple* captures this same complex, the intertwined relationship between religion and race through Celie's initial view of God as a white man.

Historically, women have had less say in the conversation about who God is—not for lack of insight or opinion, but because they are often not allowed a voice in the discussion—and therefore masculinist bias plays out with bold assurance and self-righteousness in some religious contexts. The characters in Walkers' stories reclaim/redefine their "God" in a powerful way; they examine their internalized biases, sorting out the strawman from the real thing. One cannot discuss religion and racism without discussing gender and sexuality, especially when dealing with Alice Walker. Shug and Celie specifically address the intersectional nature of religion, gender, and race in *The Color Purple*. Shug says, "You mad cause he don't seem to listen to your prayers. Humph! Do the mayor listen to anything colored say?" (Walker). In the same way the characters have racial stereotypes projected on them and religious beliefs impressed on them, these characters also have gender roles and sexual expectations forced upon them. For instance, Celie is married off to Mr. _____ without any consideration to how she might feel about it, and then expected to have sex with this new husband regardless of her complete lack of desire and repulsion, "I don't like it at all. What is it like? He git up on you, heist your nightgown round your waist, plunge in. Most times I pretend I ain't there. He never know the difference. Never ast me how I feel, nothing. Just do his business, get off, go to sleep" (Walker). Celie is trapped by the societal expectations, and this oppression prevents her from feeling autonomous, worthy of happiness or pleasure, or even fully human. Therefore, in order to become the truest version of herself she must also reevaluate this gender and sexual component of her identity. There is a kind of rebirth alluded to here as Shug tells Celie, "Why Miss Celie, she say, you still a virgin" (Walker). In the same way girls are told their virginity is renewed when they ask for forgiveness and are "born again" in Christ, Celie is given new life, a salvation of sorts, in her life-giving relationship with Shug.

As Walker's characters outgrow traditional monotheism, they simultaneously reject their previously held patriarchal beliefs; these two developments are not mutually exclusive. This intersectional overlap is further explored in Hankinson's essay, "From Monotheism to Pantheism: Liberation from Patriarchy in Alice Walker's the Color Purple", in which she studies this transformation of gender/sexual identity as it relates to religious/spiritual identity, writing:

Celie's conversion from a monotheistic view of God (or traditional Christianity) to a more pantheistic outlook represents and parallels her movement from feelings of oppression under domination of patriarchy into a sense of connectedness with others and self-acceptance at which she ultimately arrives by the novel's end. (Hankinson 320-321)

Though many critics entirely credit Shug with Celie's liberation by exposing Celie to what a healthy, constructive, and sexually gratifying relationship can be, Hankinson claims that Celie may never have been receptive to Shug's sexual advances if she hadn't already been on the path towards pantheism and away from monotheism. Celie simultaneously distances herself from traditional monotheistic religion and patriarchal oppression. By claiming that Celie is liberating herself sexually and as a woman by liberating herself from monotheistic doctrine, Hankinson suggests that these religious institutions are oppressive in regards to gender. Hankinson claims, "[...] it is only as Celie diverges from patriarchal family structure and perspective of God that she acquires her first sense of self-acceptance. She resists the imposed negative self-image and develops a previously unprecedented confidence" (Hankinson 325). Patriarchal laws of Western Christian religion oppress women in their search for place and identity and it is only by breaking free of these traditional institutions and ideologies that women can find self-acceptance and empowerment. When Shug and Celie discuss sex and pleasure, Shug says, "God loves all them feelings. That's some of the best stuff God did. And when you know God loves 'em you enjoys 'em a lot more. You can just relax, go with everything that's going, and praise God by liking what you like", Celie asks, "God don't think it dirty?" and Shug replies, "Naw[,] God made it. Listen, God love everything you love" (Walker). Walker illustrates this phenomenon in Celie, Shug, Nettie, and Adrianne's narrative arches as they shed their oppressive beliefs and structures, develop their own spiritual understandings, and assert themselves as independent, free-thinking agents.

Walker also introduces some positive aspects of organized religion in "Convergence" and *The Color Purple*, demonstrating that she is not so enraged by, or biased against, the church that she entirely writes it off completely, adding an important layer of nuance to Walker's critique. At the end of her somewhat anti-church monologue, Adrianne pauses to admit that, "[...] whereas the few God-deniers she knew had thrown themselves from fifteen-story apartment windows and others 'flipped out,' her mother stayed sane as an ant" (Walker 6). Adrianne (and arguably Walker) implies that religion has a way of keeping people sane. Having a set belief system can be stabilizing and life-affirming—Mrs. Taylor feels secure in her identity even if some of her underlying

beliefs include internalized racism. In *The Color Purple*, Celie's letters to God provide her with a certain security even when she is speaking to the white bearded man in the sky. By simply writing to God she does not feel so alone and these letters set Celie on the path to self-awareness. In both stories indoctrinated religion is not entirely vilified and certain characters advocate for it; however, according to Walker, the hypocrisy and oppressive tendencies of the indoctrinated religion overshadow these positive aspects. However, this security and comfort that institutionalized religion offers is a double-edged sword; when Celie and Mrs. Taylor resist doubting or critically thinking about their beliefs they also fail to see the harmful ideologies interwoven with their faith.

Walker is not alone in recognizing the racism and hypocrisy within the Western church. She builds upon the criticisms of those before her and without addressing how other civil rights activists and Black Americans reproached the church, one cannot fully understand Walker's contribution to the ideological conversation. Benjamin E. Mays book, *Born to Rebel: An Autobiography*, he expresses similar frustration and disappointment. Despite his many criticisms of the (White) church, Mays did not inherently oppose Christianity— after all, he was a Baptist minister— but he was deeply critical of certain aspects of religious institutions. Walker's (and Mays') criticisms of indoctrinated religion do not spring from the spirituality and moral lessons within the bible, but rather from what White men have done with them and how these white-washed ideologies have been indoctrinated and institutionalized on such a wide scale. Mays, though he does not abandon monotheism in the same way Walker does, still resists letting his own religious views blind him to the realities of the dark side (racist side) of the church, vehemently claiming, "the local white church has been society's most conservative and hypocritical institution in the area of White-Negro relations" (Mays 241). Similarly, in a speech Derrick Bell gave at the National Black Law Journal 25th Anniversary Conference, he spoke about how we often study racism through economic, political, and cultural lenses, but then introduces, "the possibility of a deeper foundation growing out of an undeniable fact: Most racists are also Christians" (Bell qtd. in Taylor 1). Here Bell speaks directly to that same difficult reality facing Christians of all colors (and the characters in Walker's stories) as they grapple with their religious, ethnic, and moral identities. As a preacher, Mays could explain racism in religious terms, "The sin of man asserts itself in racial pride, racial hatreds and persecutions, and in the exploitations of other races. *Religious* categories may most deeply capture racist belief. The sin is one of pride" (Mays 240). In the chapter "The Church Amidst Ethnic and Racial Tensions" Mays writes, "Within the past quarter of a century, Christians have been forced to think

about the bearing of their faith upon the problem of racial discrimination [...]” (Mays 241). He addresses how Christians must reconcile the morality of their faith with the historically immoral way their religious institutions have dealt with racism. Mays explicitly laid the foundation for Walker’s critical approach to religion in her feminist fiction.

By injecting that moment of religious sympathy at the end of Adrienne’s anti-church monologue, she demonstrates a certain understanding of the potential positive components of these traditional Christian beliefs. Similarly, George Taylor concludes, “Race, Religion and Law: The Tension Between Spirit and its Institution” with:

Theological and religious categories help us understand both the functioning of civil religion and its limits. For our purposes, the concern is not that civil religion’s faith-like character should be eliminated. That would be to reject the positive, constitutive, and properly aspirational role that civic religion may play [...] Rather, the concern, particularly in areas such as civil rights, is that faith in law not become dogmatic, insular, and immune to criticism from external values such as religious faith. As throughout, the goal is to maintain the tension—both in criticism and insight—in the relation between religion and law. (Taylor 67)

Walker’s solution to the problem of indoctrinated religion, accomplishes a version of what Taylor suggests. By having her characters separate themselves from religious structures, they are not “eliminating faith” but discovering truths and unearthing a spirituality that does not oppress, degrade, or inhibit them.

The generational divide in regards to religion as seen in “Convergence” is most explicitly visible in the relationship between Adrienne and her mother, Mrs. Taylor. Their argument, which mostly concerns racism and civil rights, also seeps into the realm of religion; even in the brief passage we see the ties between blind religious faith and blind internalized racism. The way Adrienne speaks about her mother’s acceptance of racist ideology is almost identical to how she speaks about her mother’s acceptance of religious ideals.

Part of why Mrs. Taylor refuses to doubt her faith (and why Celie initially resists doing so) is because they are afraid to be angry with God or disagree with the church. This could mean going to hell. Shug and Adrienne— and eventually Celie— give themselves permission to doubt and rethink. Celie writes:

I can’t even remember the last time I felt mad, I say. I used to git mad at my mammy cause she put a lot of work on me. Then I see how sick

she is. Couldn't stay mad at her. Couldn't be mad at my daddy cause he my daddy. Bible say, Honor father and mother no matter what. Then after while every time I got mad, or start to feel mad, I got sick. Felt like throwing up. Terrible feeling. Then I start to feel nothing at all.
(Walker)

The goal is not to get angry and stay angry; it is to allow oneself to be justifiably angry at injustice as a part of the stages of grief of letting one's old identity die and bloom into someone new and authentic. Mrs. Taylor is more resistant to questioning her faith simply because of her age. She internalized these "truths" her whole life—decades longer than Celie— and, frankly, she is closer to death and therefore closer to the potential consequences of renouncing/revising her faith (heaven or hell). However, at the end of "Convergence", when Mrs. Taylor's resolve wavers, she finally allows herself to get angry. This is her first step in identifying and admitting that injustices is at play. By simply articulating her frustrations to her mother and introducing new ideas about equality into the conversation, Adrienne helps Mrs. Taylor cross over from denial (due to the internalized racism) to a new perspective. In order for her characters, regardless of age, to fully develop their racial and spiritual identities, they must (to some degree) separate themselves from the indoctrinated religion they internalized; they must take a few steps back to gain new perspective and take ownership of their own spirituality.

"Convergence" is deeply autobiographical in nature and this aspect of the narrative gives depth to our understanding of the characters. In "The Evolution of Alice Walker", Cynthia Cole Robinson touches on some of the parallels between Walker and Adrienne. She writes about Walker's close relationship with her mother, telling the story of how her mother and her local church congregation helped her pay for college: "Walker did not have to search very far to find other black women with persevering strength and character. [Walker] writes of women in her church and how they worked tirelessly to support the church and her. When Walker was offered a scholarship to Spelman College in Atlanta, the ladies of the Methodist church collected \$75 to bless her on her way and this was a nice sum of money for impoverished women to raise" (Robinson 305). This parallels Adrienne's narrative: "How else could [Mrs. Taylor] have sent Adrienne to college on twelve dollars a week? There was something miraculous about that, one had to admit" (Walker 6). However, Robinson then explains how Walker began, "to see the oppression of her Methodist church and Christianity as a whole"; this was partially because Walker's mother tirelessly served the church by cleaning it every week, but, unlike many of the male volunteers and members, she was never invited to speak, "In

fact, [women] were forbidden [to preach] according to the Christian doctrine that they were being taught” (Thomas qtd. in Robinson 492). As a result of the treatment of women in the church, the fact that God has been represented as white, the way in which Christianity was forced on the slaves, and the depiction of Eve causing the fall of man, Walker does not believe in indoctrinated religion. She states, “I don’t believe there is a God, although I would like to believe it. Certainly I don’t believe there is a God beyond nature. The world is God” (*Gardens* qtd. in Robinson). Walker has never been shy about sharing her personal theological and pantheistic beliefs. This outspokenness helps readers better understand Celie, Shug, and Adrianne’s movement away from the church to discover their own truths, a trajectory that mirrors that of their author.

Understanding Nettie’s narrative and religious/spiritual journey is vital to fully grasping Walker’s theological prerogative in *The Color Purple*. Both the significance of the missionary narrative and the way Nettie and Celie come to similar spiritual conclusions, despite being worlds apart, are both significant plot points that contribute to the religious, spiritual, and racial attitudes of the novel. In Lindberg-Seyersted’s article, “Who is Nettie? and What is She Doing in Alice Walker’s *The Color Purple*,” she explores Nettie’s role from the beginning (analyzing the way Celie’s talks about her sister in her initial letters to God), and then through the letter correspondence between Nettie and Celie. Lindberg-Seyersted writes, “The greatest change that Nettie’s African experience has had on her is in her view of religion. When she leaves Africa, her idea of God and the divine is no longer the orthodox one that the church at home had taught her. The Olinka have made her see the divine in many more forms than the one presented in the Bible and in Christian religious art” (Lindberg-Seyersted 84). The fact that Nellie and Celie arrive at similar spiritual conclusions while thousands of miles apart speaks to the truth of their conclusion. They did not read this pantheistic philosophy in a book or hear someone preach on the subject, but instead, they arrived at this conclusion purely through life experience, realizing the biases and injustices at the heart of the religious institutions. There is also a connection between Nettie and Mrs. Walker. Nettie is deeply involved with institutionalized religion as well and Nettie’s eventual denunciation of traditional Christian doctrine proves there is hope for escape for anyone, even someone like Mrs. Taylor who clutches to these beliefs for dear life. And as I stated before, even she shows potential for rebellion at the end of her tale.

Walker recognizes the potential purpose-giving, community-creating, identity-affirming, philanthropic qualities of formal religion, and these sympathies are visible in both “Convergence” and *The Color Purple*; however, these stories are arguably more

influenced by the sexist and racist aspects that have hijacked traditional Christianity as a result of the Western appropriation of the religion and human's natural proclivities for pride and subjugation. Through Adrienne's somewhat sympathetic attitude towards her mother's religious beliefs, we see a glimpse of Walker's sympathies, but Walker also illustrates the dark side of indoctrinated religion in the Christian church and how it perpetuates racist ideology. Therefore, when her characters set forth in a journey to free themselves from their internalized racism, they also free themselves from traditional religious institutions. Adrienne searches for answers at university and Celie finds simultaneous freedom and security in a pantheistic spirituality and in a liberated and loving lesbian relationship. Both these protagonists struggle to fully escape the deeply ingrained images of a White God, but with every step they take away from "Him" the closer they get to self-love and a life-giving, personal spirituality. Walker explores the intersectional nature of race and religion while also addressing gender, sexuality, and age in these stories, exposing how they are so interconnected that one can hardly be spoken about without tackling the others as well.

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39 Million and Counting: The Role that Federalism Played in the HIV/AIDS Crisis

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The Nixon administration ushered in an era of “New Federalism” by returning autonomy to the states, while also maintaining significant levels of federal funding (Borick, 2013, p. 140). When the Reagan administration came to power they took this form of federalism one step further. “New, New Federalism” would drastically cut back on the powers of the federal government under the assumption that state/municipal governments would better understand the needs of their own people (Broadnax, 1981, p. 231). Around the same time, researchers at the Center for Disease Control and Research (CDC) were able to pinpoint and identify the virus responsible for a string of auto-immune deficiency related deaths that had plagued the New York City “Men-who-have-sex-with-men” population since the late 1970s. However, with a lack of federal funding, the CDC was unable to fund the research efforts necessary to eradicate the virus (Francis, 2012, p. 292). Through careful analysis of scholarly sources, we will find that the Reagan administration’s approach of “New-New Federalism” led to the CDC’s inability to respond appropriately to the initial AIDS outbreak.

I. Introduction

Larry Kramer is often cited as having put a face to the NYC HIV/AIDS movement. His involvement with the “Gay Men’s Health Crisis” and “Act Out!”, along with his multiple publications on the topic, gave visibility to a public health crisis that was largely ignored by the local, state, and national government (Kramer, 1983). It is Mr. Kramer’s belief that certain actions not taken by Ronald Reagan on the national level, and Ed Koch on the local level, were responsible for the global pandemic that HIV/AIDS was shaping up to be. Kramer’s work also poses the question of whether HIV/AIDS would have been the global pandemic that it is today, had the federal government and the NYC municipal government been more willing to work with executive agencies, nonprofits, and other health organizations to support HIV/AIDS research, and stop the spread of the virus.

¹ Written under the direction of Dr. Abraham Unger for GOV211: *Public Administration*.

At the core of the issue is the fact that the Center for Disease Control and Research did not have the proper funding, or resources available to them for sufficient research on the virus. This was in part due to the Reagan administration cutting a solid portion of their funding, and the NYC Department of Health refusing to allocate any funds towards the study of this public health threat. This cut in federal funding was a part of Reagan's call to downsize on the power and influence of the federal government. "New-New Federalism" would cut down on federal government spending, by turning what were previously the responsibilities of the federal government, over to the state governments (Borick, 2013, p. 140). Reagan's theory of "New-New Federalism" led to a lack of the funds/resources needed to fight the growing HIV/AIDS epidemic in NYC.

II. Literature Review

In finding the difference between "New-Federalism" and "New-New-Federalism", one can rely on Christopher Borick's *Introducing Public Administration* (2013) to offer an almost entirely unbiased take on these theories, and their differences. One could argue that Mr. Borick's use of commentary creates a blatant bias, but more often than not, this bias is used for the purpose of driving a point home. Borick's definitions of "New-Federalism" and "New-New-Federalism" serve as a solid foundation in researching the roles that both theories played in the initial NYC HIV/AIDS scare.

Texts that explored Nixon's theory of "New-Federalism" include Walter Broadnax's *The New Federalism: Hazards for State and Local Government*, and Timothy Conlan's *New Federalism: Intergovernmental Reform from Nixon to Reagan* (1988). Broadnax offers us his educated opinion that not only will the states not be able to handle the federal mandates, but also that Reagan and his administration have not put nearly enough thought into the long term effects of this style of federalism. Rather Conlan's text, as short as it may be, compares and contrasts Reagan's style of federalism with his predecessor, Nixon. Conlan's text was written towards the end of Reagan's second term and can offer facts on how both styles of federalism played out; whereas Broadnax's text is written only a year into Reagan's first term as president. For these reasons, one should use Broadnax's text as a source for information on Nixon's presidency, and the immediate effects of when Reagan first came into office.

In researching the role that the federal government played in the spread of HIV/AIDS, one can refer to Lucas Richert's *Reagan, Regulation, and the FDA: The U.S. Food and Drug Administration's Response to HIV/AIDS, 1980-90* (2009), and Donald Francis' *Commentary: Deadly AIDS Policy Failure by the Highest Levels of the US*

Government: A Personal Look Back 30 Years Later for Lessons to Respond Better to Future Epidemic (2012). Richert's essay offers a purely factual timeline of events that lead to the spread of HIV/AIDS; while Francis' article offers the perspective of a federal agent working for the Center for Disease Control and Research. While Richert's work may supplement most research done on this subject, Francis' work offers a unique, expert perspective that can strengthen any argument on the federal government's lack of interference in controlling the spread of HIV/AIDS.

Finally, both Mark Green's *The N.Y.C. Scandals of Ed Koch* (1989) and Bruce Lambert's *Koch's record on AIDS: Fighting a Battle Without a Precedent* (1989), give insight into how Ed Koch's passive stance on the HIV/AIDS outbreak led to its spread. Lambert's article is more of a critique on the actions of the former New York City mayor, whereas Green cites more credible sources on where he believed Koch failed.

III. Findings

In discussing the role that Reagan's "New-New Federalism" played in the NYC HIV/AIDS crisis, one must first have an understanding of President Nixon's theory of "New Federalism." Prior to Nixon coming to power in 1972, we began to see the shift from liberal/moderate politics, to more conservative politics. As the name implies, Nixon's goal was to "*return autonomy to the states while maintaining significant levels of federal funding*" (Borick, 2013, p. 140). Nixon intended to turn certain responsibilities of the federal government over to state/local governments, while maintaining the federal funding that these state/local agencies would need to provide social services. Funds were allocated from the federal government in block grants to be spent as local/state governments saw fit. These provisions were known as the "Nixon Reforms", and served the purpose of improving coordination, efficiency, and planning when it came to programs ranging from public health to public safety (Starkes, 1989, p. 401).

While both Reagan and Nixon called for a "War on the Welfare State", Nixon "*...pushed for efficiency and economy of scale, while Reagan fought for the reduction of the governmental bureaucracy, especially for those areas perceived as being in conflict with the conservative agenda of the president*" (Starkes, 1989, p. 401). Reagan's goal was to downsize on the power and influence that the federal government had over state/local governments, with the theory that local governments should be responsible for carrying out the expectations/mandates of the federal government without any federal intervention and virtually no federal funding. Granting the states more power would in theory improve responsiveness of the government to local issues, decrease conflict over goals and

objectives, and improve the level of efficiency/effectiveness of programs that are implemented (Broadnax, 1981, p. 232).

However, both federal/local agencies were in desperate need of funding in 1979, as a cluster of auto-immune deficiency related deaths began to appear across New York City. A strange new disease believed to be a form of blood cancer, was taking the lives of the homosexual/"men-who-have-sex-with-men" population in New York City, and many feared that the the common link between these infections was a sexually transmitted virus or bacterial infection that attacked the immune system (Lambert, 1989). Only six-months after having settled into the White House, President Reagan and his administration would receive an emergency brief on the severity of the still unidentified infection that lead to AIDS (Francis, 2012, p. 291). The CDC was now putting pressure on major figureheads in Washington to act immediately or face a potential global pandemic.

By 1983, over a thousand confirmed cases had been reported to the CDC. It was now understood by the CDC that the disease was spread through blood product/sexual contact, and that it did not discriminate based on sexuality (Francis, 2012, p. 291). Dr. Donald P. Francis, an epidemiologist, was appointed by Dr. James Mason, Director of the CDC, to become the coordinator of all AIDS Laboratory Activities. He claims that the key to controlling a potential outbreak is an "*early understanding of epidemiology of the disease*", and "*rapid applications of preventive interventions*", and that Dr. James Mason refused to make the calls necessary for a proper response, because he was being influenced by Washington figureheads who had no concept of how to properly respond to a public health threat (Francis, 2012, p. 290).

According to Dr. Francis, the CDC follows a three-step process in approaching a potential public health threat. First, a potential health threat is reported to the CDC, followed by the director of the CDC putting together a panel of experts to formulate possible attack plans, and finally the director of the CDC putting the experts' plans into action (Francis, 2012, p. 291). Thankfully, Dr. Francis was commissioned by the CDC in 1983 to put together a team to study the disease/spread of the virus, however they were unable to get far in their research due to a lack of federal funding.

Francis and his team recognized that the disease had a 100% mortality rate, and that there were no signs of a cure being developed anytime soon. So instead of trying to develop a cure for HIV/AIDS, they decided to put their best efforts towards containing the spread of the virus. They planned to consult behavioral specialists for advice on how to educate the public and keep transmission levels low, and also looked toward the French who were developing various drugs for patients already infected with the virus

(Francis, 2012, p. 295). However, on February 4th, 1985, all research was shut down to a complete cut in funding from the CDC. As it turns out, Reagan had cut a significant portion of the CDC's funds, and in turn the CDC was no longer able to sponsor research on the federal level. (Francis, 2012, p. 295) The only hope now was for further work to be done on the state/local level.

Unfortunately, very little was being done in the city of New York, which had become the epicenter for the HIV/AIDS crisis by the mid-eighties. Mayor Ed Koch, who served as mayor from 1978-1989, was said to have been, "*The Mayor 'who didn't want to know.'*" (Green, 1989, p. 483), given the fact that he was notorious for his "selective memory", and often tried to float above political scandals/endeavors that were against his better interest. Not only that, but he was famously always concerned with protecting the image of New York City at all means possible. As Jackie Mason puts it, "*His opinion of people depends on how they're doing. If they're doing great; he nominated them. If they're indicted, he never heard of them.*" (Green, 1989, p. 483)

When it came to the world of gay politics, Koch wanted nothing to do with it. Although his political ideology had been closer to the left during the early years of his administration, he began to veer closer and closer to the right towards the end of his career as mayor, which didn't help given the fact that opportunistic infections related to AIDS were becoming a major cause of death not only for the homosexual/"men-who-have-sex-with-men" community, but the New York City community in general. By 1989 AIDS had become the number three cause of death in New York City, right behind cardiac disease, and cancer (Lambert, 1989)

Only during the latter years of the eighties did the federal government finally begin to fund efforts to fight the HIV/AIDS crisis. In 1989, the federal government would finally allocate \$171 Million towards the CDC and state/local health departments effort in fighting HIV/AIDS. Just prior to that in 1988, Mayor Koch would finally come up with housing/critical care solutions for New York City residents suffering from HIV/AIDS. (Lambert, 1989)

One cannot deny that both the Reagan administration and the Koch administration would both eventually recognize for the need for action against HIV/AIDS. However, Reagan's approach of cutting down federal funding/social services through his theory of "New-New-Federalism" lead to what is now a global pandemic with no end in sight.

IV. Explanation of Findings

In comparing Nixon and Reagan's separate takes on federalism, one can argue that Nixon's approach was less radical than Reagan's. Nixon intended to turn more responsibility over to the states, yet maintain federal funding so that state/local governments would be able to adjust, whereas Reagan wanted to take away all block grants/federal funding for state/local projects. Although in theory state/local governments would know best how to meet the needs of their people, they ultimately did not have the resources available to them to do so (Richert, 2009, p. 468).

In trying to cut down on the national deficit, Reagan overlooked how expensive it was to provide social services. Social services come at a cost, and the Welfare State had long provided federal funding to subsidize the costs of local services such as public health and public safety, and many state/local agencies would not be ready to take on the ultimate burden that would come from a sudden lack of federal funding.

When public/private health clinics began to see cases of a strange form of "blood cancer" pop up across NYC, they began to report it to the local NYC department of Public Health. This local agency did not have the means needed to approach this new public health threat, and many health professionals looked towards outlets such as the New York Times, health journals, civic leaders, etc., in order to bring more visibility to the issue. As discussed previously, former NYC mayor Ed Koch proved unsympathetic towards the growing health threat, and chose to avoid the issue out of fear of getting involved in "gay politics" (Lambert, 1989).

On the federal level, it is no surprise that the Reagan administration chose not to approach the issue for as long as they did. There are two arguments that can support as to why the Reagan Administration waited as long as they did to intervene. A weaker argument would be that the homosexual community had no place in Reagan's America, with Reagan even rumored to have once said that "*those who live in sin, shall die in sin.*" (Vilanch, 2004, p. 68) However, the stronger and more reasonable argument is that the powers that be under the Reagan administration did not understand how vital it was to support the efforts of the CDC.

Figureheads in Washington didn't understand that it takes a great deal of time, capital, and other resources in order to not only cure a disease, but more importantly stop the spread of it. Public health agencies within New York City at the time did not have the resources they needed to better understand/prevent the spread of the HIV virus, and that is mainly because the Center for Disease Control and Research did not have the funding from the local government to support their efforts, making the argument rather simple:

Reagan's theory of "New-New Federalism" depleted the CDC of the resources that it would have needed in order to properly fight the spread/eradicate HIV. Had the Reagan Administration been more willing to work with the CDC (a federal agency!), HIV/AIDS might not have been the global pandemic that it is today.

V. Conclusion

To date, more than thirty-nine million people worldwide have died of AIDS related diseases. The disease does not discriminate based on sexuality, gender, race, or age, and has taken countless lives in both western nations, and developing countries. Health care workers continue the effort to treat/cure the disease, yet most efforts to date have proven to be futile. Had the Reagan Administration originally budgeted the funds necessary for the CDC to attack the virus, than a cure/the eradication of the virus might have been a reality. However, current trends show that there is no accessible cure in sight, and strains of the virus now prove to be resistant to antiviral treatments. It goes without saying that Reagan's theory of "New-New Federalism" has led to a global pandemic that continues to ravage the whole world over.

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Gregor Samsa and Marx's Alienation of Labor

Rebecca Martin (English)¹

German-language novelist and short story writer, Franz Kafka, is widely regarded as one of the most influential authors of the twentieth century. He is best known for the way he artfully combined elements of fantasy and realism to produce works that explore themes of guilt, anxiety, existentialism, and alienation in surreal and often bizarre predicaments (Sokol 485). Kafka's 1915 piece, *The Metamorphosis* is perhaps the best (and most famous) example of this unique style of writing. The novella is notorious for its odd plotline in which the protagonist, Gregor Samsa, awakens one morning to find that he has transformed into a grotesque insect.

A subtextual reading of Gregor's altered physical appearance reveals an internal struggle with depression, anxiety, alienation, and societal pressures. While the piece has been read and interpreted at length through various lenses of literary analysis, it is remarkably difficult to find a Marxist approach to *The Metamorphosis*. Given the explicitness of Gregor's feelings of alienation and the emphasis placed on his job as a traveling salesman, it is shocking that few literary critics have attempted to apply Karl Marx's piece on "Estranged Labor" to Kafka's creepy-crawly protagonist. That is, Marx's theory that in a capitalist society, laborers are forced to work under such unpleasant, demeaning conditions that they inevitably become alienated from the product of their labor, the activity of production, their "species-being," and finally, from other human beings (Marx 401-405). This paper, therefore, seeks to demonstrate how Gregor Samsa's transformation into an insect, which renders him unable to work and ultimately kills him, is a somatic depiction of what Marx referred to as "the alienation of labor."

Prior to beginning this study, however, I feel that it is important to briefly discuss the "suspension of disbelief" that accompanies a reading of this novella. That is, as a reader, one must be willing to accept certain absurdities or impossibilities in order to enjoy, interpret, and analyze *The Metamorphosis* on an academic and pedagogical level. (Human beings, for example, cannot morph into insects.) That is not to say, however, that this paper plainly accepts Gregor's transition as factual and unembellished. On the contrary, this study understands his transformation as being a shift in mental state rather

¹ Written under the direction of Dr. Ann Hurley for EN425: *Senior Seminar*.

than a physical change. From this perspective, whether or not Gregor literally morphs into an insect is irrelevant because Samsa himself *believes* in his altered physical appearance. Therefore, regardless of reality, he acts and reacts to his circumstances as though he is, indeed, a bug. Through Gregor's delusion, his internal feelings of estrangement and disillusion manifest physically and become his warped reality. In other words, in hypothetically transitioning into an insect, Gregor imagines his alienation into existence.

Marx's Capitalist Society

In my opinion, it is worthwhile to briefly establish a context for analyzing Gregor's relationship with his job as a traveling salesman by highlighting parallels between the capitalist society that Marx describes and the capitalist society in which Gregor Samsa lives. In doing so, I aim to provide a basis of comparison between the two and demonstrate how the text is subliminally rich with Marxist concepts, thereby making it a fantastic source for Marxist analysis.

In his 1844 publication, *The Alienation of Labor*, Karl Marx offers a critique of the capitalist society in which he lives and describes how capitalism serves as a catalyst for what he calls "the alienation of labor." According to Marx, this alienation occurs as a result of a social hierarchy within the capitalist system, where those at the top of the hierarchy (the bourgeoisie) control the capitalist system, while those at the bottom (the proletariat, or laborers) are slaves to the system (401). Under capitalism, he claims, laborers lose the ability to be in charge of their own destiny and once this dissociation occurs, workers invariably become alienated from their labor (401- 405).

In Kafka's piece, Gregor is a member of the proletariat class, while his boss (the office manager) is representative of the bourgeoisie. Gregor articulates this relationship when he states that his boss "sit[s] up at [his] desk and talk[s] down to [his] employee[s] from way up there" (Kafka 5). The office manager's elevated position conveys a sense of authority over Gregor and his fellow laborers in the same way that a king's throne in a Shakespearean tragedy would likely be the highest point on the stage. Further, Gregor's office manager is harsh, unsympathetic, and solely concerned with production, as is the role of the capitalist in Marx's theory (Sutherland 121).

An additional feature of capitalism that Marx identifies is the "consent," or voluntary acquiescence of the laborer's own subordination (Sutherland 123). While this acceptance must initially be coerced by the capitalist (the bourgeoisie), over time,

workers become compelled by social conditions to “sell the whole of [their] active life,” thereby self-imposing their own subservience (Sutherland 123).

A close examination of Gregor Samsa’s everyday activities reveals that he is no exception to this rule. Although he complains about his job and fantasizes about quitting, Samsa’s tyrannical office manager has had such an effect on his mental state that he becomes *obsessed* with his job – Gregor’s career as a traveling salesman wholly consumes his life.

Consider, for instance, that Gregor has never missed a day of work in the five years he has been a traveling salesman and “has nothing in his head except business” (Kafka 6, 12). Further, reflect on the fact that Gregor’s only concern upon waking up to find that he has transformed into an insect is arriving to work on time. In reviewing all of the details that define and shape Gregor’s life, it becomes clear that he is living in the capitalist society that Marx describes. Samsa’s boss (the bourgeoisie) is in control of the employees (the proletariat), and Gregor has bought into his inferiority. The haughty, capitalist office manager has conditioned him into only caring about his career and Samsa therefore becomes compliant with the restrictions and expectations imposed on the proletariat class by the bourgeoisie. These Marxist notions serve as an impetus for Gregor’s alienation and elucidate the argument in favor of the application of the alienation of labor to Kafka’s protagonist.

Alienation from the Product of Their Labor

For Marx, a worker’s estrangement from the product of his labor is the first major form of alienation. Under this model, when a worker devotes a great deal of effort to the object that he is creating, he becomes invested in the product. The laborer may even identify with the product as an extension of himself (401). Under the capitalist system, however, nothing that the laborer produces is his own. This, in turn, creates a distance between the laborer and his product. Because the worker no longer relates to the fruits of his labor in any significant way, he subsequently views the product as alien to himself (401). Everything that the laborer creates contributes to a world that he does not take part in. Marx claims that the more he produces, the more alienated the laborer is from his product.

Applying this theory to *The Metamorphosis*, we see that Gregor is precisely Marx’s alienated laborer. That is, Gregor is primarily unconcerned with anything that does not relate to his job. As his mother affirms, even in his free time, he studies travel schedules or reads the newspaper – he does not dawdle about or spend his weekends

hitting the town with his friends (Kafka 12). For Gregor, his career is of the utmost importance, regardless of how much he dislikes it, because his despotic boss leaves him with few other options. (The office manager literally comes to Gregor's house when he sees that he is late for work and demands to know what is holding him up). In other words, Gregor's profession is an extension of himself – Gregor Samsa *is* a traveling salesman. It is what defines him.

Furthermore, Gregor's job requires that he move from one location to another, trying to sell various items to potential customers. Accordingly, Samsa must be warm, persuasive, and convincing in order to perform well in his career. In this way, the product of Samsa's labor is a successful transaction in which he effectively convinces someone to purchase what he is marketing. Gregor's transformation, however, reveals that he has become alienated from the fruits of his labor. That is, his physical change hinders his ability to communicate with his family and his office manager and therefore renders him unable to *sell* them the falsity that all is okay behind the locked door of his room (Kafka 16). While Gregor can hear himself clearly when he attempts to reassure the crowd outside of his bedroom door that he will be on his way to work shortly, all they hear is chirping (Kafka 16). So, despite how hard he tries to annunciate his words and reinstate a sense of calm in his household, his efforts are in vain. Gregor's insect qualities (his mouth, voice) inhibit his vocal capabilities and therefore demonstrate how his transition alienates him from the product of his labor (the ability to convince others with his words), which is a defining characteristic of himself. Without the product of his labor, Gregor is nothing. Hence, Gregor's transition and subsequent inability to communicate demonstrates that he has become alienated not only from the fruits of his labor, but also from himself, as Gregor's labor is an extension of himself.

Alienation from the Activity of Production

The second form of alienation that Marx discusses is the alienation of the laborer from the activity of production. He theorizes that if the product of laboring is alien to the worker, then, by the same logic, the activity of production itself must be a form of "active alienation" (402). According to Marx, this estrangement is characterized by lack of voluntary labor. He argues that since the laborer is engaging in work that is not necessarily chosen by free will, the work is essentially forced labor (403). In other words, even if the laborer produces an object that he has favorable feelings toward, if not for capitalism, he would not produce this item for monetary gain. Therefore, the capitalist society coerces the laborer to exploit his efforts and take part in alienated labor (403).

Just as the fruits of a laborer's work can appear as alien, so too can the creation of this product.

As discussed earlier, this is clearly the case for Gregor Samsa. From the very beginning of the novella, he places a great deal of emphasis on the stressors of his job, how much he dislikes it, and even spends time daydreaming about how great it would feel to quit (Kafka 5). Gregor labors tirelessly for his boss, working under miserable conditions – “worries about train connections, bad food, constantly changing human relationships that never come from the heart,” – all to be treated inhumanely (Kafka 5). Even more vital to this argument, however, is the fact that Gregor is working to pay off his family's debt to his office manager. So, not only does Samsa have an overly-intense boss and a job that he hates, but he must also commit at least another five or six years to being a traveling salesman in order to rectify his father's monetary troubles (Kafka 5). Hence, Gregor's labor is certainly forced, if not by his office manager, then definitely by his family's financial struggles.

Taking this idea one step further, one could even theorize that within the two spheres of the capitalist society in which Gregor and his family live, Samsa's home life is divided even further into an additional bi-furcated social hierarchy. That is, Gregor's parents are part of what I will call the “at-home bourgeoisie,” while Gregor is, again, relegated to the working class. In this sense, Gregor's labor is coerced on a minor level by the financial perils of the “at-home bourgeoisie,” and then again at a universal level by his office manager. This double-layered pressure from his parents and his boss clearly show that Samsa's labor is not an act on his own volition, but is instead affected by external forces. Thus, the activity of production of Gregor's labor is exploited by the two-fold bourgeoisie and is therefore alien to him. His disdain for his job and incessant desire to quit proves that he is working solely because it is what is required of him, not because he has a burning passion to travel from place to place, pushing items on people. Moreover, even if Gregor did have a deep love for his job, Marx tells us that he would still be an alienated laborer, because if not for capitalism, the worker would not be laboring for monetary gain.

Gregor's transition into a bug, then, brings these feelings of estrangement into fruition. That is, his alienation from the act of production as a result of coerced labor manifests as an insect and therefore makes him unable to produce, or to even leave his house. Instead, he is bound to his room, where it is impossible to effectively perform his tasks as a *traveling* salesman.

Alienation from the “Species-Being” and from Other Human Beings

I have chosen to combine the remaining two forms of alienation into one succinct section because Gregor’s transition simultaneously causes alienation from the “species-being” as well as from other human beings. Hence, there is a great deal of overlap between the two.

Marx describes the alienation from nature and the “species-being,” or, human identity as being the result of the lack of relationship between the laborer and the product of his labor and coerced labor (403). He holds that an individual is defined by his or her ability to turn nature into objects through “practical activity,” or labor (403). Thus, for humans, work offers a meaning to life. According to Marx, however, because neither the object of production nor the activity of production sufficiently express the laborer’s species-being, the capitalist society also causes the alienation of the worker from his human identity (404).

Further, Marx asserts that because workers are alienated from the product of their labor, from their activity of their production, and from their species-being, laborers are also estranged from other humans. In other words, the relationship among workers mimics the relationship they have with their labor, the product of their labor and themselves – they lack the ability to relate to one another as a consequence of capitalism (Marx 404).

Gregor Samsa’s transformation into an insect presents self-alienation in a literal way. That is, one morning, out of the blue, Gregor can no longer recognize himself. He goes to sleep in his human form, and awakens fundamentally estranged from his own identity (Sokel 485). To put it concisely, “no manner more drastic could illustrate the alienation of a consciousness from its own being than Gregor Samsa’s started and startling awakening” (Sokel 85). It is this concept that typifies how Gregor is alienated from both his species-being *and* from other human beings. Samsa’s altered physical appearance demonstrates on a visual level how he is disconnected from his own essence as well as from the human race. He is not himself (the traveling salesman) and he is not a human. Instead, Gregor is a specimen of vermin – a physical form that is alien to his regular, human body, and a species that is largely feared and disliked by humans.

Further, Gregor’s transition causes him to act in a way that is dissociated from human norms. For instance, the longer he remains in his insect-form, the more uncomfortable he feels in open spaces and subsequently seeks refuge in the darkness under furniture, as is characteristic of bugs (Kafka 30). He also grows apathetic to fresh food, and instead prefers rotten vegetables, moldy bread, and things of the like (31). In a

somewhat humorous turn of events, Gregor, in one scene, happily eats cheese that he had declared completely inedible two days prior when he was still in his human form (31). This change in pallet demonstrates how Gregor has become estranged from both his species-being, or his human essence, and other human beings, as people cannot consume outdated food without the risk of becoming ill.

The disgust of Gregor's family and office manager at the sight of him also speaks to the notion that Gregor's transition alienates him from others. If Gregor's own family is apprehensive in his presence, chases him back into his room with a broom, and throws apples at him, the outside world is certainly not going to welcome insect-Gregor with open arms. Hence, Gregor's metamorphosis renders him unlike his human self (his species-being) and, consequently, unlike other human beings. His new insect-state makes him not only physically different from the human race, but it also makes him unable to conduct himself in a way that is in accordance with the "normal" habits of the human species.

In this way, Gregor's metamorphosis subjects him to alienation from the product of his labor, the activity of production, his species-being, and from other human beings. The conditions for the alienated laborer, as characterized by Karl Marx, are present in Gregor's capitalist society, and therefore provide a basis for his estrangement. In transforming into an insect (mentally or physically), Kafka's protagonist turns his feelings of alienation that are evoked by his miserable working conditions into his reality. Gregor's insect-form inhibits his ability to effectively communicate with other human beings, thereby alienating him from the product of his labor. That is, his ability to perform and sell people with his words. Further, Samsa's transition brings into fruition his feelings of alienation from the act of production as a result of double-layered coerced labor, and estranges him from his species-being, as well as from other human beings. Thus, Gregor Samsa's metamorphosis is an excellent somatic depiction of Karl Marx's theory of the alienation of labor.

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Why Adults are Allowed to Say Children Are Best Kept Out of Sight and Out of Mind: A Study on Adult Focused Therapy for Survivors of Domestic Violence and Human Trafficking

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This paper examines the therapeutic effects of adult focused therapy for survivors of domestic violence and human trafficking. Survivors are operationally defined as adults who have fled the environment of violence and are already engaged in the process of emotional and psychological rehabilitation. The research examines how adult focus therapy which includes the separation of children from parents or other adult survivors affects the recovery process for adults. The data for this study come from participant observation, participant evaluations, and volunteer feedback from Here There and Everywhere, an art therapy nonprofit working with survivors of domestic violence and human trafficking. The focus group is held at The Family Justice Center, a social service center in New York, New York. The main findings of this research are parents benefit from having time away from their children because they require independent opportunities to focus on goals for present and future. The parent child relations improve with separation because time together becomes more valuable. In addition, domestic violence and human trafficking survivors empower each other by creating a support network to reduce likelihood of returning to violent situations.

I. Introduction: Reclaiming Adult Survivor Empowerment in Therapy

This study is concerned with survivors of human trafficking and domestic violence. These survivors are grouped together as participants because the after effects of trauma are similar and therefore treatment from an art therapy approach yields similar results. The most cited definition of human trafficking is the World Health Organization's (2012) definition:

The recruitment, transportation, transfer, harboring or receipt of persons, by means of the threat or use of force or other forms of coercion, of abduction, of

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fraud, of deception, of the abuse of power or of a position of vulnerability or of the giving or receiving of payments or benefits to achieve the consent of a person having control over another person, for the purpose of exploitation (p. 4).

The United States Department of Justice (2016) defines domestic violence as a continuous pattern of abusive physical, sexual, emotional behavior, economic, or psychological actions. Violence is defined to include threats of actions in any domestic intimate relationship that is used by one partner to gain power and control over the other partner. There has been limited research about adult focused therapy for survivors of domestic violence and human trafficking, which most likely has also contributed to these programs not being adequately funded. However, examining the success of adult focused therapy for survivors is important to better understand adult rehabilitation and the mental effects of leaving environments of domestic violence and/or human trafficking. This study evaluates how survivor empowerment is achieved in a therapeutic practice where parents arrive with their children but then children and adults are separated into two separate groups. The data show that with separation both adults and children receive quality rehabilitation. Adults receive enhanced benefits from art therapy with increased healing effects when they have a designated time to focus on themselves. Without having the responsibility for their children or the children of other survivors, adults are able to focus on their personal needs and with deeper reflection can identify goals while knowing their children are safe.

At Here There and Everywhere's art therapy program a recent group of participants living in New York City shelters after fleeing situations of violence expressed that they would prefer to be separate from their children while working on developing personal skills. The participants argued they would be more successful if they could focus on their personal goals without having to watch their children imultaneously. The feedback prompted the central research question of this study and this paper will analyze the validity and success of separation for adult focused therapy.

Verifying the efficiency of art therapy with an adult focus can support separated social services for adult survivors of domestic violence and human trafficking. Because survivor therapy is typically structured to be centered on the children, promoting parent and child separation based on findings may reduce the likelihood of combining both age groups, a measure that may be enacted for budget reasons.

The political climate of 2017 has brought services for domestic violence survivors to almost a standstill. During the process of this research, funding for therapy was cut by the New York City Mayor's office because of presidential threats to sanctuary

cities. At the time of the study (May 2017), the 45th U.S. President has executive plans to cut budgeting from the Department of Justice which would specifically eliminate the government grant programs created under the Violence Against Women Act of 1994 and subsequent legislation. This program was designed to develop the nation's capacity to reduce domestic violence and similar offenses by strengthening services it currently oversees 25 grant programs that support survivors of domestic violence. This threat affects many different grant programs. The consequences of defunding programs that support survivors would be detrimental to adults who are psychologically affected by trauma and would disproportionately affect low-income single parents, (undocumented) immigrants, and/or survivors who are often estranged from their family as support networks.

II. Literature Review

Findings from studies investigating the effects of domestic violence and human trafficking on women in group therapy support the idea of practicing adult-focused therapy so the parent survivors can counteract the negative effects of violence (Dodd, 2009; Johnson, 2013; Rankin & Taucher, 2003; Swanston et al., 2014). In absence of focused counseling, many victims continue to live with the negative mental instability and inability to cope after negative effects of trauma events (Johnson, 2012 and Swanston et al., 2014). Having a space designated to parent survivors² allows facilitation of relationships with other mothers and provides social networks for adults in similar circumstances (Dodd, 2009). For parents one of the most therapeutic element of therapy is connecting with others to discover that they are not alone in recovery. Individual behavior and parenting skills improve because adult therapy increases confidence and self-esteem and promotes opportunities to discuss life concerns (Dodd, 2009). To build connections survivors must evaluate where they currently are emotionally and where they have been both psychologically and physically. Reevaluating the self is easier to accomplish when support is centered for a group of similar experience and identity (Johnson, 2012). Survivors gain control over improving the quality of their lives and can do so by labelling symptoms and practicing self-management techniques to stabilize daily life (Rankin & Taucher, 2003).

² The term parents refers to parent survivors, which only focuses on mothers who participated in workshops

In therapy, adult focused discussions or art prompts³ are used which allow confronting trauma to reshape self-perspectives (Kapitan, 2011; Rankin & Taucher, 2003). Trauma sensitive care is informed care that acknowledges the presence of complex devastation through telling a narrative. Parents can easily recognize and discuss trauma in the absence of children (Dodd, 2009; Johnson, 2012; Rankin & Taucher, 2003; Swanston et al., 2014). In groups with children present and listening both groups face difficulties remaining present during emotionally intense situations. Children witness their parents' distress during and following acts of violence then do not know how to cope (Swanston et al., 2014). Parents experience the discussion of trauma as being forced to continue to acknowledge that their children live or have lived in an environment controlled by threat and fear. This continuation of stress can strain the parent child relationship and make rehabilitating together painful for the parent because it creates a sense of being unable to escape the effects of violence (Johnson, 2012; Swanston et al., 2014). Scholars (Dodd, 2009; Johnson, 2012) have found that time away from the child, for at least a major portion of the therapy session, makes this experience de-stressing rather than distressing.

Parents can develop attachment issues with their children by becoming dependent on parent-child relationships as a replacement for dependency on a partner (Moulding, 2015). Having adult focused therapy separate from the children encourages women to become dependent on themselves and ultimately fosters healthy parent-child relationships. This is important because survivors of domestic violence and/or human trafficking have more parenting difficulties than those who were not victimized (Keeshin et al., 2015). Even after leaving the environment of violence, without professional support, parents often feel unequipped to deal with distress (Swanston et al., 2014). Victim blaming is a common problem in parent child relations following trauma. As a method for protection of the self and the child, parents sometimes remain silent about violence. Perceiving this as a lack of closure from the parent as a sign of weakness, children may blame the victimized parent (Moulding et al., 2015). In an adult setting which allows parents to discuss their experiences and feelings with others who share these, adults are more likely to achieve closure and move forward. This may enable the parent to discuss trauma more openly or to help the child achieve closure. Parents with existing trauma are still able to be emotionally available to their children when there

³ Art prompts are instructions to guide the beginning of a project with freedom of interpretation.

exists adequate professional support. Adult focused therapy that promotes wellbeing through sustainable self-care, such as art therapy, provides a focus on healing skills so that adults are equipped to handle high stress from children (Kapitan, 2011). If parents are able to decrease the intensity and frequency of negative aftereffects to improve daily functioning and increase positive life experiences through therapy, they can rehabilitate parent-child relationships (Mauri & Klein, 2007; Rankin & Taucher, 2003).

Adult focused therapy fosters the development of support networks with facilitators who offer professional guidance or rehabilitation services and fellow participants who create a safety net by discouraging the return to a violent environment (Dodd, 2009; Rankin & Taucher, 2003). Finally, the separation from children protects survivors from being reminded of the lasting effects trauma has on their children because they do not witness outbursts or behavior that mimics the perpetrator (Rankin & Taucher, 2003).

III. Data and Method

Data for this research project come from Here There and Everywhere art therapy workshops. These workshops are for survivors of domestic violence and/or human trafficking. The status of which violence the participants were victims of remained confidential and this information was only shared with their case workers. Most of the adult participants were women. Approximately half of all women were mothers who brought their children to the art therapy sessions. Participants attended weekly three-hour long workshops. Each session began with an opening exercise, either stretching, a physical warm up, or an emotional check in. Then participants transitioned into the week's predetermined art project. Each week concluded with a share out where participants had the option to show what they made and discuss it.

Data for this study consist of a) feedback forms from participants, b) volunteer evaluations, c) participant observation, and d) an in-depth interview with the founder and CEO of Here There and Everywhere.

a) Participant feedback was completed with open-ended evaluations at the end of the cycle. As several participants are immigrants with low level English skills, evaluations were distributed in English, Spanish, Mandarin, and Arabic. One participant received help from a volunteer with her writing. Evaluations completed in languages other than English were then translated by volunteers who were recruited to Here There and Everywhere based on their language skills. Responses were then read to determine the effectiveness of Here There and Everywhere cycles and measure the growth of

survivors considering their feeling of empowerment. For this study evaluations from 2014, 2015, and 2016 were used.

b) Volunteer evaluations collected information in the form of guided prompts, which included information on group atmosphere, bonding and connections made, mutual aid among group members, new problems, staff response to issues, accomplished growth, analysis, and areas of improvement. For this study evaluations from 2014, 2015, and 2016 were analyzed.

c) Participant observation: From January until May 2017, I was an intern for Here There and Everywhere. I participated in a number of different tasks. For example, I was a facilitator for adult workshops and children's workshops. I provided aid by distributing supplies, guiding creativity with step by step directions or artistic prompts, and being a source of verbal support. With the adults, my primary function was to guide them in communicating an idea or emotion through art. As a child care volunteer, I facilitated the children's wellbeing by monitoring behavior and reducing acts of verbal or physical aggression. It was my responsibility to make sure the children did not invade the adult workshops. Hands on participation in both workshops allowed me to observe the various adult interactions and parent-child relationships.

d) In an interview with the co-founder and President of Here There and Everywhere, Tanya Gupta, I asked follow-up questions about how the parent-child relationships noticeably changed over the twelve-week therapy cycle and what strategies participants use to empower themselves. The interview was recorded and all responses were transcribed verbatim and analyzed.

IV. Findings

A Need for Separation

At one of the of Here There and Everywhere's art therapy workshops in February 2017, there were 22 women, five of whom brought a total of fourteen children. The women were in a large conference room, which was pre-arranged to look more like an art studio. The children were down the hall in a smaller conference room out of their mothers' sight. Within the first half hour of the three-hour workshop a child opened the door and ran to his mother. A childcare volunteer attempted to prevent the child from going into the adult workshop and cause a disruption but the mother could witness her distressed child through the open the conference room blinds and felt she needed to respond. This took the mother away from the project she was working on and broke her

away from the group. After the first child ran out of the designated children's area, the youngest child followed. Her mother and a returning survivor, Ms. Lee⁴, came out and calmly sent her back to the childcare room by saying, "Mommy needs this time, you can go play with the big kids." The older children were less inclined to run to their mothers because there were activities for them to do and snacks for them to eat in the smaller conference room.

In previous group sessions when children were physically with the mothers, sessions were reported to be more intense and difficult to handle. Although the children were engaged in the beginning, before the three-hour session ended it became more of a daycare program for the younger ones. Mothers were restricted by childcare and each had to focus on the child's needs rather than her own. Without feeling an obligation to center attention on the child, adults could devote energy to the therapeutic project and relax. They had more time to begin planning projects and executing their goal for the designated time. Here There and Everywhere co-founder, Tanya Gupta, stated:

It's more of just needing space to think about what they're doing right now. I think it's very healthy and important. Especially the parents of the younger parents because they are doing so much for the child and spending even more time with them.

The mothers in the Here There and Everywhere workshops value time with their children, but understand that they benefit psychologically and professionally from devoting time to themselves and developing vocational skills. Because the children heard or witnessed violence first hand it was common for children to exhibit behaviors that reminded the survivor of traumatic experiences. They have not or are still learning how to cope following acts of violence. Mothers expressed that when a child used language recognizably similar to their perpetrator or inflicted violence on other children, they were reminded that their children live or lived in an environment controlled by threat and fear that was unbearable. Mothers were hyper aware of the foul language, pushing, and choking which can be seen in numerous weekly evaluations.

Children are one of the biggest motivators for a parent to leave an abusive or dangerous situation. The mothers felt secure when they knew where the children were but in the evaluation section which asks if anything about the workshops can be improved several mothers requested to be separated into a group exclusively for adults. In her evaluation Ms. Ashoke wrote, "If there is anywhere that the workshops can improve, I

⁴ All participants' names are pseudonyms.

think the children should be separated from the parents whenever possible.” Another participant, Ms. Sasha echoed this:

It would be good to have a space where we can work without the children. I think we should not be in the same room and sometimes it is hard to work when we can still hear them. Especially if we hear them cry.

The mothers exhibited sentiments of not wanting to exclude the children completely because they want to know where the children are at all times. With this precaution in mind, they still communicate a desire to have separation. When groups were divided so that adults were in a space designated for them the group was more receptive to projects and displayed greater enjoyment while working together. It was apparent that everyone was engaged and excited because each participant was eager to work on the week’s project as a group. No individual asked to do a different project or work separately from the group when the program was designed to have participants working on the same projects simultaneously.

Parent-Child Relationships

When the adults were able to spend time away from the children the time which was spent together becomes more valuable. Children were excited to talk about what they did during the time apart. Parents were excited to see how well they did and because they felt refreshed, they were ready to exert energy with the children. The adult group and the child group convened together at the end of the workshop to share through showing and telling what each participant created that day. Appreciation for time spent together was evident from the way parents and children communicated with each other following the art project. A volunteer described the mothers being excited to share and see what their children made while apart:

Having that space away from the parent makes them appreciate time with the parent even more. And from the parent’s point of view I think two or three hours after they are excited to see the kid. And the child is excited to show what they made to the parent. And there is another level of communication where they can each share with one another.

You hear a lot of, “Oh look mommy, look at what I made today.”

For the children, to see their mothers in a situation where they took control of a project enhanced the child’s perception of the adult as powerful. Some children blamed the parent for not assuming responsibility early enough in the former dangerous environment

and they, as well as the parents, question their ability to protect. By witnessing the parents' strength and abilities, the perception as a protector increases. Observation during workshops revealed that expressing love and appreciation are reassuring strategies parents use to demonstrate protectiveness. This is apparent from the reactions parents gave their children and could be seen when the parent shared a project with the child (Moulding et al., 2015).

Individualized attention and moments of private time to reflect allowed parents to restore emotional well-being. While in the violent environment, parents were emotionally drained and children often report having felt emotionally neglected (Moulding et al., 2015). The child is then more likely to have outbursts in search of attention or as a result of neglect. When these tantrums or outbursts occur without the parent being present, the emotional strain already being experienced is not further worsened. Through the separate therapy sessions, young participants were able to develop communication skills under guidance of childcare volunteers. Children did not have much interaction with others outside of the household because the environment is controlled by the perpetrator. And so this is often the first time that they are out of their socially restricted environments and engage with children of different ages, which is healthy for rehabilitating (Moulding, 2015).

The improvement in the children's behavior deferred them from acting out like the perpetrator and forced the adults to acknowledge previous trauma. As a possible outcome of separation combined with consistent individualized attention during therapeutic workshops, the parents and children can then get along with less conflict.

Individual Empowerment

Empowerment is a foundation of recovery for survivors. The term empowerment is used in this context to mean the power that develops and is gained. From this perspective individuals gain more control over their lives than previously held, either independently or with the help of others, such as volunteers, caseworkers, or supportive friends. Empowerment is both a process and an outcome of effort to obtain a relative degree of ability and influence (Staples, 1990).

In adult focused groups, participants received individualized attention from facilitators. The facilitators dedicated time to working closely with the survivor while helping to ensure the success of their project positively enforces the idea that the survivors are deserving of encouraging partners. This also affirms that healthy resources exist in relationships where one is providing support rather than seeking power.

Facilitators do not exercise power over the survivors and act with equal capabilities. The barriers of status and authority typically established between workshop leaders and participants are not present at Here There and Everywhere. The facilitator-participant dynamic uses inclusive involvement and therefore empowers both groups. This also provided opportunities to discuss life concerns without stress of repercussions. Promoting well-being by fostering partnerships to acquire vocational and emotional skills gave participants life skills to create nurturing environments for themselves. By knowing their value, survivors are more likely to discover one's own capabilities and are less likely to return to an oppressive environment (Cantos, 2014).

The cooperation level among adults engaged in the workshops increased as well. The art therapy space offered a non-threatening environment where adults could share ideas about coping. The recovery process combined with parenting can be a lonely responsibility, especially because the majority are single parents or adults not living with other family members. Conversations without forced prompts allowed survivors to discover that although they experience anxiety concerning family or individual struggles, they are not alone in this plight (Dodd, 2009). This also makes it easy to share ideas for projects. Participants often noticed if another was having difficulty with a project and offered guidance. By helping one another complete projects the participants validated their own skills to feel self-empowered and exercise leadership. This is exemplified by Ms. Zara's reflection:

I enjoyed the learning new things and taking knowledge. I also like to attend the Here There and Everywhere workshops because it is a team work and everybody has different ideas, knowledge. And I enjoyed most interacting with others [mothers/survivors].

The central focus of the program is empowerment because both domestic violence and human trafficking rely on disempowering individuals who subsequently feel worthless. Particularly in cases of human trafficking, the survivor was treated as a commodity whose value is determined by the perpetrator. Their value is further decreased by exchange for little or no compensation for forced demeaning work (Brooks, 2013). Domestic violence survivors also had their value undermined by the violent treatment they had to endure in the past. Perpetrators prey on vulnerability and victims are only able to view their worth in the capacity established by the offender. In the art therapy workshops survivors created products then had the option to sell what they made using an online store and keep the total profit. Transitioning from being treated as someone else's

product to creating artistic products and determining their value puts the survivor in a position of power. Once they make a profit of their product, their productivity transforms a creator-consumer paradigm from an abuser-master paradigm (Brooks, 2013). That power becomes a platform to continue building on that foundation. The workshop structure gives participants the opportunity to make decisions for themselves and relax from the stress induced by the after effects of trauma.

V. Conclusion

There is mounting evidence that supports adult focused therapy for successful rehabilitation through empowerment (Johnson, 2012). Although mothers in this study discussed wanting to spend time with their children and knowing they are safe they also valued time dedicated to themselves. Observation and evaluations reveal that parent-child relationships in fact improve when there is temporary separation because they are excited to share what they accomplished and adults feel refreshed after focused therapeutic practices. Empowerment is best achieved when adults can focus on their own personal needs and goals. This is possible when parents are part of therapeutic group work with other adult survivors because with an understanding of similar experiences and responsibilities, they form relationships which create a supportive environment that ultimately deters survivors from returning to a violent situation. In addition, survivors are able to build healthy relationships with each other, something they could only do after leaving an environment that restricted their interactions. They also gain the liberty to execute a short-term goal for the workshop, and are then able to plan long term goals for personal or vocational growth.

This study, although local to New York and small scale, shows that survivors of domestic violence and human trafficking are empowered during adult focused therapy where they are able to create a finished product with the option of marketing it for financial support. One obvious omission was the lack of any male participants (including fathers). Future research should consider the impact of this on overall results.

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