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EDITOR'S INTRODUCTION

The diversity of scholarship at Wagner College is incredible. Young minds are exploring topics ranging from MRI contrast agents to women in contemporary French cinema. Interested in crystal growth, QT syndrome in athletes or female subversion of a patriarchal society? A quick glance at the table of contents will reveal a plethora of quality research. Be sure not to miss a first for the journal--a critical analysis of Oscar Wilde's The Complete Works of Oscar Wilde in the form of a dialogue between Rush Limbaugh and Al Franken.

Read on and enjoy!

Gregory Falabella and Richard Brower, Editors

Section I: Eastern Colleges Science Conference¹

Abstracts

- 2 Synthesis and In Vitro Analysis of Iron(III)-Based MRI Contrast Agents
Janine Borgaro and Dr. Nicholas Richardson
- 2 A Statistical Analysis of Basketball Shooting
Joy Gallagher and Dr. Otto Rath
- 2 Hydrothermal Crystal Growth of ZnO Using Ethylenediamine-based Ligands
Yuliana Toderika and Dr. Maria C. Gelabert
- 3 Geographic Distribution of *Drosophila Melanogaster*
Maura Melvin, Janette Lebron and Dr. A. Moorthy
- 3 Estimating Coliform Levels in Lake Water: A Comparison of Methods
Leann Matta and Dr. Roy Mosher
- 3 A Study of Capacitor Charge Storage
Brittany Corn and Dr. Otto Rath
- 4 The Social Impact of Beauty
Mark S. Reeves
- 4 Survival of Adult Zebrafish Brain Tissue in Organotypic Culture: A Morphological Study
Frank Garittano, Christopher Corbo, Dr. Geoff Church, Prof. Linda Rath and Dr. Zoltan Fulop
- 5 Linear and Non-Linear Oscillation Studies Using a Simple Pendulum
Kaitlin Buffington, Evan Webber-Junot and Dr. Otto Rath
- 5 Alcohol Induced Tissue Injury in Adult Zebrafish Brain with Special Focus on Hormesis
Christopher Corbo, Christopher Cortes, Zoë Bandola, Dave Quiros, Prof. Linda Rath and Dr. Zoltan Fulop

¹ Papers and posters presented at the 59th Eastern Colleges Science Conference held in New Britain, Ct. on April 8-9, 2005.

- 6 The Influence of an Administrator Affecting Eyewitness Identification Procedures
Nancy Andiloro
- 6 The Influence of Bias Lineup Instructions on Suspect Identification
Jennifer Wiech and Dr. Amy Eshleman
- 6 Assessment of Relational and Overt Aggression in Elementary School Children
Gina Sportiello (Psychology) and Dr. Amy Eshleman
- 7 Morphological Study of the Periventricular Gray Zone of the Optic Tectum in Adult Zebrafish Brain
Christopher Corbo, Christopher Cortes, Zoë Bandola, Prof. Linda Rath and Dr. Zoltan Fulop
- 7 The Effect of UVA and UVB Ultraviolet Radiation on UV Resistant and Sensitive Strains of Yeast
Justin DiSanto, Megan Melvin, Maura Melvin and Dr. Ammini S. Moorthy
- 8 Effects of Various Concentrations of Alcohol on the Grooming Behavior in *Drosophila Elanogaster*
Kim Farrell and Dr. Ammini S. Moorthy
- 8 Microscopic Imaging of the Adult Zebrafish Brain
Denise Wong, Christopher Corbo, Christopher Cortes, Zoë Bandola , Gary Greenfeder, Dr .Andrew Needle and Dr. Zoltan Fulop
- 9 Effects of Alcohol on Shoaling and Species Recognition in Zebrafish (*Danio Rerio*)
Chris Powell, Kristin Risch and Dr. Brian Palestis
- 9 A Discussion of the Flaws and Ineffectiveness of State Mandatory Minimum Sentencing Guidelines
Gerard Mangieri

Section II: The Natural Sciences

Full Length Papers

- 12 Geographic Differences in Allelic Frequencies for ADH+ and ADH-Allozymes in *Drosophila melanogaster*
Maura Melvin
- 26 Hydrothermal Crystal Growth of ZnO Using Ethylenediamine-based Ligands
Yuliana Toderika

Section III: The Social Sciences

Full Length Papers

- 42 Prolonged QT Syndrome in College Athletes
Roxanne Febick
- 49 Relational Aggression: Finding Ways to Deal with This Negative Female Behavior
Gina Sportiello
- 67 The Effect of Objective Self-Awareness on the Ability to Deceive
Gareth Shumack

Section IV: Critical Essays

Full Length Papers

- 82 Gender as Performance in *Todo sobre mi madre*
Lindsay Beren
- 87 *Flâneuses et Vagabondes*: Women on the Run in Contemporary French Cinema
Jake Brown

94 Growing Up Indian American

Naveena David

103 Female Subversion of a Patriarchal Society: Isabel Allende's The House of Spirits

Jessica Friswell

112 The Limbaugh and the Lily On Lies, Liars, and Oscar Wilde

Jacob Meranda

**Section I: Eastern Colleges
Science Conference**

Synthesis and In Vitro Analysis of Iron(III)-Based MRI Contrast Agents

Janine Borgaro (Chemistry) and Dr. Nicholas Richardson (Chemistry)

The detection of tumors by traditional MRI contrast agents has been inefficient due to rapid excretion of the contrast agents from the blood. By binding a contrast agent to a macromolecule such as human serum albumin (HSA), it allows the contrast agent to stay in the blood for a longer period of time. Also, binding contrast agents to a macromolecule may decrease the spin-lattice relaxation times due to the Proton Relaxation Effect. This allows for a distinction between vascularized and non-vascularized tissue and enhances the detection of tumors. A series of ligands designed to bind to HSA were synthesized and coordinated to iron(III). A 20-MHz minispec was used to measure the relaxation rates of the complexes in water and HSA solutions.

A Statistical Analysis of Basketball Shooting

Joy Gallagher (Chemistry) and Dr. Otto Rathes (Physics)

In recent times there has been great interest in the physics of sports. This paper presents a statistical study of basketball shooting as a function of range (distance to the basket) and angle (position on the court).

Hydrothermal Crystal Growth of ZnO Using Ethylenediamine-based Ligands

Yuliana Toderika (Chemistry) and Dr. Maria C. Gelabert (Chemistry)

The chemistry of aqueous zinc solutions was explored to see the effect on size and morphology of zinc oxide crystals. Multidentate ligands such as tetraethylenepentamine pentahydrochloride (tetren), ethylenediamine-N, N'-diacetic acid and pentaethylenehexamine were investigated separately in the growth of ZnO crystals. In this study, complexing agents and pH were varied in the precipitation of ZnO from basic aqueous solutions. Autoclaves were used for synthesis at 200°C and around 15 atm. Optical microscopy on the resulting products revealed crystals with a needle habit for all ligands and plates for specific ligands in specific pH. The overall variation in size and morphology may be explained to some degree by considering the coordinating nature of the ligands and their polarity.

Geographic Distribution of *Drosophila Melanogaster*

Maura Melvin (Biology), Janette Lebron (Biology) and Dr. A. Moorthy (Biology)

Drosophila melanogaster has the ability to detoxify alcohol by an enzyme called alcohol dehydrogenase (ADH). ADH+ flies have this gene. ADH- flies cannot produce an active ADH enzyme and therefore experience the toxic effects of alcohol. An allozyme is one of several forms of an enzyme coded for by different alleles at a particular locus.

Electrophoresis allows separation of proteins, the products of genes, based on charge and other factors. The fast and slow alleles of ADH have a worldwide distribution in *Drosophila melanogaster*. There is a high frequency of fast alleles in higher latitudes and a high frequency of slow alleles in lower latitudes. Allelic frequencies of the ADH fast and slow allele in different locations has been studied.

Estimating Coliform Levels in Lake Water: A Comparison of Methods

Leann Matta (Microbiology) and Dr. Roy Mosher (Biology)

Levels of coliforms and fecal coliforms in Silver Lake Reservoir, Staten Island, NY were monitored over a five-month period. A ten-tube MPN (most probable number) procedure was the primary method used to estimate bacterial numbers. The presence of coliforms and fecal coliforms was also assessed using a chromogenic/fluorogenic assay and a PCR (polymerase chain reaction)-based method. Preliminary results indicate that fecal coliform levels are correlated with the ambient temperature and/or the relative numbers of waterfowl present.

A Study of Capacitor Charge Storage

Brittany Corn (Physics) and Dr. Otto Rath (Physics)

This paper presents data on the charging, discharging, and leakage of a large (7000 microfarads) capacitor. Models of charge storage were formulated and will be presented. Historically, fluctuations in charge storage of a capacitor were studied by Albert Einstein in 1907.

The Social Impact of Beauty¹

Mark S. Reeves² (Psychology)

In today's society, much importance is placed on being beautiful and many are willing to spend the money to have cosmetic surgery. The current research sought to expand the existing literature on physical attractiveness and the extent to which our judgments on others are affected by an individual's beauty. In an attempt to empirically show this phenomenon, participants were asked to rate the music of a female singer after being presented with her photograph. Participants were randomly assigned to an "attractive" condition or "unattractive" condition in which the photograph of the woman changed respectively. Participants assigned to the control condition were asked to rate the music without a photograph. Results are presented with a psycho-social approach to the importance of "beautiful".

Survival of Adult Zebrafish Brain Tissue in Organotypic Culture: A Morphological Study

Frank Garritano (Biopsychology), Christopher Corbo (Biology),
Dr. Geoff Church (Biology), Prof. Linda Rath (Biology) and Dr. Zoltan Fulop (Biology)

An organotypic culture technique was adapted to study whether adult zebrafish brain slices could survive long enough to serve as an experimental model to investigate direct cellular effects of alcohol. Although massive degeneration of the neuronal tissue begins as soon as 48 hours in cultivation some neurons and glial cells are able to survive for a longer period of time, up until at least 14 days. Morphological signs of demyelination and other inflammatory processes could be detected in all investigated stages with the appearance of considerable number of mast cells, microphages (neutrophiles) and macrophages (basophiles). It was found that macro and micro neurons have different capacities to survive. It was concluded that such tissue model could serve to study the effect of alcohol on different, specific cellular events of neuronal tissue degeneration. Supported by an anonymous donor, this project is part of a larger study that investigates the hormetic effect of ethyl alcohol on the zebrafish brain. There is a renewed interest in the scientific community in studying hormesis, a phenomenon that deals with the beneficial effects of toxins administered in extremely low concentrations.

¹ Recipient of Outstanding Platform Presentation in Psychology or Education Award

² Research performed under the direction of Dr. Amy Eshleman (Psychology)

Linear and Non-Linear Oscillation Studies Using a Simple Pendulum

Kaitlin Buffington (Physics), Evan Webber-Junot (Physics) and Dr. Otto Rath (Physics)

Statistical data for large and small oscillations of a simple pendulum were used in formulating models of pendulum oscillation. Additionally measurement of the acceleration due to gravity will be discussed.

Alcohol Induced Tissue Injury in Adult Zebrafish Brain with Special Focus on Hormesis

Christopher Corbo (Biology), Christopher Cortes (Biology), Zoë Bandola (Biology), Dave Quiros (Microbiology), Prof. Linda Rath (Biology) and Dr. Zoltan Fulop (Biology)

There is a renewed interest in the scientific community in studying hormesis, a phenomenon of different effects of the same toxic agent depending on its concentration: in a very low concentration, toxic agents actually may have some beneficial effects. Ethyl alcohol (ETOH), a toxicant, has been known to affect cell functions such as cellular metabolic activity, cell division, growth, and differentiation. In one hand, ETOH can cause cell death while on the other hand it can increase cell proliferation depending on its concentration. Cell death may occur by either of two mechanisms: apoptosis or necrosis. Necrosis, the first type of cell death to be recognized, is an uncontrolled degenerative phenomenon invariably caused by noxious stimuli and is the result of irreversible failure of membrane function. Apoptosis, on the other hand, is a death process, which involves a series of well-organized events that require active cell participation. Alcohol is known to cause either form of cell death. This light and electronmicroscopic study of adult zebrafish brain attempts to differentiate between apoptotic and necrotic cell death forms after exposure to lethal and lethal-50 doses of ETOH. Supported by an anonymous donor, this project is part of a larger study that investigates the hormetic effect of ethyl alcohol on the zebrafish brain.

The Influence of an Administrator Affecting Eyewitness Identification Procedures

Nancy Andiloro³ (Psychology)

Human memory is incredibly malleable – memories can become distorted over time, through retelling, or from the influence of external sources. Eyewitness memory may be influenced by external sources such as the media and police questioning, making an eyewitness's identification of a perpetrator unreliable. After watching a video portraying a crime, participants were randomly assigned to one of four conditions to make an identification through a lineup: isolation, experimenter presence, experimenter presence + influence, experimenter presence + influence + a demand to view the lineup for a second time. Preliminary analyses suggest that isolation might produce the most accurate responses. Changes in responses were also made in the wrong direction in the 3rd and 4th conditions.

The Influence of Bias Lineup Instructions on Suspect Identification

Jennifer Wiech (Psychology) and Dr. Amy Eshleman (Psychology)

Identifying the perpetrator in a lineup is a common way of charging a suspect. However, eyewitness memory is often flawed and easily manipulated. This study explores how the administration of lineup instructions can influence the witness' decision. A video clearly depicting a theft was shown, and the participants were asked to identify the thief from a lineup of photographs, presented sequentially. Participants in the biased instruction condition were told that the thief was definitely present in the lineup, and those in the control group were told that the thief might or might not be present. The perpetrator was absent from the lineup in both conditions. The majority of participants in the biased condition made a false accusation.

Assessment of Relational and Overt Aggression in Elementary School Children

Gina Sportiello (Psychology) and Dr. Amy Eshleman (Psychology)

Relational aggression (covert aggression common among girls) has long been in existence, yet empirical work has been conducted only fairly recently. The present study

³ Research performed under the direction of Dr. Amy Eshleman (Psychology)

involves fifth-grade students. The children are interviewed individually by a researcher regarding the prevalence and personal importance of instances of relational and overt aggression. Aggression-related issues in the interview include physical and mental abuse amongst classmates, gossip, social exclusion, and chronic bullying. The study's focus is to assess aggression in a school setting. Results will inform the creation of interventions and curriculum to address this behavior.

Morphological Study of the Periventricular Gray Zone of the Optic Tectum in Adult Zebrafish Brain

Christopher Corbo (Biology), Christopher Cortes (Biology), Zoë Bandola (Biology), Prof. Linda Rath (Biology) and Dr. Zoltan Fulop (Biology)

Liquor-contact neurons are believed to represent a specific, evolutionarily early form of neurons of the vertebral brain whose function may depend on their close proximity to the cerebrospinal fluid. These neuronal cells are often referred to as protoneurons and may represent neuronal population known as neuronal stem cells. In this work, we present light and electron microscopic morphological analysis of the periventricular gray zone of the optic tectum in the adult zebrafish brain. A special focus is given to the liquor-contact neurons and their surroundings. We pay particular attention to the ultra structure of the ependymal cells, as the possible path of the CSF flow from the tectal ventricle, as well as to glial satellites to these neurons. Supported by an anonymous donor, this project is part of a larger study that investigates the hormetic effect of ethyl alcohol on the zebrafish brain. There is a renewed interest in the scientific community in studying hormesis, a phenomenon that deals with the beneficial effects of toxins administered in extremely low concentrations. This work provides the needed background information about specific regions of the zebrafish brain that may be the targets to the effects of ethyl alcohol.

The Effect of UVA and UVB Ultraviolet Radiation on UV Resistant and Sensitive Strains of Yeast

Justin DiSanto (Biology), Megan Melvin (Biology), Maura Melvin (Biology) and Dr. Ammini S. Moorthy (Biology)

Different types of UV light have different damaging effects on cells and their DNA, some cells have mechanisms in place to repair DNA damaged by UV light. Two strains of yeast one with repair mechanisms and one without where tested to compare the effects of two types of UV light and the effectiveness of the repair mechanisms for DNA. Two

sunscreens were also tested to investigate the effectiveness of sunscreens at protecting cells from UV light. We hypothesized that UVA UV light was less damaging than UVB UV light, we also hypothesized that the mechanisms for DNA repair in resistant yeast strains were highly effective in maintaining cell life and that increased SPF sunscreens do assist in offering additional protection for cells from Ultra Violet radiation. Our results found that increased SPF does offer additional UV protection, Sensitive yeast strains are less able to survive UV radiation and UVB generally is more harmful to cells.

Effects of Various Concentrations of Alcohol on the Grooming Behavior in *Drosophila Elanogaster*

Kim Farrell (Chemistry) and Dr. Ammini S. Moorthy (Biology)

The objective of this experiment was to determine behavioral differences in the grooming pattern in *Drosophila* flies that are alcohol dehydrogenase positive and alcohol dehydrogenase negative. Flies of both kinds were exposed to various concentrations of alcohol and their grooming behavior was observed over a period of 24 hours. Alcohol dehydrogenase is an enzyme that allows ethanol to be metabolized into aldoses and ketones. Alcohol dehydrogenase is essential for preventing inebriation in flies. Grooming behavior are easy to observe and score and different concentrations of alcohol produces dramatic differences in grooming behavior in the fly population in ADH + flies and ADH-minus subgroups. The ADH + flies tolerate alcohol consumption much more efficiently than the ones that lack the enzyme. We also observed male female differences in response to alcohol and also different concentrations produced changes in the behavior response. This study is very interesting from the human perspective in that humans also show ADH+ and ADH- subgroups and they also respond differently (in behavior) to different concentrations of alcohol.

Microscopic Imaging of the Adult Zebrafish Brain⁴

Denise Wong (Art), Christopher Corbo (Biology), Christopher Cortes (Biology), Zoë Bandola (Biology) , Gary Greenfeder (Nursing) , Dr .Andrew Needle (Art) and Dr. Zoltan Fulop (Biology)

During the last two decades, zebrafish has become a widely used laboratory animal for brain research because it provides a simple yet valuable model to study the vertebral central nervous system (CNS). As such, it contributes to our understanding of medical problems related to the human CNS. However, surprisingly little general anatomical

⁴ Recipient of Outstanding Poster Presentation in Physiology or Microbiology Award

information is available about the adult zebrafish brain. Here we present a set of microscopic images of the adult zebrafish brain, which later will be used to create a digital, interactive display that could benefit both students and professionals in zebrafish neuroscience. The 3D structure is viewed through successive serial 2D sections in three different planes. The project is ongoing and the display will allow for expansion. Supported by an anonymous donor, this project is part of a larger study that investigates the hormetic effect of ethyl alcohol on the zebrafish brain. There is a renewed interest in the scientific community in studying hormesis, a phenomenon that deals with the beneficial effects of toxins administered in extremely low concentrations.

Effects of Alcohol on Shoaling and Species Recognition in Zebrafish (*Danio Rerio*)

Chris Powell (Biology), Kristin Risch (Biology) and Dr. Brian Palestis (Biology)

Hormesis is the study of how low level toxins can be beneficial. Using zebrafish (*Danio rerio*), we studied the effects of alcohol on shoaling and species recognition. At the highest concentration of ethanol, 1%, zebrafish show little preference for their own species or for a related species (*D. albolineatus*). Shoals were loose with sluggish activity. At intermediate concentrations, 0.5% and 0.25%, zebrafish showed no preference for their own species. When examining shoaling, with decreasing alcohol concentration overall activity increased and shoals were still more spread out than in controls. At the low concentration, 0.125%, zebrafish surprisingly preferred the alternate species over their own. Shoals were the most cohesive out of all trials, including control, which may be evidence for hormesis. The trends reported here will be subjected to statistical analysis.

A Discussion of the Flaws and Ineffectiveness of State Mandatory Minimum Sentencing Guidelines⁵

Gerard Mangieri⁶ (Sociology)

In 1984, Congress passed legislation that drastically altered the criminal justice system. In their vote to enact the Federal Sentencing Reform Act, Congressional leaders took it upon themselves to determine the appropriate forms of punishment for all crimes listed in the Model Penal Code, thereby violating the separation of powers. The nature of Federal

⁵ Recipient of Best Paper in Sociology Award

⁶ Research performed under the direction of Dr. John Esser (Sociology)

and State mandatory sentencing guidelines are discussed. Additionally, an overview of the flaws inherent in State guidelines will be provided, with a particular examination of the public's opinion of sentencing, and the gender and racial bias these statutes have created.

Section II:
The Natural Sciences

Geographic Differences in Allelic Frequencies for ADH+ and ADH- Allozymes in *Drosophila melanogaster*

Maura Melvin (Biology)¹

Drosophila melanogaster has the ability to detoxify alcohol by an enzyme called alcohol dehydrogenase (ADH). ADH+ flies have this gene, allowing for the production of this enzyme. ADH- flies cannot produce an active ADH enzyme and therefore experience the toxic effects of alcohol. An allozyme is one of several forms of an enzyme coded for by different alleles at a particular locus. Electrophoresis allows separation of proteins, the products of genes, based on charge and other factors. The fast and slow alleles of ADH have a worldwide distribution in *Drosophila melanogaster*. There is a high frequency of fast alleles in higher latitudes and a high frequency of slow alleles in lower latitudes. Allelic frequencies of the ADH fast and slow allele in different locations has been studied.

I. Introduction

Model Systems

Biological research tends to focus on organisms that can be easily studied, termed “model systems”. Researchers have studied the fruit fly *Drosophila melanogaster* as a model system for studying the effects of alcohol on behavior and how flies can counteract its toxic effects. *Drosophila* appear resistant to alcohol’s toxic effects and display many behaviors resembling intoxication, including impaired motor control when they are exposed to alcohol vapors.

Fruit flies live on rotting fruit. When a piece of fruit falls, a population of bacteria, yeast, and flies invade. Yeast and bacteria produce ethyl alcohol (ethanol) as a product of cellular respiration (fermentation). In order to counteract its effect on the flies, the fly has developed the ability to metabolize the alcohol with an enzyme called alcohol dehydrogenase (ADH). The ability of the fly to produce this enzyme is controlled by the genetic makeup of the fly. ADH+ flies have the ADH gene that produces ADH. ADH- flies cannot produce an active ADH enzyme and therefore experience the toxic effects of the alcohol (Sidelsky and Martin 2004).

¹ Research performed under the direction of Dr. Ammini Moorthy (Biology) leading to the completion of an Honor’s Project.

Investigators have begun measuring alcohol sensitivity in *Drosophila* and have sought to identify genetic mutations associated with increased or decreased sensitivity (Heberlein 2001).

“*Drosophila melanogaster*”

“*Drosophila*” is a Greek word for “dew lover”. These flies are attracted to moist fruits and vegetation. “*Melanogaster*” means “black belly”. A black belly can be seen on the tips of the males’ abdomens. The most commonly used name for *Drosophila* is “fruit fly”. These flies typically don’t attack fresh fruit but rather feed on rotting fruit. Other common names for *Drosophila* include: “vinegar fly”, “pomace fly”, and “wine fly”. These names refer to the fly’s attraction to these fruits that harbor fermentation products (Powell 1997).

Genetics

Molecular techniques are beneficial to use in studying genetic variation in populations. Estimates on the number of genes vary, but more than 5,000 genes have been found to exist in *Drosophila* (Powell 1997).

A set of genetic instructions for any organism is its genome. Genomes are encoded in nucleic acids, either DNA or RNA. Genes within the genome are stretches of DNA that code for proteins or polypeptides (Pierce 2003). There are few genes that have been studied as extensively in *Drosophila* as the alcohol dehydrogenase locus. A locus is a specific place on a chromosome occupied by an allele (Pierce 2003).

In 1983, Kreitman published the first view of genetic variation in *Drosophila* populations. The alcohol dehydrogenase locus (ADH) was studied. Kreitman sequenced 2,721 bases in and around this gene for 11 alleles from 5 different populations. A total of 43 polymorphisms were detected at these 11 alleles. No two alleles were identical (Powell 1997). An allele, by definition, is one of two or more alternate forms of a gene (Pierce 2003).

Allozymes

An allozyme is one of several forms of an enzyme coded for by different alleles at a particular locus. Allozymes are a type of single-gene polymorphism. Allozyme alleles are in high frequencies in natural populations (Powell 1997).

Electrophoresis developed in the late 1950s and early 1960s allowed separation of proteins, the products of genes, based on charge and other factors which affect rates of migration through a gel medium. In 1959, Market and Moller demonstrated that proteins coded for by different loci that produce the same enzyme activity can be separated on these gels. These enzymes were called “isozymes” (Powell 1997). Isozymes are multiple

forms of enzymes that arise for any reason, such as being encoded for by different loci (Powell 1997).

Biochemistry of Fast/Slow Alleles of ADH

Phenotypic effects of allozymes can be detected by biochemical analysis. The fast and slow allozymes of ADH have been studied. The kinetic properties of the allozymes differ between the two (Heinstra et al., 1987; Chambers, 1988) as well as the thermostabilities (Vigue and Johnson, 1973). The amount of protein produced by the fast alleles is roughly double that of the slow alleles. Therefore, the ADH activity differs among genotypes (Laurie-Ahlberg, 1985).

The genotypes of *Drosophila melanogaster* ADH produce proteins that affect metabolism differently. Carriers of the fast alleles have three to five times the ADH enzyme activity when compared to the slow alleles. Differences in ADH activity in carriers of fast and slow alleles are due to catalytic differences among the allozymes and different amounts of the allozymes being present (Laurie-Ahlberg and Stam, 1987; Laurie and Stam, 1988; Laurie et al., 1990, 1991; Choudhary and Laurie, 1991).

Eleven alleles of the ADH gene (five fast and six slow alleles) from different populations were cloned and sequenced to look for hidden variations at the ADH locus (Kreitman 1983). The results can be seen in the diagram below (Genetic Analysis of Populations 2004):

Sequence Variation in ADH								
	I1	E2	I2	E3	I3	E4	*	3'U
Ref Seq	CATGGC	T	AC	CCC	GGAT	CTCCACTAG		AC
Strain								
Wa-S	..A...	.	..	TTA	CATA	AC.....	..	
Fl-1S	.....	.	..	TTA	CATA	AC.....	..	
Af-S	.....	.	..	...	....	.....A	..	
Fr-S	.....	.	GT	...	....	.....A	..	
Fl-2S	AGATC.	G	GT	...	....	.....	C.	
Ja-S	.....	G	..	...	....	..T..CA.	C.	
Fl-F	.....	G	..	...	....	..GTCTCC.	C.	
Fr-F	AGATCG	G	..	...	....	..GTCTCC.	CG	
Wa-F	AGATCG	G	..	...	....	..GTCTCC.	CG	
Af-F	AGATCG	G	..	...	....	..GTCTCC.	CG	
Ja-F	AGA...	G	..	...	....	..GTCTCC.	C.	

* is the amino acid change from slow (Lys) to fast (Thr)

As seen in the data, in the 11 ADH genes sequenced, the only amino acid change was the change causing the slow (Lys AAG) to become fast (Thr ACG). All other changes were due to either silent substitutions in the exons or introns (untranslated regions). There is

more DNA variation than protein variation, including no hidden protein variation (Genetic Analysis of Populations 2004).

DNA sequencing studies have shown that the two allozymes generally differ by the single amino acid at residue 192, the difference causing a change in catalytic efficiency (Choudhary and Laurie 1991).

The Theory and Background to Electrophoresis and the Use of Titan III Cellulose Acetate Plates

Electrophoresis is a powerful tool that studies life's processes. It can be used to analyze proteins and since proteins are the building blocks of life itself, their detection and analysis is important in studying processes of an organism (The Theory of Electrophoresis).

Electrophoresis is the movement of charged particles in an electric field. There are three criteria necessary for electrophoresis: an electric field, a charged particle, and a medium in which movement can occur (The Theory of Electrophoresis).

Tiselius gave the name "zone electrophoresis" to describe all forms of electrophoresis on a solid support media. Paper was used first. Agar gel, starch, acrylamide gel, and cellulose acetate are commonly used today. One advantage of zone electrophoresis is that there is a stabilization of the migrated particle (The Theory of Electrophoresis).

Movement through cellulose acetate is similar to other porous materials. It depends on the nature of the charged particle, the buffer, and the intensity of the electric field. For a sample to undergo electrophoresis, it must carry a charge. Proteins are amphoteric and may be positively or negatively charged based on the pH of the solution. The pH at which positive and negative charges are equal is called the isoelectric point. If it is subjected to more positive or more negative ions according to the pH of the solution, the net charge will accordingly become either positive or negative. Positively charged protein molecules exhibit more absorption than negatively charged proteins so negative charges are usually used when proteins are electrophoresed (The Theory of Electrophoresis).

On cellulose acetate, the net charge of the protein is responsible for its proximity to other proteins. The molecular weight and shape of the protein are unnecessary to consider. Factors affecting mobility include: electro-osmosis, evaporation with resulting capillary movement, temperature, voltage, current, and ionic strength (The Theory of Electrophoresis).

Because of the nature of the matrix, gel media, porosity, pore size, pore distribution, acetylation, residual movements, and wetting agents in cellulose acetate, it is almost impossible to predict movement (The Theory of Electrophoresis). However,

some influences can be predicted. Movement increases if ion strength is lowered. If ion strength is increased, movement decreases because bands are held much tighter (The Theory of Electrophoresis).

Voltage is the driving force of electrophoresis. As it is increased, the velocity of movement is increased proportionately. Heat is the limiting factor. Voltages don't exceed 500 Volts and current doesn't exceed 1mA/sq.in. because dissipation of heat is not used in a sophisticated manner with cellulose acetate. Proteins easily denature at high temperatures. Temperature is kept at low or room temperature so that evaporation surface area and buffer movement into vacated pores, which can result in unwanted artifacts, are kept to a minimum. In addition, long running times increase the opportunity for artifacts. Running times are therefore kept to a minimum as well (The Theory of Electrophoresis).

Cellulose acetate matrix consists of a sponge-like matrix with uniform pores arranged in random order. These pores are filled with buffer. Water molecules attach to the cellulose structure to lubricate pore openings and decrease buffer movement (The Theory of Electrophoresis).

Titan III cellulose acetate plates are useful and efficient to use in this type of electrophoresis. There are two main differences between these plates and other cellulose acetate media. First, the degree of gellation (water molecules) for Titan III plates is different than other plates. Approximately 6% of the cellulose acetate is water. Other acetates are only one third as great. Greater gellation makes it easier for charged particles to move because it is more lubricated. Gellation also allows for better resolution which is decreased by diffusion and buffer movement. Cellulose acetate gellation attaches to solid cellulose chains and acts as a buffer to reduce diffusion. The result is tighter bands and resolution (The Theory of Electrophoresis).

The second difference between Titan III plates and other cellulose acetate plates is that the Titan III plates have two layers. The first is the cellulose acetate. The second is a polyester plastic sheet named Mylar. This sheet makes it easier to handle. It also restricts evaporation during electrophoresis to only one surface instead of two. In this way, it reduces the evaporation rate to half that of ordinary cellulose acetate plates. This factor reduces buffer movement and diffusion. The cellulose acetate layer consists of a dull white surface with a thickness of approximately 130u. The Mylar layer has a glossy gray surface with a thickness of 260u.

Allozyme Electrophoresis

More than 90% of the alcohol ingested by *Drosophila melanogaster* is degraded by a biochemical pathway involving ADH. ADH activity occurs in the body fat, midgut, and Malpighian tubules (or kidneys) of larvae and adults as well as in the reproductive organs of adults. ADH converts ethanol to acetylaldehyde and higher alcohols to higher

aldehydes, which are converted to acetate and enters the central metabolism. As in mammals, the toxic effects of ethanol in flies alter the activity of the membrane-bound ion channels important in neurotransmission and neuromodulation (Allozyme Electrophoresis 2004).

As previously mentioned, natural populations of *Drosophila melanogaster* are polymorphic for two alleles: fast ADH and slow ADH which differ only by a single amino acid. The amino acid is either threonine, which is neutrally charged, or lysine which is positively charged. This variation occurs at position 192 of the 225 amino acids in the ADH protein. Because of this amino acid substitution, the proteins can be separated by electrophoresis, separating the fast and slow alleles (Allozyme Electrophoresis 2004).

A general overview of the electrophoresis procedure includes tissue samples being homogenized to release enzymes from the cells. The homogenates are placed into wells of the gel. The proteins are separated by electrophoresis in a cellulose acetate matrix. Separation can be achieved in about 20 minutes in this medium, compared to the 2 hours which is required for starch gels (Bader 2004). Another general problem with starch and polyacrylamide gel electrophoresis is that they both require a large amount of tissue homogenate relative to the size of many small arthropods (Easteal and Boussy 1987).

After electrophoresis, the gel is treated with a substrate that is specific for the enzyme that is being studied. A positive reaction is indicated by a dark spot at the location to which the protein has migrated to. This procedure takes advantage of the fact that *Drosophila melanogaster* produces allozymes that are multiple forms of an enzyme (Bader 2004). The staining reaction mentioned couples chemical reactions to make biochemical changes. In this case, the enzymatic activity of ADH is coupled in two stages by the reduction of its co-factor nicotinic acid dinucleotide (NAD) to the reduction of the colorless precursor methyltetrazolium (MTT) to form an insoluble blue dye using the electron carrier phenazine methosulphate (PMS) (Allozyme Electrophoresis 2004). After the allozymes are stained, the results can finally be analyzed and conclusions can be drawn.

Variation in Latitudinal Clines

The fast and slow alleles of ADH have a worldwide distribution in *Drosophila melanogaster*. Studies have shown that northwards in North America and southwards in Australia have high frequencies of the fast allele whereas the slow allele becomes less frequent. It has been shown that the fast allele is seen more frequently in populations found near the equator. The ADH allozymes can be separated using cellulose acetate electrophoresis. The allozymes are separated by charge: the slow allozyme will run

further than the fast allozyme. The bands for the fast and slow allozymes can be visualized using a histochemical stain for ADH activity (Oakeshott *et al.* 1982).

Strong evidence exists for selection in natural populations due to the latitudinal clines existing in Northern and Southern hemispheres, illustrated in the fast and slow polymorphism of *Drosophila melanogaster* ADH. There is a high frequency of fast alleles in higher latitudes and a high frequency of slow alleles in lower latitudes (Oakeshott *et al.*, 1982) unlike other DNA polymorphisms which are typically geographically uniform (Powell 1997).

The alcohol dehydrogenase enzyme presents two electromorphs that differ in biological properties. The fast enzyme is broadly described as being more active, and the slow is more thermostable (Chambers 1988). ADH frequencies have a distinct geographical distribution pattern. The ADH slow allele frequency decreases with increasing latitude (Van Delden and Kamping 1997). Multicontinental regularity of this pattern suggests that there is selection on this locus or other loci linked to it. The most likely explanation is that different habitats might provide an alcohol related selection on ADH (Deniz 2003). The distribution pattern could possibly occur in a single continent by chance, but the fact that it occurs in many continents suggest that it is a product of natural selection (Johnson 2000).

This lab is interested in the ADH allozyme frequencies in *Drosophila melanogaster* populations originating from Mexico and Australia. After reviewing previous studies, our hypothesis is that there should be a higher frequency of the fast allele in the population from Australia in comparison to the Mexican population. Samples from the different populations will undergo cellulose acetate electrophoresis and then stained using a histochemical staining procedure in order to visualize the separated bands of the fast and slow alleles. We will use the results from these experiments and analyze genotype and allelic frequencies.

A genotype frequency is the fraction out of the total number of individuals in a population which has the genotype in question. An allelic frequency is the fraction, out of the total number of alleles in a population, which have the allele in question. These statistics will be performed under the Hardy-Weinberg Principle. This important principle of population genetics states that in a large, randomly mating population not affected by mutation, migration, or natural selection, allelic frequencies will not change and genotypic frequencies stabilize after one generation in the proportions p^2 (the frequency of the homozygous dominant), $2pq$ (the frequency of the heterozygous), and q^2 (the frequency of the homozygous recessive), where p equals the frequency of allele A and q equals the frequency of allele a (Pierce 2003).

II. Materials

Equipment

- Gel tanks
- Helena Super Z-12 applicator kit including 2 well plates, an applicator, and aligning base.
- 76mm x 76mm Titan III cellulose acetate plates

Items for Preparation and Storage:

- Refrigerator
- D.C. power supply
- Microwave
- Drying oven set at 60degrees Celsius
- Light box
- Square plastic trays
- Micropipettes
- Microcentrifuge tubes
- Whatman filter paper
- Blotting paper

Chemicals for Electrophoresis and Stain Recipe

- Tris Glycine (TG) pH 8.5
- Stain Buffer: 0.09M Tris HCl pH 7.0
- NAD
- MTT
- PMS
- Ethanol
- Agar overlay

These solutions should be re-made every 2-3 weeks due to bacterial degradation.

III. Procedure

Gel Soaking

Cellulose acetate plates should be soaked in TG buffer in a plastic tray for at least 20 minutes prior to usage. In addition, the plates should be submerged slowly in order to prevent the formation of bubbles.

Tank Setup

1. Both sides of the electrophoresis tank are filled with TG buffer until the platinum electrodes are fully submerged.
2. A piece of Whatman filter paper is cut in half and placed on either side of the partition to draw buffer from the reservoir.

Sample Preparation

1. Samples of adult flies are homogenized in microcentrifuge tubes in 20ul of TG buffer using the end of a metal spatula or brush. The end of the spatula/brush should be washed with distilled water after each fly is homogenized in order to prevent contamination of each sample.
2. Tubes are centrifuged for 5 minutes at 14,000g.

Sample Application

1. 10ul of each homogenate is transferred to a depression on a sample well plate which is supplied by the Super Z-12 Applicator Kit.
2. If the sample is not to be used within two minutes, a glass slide should be placed over the wells in order to prevent evaporation.
3. Using the Super Z-12 Applicator, the samples should be placed into the brackets on the Well Plate.
4. The Super Z-12 Applicator should be primed by gently pressing the tips into the sample wells for 3 or 4 times on a piece of blotting paper. Priming the applicator makes the second loading more uniform.
5. Remove the wetted Titan III Plate from the soaking buffer and blot between filter paper firmly.
6. Cut the corner of the plate where Lane 1 will be.
7. Place the Titan III Plate in the Aligning Base, cellulose acetate side up, aligning the top of the plate with the black line marked "Cathode Application" or "Center Application".
8. Apply the sample to the Titan III Plate by gently pressing the Super Z-12 Applicator tips into the sample wells 3 or 4 times and then transferring the applicator to the Aligning Base.
9. Press the button down and hold for 10 seconds.
10. Repeat steps 8 and 9 for a second application on the Titan III Plate.

Gel Running

1. The Titan III Plates are placed acetate side down on the wicks in the electrophoresis chamber. If the gel was loaded at the top, make sure not to place the load zone in contact with the wicks. The load zone should be positioned at the cathodal end considering that the proteins run from positive to negative.

2. Run a finger along the length of the edges to ensure complete contact and displacement of air. Glass slides should be used as weights to ensure complete contact.
3. Electrophoresis is carried out at room temperature at 200V for 75 minutes.

Stain Preparation (3 minutes before the gel is finished running)

1. Mix 600ul Tris HCl, 1500ul NAD, 5 drops of MTT, 3 drops of ethanol just before gel running is complete. After completion, add 5 drops of PMS, and 2 ml of agar.
2. Remove the plate from the tank and place mylar side down on a plastic tray.
3. Pour stain mixture over the plate and allow the agar to set for 30 seconds.
4. Incubate the plate in a dark grey incubator at 25degrees Celsius for 75 minutes.

Gel Scoring

1. After the plate has been stained, the agar stain overlay can be removed by holding the plate under gently running water.
2. Plates must be soaked in distilled water.
3. Score on a lightbox.

Storage

1. Remove the plate from soaking and blot dry with filter paper.
2. Place in a drying oven set at 60degrees Celsius for 10-15 minutes, or until dry.
3. You can write on the mylar (shiny) side with a water insoluble marker to label the plate.
4. Place in a Ziploc bag until further use.

IV. Results

Our data was taken from *Drosophila melanogaster* from four different locations: Ear Pod Chiapas, Mexico, Tepanantepac, Mexico, Coffs Harbor, Australia, and Gordonvale, Australia. From the visualization of bands on the cellulose acetate plates, we could analyze the results using Hardy Weinberg calculations. For each population, 60 flies were used (120 alleles). The results obtained are shown in figure 1. As can be seen the frequency of the fast/fast genotype is more prevalent in the Australian populations. In addition, we see that there is a stronger occurrence of the slow/slow genotype in the Mexican populations. There are also a higher percentage of heterozygotes in the population in Australia.

	Coffs Harbor, Australia	Gordonvale, Australia	Ear Pod Chiapas, Mexico	Tepanantepac, Mexico
	Genotype Frequencies	Genotype Frequencies	Genotype Frequencies	Genotype Frequencies
F/F	24.2%	25%	3%	1.5%
F/S	50%	50%	28.9%	21.9%
S/S	25.8%	25%	68.1%	76.6%

Figure 1: Genotype Frequencies

In comparing the two populations in Australia, their results are similar. We can see similar results comparing the Mexican populations to each other as well. An additional chart representing this data can be seen below:

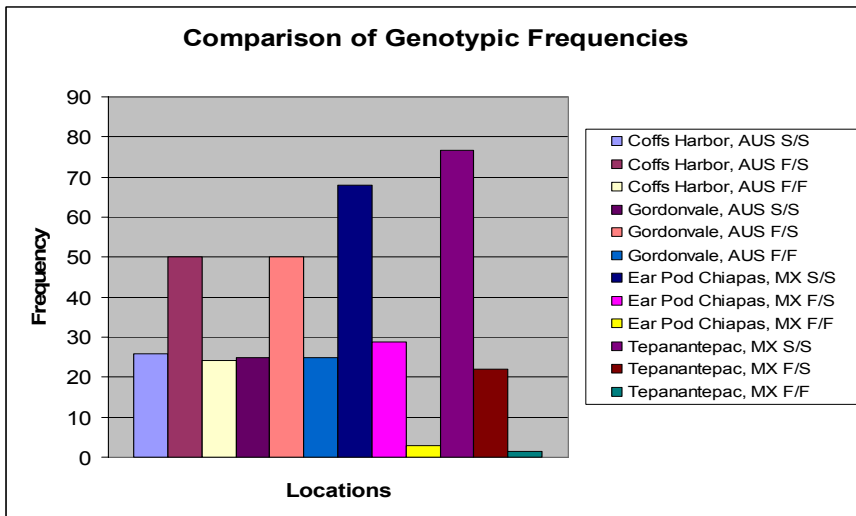
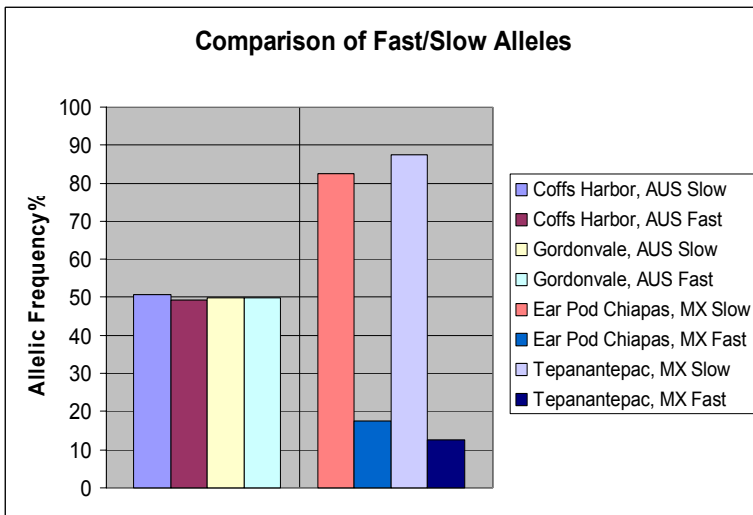


Figure 2 shows a comparison of allelic frequencies among the four populations:

	Coffs Harbor, Australia	Gordonvale, Australia	Ear Pod Chiapas, Mexico	Tepanantepac, Mexico
	Allelic Frequencies	Allelic Frequencies	Allelic Frequencies	Allelic Frequencies
Fast Allele	49.2%	50%	17.5%	12.5%
Slow Allele	50.8%	50%	82.5%	87.5%

Figure 2: Allelic Frequencies

As we can see in Figure 2, the allelic frequency of the fast allozyme increases in the Australian populations in comparison to the Mexican populations, which have a much higher frequency of the slow allele. Comparing the two populations in Australia, we again see similarity in results. This is also true when comparing the two Mexican populations to one another. These results can be represented in a different manner in the following graph:



V. Discussion

Evidence of enzymatic polymorphisms in natural populations can be seen in the selection on the ADH locus based on the global geographic cline. The ADH fast allele increased in frequency in higher altitudes, such as in the Australian population as expected in the lab. The slow allele was more prevalent in the Mexican populations. This lab was also effective in showing the similarities in populations that are geographically close to one another. The two populations of Mexican populations and the two populations from Australia yielded similar results when comparing allelic frequencies within the same country.

ADH fast flies show an increase in the amount of the enzyme with respect to ADH slow flies. The ADH slow allozyme is more thermostable. This high thermostability is used to understand why it is prevalent in hot-climate latitudes (Benach *et al.* 2000). At low temperatures, the ADH fast allozyme is the more efficient enzyme. Efficient alcohol metabolization is important in fruit flies because they often feed on rotting, alcoholic fruit (Johnson 2000).

VI. Future Research

Research will be performed in the near future using the same cellulose acetate electrophoresis to further study geographic distribution of allozymes.

VII. Acknowledgements

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Hydrothermal Crystal Growth of ZnO Using Ethylenediamine-based Ligands

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The chemistry of aqueous zinc solutions was explored to see the effect on size and morphology of zinc oxide crystals. Multidentate ligands such as tetraethylene-pentamine pentahydrochloride (tetren's salt), ethylenediamine-*N*, *N'*-diacetic acid and pentaethylenehexamine were investigated separately in the growth of ZnO crystals. In this study, complexing agents and pH were varied in the precipitation of ZnO from basic aqueous solutions. Autoclaves were used for synthesis at 200°C and approximately 15 atm. Optical microscopy on the resulting products revealed crystals with a needle habit at all pH and plates for specific ligands at low pH. The overall variation in size and morphology may be explained to some degree by considering the coordinating nature and polarity of the ligands and KOH molality.

I. Introduction

ZnO crystals have unique optical and electrical characteristics. They are widely used in transparent conducting films, waveguides, ultraviolet lasers and varistor-electronic devices among other applications.^{6,9} All of these optical and electronic applications are possible because of their properties, some of which vary with crystal orientation.

The hydrothermal method is one of the methods used for preparation of metal oxide crystals of high quality. In this method, low supersaturation of the solution promotes the formation of distinct regular polyhedral crystals.⁸ The most common way to produce large crystals under the hydrothermal method is in supercritical conditions: greater than 375°C and 200 atm.³ At high temperature the viscosity of water decreases by two orders of magnitude, increasing the diffusion rate. Another way to increase the growth rate of crystals is to increase its solubility. For this purpose, complexing agents are used as ligands and mineralizers. They promote solubilization and recrystallization of the solution. Some of them are OH⁻, NH₄⁺, H⁺, Cl⁻.⁷ The large industrial materials that

¹ Research performed under the direction of Dr. Maria Gelabert (Chemistry) leading to the completion of an Honors Thesis and a presentation at the 2005 Eastern Colleges Science Conference.

are grown at supercritical conditions are α -quartz (SiO_2), α -corundum (Al_2O_3), KTP (KTiOPO_4) and zincite (ZnO).³

At low temperature (100-200°C) with a higher viscosity of water, lower diffusion rates lead crystals to form protuberances that may produce dendritic powder. But under hydrothermal conditions the viscosity of water decreases, leading to higher growth rate at lower temperatures. Numerous studies were done on the growth of nanostructures, microcrystals and films of zinc oxide because of their useful optical and electrical applications, like light-emitting diodes (LEDs), single-electron transistors and photodetectors.¹ However, the surface density, orientation and size of those structures are still the main challenge for researchers.⁶

The growth habit of crystals depends on the internal and external conditions. Internal conditions include structurally-related factors like intermolecular bonding and dislocations. External factors include variation of supersaturation, temperature, solvent, pH and pressure.¹ Under subcritical hydrothermal conditions, solutions are especially sensitive to external factors. By varying one of those conditions and keeping all the rest the same, the experimental data can contribute to the understanding of crystal growth. This will be described in this paper.

ZnO is a good material for studying crystal growth. As with most materials, under hydrothermal conditions its solubility increases, promoting better crystallinity and regular polyhedral faces. In addition, it has been analyzed by the growth unit model hypothesizing that cations exist in complexes with ligands of OH⁻ ions, the coordination numbers of which are the same as in the crystal formed.⁸

Some characteristics of zinc as an element may support this point. Zn in the periodic table is located in group IIB (12). There is no place for ligand stabilization by electrons because the *d* shells are already full. Zn²⁺ stereochemistry, then, only depends on the size, electrostatic forces and covalent bonding of the ligand. Zn²⁺ can form different coordination numbers from 2 to 8. The most common ones are 2, 4, 6 and 5.² If the growth unit model were correct, then the best crystals of zinc oxide would be those obtained with a ligand of the same coordination number as that of zinc in the solid. In the present work, ligands with coordination numbers of 4, 5 and 6 were used and the resulting crystals are discussed.

Another interesting fact about Zn²⁺ is that it has similar characteristics to Mg²⁺ but higher polarizability. This is explained by the easier tendency of distortion for the filled *d* shell element than *p* shell of Mg²⁺.² From this, it can be suggested that polarizable Zn²⁺ might be highly influenced by polar ligands. Moreover, polar and nonpolar complex agents could be added to explore the influence of polarity on the formation of crystals. In this paper the influence of the polarity of ligands on crystals is also discussed.

Recent studies were done on exploration of the morphology of crystals with changes in their chemical environment. EDTA and DTPA were used as ligands in different chemical environments at 200°C and 15 atm. The variables were pH, molality of Zn^{2+} and time. It was found that the crystals grow best at Zn^{2+} and a ligand molality between 0.030 and 0.060*m*. At higher molality the product was powder while at lower molality it was not visible. Therefore, for this experiment 0.050*m* solution was used. In addition, there was not significant difference in crystal product for reaction times of less than 20 days.⁴ Thus, the solutions were held in the oven for 7-10 days to pursue production on needles and plates in the samples. As the pH of the solution was changed with addition of KOH, crystal morphology was changed too. For EDTA at low pH (6.0) very long (5 x 1000 μm) needles and small plates (10 μm) were produced. At higher pH the ZnO gave powder, which then changed to needles again at pH 13.5. In contrast, Zn^{2+} with DTPA produced mostly plates from pH 6 to pH 11.4 (40-100 μm) and mostly needles (5 x 100 μm) above this pH.³ These results can be explained by the different coordination numbers of the ligands (6 and 8), differences in polarities, the increasing molarity of KOH and corresponding changes in the zinc hydroxide species. At lower pH, with a smaller amount of KOH, $Zn(OH)^+$ was the dominant product that possibly led to the creation of plates. At higher pH, $Zn(OH)_3^-$ and $Zn(OH)_4^{2-}$ were dominant and perhaps led to the formation of needles.³

Gao *et al.* believed similarly about needle formation. The growth mechanism of zinc oxide can be divided into two stages. One is nucleation, original formation of precipitate, and the other is the epitaxial growth of rods along six main crystallographic directions. Epitaxial growth occurs from substrate nuclei toward the direction favored by the chemical environment. It was thought that the concentration of NaOH is the key factor because it controls the concentration of $Zn(OH)_4^{2-}$, which is believed to decompose directly into ZnO rods. Hence, at low pH (low NaOH concentration), ZnO produced single uniform rods. At higher pH, where the $Zn(OH)_4^{2-}$ concentration was high, petal or star shaped rods were produced perpendicular to the substrate. Their experiment was done at 100°C but they found that elevation of temperature had no significant effect on the morphology. In addition, they stated that the extension of hydrothermal time gives better crystallinity and structure to the crystals.⁵ Their view is similar to DiLeo *et al.* who maintained that hydroxide ion concentration is the key factor in morphology of crystals. Based on these previous works, needles and plates were expected at low pH and star-like needles were expected at higher pH.

Rosa performed another experiment (at 200°C and 15 atm) with ethylenediamine, a ligand of coordination number 2. Even though the range of pH was limited from around 11 to 13, the products varied significantly. At lower pH there was a habit of needles but at higher pH dendrites were the product.¹⁰

Recently, chemical deposition methods were used to synthesize large amounts of ZnO films with thicknesses of approximately 10^{-3} μm (nanostructures). In contrast to previous methods, the films were synthesized at lower temperatures (up to 100°C). During nucleation the growth of ZnO plate-like crystals were spread over the template film. Then the temperature was gradually increased from 40°C to around 80°C to get the growth of plate-oriented crystals. Lattice planes of crystal were parallel to the plane of the template, suggesting that the growth is epitaxial. In other words, the growth of crystalline material of one composition (plates) occurs on the surface of the crystal. Another detail is that plates are formed when the crystal grows along the *a*-axis direction; rods are formed from the growth along the *c*-axis. This research also confirmed the previous notion that needlelike crystals grow gradually from discrete nuclei. By contrast, plates grew epitaxially on the large grains of template. Furthermore, it was stated that because of the low temperature of the experiment the crystal growth was slower. This, in turn promoted the nucleation in two-dimensions (*c* and *b*-directions) forming plates.⁶

Li *et al.* and Zhang *et al.* stated that the more rapid crystal growth of a certain face would lead to its faster disappearance.^{8,11} Thus, crystal faces that would grow the slowest would be best seen. Zinc oxide is a polar crystal tending to grow along the *c*-axis to form needles. So, to get plate-like morphology the growth should be slower along the *c*-axis and faster along the *a*-axis. Li *et al.* received plates (nanostructures) by reacting zinc in hydroxide solution. They also stated that zinc oxide crystals in hydroxide solution would preferably grow in the *a*-direction as compared to the *c*-direction in pure water. This is because NaO^- ions first bind to Zn^{2+} and hinder the process of formation of zinc hydroxide compounds. This in turn slows down the growth rate and leads to the prismatic form of nanorods.⁸

In this research, potassium hydroxide was used to control the pH of the solutions and promote the formation of plates. The results were analyzed and chemical conditions that produced the biggest plates and needles were examined.

II. Experimental Approach

In this experiment only one external factor was varied to get a better understanding of the empirical data. A temperature of 200°C and a pressure of 15 atm was always maintained. The zinc source was zinc acetate dihydrate (98%, Aldrich). Three different ligands or ligand salts were used: tetraethylenepentamine pentahydrochloride (tetren, 98%, Aldrich), pentaethylenhexamine (penten, liquid, Aldrich) and ethylenediamine *N, N'*-diacetic acid (EDDA, 98%, Aldrich). The ligands were chosen by their high capacity to bind to zinc ion at different places. By doing so, they slow down the process of reaction of zinc ions with hydroxide ions, producing larger crystals. In addition, they have different coordination numbers and polarities. As a

result, all these factors could be used to analyze the morphology and length of the product. With each sample, the pH was changed from 9 to 13 (for tetren the pH was changed from 10-13) using potassium hydroxide (85+%, Aldrich). All reagents were used as received.

For each sample, amounts of zinc and ligands were calculated for 0.05 molal solutions. Approximately 0.1317 g of zinc acetate dihydrate solution was diluted in 12 g of deionized boiled water. Different masses of each ligand were added to the sample to get 1:1 molal ratios with zinc acetate (0.05 *m*). In the case of tetren, 0.2232 g of its HCl salt was needed to add to the sample, in other cases 0.1057 g of EDDA and 0.1394 g of penten were needed. The exact amounts of the added solution were recorded to calculate the resulting molalities. In the first experiment, the volume of tetren solution was much larger (50 g) because a bigger autoclave was used; however, the molality of 0.05 was maintained throughout the experiment.

The pH was varied by the addition of KOH pellets. To get a more precise pH, KOH pellets were dissolved volumetrically into a 1.00 M solution of deionized boiled water. Specifically, 14.027 g of KOH was dissolved in 0.25 L of water. The drops of this solution were used to control pH. Later, the exact amount of added solid potassium hydroxide was found by measuring the density and used to calculate total KOH molality. As expected, when the molality of KOH increased, the pH of the solution increased.

Solutions at the desired pH were put into Teflon-lined autoclaves and sealed. Samples were placed into a mechanical convection oven (BlueM,+/- 1°C) set at 200°C. At this temperature and volume, internal pressures are estimated to be approximately 15 atmospheres. The autoclaves were kept in the oven for 7 to 10 days.

When the autoclaves were taken out, the solutions with precipitate were observed. The solutions were clear and contained white precipitate underneath, similar to powder. The precipitate was washed with deionized boiled water twice and then with isopropanol twice to dissolve any remaining aqueous impurities. The crystals were stored in isopropanol. The sample was observed with a Nikon ME600D compound microscope, with magnifications up to 1000x. Pictures were taken by a digital camera (Spot). The size of the crystal formations was estimated optically. The results for each ligand were compared and discussed.

III. Results and Discussion

All samples produced crystals. The amount of product varied, but in all cases crystalline powder products were apparent. The smallest amount of crystals was produced from the tetren sample at pH 10-11. From all other samples, the product was seen as the white powder.

All of the sample ligands had a 1:1 molar ratio with zinc acetate. The potassium hydroxide ratio to zinc was increased proportionally with pH. The highest pH molality of hydroxide was 15 times higher than molality of zinc for the tetren sample (Table 1). For EDDA it was around 5 times higher and for penten it was around 4 (Tables 2 and 3).

All samples of tetren produced plates and needles (Table 1). At low pH (10) plates up to 0.14mm and needles up to 0.2 mm were produced, but the amount of product was very small. The samples at pH 10 and 11 had more plates. As the pH increased, plates grew in size but diminished in quantity. Needle lengths, on the other hand, were gradually reduced. An example of a tetren plate can be seen in Figure 1. At pH 13, the plates were 0.66mm but the needles were approximately 0.12 mm. Needles were dominant in the product and went from singles to bunches of flower-like forms, and their abundance in the product was much greater.

Table 1: Reaction conditions and results for tetren (all zinc and ligand molalities $\approx 0.05 m$).

Name	pH	m (KOH)	Size
TN10	10.27	0.2188	Plates up to 0.14mm Needles up to 0.2mm
TN11	10.59	0.3250	Plates up to 0.18mm Needles up to 0.16-0.16mm
TN12a,b	12.50	0.3676	Plates up to 0.42mm
	12.03	0.3108	Needles, star-like shape up to 0.1mm
TN13a,b	13.26	0.7939	Plates up to 0.66mm
	13.37	0.6939	Needles up to 0.12mm

For EDDA, the results were somewhat different (Table 2). EDDA samples also produced needles and plates, and at low pH needles were dominant over plates. However, plates and needles were of equal sizes (around 0.18 mm). As the pH got higher, needles were still dominant but at the highest levels of pH, powder took over the product. Overall, needles had similar lengths from pH 9 to 12 with the highest (0.35mm) at a pH of 10. At pH 13 their sizes suddenly diminished to around 0.04 mm and they became powder. Plates had similar sizes at pH 9 through 11 with a maximum size of 0.23mm at a pH of 11. But at pH 12-13 their sizes diminished, for the most part, to 0.08 mm. The plates in all samples were singular but the behavior of the needles differed from the previous sample. At the low pH of 9 needles formed bunches of stars (petal-like shapes), while as the pH increased more single longer rods appeared among the star-like crystals. Finally at a pH of 13, the star-like formations of agglomerate small needles returned.

Table 2: Reaction conditions and results for ethylenediamine *N,N'*-diacetic acid (all zinc and ligand molalities $\approx 0.05 m$).

Name	pH	<i>m</i> (KOH)	Size
NAc9	9.38	0.1115	Plates up to 0.18mm Needles up to 0.18mm
NAc10	9.98	0.1223	Plates up to 0.16mm Needles(long) up to 0.35mm
NAc11	11.03	0.1509	Plates up to 0.23mm Needles (long) up to 0.3mm
NAc12	11.99	0.1736	Plates up to 0.08mm Needles up to 0.27mm
NAc13	12.78	0.2857	Plates around 0.07-0.12mm Powder: (needles around 0.04mm)

The last ligand, penten (Table 3) produced mostly powder products. As the pH increased the quantitative amount of product diminished. At pH 9, powder and plates were the main results and needles were very rare. Plates ranged in sizes up to 0.4 mm and needles up to 0.12 mm. The size of needles in powder was around 0.03 mm. With an increase in pH the amount of powder product increased. The size of plates slowly decreased to 0.08-0.11mm at a pH of 13. The needles appeared more at pH 10 and then disappeared for the rest of samples. Needles at low pH were single but at higher pH all powder-like needles (of size around 0.04 mm) were star-like shapes and found in bundles. Overall, the powder was dominant in all products.

Table 3: Reaction conditions and results for pentaethylene hexamine (all zinc and ligand molalities 0.05 *m*).

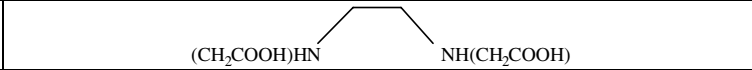
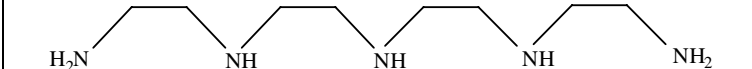
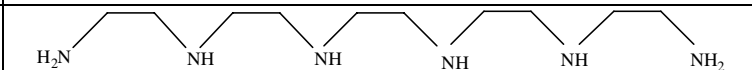

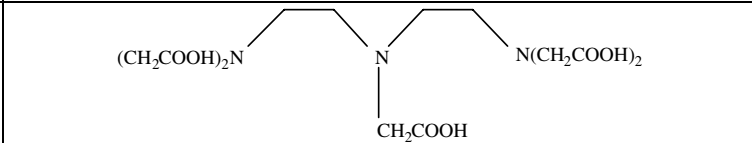
Name	pH	<i>m</i> (KOH)	Size
PT9	9.28	0	Plates up to 0.4mm Powder (needles around 0.03mm) Needles rare up to 0.12mm
PT10	9.95	0.0080	Plates up to 0.13mm Needles up to 0.11mm
PT11	10.97	0.0226	Plates up to 0.19mm Needles up to 0.05mm (similar to powder)
PT12	11.98	0.0274	Plates 0.105mm Powder (needles around 0.03mm)
PT13	13.01	0.2049	Plates up to 0.08-0.11mm Powder (needles up to 0.04mm)

Since the Zn ion and the ligand had the same molality of 0.05, the molality of KOH increased with pH. This was expected since the molality of KOH at one pH for different ligands should vary because of their different structures and acid-base equilibrium constants. But it should not vary significantly. For example, for pH 13 penten and EDDA had similar molalities of KOH: 0.2049 and 0.2857, respectively (Tables 2 and 3). On the other hand, for tetren the molality of KOH at pH 13 was 0.6939 (Table 1), which is three times higher than the molalities of former ligands. The results are explained by the fact that tetren was used in salt form with additional HCl. The charges complement each other and do not produce an overall increase in polarity. However, the overall increase in the amount of ions affects ionic strength, which can in turn influence crystal growth.

The ligands that were used in the experiment were chosen because of their high capacity to attach by lone pairs to Zn^{2+} . The coordination number reflects the number of attachment points. They were also chosen so that they could be compared to work previously published by Dileo *et al.* Those ligands had coordination numbers of 4 (for EDDA), 5 (for tetren) and 6 (for penten). Later, the results could be compared to the results of previously mentioned work,³ where EDTA with a coordination number of 6 and DTPA with a coordination number of 8 were used (Table 4).

Zinc can form complexes with water and with hydroxide. Zinc oxide complexes in water tend to have a needle-like morphology but in an alkali medium the crystals have prismatic plate-like morphology. In the interest of contrasting the morphology of plates and needles an alkali environment was used.^{2,8}

Table 4: Structures of ligands.

EDDA	
Tetren	
Penten	
EDTA	
DTPA	

By the growth unit theory it is believed that the primary unit for formation of ZnO crystals is the complex $\text{Zn}(\text{OH})_4^{2-}$,⁸ partly because the coordination number of 4 is equal to the zinc coordination in crystalline ZnO. The formation of it goes as follows: Zn disassociates from the complex of zinc acetate, forming a zinc ion. Then it reacts with two hydroxide ions to form $\text{Zn}(\text{OH})_2$. After that it reacts with two moles of water, producing the needed ion $\text{Zn}(\text{OH})_4^{2-}$ and acid. Precipitation occurs when this ion combines with others like it.⁸

Crystal morphology depends on the growth rates of its faces. Crystal faces with faster growth rates disappear more quickly, forming edges or points. In contrast, the slow face growth enables faces to form. For example, ZnO is a polar substance that has a tendency to grow along the *c*-axis to create needles. This means that the highest growth is found along the *c*-axis and the slowest along the *b* and *a*-axes perpendicular to the *c*-axis. From this, it follows that to make a product consisting of plates the crystal should grow slower along the *c*-axis and faster along the *b* and *a*-axes.⁸ So, if the growth rate is somehow diminished, especially at the nucleation stage, crystals would diminish the growth along the *c*-axis, allowing faster growth along the *a*-axis.

The growth of crystals can be divided in two phases: nucleation and growth. To create bigger plates, diminishing nucleation process and increasing crystal growth would be required.^{3,7} A slow growth rate at the beginning would produce slower nucleation that would possibly lead to the formation of bigger crystals. The other way to create bigger plates is to increase the temperature after nucleation as it was done by Hirano *et al.* This could be done in future experiments.

One of the hypotheses that has been explored is the influence of different zinc hydroxide components on the formation of plates and needles. In the work of DiLeo *et al.* the molalities of all zinc species were calculated, such as Zn^{2+} , $\text{Zn}(\text{OH})^+$, $\text{Zn}(\text{OH})_3^-$, $\text{Zn}(\text{OH})_4^{2-}$, $\text{Zn}(\text{EDTA})^{2-}$, $\text{Zn}(\text{DTPA})^{3-}$, protonated $\text{Zn}(\text{HEDTA})^-$ and $\text{Zn}(\text{HDTPA})^{2-}$ and Zn_2DTPA^- . It was found that the zinc-ligand concentration is independent of pH but zinc hydroxides vary with different pH levels. Monohydroxide species ($\text{Zn}(\text{OH})^+$) dominate at lower pH, whereas trihydroxide ($\text{Zn}(\text{OH})_3^-$) and tetrahydroxide ($\text{Zn}(\text{OH})_4^{2-}$) dominate at higher pH. This behavior could be explained by concentration of KOH at different pH. The molality of KOH at higher pH would be much larger than at lower because more KOH solution would be needed to achieve higher pH. Because of that, fewer units of $\text{Zn}(\text{OH})_4^{2-}$ and $\text{Zn}(\text{OH})_3^-$ would be observed and more $\text{Zn}(\text{OH})^+$ would be formed. Additionally the results showed a crossover at the middle pH at around 9 with mostly dendritic powder product. Plates were formed at lower pH but needles at higher. So, it was concluded that the monohydroxide species is possibly more favorable for the formation of plates and trihydroxide and tetrahydroxide are favorable for the formation of needles.³

The results reported here could be compared with the previous work of DiLeo *et al.* for EDTA and DTPA. Because for EDDA, tetren and penten there are only results for pH 9-13.5, the results for EDTA and DTPA would be used from the same range. The results would be compared between species with similar polarity to see for the trend between them. One group would be aminocarboxy ligands EDDA, EDTA and DTPA; the other would be tetren and penten amines. Then those groups would be compared between each other to see which one produced the biggest needles and plates. The ligands would also be discussed by their coordination numbers: EDTA has 4, tetren has 5, penten has 6, EDTA has 6, and DTPA has 8 (Table 3).³

EDDA, EDTA and DTPA have amine bases with different numbers of acetate groups, both of which bind to Zn^{2+} with lone electron pairs. More acetate increases the total coordination number of the ligand. In addition, ligands with acetate groups are more polar compared to the purely-amine penten and tetren. The resulting crystals could be analyzed by these qualitative polarity differences as well.

The biggest needles for EDDA were found from pH 9 to 11 with lengths around 0.2 mm. For EDTA the biggest needles were found at pH 13-14 with a size of 0.1 mm. DTPA got similar results, with the biggest needles at the same region pH 13-14 at 0.1 mm. It seems like the region with the biggest needles was shifted down in pH for EDDA compared to EDTA and DTPA. This could be explained by the higher polarity of EDTA and DTPA compared to EDDA with fewer acetate groups. However, overall the sizes of the biggest needles for all ligands are similar, EDDA producing the largest ones. Furthermore, all three ligands support the hypothesis of forming needles at high pH. EDTA and DTPA had their needles at their highest pH of 13-14. EDDA's shifted region of needles from pH 10 to 12 showed that at those points zinc solution is already saturated enough with tetrahydroxide and trihydroxide ions. High supersaturation of the solution caused ZnO to precipitate quickly, forming dendrites.

The plates for this group were clearly produced for EDDA and DTPA. EDTA gave only needles. The biggest plates for DTPA were seen at pH region 9-11 with the largest plate of around 0.04 mm. For EDDA the regions of high plates were the same from pH 9 to 11, but the sizes were bigger, with the highest plate at around 0.23 mm. Those results could be explained by the coordination numbers of the ligands: EDDA and DTPA have coordination numbers of 4 and 8, as compared to 6 for EDTA. So, similarity could be expected for two former ligands, especially if the primary growth unit of ZnO is presumed to be the tetrahydroxide complex. Moreover, the tetrahydroxide complex could explain why bigger plates were obtained for a ligand of 4 coordination, as they might bind together more strongly than with the ligand of 8 coordination number. The results also support the hypothesis that at a lower pH, where zinc monohydroxide species predominate, ZnO would form plate-like crystals. In an overall comparison of plates and

needles, EDDA produced the biggest crystals in both cases comparatively to EDTA and DTPA.

Next, tetren and penten results are compared in production of needles and plates. For tetren the longest needles were produced at pH 10-12 with the longest of 0.37 mm. For penten the region with biggest needles was seen at pH 9-10 with the longest ones of 0.12 mm. The regions of longest crystals are different in both compounds. Tetren partially supports the zinc tetrahydroxide hypothesis discussed previously, with needles forming at high pH. Penten has highest needles at lower pH (9-10), and then powder is formed at higher pH. It is possible that the region of saturation for penten is shifted down along pH. According to the previous hypothesis, at the lowest pH (i.e. 7-8) plates should be formed at lower pH. To test this, two more samples at pH 7 and 8 were done. Even though the needles got longer with the biggest ones at pH 7 of 0.24 mm, there was a formation of plates of 0.16 mm. Moreover, pH 7 and pH 8 were obtained by addition of acetic acid, not KOH. Obviously, there are additional aspects to KOH that lead to growth of zinc oxide crystals.

The growth of plates of both ligands produced different results also. Tetren's highest region for plates was at pH 12-13 with the longest of 0.66 mm at pH 13. Crystals of penten got the biggest plates at the regions of pH 9-11 with the longest of 0.4 mm at pH 9. As with needles, the regions of the biggest growth of plates are different, even opposite. Here penten supports the hypothesis of zinc monohydroxide since at low pH the largest plates appear. However, tetren does not. It is unlikely for plates to be formed at such a high pH. However, two samples of tetren at pH 13 were made and both of them had very big plates. In addition, the result is consistent with the results of lower pH. Two samples at pH 12 produced plates of around 0.42 mm. Thus, the products are logical. The results are not readily explainable considering only the zinc-hydroxide species. Perhaps the coordination number of 5 (tetren) is more suitable for zinc ions than 6 (penten). Based on their sizes, both ligands produced pretty big plates but tetren formed the biggest ones up to 0.66 mm. Overall, tetren produced the biggest crystals – needles and plates.

Of the two main groups, one with carboxy/amine groups and the other with only amine groups, tetren and penten produced bigger crystals overall. Thus, polarity does play a role in the formation of crystals, especially for plates. It seems that the less polar ligands produce bigger plates. Of the polar ligands, EDDA gave the longest crystals. Of the less polar ones, tetren produced the largest crystals. Although tetren formed the longest plates, the needles of tetren and EDDA were similar sizes of around 0.35 mm. It seems that ligands with the lowest coordination numbers produce larger plates and needles.

Of both non-polar ligands, penten is longer than tetren, so more favorable results might be expected from a stability standpoint. Another factor that could influence results is that tetren was used as a salt of hydrochloride acid. As mentioned earlier in the paper, for this reason more KOH was used for tetren to get needed pH than for any other ligand. Increasing the total number of ions in solution increases the ionic strength, which might affect crystal growth. Possibly, ionic strength effects are responsible for longer crystals grown in the tetren samples at high pH. Another factor of tetren is that for the penten samples, a white precipitate formed prior to the addition of hydroxide, indicating some kind of precipitation reaction, possibly forming ZnO. With all other ligands the solution was always clear. These two factors could lead penten to produce smaller crystals than tetren.

The change in the morphology of the crystals with an increase in pH supports the results of Gao *et al.* and DiLeo *et al.*, that at low pH single needles⁵ and plates³ would be expected and at high pH needles of star-like⁵ shape form. It was explained by the lower and higher concentration of hydroxide ions that led to corresponding amount of $\text{Zn}(\text{OH})_4^{2-}$. Tetren illustrated this: at pH 10 plates were dominant, all present needles were single, long, thick or thin. As pH increased needles slowly became the dominant product. Some of them decreased in size, coupled together, then formed a petal-like form at high pH. Some, however, still kept their size throughout.^{3,5}

Penten, on the other hand, produced a lot of powder with the expected product. Powder was predominant in all products, as seen in DiLeo *et al.* work with EDTA. It means that there was high degree of nucleation as compared to crystal growth. Similarity between two complexes could be explained by the equal coordination number of 6. However, their results do show some differences. EDTA, for example, produced only powder from pH 9 to pH 11. Penten, in addition to the powder, had formed plates at lower pH 9 with singles needles at pH 10, diminishing to powder totally at pH 13. Penten product morphology is similar to the expected, except in the formation of powder. For all samples, only penten and EDTA produced high amounts of powder, coordination number does have some influence on morphology. In this case, it increases nucleation of complexes that lead to the production of dendrites.³

EDDA, on the other hand, had formation of plates but needles were predominant in all samples. However, needles still followed the expected morphology. At pH 9 they were singles, and then were formed into petal-like shapes. These samples support the influence of the amount of hydroxide ions in the solution.^{3,5}

Thermodynamic factors could also be considered here, namely the formation constants of three ligands with zinc ion. Penten has the largest one of $10^{16.24}$, then tetren is 10^{15} and EDDA $10^{10.99}$. The formation constant would show how energetically favorable the complex is. The disadvantage of this analysis is that the values correspond

to 25°C, but at 200°C they are unknown. Our results, then, do not show any correlation with the constants, as did the work of DiLeo *et al.*³ From three ligands, tetren produced the best results in terms of crystal size and desired shape.

IV. Conclusions

Zinc oxide crystals were grown under hydrothermal conditions in different chemical environments by varying ligands (EDDA, tetren and penten) and pH. The results were consistent with other studies and confirmed the morphological habit of crystals to produce larger amounts of plates and single needles at low pH (9-10), and star-like bunches of needles at high pH. The dendritic formation at high pH was also found to be possible.

The key factor is the concentration of hydroxide ions. All of the results support the hypothesis that at low pH $\text{Zn}(\text{OH})^+$ would promote plate growth and that at high pH (13-14) predominant $\text{Zn}(\text{OH})_3^-$ and $\text{Zn}(\text{OH})_4^{2-}$ would tend to form needles. Tetren results did not support the hypothesis because it had the biggest plates at around 12-13. These inconsistent results could only be explained by increased ionic strength due to the presence of hydrochloride ions in its salt. In other samples, through variation of pH, the largest plates were found at lowest pH, the longest needles – at the highest pH. In addition, the longest needles and the largest crystals were produced in the samples with lowest coordination numbers: tetren (5) and EDDA (4). It seems that those ligands are better fitted with zinc ions than the others. The polarity of ligand played a specific role. The less polar ligands, like tetren and penten, produced larger crystals than did the polar ligands (e.g. EDDA). The thermodynamic formation constants seemed not to be correlated to the product.

V. Acknowledgments

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Section III:
The Social Sciences

Prolonged QT Syndrome in College Athletes

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College athletes, and athletes at any level, are required to undergo a routine physical examination before competing in their sport. Often, underlying cardiac anomalies are undetected, which could result in deadly consequences. There is a lack of consistency in the pre-participation screening (PPE) used on athletes nationwide, and is often not thorough enough to detect serious cardiac conditions. If athletes are given information through discussions and question/answer sessions, they will have an increased knowledge of the signs and symptoms of cardiac problems. They can then relate any of these possible signs and symptoms they may have been experiencing to a possible cardiac condition and seek treatment with a physician appropriately. Discontinuation of participation in a sport could be recommended. This study's goal was to increase athletes' knowledge and awareness of Prolonged QT Syndrome to reduce the number of sudden cardiac deaths through early interventions. The use of EKG's and echocardiograms (which are not used during a regular physical exam) can be requested by the athlete themselves if the symptoms are recognized. Prolonged QT Syndrome is one of the conditions that can be easily diagnosed with the use of an EKG, and if detected early, can save lives. If an athlete is aware he/she has this condition, withdrawing from the sport would be highly recommended to reduce the incidence of sudden death.

I. Introduction

A seemingly healthy young college basketball player drops to the floor in cardiac arrest during a game. A football player collapses and is found unconscious during his team practice. Both of these scenarios, although rare, occur throughout the country in athletes of all kinds. "Research found that nontraumatic sports-related deaths occurred in 126 high school athletes and 34 college athletes (about 16 deaths per year); 100 of these deaths were cardiovascular in origin." (Lyznicki, Nielson, and Schneider, pg 765, 2000) If athletes are screened before they engage in strenuous activity for cardiovascular anomalies, the incidence of sudden death cases may be lowered. Annual physicals are mandatory for all students participating in any sport, but are these students even aware of

¹ Research performed under the direction of Dr. Lauren O'Hare (Nursing) in partial fulfillment of the Senior Program requirements.

the risks associated with participating in a sport with an underlying heart condition and do they even know if they have one?

College athletes, as well as athletes at any level are always at risk for injury and possible death when engaged in demanding, strenuous activity such as football, but with an underlying heart anomaly these risks are even higher. This research study focused on assessment of the athletes' own knowledge related to sudden death during strenuous activity and its signs and symptoms. Syncope is a common occurrence among many young people, but for a person with prolonged QT syndrome, it may cause sudden death. "Long QT syndrome is a congenital abnormality of the heart's conduction system which prolongs ventricular repolarization. Intense physical activity and emotional stress can trigger rapid, aberrant contractions originating in multiple ventricular sites that ultimately lead to diminished cardiac output and sudden cardiac death." (Lopez, pg 5, 2003) Athletes with a family history of cardiovascular disease were also assessed, along with their knowledge and awareness of any possible cardiovascular disease that may have been inherited. If the athlete had a family member who died a sudden death before the age of 35, this person would be an ideal candidate for cardiovascular testing using a baseline EKG to rule out prolonged QT syndrome. "Sudden cardiac death (SCD) has been operationally defined as a nontraumatic, nonviolent, unexpected event that leads to cardiac arrest within 6 hours of witnessed, usual state of normal health." (Lopez, pg 2, 2003) Finally, if the athlete showed symptoms of a possible cardiovascular problem, such as dizziness, lightheadedness, or palpitations, would the athlete actively seek treatment or if not why wouldn't they? If these symptoms were present in the athlete would they also actively continue playing their sport, and if so why and are they aware of the risks?

This research study aimed to answer these questions. For the purpose of this study, the dependent variable was the increased knowledge and awareness of prolonged QT syndrome, and the independent variables throughout this study included any symptoms the athlete might have such as syncope, dizziness, lightheadedness, or palpitations. Other variables that were identified included a family history of cardiac anomalies, baseline EKG readings, and the type of sport the athlete played. The purpose of this research study was to increase college athletes' awareness of possible causes of sudden death by increasing their knowledge through information and answering questions, especially on prolonged QT syndrome. The athlete can then become actively aware of any symptoms he/she had, which they may have previously thought were innocent, such as syncope and pursue treatment as needed.

II. Research Question and Hypothesis

The research question that this study will propose is if college athletes have an increased knowledge and awareness of prolonged QT syndrome and its risks, will they

seek treatment promptly and discontinue the sport or physical activity in which they are currently engaged? “Decisions to remove high-profile athletes with cardiovascular disease from competition may be confounded by the complex social ramifications and can prove difficult to implement, particularly when collegiate or professional careers are at stake. Many elite athletes with heart disease may not fully appreciate the implications of the medical information presented and are too often willing to accept risks and resist recommendations to stop competing in order to remain in the athletic arena.”(Maron, pg 1072, 2003) The athletes’ acceptance of any possible cardiovascular disease may be difficult to accept for a multitude of reasons, but when risks are explained, and any possible diseases are fully understood, the athlete will hopefully choose not to participate. The research hypothesis for this study: Knowledge of prolonged QT syndrome will cause college athletes to seek medical treatment promptly and become compliant with recommended treatment.

III. Review of Related Literature

Current knowledge of sudden death by prolonged QT syndrome states that athletes have a minimal chance of dying of sudden death, but it does occur. If diagnosed early, a person’s life can be prolonged by avoiding strenuous physical activity. Also, physicians need to assess athletes’ cardiovascular status more closely, and do annual EKG’s for students in rigorous sports such as football who present with symptoms. However, the preparticipation screening exam (PPE) used to assess an athletes health status is not as thorough as it needs to be. “According to the American Heart Association (AHA), the focus of the PPE screening is to provide medical clearance for participation in competitive sports through routine and systematic evaluations intended to identify clinically relevant and preexisting cardiovascular abnormalities and thereby reduce the risks associated with organized sports.”(Lyznicki, Nielson, and Schneider, pg 766, 2000) However, there are screening problems with the preparticipation exam performed on athletes because some potentially fatal abnormalities which are uncommon, are in some cases undetectable without sophisticated tests that are not done. Many athletes may also not report a family history of sudden cardiac death do to the fear that they may no longer be able to participate. There is also a wide variation between states on pre-participation examinations and a more uniform screening process should be implemented. “They (AHA) found that in eight states there were no approved history and physical examination questionnaires to guide examiners, including one state which had no formal screening requirement. Of the remaining states, 12 had questionnaires judged to be inadequate because they contained four or less of the AHA recommendations and only 17 states had questionnaires judged to be most adequate because they contained 9 or more of the recommendations.” (Lopez, pg 8, 2003) Cardiac anomalies need to be detected in the

most effective and practical manner and tests such as EKG's and echocardiography may not be used initially since the incidence of sudden death is rare and these methods are not cost effective.

There is a clear need for a study to be implemented targeting college athletes because the annual physical exam they are receiving each year before participating in sports may not be in depth enough. Finding such a serious underlying heart condition, such as prolonged QT syndrome may be rare, but if the person is aware that they have it, measures, such as reduction in strenuous activity and medication, can be considered to prolong their life. "We can also educate athletes about the need to seek medical advice and refrain from training when any new exertional symptoms develop. Athletes should be made aware that any exertional symptoms severe enough to interfere with performance should be extensively investigated and a cardiac cause must be presumed until disproven." (Lopez, pg 9, 2003) If an athlete is currently participating in a sport and has several episodes of syncope this study may raise questions that before they did not think of and seek further treatment.

IV. Methods

The researcher utilized a population sample of thirty college athletes from various athletic sports. The sports were chosen based on their competitive nature and the amount of time and practice needed within the sport for participation. "The association of unsuspected cardiovascular disease and sudden death in young athletes is not coincidental, since participation in competitive sports itself substantially increases the likelihood of sudden death" (Maron, pg 1067, 2003). A sample of ten football players, ten basketball players, and ten swimmers of both genders were used to assess baseline knowledge related to cardiovascular anomalies. This study was of a qualitative research design to gather and review data. This study aimed to get the participants to become aware of any possible cardiac symptoms, understand them, and then correlate these symptoms to see if there is any relationship between prolonged QT syndrome and the necessity of seeking treatment. The researcher did not aim to manipulate or control the data collected, but rather connect and correlate the findings and use results to assist future athletes and healthcare professionals. The data was collected in the format of a questionnaire given to the athletes to answer. Questionnaires provided the researcher with subjective data, which was then reviewed and analyzed to assess the incidence of risk factors related to possible cardiac anomalies. Research questions asked on the questionnaire were as follows:

1. Have you ever experienced dizziness or lightheadedness during physical exertion?

2. Have you ever experienced palpitations (conscious awareness of a forceful or rapid beat) or the feeling of a “skipped beat”?
3. Have you ever experienced chest pain or a crushing sensation during physical exertion?
4. Have you ever passed out during physical exertion? If yes, how many times?
5. Have you ever had a family member die a sudden death (non-traumatic, nonviolent, unexpected event that leads to cardiac arrest within 6 hours of witnessed usually state of normal health)? If yes, was it at an age of 35 or younger?
6. Do you have any cardiovascular disease in your family?
7. Has your doctor done an EKG on you? If yes, is it done annually?
8. Are you currently diagnosed with any cardiac problem?
9. If you have any of the above symptoms are you under a doctors’ care? If not why?
10. Would you continue to play the sport you are currently involved in if you have had any of the above? If yes why?

The questionnaires were handed out to each of the specified team members prior to engaging in physical activity such as a game or team practice, along with a consent form. Each participant was asked to fill out each questionnaire to the best of their knowledge, and was collected after they are completed. They were each told that all information is kept confidential and that their names are not required. After all of the questionnaires were collected the results were analyzed and any significant findings were documented.

V. Results

The results of this study were compiled after the completion of thirty surveys filled out by ten football players, ten basketball players, and ten swimmers. There were several striking answers found on the questionnaire that show that cardiac anomalies in athletes are not being treated as vigorously as they should be. When asked if they have ever experienced dizziness or lightheadedness during physical exertion an alarming 21 athletes (70%) reported that they have and only 9 athletes (30%) reported that they have not. However, when further questioned if they have ever experienced palpitations (conscious awareness of a forceful or rapid beat) or the feeling of a “skipped beat” only 6 athletes (20%) reported that they have, while the remaining 24 athletes (80%) reported that they have not. When questioned if they have ever experienced chest pain or a crushing sensation during physical exertion, 8 athletes (26.7%) reported that they have, with the other 22 athletes (73.3%) claiming that they have not. The next question asked was have you ever passed out during physical exertion and only 3 athletes (10%) reported

that they have and when asked how many times each individual response was once, twice, and three times. The next question asked the athletes if they ever had a family member die a sudden death (nontraumatic, nonviolent, unexpected event that leads to cardiac arrest within 6 hours of witnessed usually state of normal health) and if yes, was it at an age of 35 or younger. Only two athletes (6.7%) reported that they have, but this is significant because if the cause was a cardiac anomaly these athletes are at a much higher risk for sudden death while engaged in physical activity. When asked if they have cardiovascular disease in their family, 10 athletes reported yes (33.3%) and other 20 athletes (66.7%) reported that they do not. The next question was very important, and uncovered astonishing results. When the athletes were asked if their doctor has ever done an EKG of them and, if so is it done annually only 10 athletes (33.3%) answered yes, and of those ten only 1 person (3.3%) answered that it was done annually. This means that 20 athletes out of 30 (66.7%) reported that their doctor has not done an EKG on them. When they were next asked if they are currently diagnosed with a cardiac problem 5 athletes (16.7%) reported that they are and 25 athletes (83.3%) reported that they are not. When further asked if they have had any of the above symptoms and are they under a doctor's care only one athlete (3.3%) said they were. This means that 29 athletes (96.7%) reported that they are not, and some wrote down that they are referred to an athletic trainer on campus rather than a physician. The final question asked to the athletes, and the most important, proposed that if they had any of the above signs or symptoms would they still continue to play and an overwhelming 24 athletes (80%) answered yes, while only 4 athletes (13.3%) answered no, and 2 athletes (6.7%) answered that they were undecided. The question also asked why they would still continue to play even if they had symptoms, and several answers given were that they loved the game, dedication, scholarship and financial needs, and that they don't think anything serious would happen to them. Since 80% of the athletes surveyed said that they would still continue to play even with these signs and symptoms, the researcher would like to increase the athletes' understanding of the seriousness of cardiac anomalies through continued teaching by providing information and answering any further questions. However, the researcher believes that the awareness level was increased in the athletes who participated in the survey because several reported back to the researcher that they would ask their primary care physician about the need for an EKG, and would question their physician about the seriousness of their own individual signs and symptoms. The researcher found that many of the athletes surveyed were curious about the study and the need for more thorough physicals and testing procedures performed by their own primary care physician before participating in their sport.

VI. Limitations

As within any study there are limitations that may have affected the possible outcome and skewed the results. The limitations that may have skewed the results within this study could have possibly been within the athletes themselves. The athlete may not have answered as honestly to the questions due to the fear that they would be pulled from the sport for an underlying heart condition, or any other medical condition. The athlete may have also not answered the questions accurately due to the fact that the questionnaires may have been given out at an inappropriate time for them. Also the participants' own perceptions of the actual seriousness of cardiac anomalies, and if they have an underlying heart condition as well may have distorted the results. Another limitation the researcher found while conducting the survey, was that some of the wording used in survey may have been unclear and confusing. Many of the athletes questioned the researcher on what EKG meant and many of them did not even know what it was. Some athletes also reported to the researcher that some of the wording was confusing for them. However, the major limitation to this study was the size of the population used. This study was only conducted on a small number of college athletes at one school, and to get more substantial results a larger population should be used with athletes from several schools. The results from this study did show significant enough results to prompt future researchers to investigate college athletes and their awareness for cardiac anomalies and their seriousness, as well as the thoroughness of the preparticipation exams college athletes, and athletes at every level are receiving nationwide.

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Relational Aggression: Finding Ways to Deal with This Negative Female Behavior

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Past research and experimentation conducted on aggression focused only on physical forms. By the late 1970's, researchers began to notice how detrimental a female form of aggression was in society. Relational aggression is now a widely researched form of aggression and the many studies conducted have allowed people to better understand female behavior. An in-depth literature review was carried out in order to familiarize the general public with the research done on aggression. The present study focuses on assessment of levels of relational aggression in an all-female high school and interventions which were formed in order to help female adolescents deal with this behavior.

I. Introduction

As human beings, we are subjected to feeling a wide range of emotions. Sometimes we are able to control them; yet, there are times when they seem almost impossible to suppress. Aggression is usually defined as hostile or violent behavior or attitudes. When looking back at the history of Psychology, one can see the developmental evolution that the theory of aggression has experienced. Throughout the earlier years of aggression studies, the only form of aggression that was primarily focused on was those acts which were physical (Frodi, Macaulay, & Thome, 1977). The majority of these studies only used men as participants which made it impossible to know whether or not women were also aggressive. For quite a long time, physical aggression was the only well known form of aggression and this was quite problematic since it ruled out other forms of aggression and excluded women as aggressive beings. When studies began to include women as participants, researchers did not observe women engaging in physical aggression as often as men were. It was close to the 1980's in America that a form of female aggression was even considered to exist and research finally began to slowly take place. It was not until about a decade ago that another form of aggression has become the focus of these studies. This alternate form of aggression always existed but was never

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studied because of its covert nature. Researchers tended to overlook it as though it was not detrimental to a human being's psychological well-being.

When more recent studies began to expose the evil side of this covert aggression, it was made known that it is a behavior that can cause great psychological distress and has the power and ability to begin in childhood and last throughout adulthood. This new relational aggression, which is the name it has been given, is a part of everyday life for many of us. It is behavior that is meant to cause damage to relationships and affect an individual's emotions and feelings (Simmons, 2002). Both men and women can be observed engaging in this negative behavior; however, studies have shown that females use this aggression far more than men do. In order to truly understand how this form of aggression has evolved and how social scientists began studying it, we need to have a better understanding of the study of aggression as a whole. The history of aggression goes far back in time, but this paper will cover about five decades of the experimental research available on the topic. As noted earlier, females were not given the least bit of consideration in aggression studies earlier than this time. This paper will then discuss present studies I am conducting in order to get a clearer understanding of this behavior and find ways of dealing with it.

1950s-1970s—Studies of Aggression Focus on Physical Aggression as Primary Aggressive Behavior

Research and experimentation done during these years focused mainly on physical aggression. Several pointed out that there might be other forms of aggression and even that there may be existing gender differences in the way that the sexes express aggression; however, little was done to further explore this idea.

A review of much of the available experimental literature was conducted by Frodi, Macaulay, and Thome (1977). In this article, the authors wished to understand whether or not women were truly less aggressive than men. Their focus was still on direct, physical aggression and how often both sexes exhibited this behavior. All articles included studied only males and females; no children or animals were used as subjects. A review of studies done in the 1950s, 1960s, and 1970s was performed in order to compare and contrast the claims made by those researching the subject. The majority agreed that women were much less likely to engage in physically aggressive behavior unless thoroughly provoked, whereas men would resort to a violent approach more quickly. Many of the experiments done in these studies had to be conducted in the controlled environment of a laboratory which makes it harder to truly simulate a situation in which an individual might have to decide whether to act aggressively or not. It is rather difficult to conduct experimental manipulations of aggression outside of the laboratory that are

controlled, and most ideas are quite unethical. Is it possible to ethically simulate a riot or hijack a means of public transportation? Certainly not.

After thorough research and review of these many articles, Frodi and colleagues concluded that any sex differences that may have appeared could largely be explained by the concept of sex (gender) roles. They explain that perhaps the different upbringing that many boys and girls experience can have an effect on what they think is appropriate behavior in certain situations. Females may refrain a bit more or shy away from physical aggression since girls are often told to behave in a certain reserved manner. This idea of gender differences was quickly abandoned after this study and following studies during this time period continued to focus on physical aggression.

A study conducted by Kraft and Vraa (1975) did not focus on aggression in any way, but looked closely at the different interaction styles of males and females. Through observation, they saw that when playing in all female groups, girls tend to keep to themselves and congregate in private places. They chose to develop and focus on intimate relationships with one or two other girls in most cases. Quite different from this kind of interaction was that observed of the boys. The boys studied all chose to play games in open spaces and were much rougher when coming in contact with another boy. They did not focus on forming close-knit relationships as much as the females had and were more comfortable playing with several boys. These findings can give us a better idea of how boys and girls tend to act and help to understand why they aggress in certain ways. Girls are more involved in developing relationships with other girls, which allows us to make sense out of why they might want to aggress the way they often do. They tend to aggress against the other girls in their group in a passive, “nonchalant” sort of way while boys aggress in a more violent, outright way. This will be looked at more closely later in the paper.

1980s—Research on Aggression Begins to Consider Alternate Forms of Expression Other Than Physical

The research done in the 1980s on aggression often sought to disprove any studies conducted in prior decades. This is quite normal practice in the field of psychology (and many other academic fields, as well) for researchers to conduct experiments and literature reviews in order to find different results which might hold more legitimacy than those done in previous years. Even so, most of the articles written in this decade still focused on physical aggression as the most important form of aggressive behavior. The researchers often restated many hypotheses that had already been set forth, but usually they added a bit of their own findings and ideas as well.

Eagly and Steffen (1986) conducted a literature review which they compared to the work of Frodi et al. (1977). A meta-analytical review of the social psychological

literature allowed the authors to conclude that men, indeed, are more aggressive than females. The studies which were researched predominantly dealt with physical rather than psychological aggression and the majority had results showing that males are likely to act in a direct, aggressive manner more quickly than women and do not show as much guilt afterwards. Women, as a whole, reported higher levels of anxiety and guilt as a consequence of aggression and were much more concerned that this kind of negative behavior could be harmful to even themselves. In Frodi et al.'s review, the conclusion was made that women usually were less aggressive than men, but not in all cases. They also focused more on the amount of provocation which was needed in order for an individual to behave aggressively. However, Eagly and Steffen stated that only six out of the fifty-six cases studied showed women who came close to equaling the aggression levels of the men studied; none of these studies observed women being the more aggressive sex.

Eagly and Steffen (1986) focused predominantly on the physical and psychological impacts that aggression has on victims. What would appear to many as a new piece of information this article provides is that it raises the idea of how much of a role biology plays in the exhibition of aggressive behavior. Many scientists wish to demonstrate that these behaviors can be attributed to biological reasons, but Eagly and Steffen state that they find it difficult to attribute the development to purely biological reasons. They offer the concept of social roles as a predictor that the two sexes will behave differently given the differences expected of them. The idea they wish to express as logical reasoning for this type of physical behavior and how there are sex differences present is that these differences can be considered a function of perceived consequences of aggression learned as aspects of gender roles and other social roles. In other words, females and males are raised in two very different ways and these socially learned roles progressively become more ingrained as time passes. This idea was introduced by Frodi at al. as a reason for why girls might not be as aggressive as boys usually are. Girls are taught to get along with others and develop long lasting relationships, whereas boys often learn that the male sex is supposed to be dominant. Therefore, males place more importance on dominance and intimidation in order to "guarantee survival". This very important point was not discussed in great detail, but studies which would take place in the following years would build upon this theory.

A study which supports the nurture argument as reasoning to explain sex differences in aggression was conducted by Tomada and Schneider (1997) on Italian children. The researchers followed similar formats to those used in earlier relational aggression studies, however, their results differed. They found that boys reported higher occurrences of both overt and covert aggression. No follow up studies were conducted, however, if this research were to be duplicated and found the same patterns, it would be

likely that nurture plays a large role in the way the sexes aggress. Further research needs to be conducted in order to further our knowledge on the subject.

Cairns, Cairns, Neckerman, Ferguson, and Gariepy (1989) wished to study the growth patterns of children as they progress into adolescence. Through doing so, their goal was to find out if aggressive behaviors changed as these children grew older. Another aim was to find whether or not there were differences in the aggressive natures of boys and girls and how these differences were exhibited. Readers can observe that at this point in time, studies were beginning to seek out sex differences in aggression in order to try and find if females really were not aggressive beings by nature. The researchers conducted a six-year study in 1981 of 220 fourth graders. The final assessment was made on the adolescents as they finished their ninth grade school year (only a very small percentage was not present by the end of the study). A few methods were used in order to properly measure the aggressive natures of these children.

First, they were given peer nominations in order to see how often each child was nominated as an aggressor or as a target. Next, each child sat down with an interviewer during a social cognition interview. During these, the child was asked questions dealing with both physical aggression (hitting and shoving) and indirect aggression (slander/gossip, clique exclusion). They told the interviewers about bullies, any conflicts they were presently involved in, and how included they felt in social groups. Finally, teachers and administrators were given Interpersonal Competence Scale-Ts (ICS-T) in order to assess the children's aggression levels from an adult point of view. These adults were also given the chance to comment on each child and how well they interact with others (Cairns et al., 1989).

What was found in this study was that fourth grade boys reported more physical conflict with other boys (45%) than with girls; whereas girls reported a very low level of physical conflict with both boys and girls. By the seventh grade, boys were reporting an increase in physical conflict while girls reported a dramatic decrease (the percentage of female physical conflict reported and observed dropped from 25% to 11%). These results show that there are definite sex differences when dealing with the issue of aggression, however, this study also explored on the levels of indirect aggression reported. When reporting the event of social alienation, boys rarely expressed any occurrences of this in their social interaction. On the other hand, the majority of the young girls involved in the study reported high levels of this kind of aggression. By the time this group reached adolescence, the occurrence of alienation was at its all time high among girls. This study shed some light on the idea that there is more than one form of aggression, and that this alternate form is popular among young girls. It also laid down the foundation which was going to be built upon in the coming years by researchers highly interested in this form of female aggression (Cairns et al., 1989).

1990s—Relational Aggression Emerges as a Leading Form of Aggression Among Females

The 1990s were the decade in which the most research was done on female forms of aggression. Interest in the subject was at its peak and psychologists were ready to make breakthroughs in the field. It wasn't until a group of Scandinavian social scientists began doing in-depth research on female aggression that behavioral scientists stopped ignoring this covert form of aggression. An American psychologist by the name of Nicki Crick has, to date, done the most extensive work on the subject and has contributed to the overall knowledge we have today on relational aggression. From the literature review below, it is easy to see just how influential this woman has been in raising awareness of relational aggression and helping to change accepted aggressive behaviors.

Crick and Grotpeter (1995) developed a study that focused on relational aggression and its detrimental effects. Previous childhood aggression studies had demonstrated that boys were the more aggressive sex in almost all situations. The authors of the present article hypothesized that this conclusion was a reflection of a lack of research on alternate forms of aggression which could be relevant to young girls. They discussed a study done several years before by Feshbach (1969) which postulated that gender differences existed in forms of aggression. In a study by Feshbach, girls were more likely to alienate unfamiliar students and try to exclude them from groups. However, not much relevant research was done after this in order to find out more. Most of the studies done in the past had simply chosen to study one form of aggression and then make a generalization of the results as they pertained to both sexes. Crick designated the term relational aggression to this phenomenon in order to describe the covert aggression in which females often partake.

Relational aggression is defined as behavior that is intended to damage relationships or acts that have the results of threatening damage to relationships. Crick and Grotpeter's (1995) hypothesis focused on how girls would express aggression toward peers. They felt that the female participants would engage in behavior which would be directed towards harming others in terms of relationships and feelings. Girls are likely to place more interest on forming friendships and spend much of their time developing close-knit groups. Therefore, if they wanted to aggress against someone, their aim would be to damage that person's relationships in one way or another. This reasoning could be attributed to the study done by Eagly and Steffen (1986) in which social and sex roles were discussed as contributing factors to how the sexes express aggression. Since boys are more likely to place emphasis on "being on top", the best way to dominate other boys at a young age is to be physically aggressive.

Most of the past research had focused on aggression forms that were salient for boys, which would be the act of physical violence. Crick and Grotpeter (1995) saw that this was not as important to girls as the maintaining of relationships is; therefore, girls began expressing their aggression in a different way. Crick and Grotpeter conducted a study using 491 third- through sixth-graders as participants and assessed three aspects of interaction: relational aggression (social ostracism, gossiping), overt aggression (physical and verbal abuse), and social- psychological adjustment. Peer nominations were used as well as scales that could help measure social adjustment levels of the children. The results confirmed the hypothesis and showed that girls are significantly more relationally aggressive than are their male peers. It also showed that relationally aggressive children are more likely to experience social maladjustment than their non-aggressive counterparts. The adjustment scales revealed that these aggressors experienced greater levels of depression, loneliness, and peer rejection. When physical and relational forms of aggression were assessed, both sexes exhibited equal amounts of aggressive behavior.

Crick (1996) later studied in depth the roles that relational and overt aggression play in the way that children adjust socially and how these behaviors could affect them in the future. After much observation and several studies on relational aggression, Crick found evidence that supported how this form of aggression remains relatively stable over time. Girls who exhibit this behavior are likely to continue engaging in it even as they get older. The teacher and peer assessments that were used in this particular study to get a better understanding of relational aggressors were significantly correlated. What this means is that there was a significant correlation between which students were perceived as relationally aggressive and socially accepted by these assessments. Many of the aggressors were seen as having problems adjusting socially and would aggress when their social position was threatened. She also found that maladjustment was experienced by victims of this behavior who were socially shunned by certain groups. Crick points out that this kind of aggression can be extremely detrimental to a child's development and action needs to be taken in order to make changes in how females behave. In order to do this, researchers needed to get a better understanding of when this behavior begins to show up in interaction.

Crick, Casas, and Mosher (1997) extended the previous study's idea of relational aggression being hazardous to a young child's mental health. Longitudinal studies have shown that childhood aggression is one of the best-known social predictors we can use to assess any future maladjustment that an individual might incur. Victims are likely to experience immense emotional distress as targets of this negative social behavior; similarly even the aggressors are exposed to harmful effects of this even though they are the perpetrators. The authors wanted to find the origins of this behavior by finding out when it first begins to show itself.

Their idea was to study preschool children in order to see if they exhibited any signs of aggressive behavior, and if so, which types. There were a few benefits to studying preschool classes, such as how children this young are often less inhibited when it comes to interacting while adults are present. This allows for more natural behaviors to be observed since preschool teachers are given greater access to peer interactions than elementary school teachers. However, it would be nearly impossible to rely solely on peer reports of aggressive behavior since children this young are likely to remember aggressive behavior that is physical, but not as likely to remember more subtle behavior such as social exclusion or withdrawal (Ladd & Mars, 1986). Due to this last factor, the social scientists used a multi-informant approach in order to get a reliable gauge of aggression; this means that both the young children and the preschool teachers were involved. What was discovered as a result of this study was that relational aggression is, in fact, observable in preschool-aged children. Physical and relational forms of aggression were exhibited behaviors of these young children and, once again, females tended to engage in the latter a bit more than the males.

Since most of the studies conducted on relational aggression focused exclusively on young children, many began to wonder if children are the only age group to exhibit this type of behavior. A study conducted in the late nineties measured relational aggression and psychosocial adjustment among a sample of college students (Werner & Crick, 1999). Interestingly enough, yet perhaps not surprising, this type of behavior was quite relevant to even an older group of students. The researchers found that relational aggression is positively correlated to psychosocial adjustment, and that it might be possible for those experiencing relational aggression to have some problems adjusting socially. The study indicated that further research should be done on samplings of this age group in order to find out more and analyze any patterns found.

2000: Relational Aggression is Closely Examined and Prevention Methods are Created

The most recent studies on aggression have been focusing on different aspects such as relational, physical, and the many correlates of both; the majority of these studies focus on children as subjects. Much of the literature is aimed at finding ways to end the cycle of relational aggression that has been in existence for more time than we could even know. Since it took so long for studies to begin to focus on this form of aggression, this kind of aggressive behavior has become almost normal and accepted in our society.

We now see widespread awareness of this issue not only in our society, but in other societies as well. In a recent study, American and Indonesian children were interviewed and observed in order to assess relational and overt aggression. Although there are many differences between these two social and ethnic groups, a common thread was found through this study. Girls from both cultures reported high levels of social

exclusion and other forms of relational aggression on a daily basis while boys reported few occurrences related to relational aggression. Cross cultural psychologists are now attempting to assess levels of relational aggression within a variety of cultures in order to see if this pattern exists in other countries that may have different rules and standards (French, Jansen & Pidada, 2002).

As widespread awareness occurs, so has the rise in interest of the subject in more mainstream publications. An eye-opening book written by Rachel Simmons quickly became a best seller. Odd Girl Out: The Hidden Culture of Female Aggression in Girls is an insightful book that shed light on female bullying. Filled with personal stories of victims, victimizers, educators, parents, and mental health professional, Simmons managed to address this issue and help many to understand what a significant problem it is in our schools and our society. In the early 1990s, a woman named Susan Wellman also helped educators and parents learn more about relational aggression. Wellman began a program in Pennsylvania called the Ophelia Project. This program was aimed at assessing levels of relational aggression in schools and then conducting interventions that help raise awareness about this form of predominantly female choice of aggression. Teachers, counselors, and administrators work to provide these young girls with an outlet for releasing any distress they have experienced due to relational aggression and help them think of ways in which they can change their behavior in a positive way. This program is now a part of school curriculum in schools across the country (McKay, 2003). Research done by Crick and Nelson (2002) allows us to see that friend victimization occurs among both boys and girls. Both boys and girls exhibit behavior which is not only directed toward “enemies” but oftentimes at friends as well. However, girls are more relationally aggressive than boys, and boys are more physically aggressive toward their friends than are girls.

Crick and Nelson are quite discouraged by the fact that so much research has been focused on physical forms of aggression and hope that more research will be conducted on relational aggression in order to better assess the present day situation and how we can tackle this widespread problem. Presently, interventions are held in certain schools in order to raise awareness of this issue and hopefully help put an end to it.

New Endeavors Studying Relational Aggression

Interventions are an excellent way of addressing relational aggression and to get young females involved with the issue. I worked alongside Dr. Amy Eshleman and Dr. Laura Martocci for several months in order to start a new branch of the Ophelia Project at aggression for 21 years but could never see that it was a true form of aggression; I had always just thought it was girls being nasty and that it was normal. We are given lectures in school on how fighting and physical violence would not be tolerated and anyone who

engaged in any violent acts would be punished, but rarely is mental abuse ever discussed.

Studies have even been published that show evidence that preschoolers (usually males) engage in overtly aggressive behavior (Ladd & Price, 1987). Yet no one ever yelled at the girl who whispered to her friend that they shouldn't let Susie sit with them that day at lunch, and no teachers ever yelled at the girls who ostracized Kim after she got glasses. Yet, weren't these girls all victims of harmful behaviors? Teachers and parents are often observed saying things such "words can never hurt you so you will get over it" when situations like these occurred. We were never warned against gossiping or castigated for the glaring looks exchanged during Math class. I couldn't believe that someone had finally named this awful behavior and was doing something to raise awareness of this deplorable attack on the mind. Now I was being given the chance to do something to help change the way girls acted and shape what they think is acceptable behavior. Over the course of the fall semester, much of my time was dedicated to researching relational aggression and programs which have been created to try to bring awareness to females and males alike. One thing that needs to be made clear is that men are not excluded from this form of aggression, but the present research and interventions focused on young girls because they are the ones who engage in this kind of behavior most often.

My field placement was a bit different from those of my Reflective Tutorial peers in terms of structure and how much hands on work I would be getting. I helped begin a mentorship program at Notre Dame Academy which would involve having meetings with faculty and students to try and understand the level of relational aggression in existence at the school. High school mentors trained by the Ophelia Project would be going into guidance sessions in order to talk about relational aggression and the many problems which stem from it. Wagner College female students would be aiding in these interventions that would take place during ninth-grade guidance groups. By being observers in these guidance groups we would be able to get a real understanding of how much of this behavior is prevalent in high school aged girls and hopefully offer ways to overcome it.

I met several times with Notre Dame girls to talk about their personal experiences and how they wished to be helped by these interventions (none of these girls were freshmen since the freshmen were the class that would be receiving the interventions). What I found was that almost every girl is not only a victim of this harmful behavior, but has also been the victimizer. It took a while for some to admit that they, too, had been in the bully role at least once in their lives. Psychologically, it is very easy to assume the role of victim. In fact, there are many perks that come along with being the victim such as sympathy. As human beings we often find it hard to accept full blame and responsibility for something if we can just pass the blame on to a scapegoat.

But one of the first lessons that women need to learn is that before we can try to rid the world of relational aggression, we need to take ownership of our own wrongdoings; once we reshape our own negative behaviors then half of the problem will be fixed.

Leading up to the interventions, I met often with a sophomore mentor who was very excited about the Portia Project (this new branch of the Ophelia Project which was started with the help of Wagner College). I learned that this negative behavior takes place on a daily basis and that she herself currently knew of several girls who felt like outsiders even though they had no idea why. When asked if she ever tried to make these girls feel accepted and befriend them, she expressed her fears of being ostracized herself. She knew that it was wrong to allow this exclusion to continue, but did not want to become the odd girl out as these young girls were. This made me think of the many articles I had read on the topic, in particular the work by Nikki Crick. Crick, Casas, and Mosher (1997) found that relational aggression could lead to problematic social adjustment in children. Relationally aggressive children were found to be vulnerable to the likelihood of depression since many nonrelationally aggressive children did not want to associate with these individuals. Loneliness of the victim is also a major issue since social ostracism can be quite emotionally debilitating. The sophomore's stories of lonely girls wandering around the hallways of the school accompanied only by their sadness made me think that our society has waited far too long to take action against this harmful behavior. It is disheartening to think of how many girls there are across the country who are being victimized at this very moment but feel utterly helpless. To whom can they turn? Parents and teachers are likely to tell them that it is just a phase that passes and to just be nice to the bullies, but it is much easier said than done. These adults are not being exposed to emotional and mental torture on a daily basis.

Monday, November 15th was the day of our first interventions. I was going to be running four of them along with one other Wagner College mentor (different mentor each session) and 2 Notre Dame mentors. Researchers were quite nervous about how receptive the girls were going to be towards the mentors and the intervention. Our topic of the month was going to be gossip and reputations since this is one way women retaliate when seeking to hurt another woman (and sometimes another man). My first group consisted of about 15 rather rambunctious young ladies who were eager to be talking about "real life". Once I began the meeting and introduced the topic of the month "Female aggression: Reputations, giving and getting them", girls were practically jumping out of their seats in order to have their thoughts and voices be heard. It was quite incredible to see these girls speaking so candidly about what they have to endure as women in our society; they were all very aware of relational aggression's presence in everyday interactions and very much affected by it.

Some girls were tired of being given labels that they didn't deserve such as nerd, slut, or lazy. They felt that other girls were quick to give labels with the intentions of hurting people, and they were tired of trying to constantly defend themselves. One girl said that as a girl one has to constantly defend her own honor and good reputation because in one moment it can be wrongfully destroyed by a relationally aggressive girl. Some girls seemed genuinely affected by what we were discussing and it was easy to see the pain that they have endured. Two of the groups were rather reserved when first getting started, and some of the girls seemed somewhat confused by the intervention. That disappeared quickly after about 15 minutes of conversation.

Each session lasted 45 minutes and needless to say it was quite a feat to try and accomplish so much in such a short time; but it was definitely worth it. It was uplifting to see the relief on these young girls' faces as they relieved themselves of burdens which had been weighing on their minds. It seemed almost therapeutic for them to be telling their stories to people who were willing to listen and help. The freshmen were extremely receptive to the college mentors which leads me to believe that it might be beneficial to conduct interventions with only the college mentors and "mentorees". Some of these young women left the room with big smiles on their faces as though they had just divulged a secret they had been keeping for a long time. I'm not sure if this is what it feels like to be a practicing psychologist, but I certainly hope that every once in a while this sense of accomplishment and happiness is part of the job (even when there are some bad days in between).

One Friday afternoon, I sat down once again with the sophomore mentor I had been meeting with to discuss a meeting that the high school mentors attended the previous day. She expressed extreme interest in the program and a solid comprehension of relational aggression and how harmful it is to female mental health and social interaction. After a few hours of talking, I was interested in how she would feel talking about romantic relationships between boys and girls if older high school girls were present during these intervention sessions. I was curious about this since one of our interventions would focus on how girls are often competing for male attention and in the process might hurt or betray a good friend. It can be rightfully assumed that many ninth graders may not want to divulge their secrets if there were older students in the room who might know who they were talking about. The young lady said to me, "I guess I wouldn't want to talk about boys if, like, cool older girls were in the room. But if they were loser girls who didn't have many friends to tell anyway then I would definitely talk about it. Because then I would know that they had no friends to tell and girls like that don't really care about boy stuff, anyway".

My heart sank as she finished speaking and asked me why I was looking at her in such a strange way. Perhaps it was the month of research on relational aggression that

led me to believe that we, as a society, would be successful in changing our behaviors and educating the young girls of our community. Or maybe it was the fact that this one young female had shown so much progression in her thoughts and ideas on how we need to address this problem in order to abolish it. Yet, after a month or so of talking with her in one moment my hopes were destroyed. To be quite honest, although it may have seemed like a silly comment to someone else, to me they were words I was shocked and saddened to hear.

After my meeting with this young student, I went home and began pondering the reasons why females engage in this kind of harmful behavior. One theory which I strongly believe is a major factor in relational aggression's formation are the concepts of gender and gender roles. Even though I am extremely interested in the study of gender, I tried to look at this behavior in an objective manner. Yet, time after time my thoughts kept wandering back to gender roles. It is quite obvious for anyone to see, whether through observation or research, that boys and girls are often brought up in different ways. Little girls, from an extremely early age, are told to be sweet and ladylike. Feminine qualities include sensitivity, kindness, gentleness, and reservation. After all, there is that saying which goes "Sugar and spice and everything nice"; this is a model for how young girls are taught to behave in order to be able to develop into refined women (Crick et. al., 1997).

On the other hand, young boys are encouraged to get dirty and be a bit rambunctious. When boys run wild and wrestle or get into fights, the reason is usually that "boys will be boys". So why this double standard and what could be some of the problems it could cause? Biology might affect our treatment of the sexes since body structure often differs. Males are usually stronger and their bodies seem more "sturdy", whereas females usually have smaller bone structure and might seem more fragile. So this dichotomy of strong versus fragile might affect our views of the two sexes. Our treatment of girls can make females believe that they are inferior to men and that they constantly need to please people (Vail,2002). By saying that girls don't feel anger and don't behave aggressively, we are forcing them to find ways to release their aggression. What can be better than forming an aggression in which one's actions are covert so that they often go undetected, yet, the victim always feels the wrath?

Relational aggression is the logical answer to women's feelings of vengeance and anger. They are able to release tension building up inside, whether it is from anger, jealousy, or hurt feelings, without going against their feminine expectations. A "sweet and innocent" young girl can use this psychological weapon without harming her reputation (Simmons, 2004). Since boys are not always discouraged when it comes to expressing their anger and to be a bit "rough around the edges", then they are far more likely to lash out overtly. We can also consider the work done by Crick and Grotpeter

which took into account the emphasis that girls place on relationships. By damaging a relationship, the pain the victim feels might be worse than any physical pain (Crick & Grotpeter, 1995). Of course, this may not be the correct conclusion to come to when trying to find reasoning for relational aggression, but this is what I have put together logically through my field placement, research, and experience.

By sitting down with these girls it has occurred to me that they are quite set in their ways, as many of us become by a certain age. Most can understand that their behavior isn't very positive or beneficial to our well being, yet they don't think that they can change; even worse, some have accepted it as normal. Too many of them seemed to have been positively affected by the interventions offered to them all across the country and even if the sessions were to help only one female, then that would be a success. The emotional and psychological lives of young girls are precious and easily breakable. We all need to join together to help make the transition into adulthood for these adolescents a bit easier. Perhaps psychologists would not see as many patients with social adjustment problems if relational aggression was greatly reduced.

Interventions and informational sessions are wonderful methods of making girls aware of their hateful behavior, but they need to start at a much earlier age. Pre-school is actually a wonderful place and time to begin teaching children about physical and relational aggression. By high school, girls have been engaging in this kind of behavior for so long that they believe it is acceptable. We, as a society, need to help our young girls and shield them from the trauma that relational aggression can bring. Educators, parents, scholars, scientists, students—we all need to take ownership of our own actions and change the way we interact. Only then can we help those young girls wandering aimlessly in the hallways by themselves wondering why no one wants to be their friend.

The Present Study: Assessment of Levels of Relational Aggression in the Fifth Grade

Presently, Amy Eshleman, Laura Martocci, and I have been developing a new study which involves fifth graders. After having worked with high school aged females, it was obvious that a younger age group would be ideal to work with in order to assess these negative behaviors before they have been blown out of proportion. After about a year of establishing ties with New York City Public School #16, school officials gave us permission to enter their fifth grade classrooms in order to measure relational aggression and work with teachers to try and reduce levels present in the school. Our hope was to have gone into the school at the beginning of the Spring semester, however, receiving permission from the school and our own internal review board took longer than expected. As of the present time, we have received permission from all parties involved and will be beginning our study this month.

After using a few measures of relational aggression, interacting with the fifth

grade children, and analyzing data, we hope to develop a concise assessment of the current levels of relational aggression amongst PS 16's fifth graders. In the future, we will use this analysis to develop future interventions and curriculum pertaining to relational aggression for use with younger children.

II. Method

Projected Participants

Fifth grade students from Public School 16 will form our participant pool. We are unsure as of yet how many will participate in the study. Both male and female students will participate. Parental consent forms will be distributed to two fifth grade classes and the children who are given permission and a signed consent form will be asked to participate. Since PS 16 is an ethnically diverse school, it is likely that the sample of children used will be diverse as well.

Materials

An interview script will be used by each researcher so that every child is asked the exact same questions. A tape recorder will be used during the interview to record the children's responses. The audiotapes used to record information will be destroyed as soon as they are transcribed in order to protect the children's identities. Each researcher will be given a form on which notes can be taken for later use.

Procedure

In order to better assess the level of aggression at PS 16, we felt it would be ideal to interact with the children in a comfortable environment in order to encourage participation and allow them to feel comfortable speaking freely about their own experiences. One-on-one interviews will be conducted by a researcher outside of the classroom during class time in a quiet room. Each interview will be recorded and the audiocassettes will later be transcribed. A script has been written and will be followed by the researcher during each session. The script contains questions pertaining to aggression and school environment. They cover topics such as physical and verbal bullying, social exclusion, the frequency of such behavior and other scenarios relevant to this type of behavior. The questions are very clear and straightforward, and a few examples are: Have you ever been left out of a group at school? How did this make you feel? How many times has it happened? How did you react in this situation? All of the questions follow the same format in that a main question is asked and then follow-up questions are asked pertaining to the main question. The interview was carefully designed in order to promote comfort in answering freely and honestly.

After conducting these interviews with the participants in the sample, tapes will be transcribed and notes will be reviewed. After all data are gathered and analyzed, information will be used to create a clear-cut, descriptive breakdown of aggression-related issues that need to be addressed at the school. The information gathered will allow researchers to develop interventions with the help of school officials that will address the behaviors students reported as being most problematic and help them to find ways of coping with it.

III. Discussion

The Future of Aggression

Our idea of aggression has certainly changed over the years. From the 1950s when only physical forms of aggression were studied and women were thought to be non-aggressive beings by nature, to the present day when we now see that women are relationally aggressive individuals. The concept of what aggression is, who is aggressive, and when they are aggressive has developed into complex ideas that have helped us understand human nature and how we express our anger. Although it is not completely clear why women tend to engage in relational aggression and men tend to engage in physical, there are two arguments which usually arise. There is the biological view which states that these differences are inborn and therefore males and females cannot help but act in such ways. The opposing view states that these are socially learned behaviors that are taken in through the environment (Galen & Underwood, 1997). Gender and sex roles often mitigate what behaviors are acceptable of each sex and behavior follows accordingly. Perhaps in the coming years we will be able to find evidence that supports one of these views or can cohesively blend the two, which is what most research today does. It seems likely that a combination of the two is the most successful way of truly understanding aggression and its origins.

It would be interesting to see if in the future we can create more ways of measuring relational aggression other than peer nominations and interviews. However, since these methods seem to be quite effective, it is likely that they will be used for several years to come. Also, it would be beneficial to study groups of adults and measure their levels of relational aggression. Many of these studies seem to have focused on children and adolescents; granted, this is probably due to the fact that relational aggression is at its highest during these phases of life. However, it would be interesting to see just how prevalent this form of aggression is among adults in the workplace and even in leisurely situations.

Social scientists now see how detrimental relational aggression is to females and how much emotional distress it can cause. Due to this, we as a society can attempt to find

ways to help girls channel their aggression in a more positive way than gossiping and social exclusion. For many years, female aggression was ignored since its covert nature made it easy to overlook. Even when people noticed the negative behavior, it was often dismissed as a normal phase in life that would end. It wasn't considered important enough to address as overt forms of aggression were, such as black eyes and bloody lips. But the vicious cycle of relational aggression hasn't ended and an observer can easily see that even adult women exhibit this kind of behavior. Hopefully, progress in the field will continue to be made in order to ensure that the young girls of tomorrow will be able to enjoy a life free of the psychological distress that can be caused by this newly studied form of aggression.

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The Effect of Objective Self-Awareness on the Ability to Deceive

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This study attempts to ascertain whether objective self-awareness has an effect on complex social interactions. My proposition is that objectively self-aware participants would be less able to deceive than control participants. A total of 23 undergraduates from an Introductory Psychology class were assigned to either a self-focus condition or control condition. Participants in both conditions were asked to drink an aversive drink and then to deceive the interviewer that they actually enjoyed the drink. The self-focus condition was confronted with a live feed of themselves on a 27-inch (0.69m) television screen; the interviewer's jacket covered the same television for the control group. The results did not support the hypothesis. A new natural performer hypothesis was offered to explain the results.

I. Introduction

The question and notion of the self and self-awareness may be best left for philosophers to debate. Psychology by its nature assumes that the self exists (James, 1918). Over the last three decades much research has been conducted within this specific field within the social psychology branch of psychology.

Self-awareness theory proposes that individuals take stock of, and evaluate their behavior by comparing this behavior to their internal expectations of themselves. The early pioneers of this field were Duval and Wicklund (1972), with a theory of objective self-awareness. The theory dictates that when we are conscious our awareness can be directed either externally or internally, but not both simultaneously, in other words our focus is bi-directional. Early on Duval and Wicklund separate the notion of subjective and objective self-awareness where "Subjective self-awareness is characterized by a feeling of control over the environment... [and] Objective self awareness is associated with entirely different effects, for the individual views himself as another object in the universe" (Duval & Wicklund, 1972, p. 6). When in the state of objective self-awareness the individuals will begin to evaluate themselves as an object. They shall compare their current or actual state against an ideal state, self-image and self-concept. This self-

¹ Research performed under the direction of Dr. Amy Eshleman (Psychology).

concept is a schema of the self that is built throughout the individual's life. However as Silvia (2001) demonstrates there are many different origins, organizations, and affective consequences of these standards.

People become objectively self-aware frequently under a variety of situations, for example many studies, like Duval and Wicklund (1972) and Carver and Scheifer (1978), have used mirrors or video cameras to activate this process. Mirrors and cameras activate this process because it makes the participants aware of themselves, to the point where they view themselves as another object in the universe that they can be both objective towards and judgmental (Aronson, Wilson & Akert, 2005, p. 139). When people's objective self-awareness conflicts with their self-schema of their internalized standards, some interesting psychological workings begin to take place. According to Duval and Wicklund (1972), the individual will begin to feel cognitive dissonance, which occurs because of the conflict between actual behavior and the ideal standard of behavior. This cognitive dissonance is not uncommon as reaching the perfect ideal self and multiple standards is by no means easy to achieve.

Cognitive dissonance was first explored by Leon Festinger (1957), the Cognitive Dissonance Theory ascertains when a person has two contrasting cognitions it causes a feeling of uneasiness that the person would like to ease and alleviate. According to Duval and Wicklund (1972) the method of alleviating this discomfort can be obtained by two routes of action. 1). Avoid the stimulus that induces these feelings, therefore preventing or eliminating the comparison process. 2). Modify behavior to match standards.

One model that spawned from the objective self-awareness theory is the self-discrepancy theory (Higgins, 1987). This model is a form of cognitive dissonance but is more specific than cognitive dissonance in the examination of differences in the individual's affective reaction to self-awareness. According to this theory, the inconsistency of actual self to the standard of ideal self will have effects similar to that of cognitive dissonance, such as motivation to alleviate the feelings of discomfort. Congruently the individual will feel psychological distress as dejection, when the existing self is discrepant with the ideal or ought self, unless the self is discrepant from others' ideals and standards in which case shame and embarrassment will be the outcome (Silvia & Duval, 2001).

People generally have a strong desire to maintain a positive self-image, and if possible to match their actual self and behavior to their ideal standard. However research by Giesler, Josephs and Swann (1996) suggests that not all people have to have a strong positive self-image. People with depression have a negative self-image, and they will seek to verify that negative self-image (Giesler, Josephs and Swann, 1996). Anyone who would challenge, for example by giving positive feedback, could face rejection by the

depressed person. As mentioned previously, cognitive dissonance can occur in a variety of ways. In the realm of self-verification it could arise if a conflict between the feedback and behavior toward a person was discrepant with his/her self-image. If a person was exposed to a mirror this would make him/her objectively self-aware. If this individual were in the process of an act that conflicts or is discrepant with his/her internalized standards, he/she would feel cognitive dissonance. For example shoplifters may think twice if they see themselves on Closed Circuit Television (CCTV) as this would objectify them and force them to compare stealing with their schema of the positive self and their internalized standards, which actually become more salient because they are being made objectively self-aware. The shoplifters may continue to steal and avoid looking at the CCTV screen (route 1) or choose not to steal (route 2) to maintain their positive self-image and prevent or reduce cognitive dissonance.

One challenge that has been prominent in early research was the issue of measurement, how can research effectively measure self-awareness? Nisbet and Wilson (1977) found that people report inaccurately on the basis of introspection because they do not interrogate their memory correctly and instead fabricate causal explanations between the stimulus and their response. Despite these challenges, a host of research has developed a means of measuring objective self-awareness and introspection.

A common means to accomplish this is to use a questionnaire to measure the level of objective self-awareness. This was the method of choice for Insko, Worchel and Songer (1973) who used a questionnaire to measure attitudes about the legalization of LSD and asked subjects questions like, "Describe your feelings during the initial phase of the experiment" (p. 264) which was measured on a scale ranging from not self-conscious to self-conscious. The study used 96 introductory psychology students from a North Carolina university. All of whom were opposed to the legalization of LSD. The study manipulated awareness with a video camera and also had an effort variable where participants anticipated cycling a distance of either four miles or a quarter of a mile. The camera condition successfully increased the participants' awareness. The level of anticipated effort also affected the amount of dissonance felt; higher effort resulted in higher dissonance. If the participant chooses to exert greater effort than write a pro legalization essay then, logically LSD must not be that bad because he/she does not mind exerting the effort given the choice. High effort and a negative view of LSD are two inconsistent cognitions, so in order to reduce the dissonance the participant changes a cognition, in this case his/her opinions of LSD.

Carver and Scheifer (1978) wanted to test the hypothesis that mirrors would make their participants more objectively self-aware. The procedure was quite straightforward; the participants were randomly assigned to a cubical with either a large mirror or no mirror. In the cubicle they completed the Self Focus Sentence Completion

(SFSC), created by Exner (1973), in privacy and then when finished returned the SFSC to the experimenter. Two judges who were blind to the assignment of the participants scored the SFSC independently. Only items agreed upon by the judges were used for analysis. The results demonstrated that participants in the mirror condition made “proportionally more self-focus responses than did those in the no-mirror condition” (Carver & Scheifer, 1978, p. 327). They also ran a second experiment with the same procedure except that a confederate was used as the “object” to increase the participant’s objective self-awareness. Just as the presence of a mirror can increase an individual’s objective self-awareness so can a confederate. For the participant being watched by someone else has much the same effect as watching his/her reflection in a mirror, it makes him/her self-aware. Having someone sit and watch over the participant can easily make him/her feel more self-aware. Similar to the eerie experience of believing someone is watching one during a walk down an empty street, this may cause a state of arousal or hyperawareness of the surroundings and the self, for example an individual’s self dialogue where he/she might evaluate his/her options may become more salient. The results using a confederate mirrored those of the first experiment.

One variation that can be used for measurement is the Stroop color-word technique as utilized by Geller and Shaver (1975). Participants were asked to name the color of the text and not the word. The text was actually a color name, e.g., red, and the ink was a color other than red. According to the research those who are made objectively self-aware had greater latency whilst naming the word’s color. The procedure for the first experiment was for the participant to complete three tasks as follows. Firstly to name the color of a row X’s. Secondly to read a list of words in black ink which were either self-relevant or self-evaluative. Finally they were asked to name colors as in the Stroop procedure with either a camera and mirror or nothing. Geller and Shaver found that the objectively self-aware condition had a greater latency than the control, but thought that the second stage of the above procedure diluted the effect. They therefore ran a second experiment, which eliminated the second part of the procedure; the results indicated a main effect, which was similar but stronger than the first experiment, of the camera and mirror condition on the participants’ color naming latency. This was attributed to the increase of self-awareness caused by the stimulus. Those who read the self-relevant or self-evaluative lists would have an interaction effect with the mirror creating a state of objective self-awareness, which would lead to an increase in color naming latency. The reason for the increased latency is that the state of objective self-awareness acts as a form of interference on the color-naming task, an individual can only think of so many things simultaneously; in this case either about the self or about the task.

Another interesting measure of objective self-awareness was used in the research conducted by Fenigstein (1979) that examined social interaction and objective self-awareness. Fenigstein stated that the level of self-consciousness experienced by the individual affects attribution-making in group settings. The experiment hypothesized that people in a high self-awareness group would be more sensitive to group rejection and also attribute the rejection to personal attributes more than a person in a low self-awareness group. In this experiment the candidates were pre-screened for a disposition for either high or low self-awareness.

The procedure used was a waiting room guise, where participants supposedly waited for the real experiment. In the waiting room a number of confederates entered separately and then began a conversation, the real participant was either encouraged or totally rejected by the group. After a little time the experimenter returned and said the final participant was a no show and they had to be reassigned, in order to do this they had to fill out a questionnaire.

The results indicated that the group's behavior was adequate as the rejection manipulation, because "group favorability" measured by the participant on a seven-point scale was significantly lower in the rejection condition. The dependent variable of affiliation showed that participants in both the heightened self-consciousness condition and rejection by the group condition were less likely to want to join that group and liked the group less on average than that of other conditions. Within the rejection groups, high self-consciousness had a clear effect in lowering attractiveness of the group. Participants were asked to attribute the behavior of the group, for example "my anxiousness" 75% and "the group being rude" 25%, totaling to 100%. Those in the higher self-consciousness condition made higher internal attributions in contrast to casual attributions about the group.

Previous research essentially looks at how objective self-awareness is activated and how it is measured. This current research endeavor attempts to establish how an increase in objective self-awareness will affect a complex social interaction. It is therefore necessary to examine some of the studies that involve the chosen interaction, deception.

Research by Baston, Thompson, Seufferling, Whitney and Strongman (1999), on moral hypocrisy touched on this issue. Moral hypocrisy can be simply defined as when moral people fail to act morally. There are some horrific examples of this, that have been a recurring theme throughout the last century such as the Holocaust, My Lai; such types of atrocities continue around the world today, for example in Rwanda. Whilst ethical research would never wish to replicate such atrocities it can replicate a portion of the psychological realism despite having very low mundane realism. Baston et al. found that an increase in objective self-awareness led to an increased and heightened awareness of

disparities among people’s salient standards and their actual behaviors, which leads to an increased pressure to meet their salient standards and match the two. Also important to the various studies in moral hypocrisy is the salience of standards. Studies where standards were salient led participants to follow those standards, whilst in a state of high self-awareness, conversely those in conditions where the standard was unclear resulted in a change in the standard. In other terms, when the individual knew what the correct manner to act was, for example to tell the truth, they were more likely to do so if he/she were in a state of high self-awareness. However when the standard is ambiguous, for example the individual is not sure whether telling a lie is wrong, a change in standard was more likely. The individual was able to essentially pick whether they would lie or tell the truth.

The present study proposes that people who are made objectively aware through a television picture of themselves will have greater difficulty in deceiving another person. The awareness group will be more detectable as being deceptive by blind judges. This is because people can make the distinction that deceiving someone is an immoral act or discrepant with their salient personal standards. Those in the control group will have less difficulty because they will not have the obstacle of induced objective self-awareness by an image of themselves on a large television. They will not have to contend with the cognitive dissonance or self-discrepancy caused by deceiving someone and their perception of ideal self, which includes the ideals of right and wrong, i.e., their salient personal standards.

II. Method

Participants and Design

A total of 23 undergraduates (5 men, 18 female) from Introductory Psychology classes at Wagner College, a small liberal arts college, participated as part of a research participation option for course credit. They were assigned to one of two conditions, a self-focus condition or control condition.

Procedure

Upon arrival to the psychology lab participants were welcomed, they then read and signed the informed consent form. They were given an opportunity to ask questions about the form and about the experimental procedure, which was described in the consent form.

Participants were asked to sit behind a table. On the table was a 0.25L transparent cup containing 67.5ml of a concoction of Flavor-Aid mixed as per instructions except with two tablespoons of white vinegar and no sugar, to make the drink taste unpleasant, replicated from a study by Harmon-Jones, Brehm, Greenberg, Simon

and Nelson (1996). Participants were instructed to “convince” me, the interviewer, that the contents of the cup tasted good throughout a variety of questions (see Appendix). Feelings were ascertained at the end of the interview by asking the participants to honestly rate the drink on a verbal 10-point Likert-type scale (1=dislike extremely, 10=like extremely). The interviewer then gave instructions to the participant to complete the post-experimental questionnaire, and left the room.

Self-Focus Manipulation

In the self-focus condition participants were confronted by a 27-inch (0.69m) television that was placed adjacently with the interviewer, approximately two meters and a 30° angle from the participant. The television displayed a live feed of them during the interview. The video camera was out of sight, as it remained in the same location for both groups.

The control condition also had the same television in the same location except the interviewer’s coat covered it, to prevent a reflection from the glass of the television inadvertently inducing self-focus. The television was not powered. Participants in the control group were asked permission to use the video footage during the debriefing.

It should be noted that a variety of items were placed on the table next to the television with the video camera concealed from the participants within an open box.

Dependent Measures

Participants were asked to complete a self-reflection and insight scale after the interview at the table; the questionnaire was a replication from a study conducted by Grant, Franklin and Langford (2002). The questionnaire was scored according to scoring instructions set forth by Grant et al. This was used as a manipulation check for the self-focus versus control condition.

The deception measure was compiled by two independent blind judges on a scale of 1 to 10, where 1 is not deceptive at all and 10 is very deceptive. Differences between judges’ scores were averaged to obtain a single score for each participant. Judges did not see the participants’ verbal score of the drink’s quality, the last interview question, until the deception score for that participant was derived. As another measure, two different independent blind judges were asked to simply state if the participant was being truthful or deceptive. In the instance of disagreement judges were asked to discuss the participant and obtain a consensus. Both groups of judges consisted of one male and one female judge to counter gender bias effects.

III. Results

To test the hypothesis that an increase in objective self-awareness would create greater cognitive dissonance and reduce the participants' ability to lie, I ran a series of *t*-tests. Predicting that the dependent variables (judges' deception score and self-reflection scale) by condition (self-focus and control).

The *t*-test to test the experimental manipulation, which predicted that those in the self-focus condition would have higher self-reflection scores than those in the control condition, was not supported by the results, $t(21) = 1.07, p > 0.05$. Those in the self-focus condition ($M = 81.83, SD = 5.67$) did not have a significantly higher self-reflection and insight score than those in the control group ($M = 77.27, SD = 13.60$).

The hypothesis that those in the self-focus condition would have lower deception scores than those in the control condition was not supported by the results, $t(21) = 1.73, p > 0.05$. Those in the self-focus condition ($M = 4.48, SD = 1.73$) did not have a significantly lower deception score than those in the control group ($M = 3.36, SD = 1.31$).

The Chi-square analysis to test whether the participant's self-awareness had an effect on their ability to deceive also proved to be insignificant, $\chi^2(1df, N=23) = 1.11, p > 0.05$. However it did show a trend that was concurrent with the results of the *t*-tests. Within the self-awareness condition judges were incorrect 63.6%, the participants successfully deceived the judges, in comparison to the control group where judges were incorrect only 33.6%, the participants did not deceive the judges.

IV. Discussion

The results show that the hypothesis that objective self-awareness would decrease participants' ability to deceive in this case was not supported. There could be many reasons why the hypothesis was not supported. One very important factor is that the manipulation may not have been strong enough to cause a significant effect, as indicated by the first *t*-test. This was a surprise as I thought that the manipulation was very strong, if not almost exaggerated. Despite the results of the *t*-test many participants reported that the television indeed made them "feel weird" and were very aware of its presence.

It is possible that it was not a case of a weak manipulation but rather an ineffective measure of their objective self-awareness; perhaps an alternative method or questionnaire would have supported a significant difference between groups. However it is entirely plausible that the measure was effective but the experience of being in the laboratory heightened the control group's self-awareness. One interesting difference between the groups was the standard deviation within each group; the control group had greater deviation in its scores about the mean. It is conceivable that the manipulation had

a focusing effect on the range in which participants answered and therefore how they were scored by the judges. Perhaps the manipulation somehow had a restrictive effect on the participants.

Assuming that it was just the measure of the manipulation that failed the hypothesis could still not be supported. The *t*-test for the hypothesis that was insignificant, and in fact began to show results contradictory of the original hypothesis. Examining the means of the two conditions it is possible to see that self-focus condition had deception scores above that of the control condition, which supports the trend that both the *t*-test and chi square exhibit.

The results pose a problem, as they are contrary to previous literature (Insko, Worchel & Songer, 1973; Baston et al., 1999). One possible explanation that this was the case was that the first set of judges expressed difficulty differentiating between the participants' levels of deception. Judges felt as if all the participants were ineffective in their deception. The inter-reliability of the judges was correlated to show a mere $r = 0.48$ between the two. Previous research has also found that people have problems detecting deception and in fact are no better at detection than that of chance (Ekman, O'Sullivan & Frank, 1999). Some cases proved to be problematic as they evaluated the aversive drink in a positive way with scores as high as seven, whilst some others obviously seemed unclear on the instructions they received.

One pertinent issue was that some participants who scored particularly well on the deception scale by the judges, expressed during debriefing no problems in committing the act of deception because of the context of the situation. I would like to propose a natural performer hypothesis to explain this phenomenon. Perhaps the context of the situation for some participants acts as a catalyst to enhance their performance. Certain people, who I shall call natural performers, have a disposition to act. These are people who are extroverted by nature and socially gifted. Examples of these types of people could be musicians, actors and athletes, all of whom regularly find themselves in front of audiences and their performance under assessment. That being said vocation may not be an indicator as these personality types could excel in many fields. For the natural performer the chance to role-play would be considered a game. The television and the presence of the interviewer facilitate performance for the natural performer, who enjoys both the attention and evaluation.

Natural performers differ from other people who may feel uneasy in a similar situation; they are able to release and relax which would allow the experimental situation to become fun. This in essence would help facilitate performance, as from my observations of people they will exert more effort toward tasks that they believe to be fun.

There is some evidence to support this hypothesis. Deception is a social skill that is necessary to manage our day-to-day interactions. The motion picture *Liar Liar* starring Jim Carey made light of a lawyer's inability to lie for just one day, which emphasizes our need for this vital social skill. I would suggest that the natural performers have mastered this as well as other vital social skills, which is why they are capable of performing well, regardless of the condition to which they were randomly assigned. Of course at this point this is merely conjecture but could prove to be an interesting avenue of pursuit.

An alternative explanation for some of the results may be explained by the research by Giesler, Josephs and Swann (1996). Perhaps those who performed well had a negative self image. The implications of having a negative self-image are that the deception would still be considered a salient standard, but in contrast with a person with a positive self-image, they would expect to break this standard as a part of who they are to match their self-image. It is also conceivable that some individuals would deem an acceptable act. One would hope that the experimental control and random assignment should reduce the chances of this affecting the results.

Further studies should address why the manipulation was ineffective in this case. I believe that changing the methodology of this study could yield more significant results. Perhaps by having four conditions based on good drink versus bad drink and deception verses honesty condition would solve some problems. We could then ask judges whether the participant is either being honest or deceptive, as was the case with the second set of judges in this study. A Chi-square analysis could then be used to analyze the results. This experimental design would require more participants as the Chi-square has less power than the *t*-test. I also believe that further research should also be conducted to test the natural performer's hypothesis, as this would alter the way in which objective self-awareness would be perceived.

The implications of this research could be quite important for real-world application. If future studies find that objective self-awareness does indeed aid certain people's ability to deceive then locations such as police interrogation rooms would have to avoid the use of a one-way mirror during interrogation. Objective self-awareness as a phenomenon deserves further attention as it intersects with many areas of life, however as this study demonstrates the examination of these complex processes cause significant methodological issues that need to be rectified in future studies.

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Appendix A: Experimental Interview Script

Instructions: To be read by the interviewer in sequence. Questions that appear to be a closed question should be supplemented by a follow up question of why? This will also be a means of prompting participants who give short answers to some of the more open questions.

As you can see in front of you there is a cup with a drink in it. I would like to ask you some questions about the drink. But regardless of how you feel I want you to convince me through your answers that you like the drink. Please sample the drink and I'll begin.

1. How would you describe it?
2. Did you like it?
3. What specifically about the drink did you like?
4. Is there anything about the drink you disliked?
5. Would you buy this in shops?
6. What type of people do you think would enjoy drinking this drink?
7. What type of drinks do you drink everyday?
8. Is this something you would be able to drink everyday like [response to question 7]?
9. Would you recommend this to your friends?
10. If I were one of your friends, what would you say so that I would taste this new drink?
11. To conclude how do you feel overall about the drink?

After response to question 11.

Now on a scale of 1 to 10, where 1 is means dislike strongly and 10 means like extremely I want you to give me your honest opinion. How did the drink taste?

Section IV: Critical Essays

Gender as Performance in *Todo sobre mi madre*

Lindsay Beren (English)¹

At the moment of our birth we are sexually identified as either a girl or a boy. Consequently, we enter this world with a fixed gender identity. Most of us would not think twice about this idea. But... what if I were to challenge this notion and say that we are not born into our gender, but rather we create this identity through the course of our conscious actions? Judith Butler, a feminist critic, claims that “identity is not something planted in us to be discovered, but something that is performatively produced by acts that effectively constitute the identity they are said to express or reveal” (2487). Ultimately, our lives consist of a series of performances, and it is through these performances that we create our gender identity.

In the extraordinary award-winning Spanish film, *Todo sobre mi madre*, Pedro Almodóvar explores this issue of gender identity. His work exemplifies Judith Butler’s critical theory and in the process, makes a captivating argument of gender as performance. Almodóvar uses the art of cinematography in order to show how, as capable human beings, we create our identity through the act of performance. He portrays female characters who are full of depth and insight; in doing so, he shows the inevitable role of performance in creating their identity. For Almodóvar, “life is a divine form of acting.” Thus, we are all actors playing a part, and that role becomes the powerful source that we use to construct our gender identity.

First, we have the intriguing character of Agrado, played by actress Antonia San Juan. The interesting aspect of San Juan and her character is the fact that she is a woman playing the role of a man who in turn is playing the role of a woman. Immediately, Almodóvar shows us the unique layering of Agrado’s character and invites us into the complex world of gender performance. Butler, in her article, gives power to Almodóvar’s portrayal of Agrado. She says, “Being female constitutes a cultural performance rather than a natural fact” (2489). For Butler, gender is a kind of continuous impersonation that becomes reality. Agrado, in her poignant monologue, reveals the way in which her identity is the result of a continuous sense of conscious attitude and behavior. In a particular scene, Almodóvar begins by using imaginative cinematography and illumination in order to create an effective double force. The camera focuses on the

¹ Research performed under the direction of Dr. Marilyn Kiss (Languages) for a Faculty Masters Presentation (April 26, 2005).

side of Agrado's face. Suddenly, a bright white light takes over the screen for a second and then this light transforms into a spotlight on Agrado. This becomes an illumination in both a literal and a figurative sense. Almodóvar is about to give us insight into the true nature of gender identity. The white light significantly becomes the spotlight in order to imply the connection between gender and performance. Agrado appears in the center of the stage, and her monologue becomes the focus of the camera and in parallel, the focus of the scene. The structure of this scene is so significant because it is a direct reflection of the idea of gender as performance. Agrado announces that she is here to entertain the audience due to the fact that the show, a staging of *A Streetcar Named Desire*, has been cancelled. Almodóvar creates a performance within a performance, within even another performance. San Juan plays the part of Agrado, who in turn is performing for this audience. Further, Agrado reveals that she is really a male who has shaped her female identity through a series of performances. It is important to see that Almodóvar uses a medium plane in order to focus on Agrado, and more importantly on the image of her body. The actress's appearance is extremely significant here because she appears to have all the features of a woman. Further, she is dressed in a pink sweater and red leather pants, which are colors that have become associated with and tend to emphasize femininity. She has created a physical appearance for herself that has helped her build her identity as a woman.

Almodóvar then shifts the focus of the camera closer in on Agrado so that we can see her genuine facial expressions and link them to her interesting dialogue. She says that she is "authentic," but then ironically she goes on to list all of the physical changes that she has made to her body in order to create a female identity. Her authenticity lies in the fact that Agrado is aware that she performs her role as a woman each day and in this particular moment, she reveals the truth behind this identity. Yet, at the same time, she says that she had to undergo all of this surgery in order to fully perform her identity because gender is a created element. Butler's theory supports Agrado's discourse in that she believes that "the inner truth of gender is a fabrication; thus genders can't be true or false, but are only produced as the truth effects of a discourse of primary and stable identity" (2497). It is obvious that Agrado's speech is the result of a stable, created self-identity that she has produced and validated with strength and confidence.

Almodóvar switches gears and shifts the focus of the camera to a general plane of the audience in order to show the overall reaction to her speech. They laugh and clap enthusiastically, seeming content with Agrado's speech. Her sense of self-assurance in her created gender is obviously very strong because the audience praises her authenticity.

It is vital that we look under the surface of this scene. We notice the large quantity of males in the audience and it is inevitable that we associate these figures with the powerful idea of the gaze. According to the feminist critic, Laura Mulvey, we are

overwhelmed with images of the male gaze, which generally is directed from males to females. Although directors sometimes subvert this gaze, here, Almodóvar clearly presents the males as strongly gazing upon Agrado. In doing so, he reaffirms Agrado's ultimate success. The males gaze upon her and accept her as an object of femininity; thus she has built her desired identity and achieved her goal of acquiring a female identity. This entire scene is an incredible depiction of Almodóvar's view of gender as performance. Agrado's identity in itself is the result of a lifestyle of acting. Her monologue is a performance that serves to reinforce the idea of acting one's gender. Agrado is who she is because she has shaped her identity as a woman. As Butler claims, "That the gendered body is performative suggests that it has no ontological status apart from the various acts that constitute its reality" (2497). Through her actions, Agrado has made her female identity a reality not only for herself, but for everyone around her.

Another particularly interesting character is Lola, the transvestite. Lola, played by Toni Canto, also creates her identity as a woman by performing her role as a nurturing, sincere female figure. In one of the final scenes of the film, Almodóvar shows the way in which Lola completely indulges in the qualities of femininity and builds her gender identity. First, the camera shows a distant focus on Lola in order to give us a general idea of her appearance. She is an attractive woman with a pretty face and an appealing figure. Next Almodóvar makes the careful decision to change the focus of the camera onto Manuela (Cecilia Roth) and Lola together. He uses the first plane in order to emphasize the intimate interaction between both women. We are able to see the details of their faces, as well as the expressive actions of their shoulders and their arms. In using this technique Almodóvar shows the tender and loving nature in which Lola takes the child, which is "her" son with Penelope Cruz, from Manuela's arms. This emphasizes the way in which she performs her role as a female. She shows her great sensitivity, along with her motherly instincts in handling the infant "she" engendered.

It is important that we notice that after Manuela gives Lola the photograph of Estéban, who is Lola's son with Manuela, Almodóvar chooses to shift the focus of the camera to a close-up of Lola. Now, we can see Lola's deep emotion in response to the picture of "her" dead child. Lola begins to tear, which becomes another way in which she plays out the role of the woman. In support of this idea, Butler proposes "we understand sex and gender as citational repetitions. We understand the meaning of woman or man as a result of cultural definitions. Individual actions then cite these meanings and play off them in various ways" (2486). This is precisely what Lola is doing. She engages in the warm, tender nature that has become associated with women; thus, she performs her role as a female and gives credibility to her identity. Lola's character endorses Butler's theory that "if reality is fabricated as an interior essence, that very interiority is an effect and function of a decidedly public and social discourse, the public regulation of fantasy

through the surface politics of the body, the gender border control that differentiates inner from outer, and so institutes the ‘integrity’ of the body” (2497). In her performance as a woman, which ultimately becomes the essence of her identity, Lola demonstrates the way in which her appearance and her actions are so genuine and passionate that the public fully accepts her female identity without any sense of doubt or uncertainty, even knowing that “she” has fathered at least two sons.

Almodóvar further promotes his theory through the use of the key image of the baby. The camera quickly focuses on a close-up of the child and then returns immediately to the image of Lola. This creates a connection between the preciousness and gentleness of the baby and the beauty, sensitivity and the delicate nature of Lola. Lola handles this entire situation in a feminized manner. She acts the role of a nurturing, motherly type of figure, and so, this becomes her identity. Through his extraordinary film techniques, Almodóvar invokes a great sense of irony. On one hand, we are aware that consciously, Lola has created her identity as a female; however, at the same time, it is evident that her behavior is genuine and sincere. This is just one of the many ways that Almodóvar demonstrates the art and power of film. By creating this juxtaposition between theory and image, he empowers the theme of gender as performance. Butler suggests “that drag fully subverts the distinction between inner and outer psychic space and effectively mocks both the expressive model of gender and the notion of a true gender identity” (2487). As the audience, we cannot help but see this theory put into action with the character of Lola. As a transvestite who shifts her identity with such incredible skill, she challenges the powerful notion of fixed gender identity, forcing us to see its complex, yet intriguing nature.

Almodóvar clearly demonstrates the way in which his female characters perform their gender identity. At the end of the film, in his credits, he makes a powerful dedication that becomes the ultimate reinforcer of his argument. He dedicates the film to all of the actresses that have been mothers and mothers who have been actresses. In doing so, Almodóvar makes a strong and final implication here. In the end, life is a series of performances and everyone is an actor. A mother is no different from an actress, but rather, her identity is built through the act of performance. In a film review in the New York Times, it states, “In *All about my mother*, the world of acting becomes a source of inspiration to women as they improvise their way through their own lives with the kind of strength, passion and humor this filmmaker has always celebrated.” In a sense, acting allows an individual, whether a man, woman, transvestite, etc., confidently to build his or her identity and to find the strength and power of self-definition. After forming such a profound connection between Almodóvar’s film and Butler’s theory, it is inevitable that we acknowledge the power of gender as performance. As we have clearly seen, we are

not born with a fixed gender. Ultimately, we are responsible for our identities; we enter this world with a blank script, and it is up to us as to how we decide to play it out.

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Flâneuses et Vagabondes:
Women on the Run in Contemporary French Cinema

Jake Brown (History)¹

“The cinema is an invention without a future” stated Louis Lumière, who, with his brother Auguste, have been credited with having the world’s first public film screening in 1895, where thirty five people paid one franc to see the *Frères Lumières’* ten films of less than one minute each in the basement of the Grand Café. Louis suspected that people would bore of the everyday images shown in film; after all, one could just as easily watch people going about their daily lives in the streets of Paris (Singerman 10-12).

It is a well known fact today that the images in film transcend borders, cultural differences and time. At the same time, though, a country’s cinema reveals to an audience characteristics of that nation’s culture. French films, though becoming more introduced into mainstream American media with the “*film du look*” genre as seen in Jean-Pierre Jeunet’s *Le Fabuleux Destin d’Amélie Poulain*, have characteristics unique to their origins. These films tend to be made on a lower budget (though there are some higher budget studio-made films). Most unsettling to an American audience is the open-ended ambiguous conclusion and longer, sometimes dialogue-lacking scenes. French films, true to life, do not have complete resolutions. The audience is asked to think, discuss and theorize what happens to the characters they have been watching. Also, whereas American film producers are less eager to spend money on scenes that do not directly add to plot, French films often immerse their audience in everyday scenes of human actions and interactions.

Just as films differ due to the cultural background of the director, gender makes a difference as well. The style of a film directed by a woman is not insofar different due to the inherent differences between the sexes, but because of the relative social differences and hardships women encounter. Even with significant changes in society’s outlook and perception of women in the past half-century, women in the film industry are still perceived, as Simone de Beauvoir explained, as the “Second Sex” (Tarr 8). Agnès

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Varda, seminal director of the French New Wave cinema states the following about her approach to filming women:

A woman must not be defined by the man who looks at her, by the gaze of men, by those men who have oppressed her: her father, her husband, her lover, her brother all looking at her, and she herself, who has become accustomed to existing by this gaze. The first feminist gesture is to say, well, okay, they may be looking at me, but I'm looking too. The act of deciding to look and deciding that the world is not defined by how they look at me but how I look at them. (Gillain 205)

The film genre I will be discussing is termed the "road movie", a genre that French female directors frequently lean towards (Tarr 14). Generally considered an American male genre, most often associated with Jack Kerouac's *On the Road* in 1957 and Denis Hopper's *Easy Rider* in 1967, the road movie provides "a ready space for the exploration of the tensions and crises of the historical moment during which it is produced." (Tarr 228) The road movie, though, also has a place for feminist discourse just as Ridley Scott's *Thelma and Louise* (1991) demonstrated a "refusal of the male world and its law." (Tarr 228) In France the road movie is a relatively new genre. Furthermore, it would appear that French female directors use the road differently than their American counterparts. Unlike the solidarity between Thelma and Louise who are on the road together, French female directors use this genre to explore the liberation of women who find themselves alone. This is clearly portrayed through the main female character in Agnès Varda's *Sans toit ni loi* (1985), Mona, who escapes the patriarchal constraints of French society by wandering and traveling through the French countryside by herself. This experience, fails, however, at empowering and uplifting the protagonist from patriarchal societal norms.

The character Mona in *Sans toit ni loi* personifies the ideal of the "flâneuse". The notion and definition of the *flâneur* (*flâneur* is the masculine noun and *flâneuse* is feminine) is unique to the French language. Loosely defined, *flâner* is to stroll, especially in urban areas; for fin-de-siècle Parisians, *flâner* had become a way of life. The contemporary *flâneur* would sanctify the words of Balzac --- "To walk is to vegetate, to stroll is to live".

To the modern individual, there seems to be a romantic attitude and reverence towards the *flâneur*. A current New York based magazine, *Flâneur*, states its mission as "dedicated to the celebration of urban life, the sanctification of the stroll." Edmund White's recent book *The Flâneur* (2001), presents the typical *flâneur* in the following way: "Endowed with enormous leisure, someone who can take off a morning or afternoon for undirected ambling, since a specific goal or a close rationing of time is antithetical to the true spirit of the *flâneur*. An excess of work ethic (...) inhibits the

browsing, cruising ambition to ‘wed the crowd’. Americans are particularly ill-suited to be *flâneurs*” (40). Americans, according to White (who was born in Cincinnati), rely too frequently on tour books and are more focused on self-improvement and goals --- not strong attributes of the *flâneur*.

In *Sans toit ni loi* Mona relies on *flanerie* as a form of escapism from the pressures of society. The character does not keep her travels to the cities, however, as she travels through the unforgiving barren snow-covered fields and small villages of the French countryside. In English, the closest word to describe the lifestyle of this character would be a vagabond. This term also happens to be the title that the American distributors chose for Varda’s *Sans toit ni loi*, which translates as “Without Roof or Law”. The French title also offers a clever double entendre. The word “*toit*”, is “roof”, yet when spoken, “*toi*” can also mean “you” --- “Without You or Law” --- since the final “t” is silent. The American distributors, however, decided to give the film a one-word, perhaps more catchy title: *Vagabond*.

Agnès Varda has been making films for more than fifty years, alternating between works of fiction and documentary pieces. Trained as an art historian at the *Ecole du Louvre*, she was unsatisfied with theoretical studies and wanted to explore other creative avenues. She became a photographer and worked as the official photographer at the *Théâtre National Populaire* (Smith 3). Varda began working on *Sans toit ni loi* by traveling through the countryside of Nîmes, being a *flâneuse* herself, meeting marginal people in the shelters and train stations at night. When she returned to Paris and met with the producers of the film, she had no written script and claimed that writing “is fixed in the imagination and needlessly diverts energy”. (Singerman 352) She presented the producers with a two-page synopsis based on the following subject matter: “a young rebellious and lone girl walks the road until she freezes to death”. (Singerman 352) During the shooting of the film, her cast and crew stayed in hostels in Nîmes while she wrote the dialogue for the day in the car on the way to the set. The filming lasted two months (Singerman 352-353).

Shot in winter in the Southwest of France, *Sans toit ni loi* has been coined Varda’s *Ulysses* (Flitterman-Lewis *Vagabond* 1) Her sixth feature film and to date, her most successful one, the film garnered awards such as the Golden Lion from the Venice Film Festival in 1986 and the César for best actress, Sandrine Bonnaire, who plays Mona. The film, which investigates the death of Mona, was made without a finished or detailed script and with a mix of professional and non-professional actors. Varda’s original intention was to make a documentary about the rural poor; hints of this are presented throughout the film, especially through the people Mona meets on her journey, such as a goat farmer and North African vineyard workers, from which Mona receives a bright red scarf, juxtaposed against her tattered black leather jacket. (Tarr 235)

Varda has modeled her film on, and given us the inversion of, Welles' *Citizen Kane*, a classic film for modernist American cinema. In her own words:

If you tell the story of *Citizen Kane* it's not much of a story. An old rich mogul man is dead. He said a word we don't understand. We don't discover so much, just some pieces of his life and finally it is just a sled. Is that a story? It is not much. So what makes *Citizen Kane* so interesting is the way [Welles] told us about the man --- intriguing us about what people think about him (Flitterman-Lewis 1)

Varda has done just the same. The audience doesn't learn much about the main character of this film; portions of her life are presented through brief vignette, mostly through the perception of others (peasant farmers, migrant workers, female professionals, male truck drivers, other vagrants) and their subjective reactions to her journey.

Sans toit ni loi begins with the discovery of Mona's frozen corpse in a ditch and ends with her falling to her death. Interspersed throughout the film are testimonies (made to look like interviews) from the people who had come into contact with Mona during the last few weeks of her life along with single tracking shots vaguely documenting Mona's movement (Tarr 235) from "triumphant wanderer with leather jacket and pack to frozen, crying vagrant in tattered boots and wine-soaked blanket" (Flitterman-Lewis 288)

The film begins with the audience thinking that perhaps this is a mystery. A woman has fallen and died; police find red stains in a phone booth. The cinematography is similar to news footage. However, the police rule out foul play and the audience soon realizes that this is not a mystery and their expectations change. The odd stains are a clue, yet perhaps a misleading one; they are the Rosebud of *Sans toit ni loi*. In a sense, Varda forces the audience to keep readjusting their expectations of the film: "the spectator has to continually change the preconceived ideas which spring up in the face of incomplete evidence, and we also watch as a series of different people form *their* expectations of Mona and cope with their destruction." (Smith 116)

After the discovery of Mona's corpse, the film reverts to a series of flashbacks until it ends abruptly on the same shot as the opening scene with her dead body. We hear the voice of the narrator, which is Varda's, as the image of Mona in a body bag is being zipped cuts, to a scene of the beach with a very distant naked Mona coming out of the sea:

No-one claimed the body: it went from the ditch to a potter's field. This woman, dead of natural causes, left no traces. I wonder who still thought about her among those who had known her as a child. But the people she had met recently remembered her. These witnesses have allowed me to tell the story of the last weeks of her last winter. She had made an impression on them. They talked about her without knowing that she was dead. I thought it best not to tell

them, or that she was called Mona Bergeron. I know little about her myself, but it seems to me that she came from the sea (*Sans toit ni loi*).

This voice is Varda's, but is Varda truly the narrator? Some have claimed that the narrator is one of the other female characters in the film, possibly the professor Mme Landier, who meets Mona halfway through the film. This would make sense since Landier is one of the few characters with an education and the means to make a film on Mona's life. It is also a possibility because the tone of the narration is similar to Landier's curiosities about Mona and her own reactions to the character as a mother figure. Also, Landier's appearance introduces a shift in the nature of the flashbacks, with dramatic shifts in time and space, whereas up until her appearance, the flashbacks were following strict chronological order. Finally, the character has a physical resemblance to Varda, much as Mona is based on Settina, a homeless woman Varda met while in Nîmes (Smith 126-8).

Contrary to what the narrator claims, Mona has indeed left traces --- strong memories --- found in the testimonies of her witnesses. In fact Varda makes it clear that this is not Mona's story, but one that has been reconstructed through the impressions of the people Mona has come into contact with during the last weeks of her life (Smith 118). The witnesses can be seen as the collective authors of Mona's life, and Mona is part of who they are; she represents their fears, their need to be free, their passions, their desire to escape patriarchal norms.

Of the eighteen testimonies in the film, three subdivisions can be made: "indirect address, direct address, and modified direct address" (Flitterman-Lewis 1990 304). In the indirect address, the easiest to point out, the characters speak among themselves as the audience is a cinematic voyeur overhearing their conversation about Mona. In direct address, the character speaks directly to the camera, reinforcing the idea that this is a "true story". The modified direct address, however, is the most prevalent and consists of the witnesses giving an address to the audience in close-up shots, yet they are speaking to someone on the screen who is masked, usually in the right-hand corner. This gives the impression that although the characters are submerged in the fiction of the story, they are giving direct recollections to the audience, tempting the audience to further immerse themselves and make judgments on Mona's life (Flitterman-Lewis 1990 304-5).

The series of shots tracking Mona's journey also leave the audience jarred. Varda redefines the way in which Mona is looked at by using an unconventional method of filming her travels by panning the camera from right to left -- in the wrong direction, against culture, against mainstream society. Mona also escapes the audience's view as she is constantly walking into or out of the frame, eluding us, never letting herself get caught in the male gaze (Tarr 235).

As the audience understands from the beginning of the film, Mona's vagabond lifestyle leads to her death; Mona cannot totally escape the clutches of societal norms. In 2001, several years after *Sans toit ni loi*, Varda shot the documentary film entitled *Les Glaneurs et la Glaneuse*. Here the story line features the lives of the homeless and rural poor. It is interesting to note that this was her original intent for *Sans toit ni loi*. *Les Glaneurs et la Glaneuse* (translated as the (male) gleaners and the (female) gleaner, where the female gleaner would be Varda herself) is a strong social commentary on the wastefulness of society and the art of gleaning, a term dating back to peasantry where one would follow the farmers harvesting, picking up the unused fruits and vegetables. Varda links this to homelessness in the city and the art of gleaning wasted, discarded food. This project had been originally intended for *Sans toit no loi*, but perhaps Varda was so caught up with the story of Mona that she could not resist making a film on a woman's story of rebellion and escape from the patriarchal world.

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Growing Up Indian American

Naveena David¹

Have you wondered what it would be like to grow up being part of a completely different culture other than your own? By this I mean to speak another language or to have different values, beliefs, and norms? Born as a first generation Indian American, my family and I have faced and still face many challenges that can be considered both positive and negative. After much research and interviews within my family, it is clear that being an Indian in America has its pro's and con's. The event of my parents moving to America played an important role in how our family has been shaped and how it has personally affected me. There were various conflicts that my family had to deal with including the historical events and the cultural change of that time both in America and in India. Along with the conflicts of the two cultures came different expectations on my family and on myself. Looking back into my childhood, there has been a variety of personal experiences in my family that have shaped my own sense of identity.

An influential event that occurred in my family was the decision of my parents to move from their home in India to the westernized country of the United States of America. This event has shaped our family's beliefs, customs, habits, way of thinking, education, social life, and much more. In an interview with my mother Joby David and father Abraham David, I was able to understand their main reasons for moving to America. Their reasons were to live the American Dream in a land full of opportunities and to financially live a more comfortable life. In an interview with my father he stated that "At that time the economic opportunity in America was better than in India. If you were qualified and if you had the requirements you could find a job and you can, you know, fulfill your dream." My mother stated that she moved to America to "support my family and to further my education." In order for my mother to further her education, she had to fit the qualifications of the Immigration and Nationality Act in order to come to America.

On October 3, 1965 the Immigration and Nationality Act also known as the Hart-Cellar Act, was passed to allow Asian-Indians with professional degrees to immigrate to the USA (Khairullah 1999: para. 5). Under this Act, 170,000 immigrants from the Eastern Hemisphere and 120,000 immigrants from the Western Hemisphere

¹ An autoethnography research paper written under the direction of Dr. Jean Halley (Sociology) for SOC301 *The Family*.

were granted residency in America. The Immigration and Nationality Act abolished the national origins quota system (the Immigration Act of 1924 and the Immigration and Nationality Act of 1952), which eliminated the national origin, race, or ancestry as a basis for immigration to the United States. According to the U.S. Citizenship and Immigration Services (2003), the significance of the bill was to “establish allocation of immigrant visas on a first come, first serve basis, subject to a seven-category preference system for relatives of U.S. citizens and permanent resident aliens (for the reunification of families) and for persons with special occupational skills, abilities, or training (needed in the United States)” (para. 2). With the influence of the Immigration and Nationality Act my mother was able to obtain a visa with her educational background as a licensed nurse. In 1979, my parents had an arranged marriage and came to America in hopes of starting a new life as the first generation to actually live in America.

The decision of my parents moving to America created many cultural, racial/ethnic, and adaptive conflicts for my family. A major conflict my parents faced was the language barrier. Coming straight from India, my parents’ main language was Malayalam and they only knew a certain amount of English. Their thick Indian accent caused conflict at times in searching for jobs and everyday communication in society, because it was hard for others to understand them and it was difficult for my parents to understand such fluent English. My oldest sister Nisha also had a problem with language at a younger age. She was placed in remedial classes because she would confuse English words with Malayalam words.

Along with the confusion my sister dealt with, my family and I also had to deal with different conflicts based on ignorance from others around us. Every member of my family has had different racial experiences that have influenced the way they live and how they look at themselves. After a person experiences racism and ignorance on a daily basis, many ideas about how one perceives his/her life are imbedded in a person and affects them significantly. There has been many times where I find myself in a situation where I feel uncomfortable because I am a person of color. For example, many times when I go shopping and enter a store where the customers and employees are predominantly white, I always feel that people are looking at me differently and that the employees are keeping an eye out on me, fearful that I may steal a product from their store. Dealing with these experiences almost everyday has personally made me more aware of the fact that the color of my skin is different from others.

In addition to the ignorance that my family and I dealt with, we also found ourselves struggling between two cultures with different values, beliefs, and norms. We are part of a collectivist society in India where decisions are made as a group. We are also part of an individualistic society in America, where there is more freedom given to the individual (www.dictionary.com). This idea of collectivism and individualism was

mentioned significantly in the interview with my parents and also in my research. In the interview with my parents, I asked them what they faced raising three girls in America. My mother stated that “Unlike most of the Americans, I had no family support.” My fathers’ initial response to my question was “We had to raise our family without the help of other members of our family involvement, like grandparents. They used to be part of our life. So it is a big impact, you know, without the close family’s involvement.” Later on in the interview he stated that in India “The community was more involved, especially in the religion. It had more power over the family. Here it is more independent, so we didn’t get that much community support in raising children.” My parents’ statements correlates with the information found in Gregory L. Pettys and Pallassana R. Balgopals’ (1998) article called “Multigenerational conflicts and new immigrants: An Indo-American experience.” In their research, they focused mainly on the conflicts that different generations face being Indo-American. An important topic they discuss is the difference in beliefs, traditions, values, and world views between Indians and Americans.

Indians tend to come from a more collectivist culture, while the American western culture is based on autonomy and individuation. By this, it is meant that an American identity is based on individual characteristics. In contrast, an Indian’s behavior and source of identity is defined by group membership and internalization of group values rather than individual independence (para. 13). Examples of group membership include the family, the caste, the religious group, or the country. The idea of collectivism and individualism greatly influences the reasons as to why an Indo-American may be confused and have conflicting issues as to where he/she may stand in society and as an individual.

An example of collectivism is the joint effort by families and friends to raise children. In India, my parents were not only raised by their parents, rather they were raised by their grandparents and other family members. When they came to America, they did not have the advantage of having their parents or family members with them, so it was hard for them to raise their own children they way they knew how to. They grew up a certain way and they had to use whatever support they had from friends to help raise my siblings and I. Personally, I feel that this made a huge impact as to how I grew up and how I look at myself. Growing up, I did not have the advantage of knowing my grandparents very well and I remember many of my classmates being very close with their grandparents. I never had the opportunity to have such a close relationship as my American friends had with their grandparents. My relationship with my grandparents was unique and was understood in a certain way. My sisters and I have the utmost respect for our grandparents regardless, because we know how much effort and work they put into our parents to give us the lives that we have today. In a way it cannot be explained

because the issue of respect is just known and understood within our culture, which creates more conflict with my family living in America.

Pettys and Balgopal (1998) state that “Respect is often cited by parents as a primary Indian family value, and they believe children in the United States are not generally taught to respect their elders” (para. 41). The issue of respect has always been a hot topic within my family and relatives. I always remember hearing my parents say something to the effect of “If you were in India you would not act like this,” or “You American children do not know the meaning of respect for your elders.” In the case of my family, it is true that my sisters and I did not have the same amount of respect that my parents had for their parents. My parents were very strict compared to other American families and liberal compared to other Indian families. They make sure that we respect our elders and present ourselves in a well-mannered fashion. My siblings and I learned the concept of talking back to our parents in America because it was what we saw and learned in our surrounding environment, whether it was on television or observing other American homes. When I talk to my parents now, they always tell me how talking back to one’s parents was never thought of or discussed in India. They did exactly what their parents told them to do and never disagreed. In India, talking back to elders is disrespectful and looked down upon because a large portion of the Indian culture is based upon the wisdom of the elders and the respect that is held for them. In a way, you are mocking an elder’s intelligence and knowledge when you act as if you are talking down to them.

In Pettys and Balgopals’ (1998) research it was also mentioned that along with giving parents unconditional respect, it is also one’s duty to take care of them when they are aged (para. 16). An example of this is shown with my parents and my grandparents today. My grandfather has been staying in my home and the homes of my aunts and uncle for as long as I can remember. Ever since he started getting sick, my mother and her siblings would take him in and do everything in their will to take care of him. Today he is living with my family and is constantly taken care of by my mother, my sister, or a home nurse. In contrast, I notice that Americans usually tend to bring their parents to nursing homes and visit them once in a while. This concept has never crossed my parents mind and has yet to cross my mind.

An important topic that I discovered while researching and looking at past experiences is the issue of acculturation. In Durriya and Zahid Khairullah’s (1999) article titled: “Behavioral acculturation and demographic characteristics of Asian Indian immigrants in the United States of America,” they defined acculturation as a learning process whereby at least some of the cultural patterns such as behavioral norms, values, characteristics, and language of the host country are adopted (para. 2). Their study “measured behavioral acculturation of the first generation Asian-Indian immigrants in the

US; explored the extent of behavioral acculturation amongst them; and examined the relationship between the degree of behavioral acculturation and selected demographic characteristics of these immigrants” (para.1). In order to measure the acculturation, the Szapocznik et al. scale was used and the results of the study confirmed that the scale is a good measure of behavioral acculturation for the study of Asian-Indian immigrants (para. 2). The study helped researchers to determine ways to assist groups of immigrants to adjust in the new environment they are placed in. They believe that “An improved understanding of Asian-Indian immigrant patterns of acculturation in the USA would enable more effective communication with immigrants and also allow the agencies to develop social program’s that will help immigrants to cope with the host environment, and to reduce problems of economic, cultural, and social adjustments in the USA” (para. 40).

When my parents moved to America, the idea of acculturation was forced upon them because in order to survive they had to learn the behavioral norms, values, language, and characteristics of America. As stated before, the language barrier for my parents was difficult when looking for jobs, and it still is a problem to this day. It was very easy for my sisters and I to become acculturated because we grew up in America and were taught to speak English in school and at home. This created a lot of conflict for us because we had to understand and live like an American, yet also maintain our culture at home. Adding to this idea is the fact that my sisters and I cannot fluently speak our native language, yet we can understand it perfectly. The reason for this is because my parents never forced us to speak back to them in our language. They always talked to us in Malayalam and we understood. Now, I regret my parents never asking me to speak back in my language because I yearn to speak my language fluently. It is very important for me to maintain my culture and pass it on to my children.

Being both Indian and American, I found that there were many cases in school where I would not understand what my friends were talking about because I grew up differently. I felt like I missed out on a lot of “American” things because my parents raised me as an Indian at home. This also caused conflict between my generation and my parents’ generation. They only knew so much about the American culture, while we understood a lot more because we grew up in America and our social life was revolved around American social norms. I can recall many times where my sisters and I had to explain common sense ideas to my parents because they were never taught certain ideas and concepts that we were taught. Similarly, my parents have to explain common sense ideas about India to us because we never experienced a life in India. In Pettys and Balgopals (1998) article it was stated that “Indo-American youth are particularly vulnerable to feeling lost in both Indian and American cultures and need support as they struggle with their identity” (para. 3).

In some ways, I feel like it is a constant battle to be who I am everyday because of my culture. However, I know I would not change my background for anything because it makes me the unique individual I am today. I believe this has to do with the fact that I am maturing and living away from my family and I find myself appreciating my culture and wanting to know more to educate myself about the Indian culture and its history. This also has to do with the fact that I never grew up around a lot of Indians and most of my friends were Caucasian. I sometimes felt alone and yearned to know more Indians and understand my culture. In Pettys and Balgopals (1998) article it stated that “Gradually, as they mature, the children begin to accept more of the Indian customs and an Indian identity becomes more important, often as a result of leaving home” (para. 47). In association with the idea of keeping my culture, my parents found it very important for my sisters and me to maintain our culture in America. In an interview with my father he stated “We like to maintain our culture, including the language and church membership. We maintain some of those connections through associations and get-togethers.” Throughout my childhood, my parents stayed in close contact with other Indian families who lived close by. They were the closest thing to a family that we had growing up and we continue to have get-togethers on special occasions.

Another important idea in the topic of acculturation that I came upon in researching, was the study done by Anju Jain and Belsky (1997) called “Fathering and acculturation: Immigrant Indian families with young children.” Their study was focused around the patterns of father involvement and the influence of acculturation. Their analysis revealed three types of fathers: engaged, caretaker, and disengaged. As a result of their study, they found the relation between fathering and acculturation. It revealed that men who belonged to least acculturated families were the least involved (disengaged) and the fathers who were most acculturated were more involved in almost all dimensions of fathering (engaged) (para. 1). This may be the case because those fathers who were more acculturated were influenced by the American culture and its ideas and philosophies that are held concerning family life and what it means to be a parent. Those fathers who belonged to least acculturated families were never taught those American ideologies and therefore they practice what they were taught. A vital idea that was mentioned in this study is that some characteristics in acculturation are acquired easily and at a fast rate, such as language and dress customs. However, others traits such as sentiments or stereotypic socialization practices, take longer and are harder to fully understand and grasp (para. 7). This relates to the idea of parenting and the emotional and mental process that parents learn in a host country.

Growing up I always observed and compared different families with my own family. In other Indian homes I saw that many of the fathers were strict and never interacted too much with their children. My experience at home was completely different

compared to theirs. My father played a significant role as a caretaker in my home. Since my mother was the main breadwinner in our family, my father had to drive us to school, come to school events, and do small tasks such as grocery shopping. My father was and is significantly sensitive to his children compared to other fathers. I believe that since he spent so much time with us, he knew our needs and wants, which gives him an understanding of his children. He stated in the interview that “We learn through experience that we have to dedicate more time and energy to raise children here. We spent more time with our children. Usually grandparents used to take care of the children. Here we are directly involved in raising children, even in their every step.” My mother, on the other hand, was perceived as the parent who “wore the pants in the family” and would be strict and enforce rules on my sisters and I. I agree and can identify with the results of Jain and Belskys’ study because I see that my father has adapted (acculturated) to many of the customs and behaviors of America, in comparison to other fathers.

As an Indian American, I grew up knowing the stereotypes of Indians in America and the expectations from our parents, friends, and relatives. In Durriya and Zahid Khairullah’s (1999) they stated that “Among the immigrant professionals in the USA, foreign-born Indians are the highest paid group with an average annual income of \$40,625. More than 67 percent of them hold an advanced degree and are concentrated in the metropolitan areas of the USA” (para. 5). It is well known throughout the Indian community and even the American community that Indians are very well educated and most of the jobs they acquire are as doctors, lawyers, engineers, and other well paid and advanced degreed jobs.

The idea of the stereotyped view of Indians working in particular fields goes along with the expectations that our family has for us. It is expected from our relatives and family members that you obtain a good education, acquire an advanced degree in a field of study, and become well off financially. In my personal experience, my parents always pushed me to get good grades and always told me that I could do better. This has greatly affected the person I am today because I still strive to get the best grades, however instead of getting good grades for them, I do it for myself. My parents have taught me to challenge myself and to always strive for the best in life. When I was younger, my parents expectations on my grades started to affect me and I started to become stressed. As I grew older I understood that they only want the best for me so that I can survive in a competitive society.

An additional expectation of my parents is for my sisters and me to get an arranged marriage to whomever they chose. I never fully understood the concept of arranged marriage when I was younger and was fearful of the concept. Growing up, my parents laid out the rule that my sisters and I were not allowed to date. As a result, my sisters and I would obey my parents; however we would be left feeling confused about

dating and understanding what “love” means. The confusion has to do with witnessing my parents’ relationship as a product of an arranged marriage and observing the American culture and how parents married because they fell in love. The concept of falling in love was and is still very hard for me to understand. I’ve always thought like a hopeless romantic and wanted to find the perfect man and fall in love with him. That state of mind is an example of acculturation and fitting into the American behavioral norms. On the other hand, I know that my parents want me to marry an Indian, who is a Malayalee (which is the type of Indian I am), Christian, and has a good family background. To Indians, marriage is not just the joining of two people; it is the joining of two families. I find that arranged marriage is still more common in India than it is in the diasporas outside of India. This can be believed because of the influence of other cultures in a person’s life compared to being in traditional India with its long lasting values and beliefs. In Pettys and Balgopals’ (1998) article it states that “In the example of arranged marriages, a family may choose a modified arrangement in which several possible spouses are selected from which the young adult may choose” (para. 63). Now that my sisters and I have matured and have a better understanding of our culture, we are willing to compromise with our parents, in letting them choose several possible spouses, in which we would later choose from as the end result. We believe that our parents know us more than anyone else and that they would choose the best candidates for us because of the trust we have in them.

As much as being an Indian American brings various conflicts in my life, I remain grateful for my culture. I believe that my culture as an Indian and as an American has shaped my sisters and I to be well cultured individuals. My parents’ expectation for us is to reach our goals and our dreams. In an interview with my father I asked him what he expected from his children. He stated “My expectation is to develop their potential to the maximum. Whatever sources they have they should utilize. This is a country where you can pursue your dream based on your capabilities and talents. So you can achieve things so that you can enjoy your life.” When I asked my mother the same question she responded with: “I want my children to be happy, to be successful, and more than that, to do God’s work. I don’t even care about their success as long as they’re peaceful and happy. That’s all that matters.” The event of my parents coming to America has shaped my family in various ways and has helped me personally to acknowledge my own sense of identity.

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Female Subversion of a Patriarchal Society: Isabel Allende's The House of Spirits

Jessica Friswell (English)¹

In The House of the Spirits, Isabel Allende paints a picture of Chile during the twentieth century, using, in particular, stories from her own family. Especially influential are the roles the women of the Allende family played. Inspired greatly by her grandmother, Allende creates female characters who are strong-minded, strong-willed, and strong at heart. The House of the Spirits is a compilation of these women's stories, told by the youngest member of the Trueba family, Alba, with assistance and contributions from her grandfather, Esteban. It is Esteban Trueba "who had the idea that [they] should write this story" which tells not only of his life, but also and more importantly of the lives of the remarkable women who surrounded him until his death (Allende 430). Each generation of "independent-minded women" found a way to "challenge traditional male authority" in a unique way as a means of subverting the patriarchy common during this time (Griego par. 3).

Nívea del Valle is the first woman who, in her own manner, fights for women's rights in a society where "man is always privileged" (Cruz par. 2). Through her actions, it is clear that Nívea means well; however, in the text, Clara points out "the absurdity of the situation" and "the contrast of her mother and her friends, in their fur coats and suede boots, speaking of oppression, equality, and rights to a sad, resigned group of hard-working women in denim aprons" (Allende 81). It is apparent that "Nívea [symbolizes] the early suffragist movement" and does what she feels she can in order to help others (García-Johnson 184). "Through her social involvement, her activism," Nívea steps off the page society has earmarked for her and becomes her own person in a society that in most other cases would recognize her only because of her husband's accomplishments (qtd. in Engelbert and Levine 43).

A more overt example of Nívea's subversion of the traditionally patriarchal family comes when she orders the tree in the backyard to be cut down. For many generations, the del Valle men had climbed the tree to prove that they were men; however, after a fatal fall, Nívea ordered the tree cut down so that none of her sons would

¹ Research performed under the direction of Dr. Marilyn Kiss (Languages) and associated with the course SP213/EN213 *Hispanic Literature in English Translation*.

suffer the same fate (Allende 80-81). In cutting down the tree, Nivea puts an end to an age-old tradition of patriarchy.

As Susan R. Frick explains, “the novel explores the human experience from the perspectives of four generations of women who approach political and social realities with defiant strength and creativity” and Nivea serves as the pioneer (27). Between Nivea and the three generations she precedes, many elements tie the women together, most obvious of which is the similarity of the significance of their names. Each woman’s name reflects the color white, light, purity, and clarity. According to Peter F. Earle, “light is freedom and hope, and the luminous names of the three women are clearly symbolic” of this attitude (550). By continuing the tradition of giving each child a name with a similar meaning, the author creates a matrilineal line that links the characters not by last name, as is common in patrilineal tradition, but by first name as a “subversion of the laws of the patriarchy” (Parham 196). Among the three most prominent female characters, “the fact that all [their] names...mean the same thing—Clara, Blanca, Alba—is like saying that Clara is the great spiritual mother of us all...On the other hand, Blanca is the great earthly mother [and]...Alba is the great intellectual mother.” (qtd. in Gautier 133-134)

In addition to the common ties found in their names, according to Allende, “all the women in [the] book are feminists in their fashion; that is, they ask to be free and complete human beings, to be able to fulfill themselves, not to be dependent on men. Each one battles according to her own character and within the possibilities of the epoch in which she happens to be living” (qtd. in Agosin 41). The Trueba women are seemingly reborn each generation with a stronger sense of their own identity apart from the overbearing Esteban Trueba. Clara, Blanca, and Alba are so much alike that it is almost as if “they are all the same woman transferred from era to era” sharing “a chain of love that goes from mother to daughter...which conveys some special qualities that are not transmitted to men” (qtd. in Engelbert and Levine 44).

This close bond between the women and their strength as a seemingly single spiritual entity enables them to control their own actions without being dominated by Trueba (Frenk 68). Each woman finds strength within herself to subvert patriarchy and go against Esteban Trueba and in some instances, the government as well, in order to be satisfied in her own life. The women share “this sense of the community of female experience across the boundaries of time and space [that] conveys a message of female empowerment [and] subverts historical stereotypes of submissive women” (Meyer 361).

Clara is the youngest daughter of Nivea del Valle and the first major character in a line of strong women. Clara is married to Esteban Trueba, the man who represents an unyielding traditional patriarchy. Even in her youth, Clara began to act out against the patriarchal society most notably when she is in church, a traditional patriarchal

institution. After Father Restrepo gives his sermon, young Clara blurts out, “If that story about hell is a lie, we’re all fucked, aren’t we...” enraging the Father and causing an uproar among the parishioners (Allende 7). Here, Clara already demonstrates that she will speak her mind even if it does go against time-honored traditions.

During her married life, Clara continues to subvert patriarchy and go against Esteban Trueba. While Trueba is content with his servants continuing life as they always had, living in little brick houses and shopping at his general store, all the while laboring for him, Clara thought differently. She “divided her time between the sewing workshop, the general store, and the school, where she established her headquarters,” passing her time treating illnesses and educating women, helping them with little tasks to make their lives easier (Allende 105). Philip Swanson says that “education is a selective form of control;” by keeping his servants uneducated, Trueba was able to control them; however, when Clara helped them move forward, Trueba slowly lost control (223).

When Esteban and Clara were not at Tres Marías, they spent their time living in the big house on the corner which appeared regal from the outside but gave a completely misleading image. Clara used the space to create a labyrinth full of people in need of help, furniture, chests of books, and spirits. As Frick describes,

The house itself becomes a subversive space as Clara and her magic overtake the mansion Esteban builds according to the European aristocratic model. Since she invades from the back of the house and the architectural changes are thus hidden from the outside world, Clara’s triumph is invisible. She, and not Esteban, fills the niches and crevices of the house, haunting his space with spirits from her world. (31)

Clara is triumphant again in a patriarchal realm by making the big house on the corner that Trueba built “both female and [her] own” (Frick 31).

In one room of the house, Clara and the Mora sisters hold sessions with spirits who Clara eagerly invites into the house. This act invoking the supernatural is again a subversion of patriarchy because “the supernatural is closely linked to female voice; in both, ghosts and spirits provide authority for articulation and identity. Significantly, such authority...proves a genuine challenge to patriarchal authority” (Jenkins 69).

Clara’s silence, too, is a way for her to gain control over her husband. After Esteban beat Blanca, “Clara never spoke to her husband again. She stopped using her married name and removed the fine gold wedding ring that he had placed on her finger twenty years before” (Allende 201). In this manner, Clara retreats into her own world, the world of the spirits and the world of her stories. Isabel Allende states that Clara “deliberately chose silence not out of passivity or fear but rather because that was the only way for her to create her own space” (Agosín 36). Spending the rest of her life not speaking with her husband, Clara is devoted to her stories. In her many notebooks,

“divided according to events and not in chronological order,” Clara records history (Allende 432-433). Typically, history reflects a male perspective, and in a twist of fate, Clara’s notebooks are saved from “the mass burning of books that accompanied the early days of the military takeover” which leaves a historical record written from a woman’s perspective for future generations (Levine 167).

Blanca is Clara and Esteban Trueba’s only daughter who, like her mother and grandmother before, finds her own way to go against the patriarchal system into which she was born. As Frick explains,

Esteban’s daughter contrasts with him in both politics and personality. But unlike Clara, who remained faithful to him despite her strong friendship and identification with his tenant farmer Pedro Segundo, Blanca rebels against her father by choosing the peasant singer and communist Pedro Tercero for her lover, completely rejecting Esteban’s values and the patriarchal order he represents. (35) Upon her first visit to Tres Marías, Blanca begins to rebel against the established patriarchal order and pulled off her clothes and ran out naked to play with Pedro Tercero. They played among the packages, hid beneath the furniture, exchanged wet kisses, chewed the same bread, ate the same snot, and smeared themselves with the same filth until, wrapped in each other’s arms, they finally fell asleep under the dining-room table...When they found them, the little boy was on his back on the floor and Blanca was curled up with her head on the round belly of her new friend. (Allende 104-105)

From this young age, Blanca rebels against class differences by showing no regard for clothing, acting like a member of a lower class, and spending all of her time with Pedro Tercero, a boy whose future is explicitly tied to the *encomienda* where he is expected to remain as a servant until his death. Blanca “causes her father’s despair when she falls in love with [Pedro Tercero]” and sneaks around just to be with him without her father’s consent (Schiminovich 109).

During their teenage years, Blanca and Pedro Tercero consummate their relationship. Blanca is sent away to school but feigns illness in order to return to Tres Marías to spend her time with Pedro Tercero (Allende 172-173). Crossing class lines, “Blanca...espouses [the patriarchal order] in her strategy of battle” against her father (Cruz 5). As a result of her relations with Pedro Tercero, Blanca becomes pregnant and upon discovery of this, Blanca consents to a marriage with Jean de Satigny; however, she is miserable with this “effete and dandified suitor” (Earle 548). The idea of Blanca as an unwed mother is in contrast to the views of patriarchal society because she is a woman alone, without a man to support her. Even in her marriage, Blanca mocks this order by marrying a man of questionable sexual orientation but escapes it in her effort for freedom and happiness that she finds only with Pedro Tercero. This relationship lasts for the rest

of her life after she takes the “guerilla revolutionary for a lover in defiance of her father’s commands” (Cox 21).

The final character in the Trueba line who acts out against the patriarchal order is Alba, Esteban Trueba’s granddaughter by Blanca and Pedro Tercero. According to Allende’s description, “Alba belongs to the younger generation and is turned more toward the outside world, toward work, politics, the preoccupations of our present-day society” (qtd. in Agosín 40). Alba comes of age, falls in love, and fights for her beliefs during a time when many social and political changes are rapidly occurring within her country. More reserved when she was younger, Alba meets Miguel, a revolutionary, and becomes much more vociferous in the city, fighting and demonstrating for the rights of the people. In this regard, “Alba...[is a] naïve [woman] who slowly [wakes] up to reality” in her country; in particular she opens her eyes to see the turmoil of the political situation (qtd. in Alvarez-Rubio 376). After wishing to spend her time with Miguel talking only of love (Allende 319), Alba “finally...joins the student political movement, has a relationship with a guerrilla leader and ends up a victim of torture. She becomes the most fully integrated with the interlinked class, political and women’s struggles” (Swanson 229-230).

Alba’s relationship with Miguel is an act that goes directly against her grandfather Esteban Trueba, a formerly prominent individual in the government. She defies him and does not truly believe that she will get involved too deeply. This is untrue, however, when Alba finds herself locked in a school building that the revolutionaries seized, frightened by the tanks that surround the building (Allende 321). Alba and Miguel create a sort of haven for themselves and their love making in the basement of Trueba’s house, thereby defying patriarchy yet again by bringing sheer bliss into a house that is oppressed by an imperious owner.

In one final way, Alba works against patriarchy and that is through her writing by “giving voice to the women characters” (Cox 20). Telling her story along with those of her mother and grandmother utilizing the texts they left behind, Alba also incorporates stories from her grandfather’s point of view. This “blending of the two narrative voices not only clearly situates the female voice within the context of a *machista* culture but it also displaces and subverts the power of that culture” by allowing women’s voices to play the most prominent role in the text (Meyer 361).

In The House of the Spirits, patriarchy in the family and patriarchy in the state mirror one another. Esteban Trueba is an unyielding patriarchal figure involved in the government and serving as head of the Trueba family. His actions clearly perpetuate the idea that “female subordination is evident in every Latin American social institution” (White par 2). At Tres Marías, Trueba tries to keep his workers uneducated, a state historically associated with females while males were frequently educated. According to

Isabel Allende, “a man who does not consider a woman as an equal cannot live life fully. His life will always be incomplete” (qtd. in Gautier 137). This statement is especially true of Trueba since he wanted his wife to be “completely dependent” on him (Allende 127), a difficult feat when all “the women of his family directly oppose nearly everything for which he stands” (Frick 31). Esteban could not even communicate with Clara, his wife, especially once she began her period of silence as a result of his cruelty, an obstacle he was never able to overcome.

Alba upsets the patriarchy within her family by going directly against all the things her grandfather supports. Also, defying patriarchy through her writing, Alba tells the history and stories of her family through the women who experienced them.

However,

history, for Trueba, was paternity and—whenever the situation called for it—aggression. One of his first rituals in organizing Tres Marías as a community was to start populating it, ranging through the wheatfields on horseback in pursuit of the peasant girls, raping and impregnating more than a few...History was procreation, and the father’s subsequent attempts to deal with the results of procreation. The most troublesome outcome of his sexual escapades in the environs of Tres Marías was Esteban García, his natural grandson born of an offspring of Pancha García, his first wheatfield victim. (Earle 547)

As a result of Trueba’s forays, the family is left with an “unforgettable progeny, both legitimate and bastard” (Agosín 36). Esteban García represents the illegitimate half and is the only one of his grandfather’s relations to share his name. In this regard, Esteban Trueba and Esteban García are intimately tied and both represent the patriarchal attitude of the time; Trueba is perhaps more human while García is downright cruel and bitter because of his past. These similarities and differences provide the reader with “a picture of two types of machismo in the characters of Esteban Trueba and his illegitimate grandson Esteban García” (Cox 21). As the state loses power, Trueba begins shrinking as a metaphor for the loss of power, control, and influence he has over the government while García continues to gain more power.

García harbors a deep hatred toward Trueba and “instead of retaliating in a direct, physical way against the aged patriarch, Trueba’s bastard grandson chooses to punish him through his ‘legitimate’ counter part,” Alba (Earle 548). He not only abused her as a young child at the big house on the corner, but also was responsible for Alba’s kidnapping and abuse. García, “having risen to the rank of lieutenant colonel in the political police...presides over the interrogation, confinement, and prolonged torture of his privileged cousin Alba...who has been active in the socialist underground and Esteban Trueba’s only recognized grandchild. Alba undergoes...torture...[and] in the process she’s raped an undisclosed number of times [by] Colonel García” (Earle 547).

By putting Alba in the “doghouse,” one of the cells for solitary confinement, García hopes Alba will break down. Instead, after several days of torture, with inspiration from the spirit of her grandmother Clara, Alba turns against García’s patriarchy and survives by remembering all her stories (Allende 414). Alba is eventually released from prison alive and returned to her family.

“Allende’s novel invites readers to wander into one room that might be called ‘feminist,’ occupied by the women of the del Valle lineage; discover another door labeled ‘patriarchy,’ inhabited by Esteban Trueba” and discover between them an area combining both extremes; however, in contrast to this idea and the Trueba women, Esteban Trueba’s sister, Férua does not find her role apart from patriarchy or marked by feminism (Levine 165). Férua dutifully cares for Clara and her children and it “may be read as one-way lesbian desire [but] is hardly a positive representation” (Frenk 77). These possible lesbian feelings, however, are never acted upon. This is perhaps the only way through which Ferula could possibly have stood up against patriarchy. By having a relationship with another woman, she would have stood against the ideals of patriarchy. Beyond this, however, Férua represents the ideals of the state. After being kicked out by her brother because of her feelings toward her sister-in-law, Férua moves to the *barrio* where she lives a poor life. She is miserable in this position, oppressed along with her neighbors by the powerful state. “The novel itself can be read as a victory for the Trueba women as it allows them, for the first time, a public voice with which to speak aloud the pain that male aggression has wrought” while in contrast to that, Férua dies alone in the end after a miserable existence which resulted from supporting the state instead of trying to work against it for her own personal freedom (Cox 47).

The House of the Spirits “[challenges] a Latin culture that reveres maleness and circumscribes its women into narrow, non-threatening roles” by placing women in prominent positions consistently throughout the text (Cox 20). Nivea, Clara, Blanca, and Alba “exhibiting different strengths in each generation, bring peace and clarity to the turbulent family saga” (Cox 35). In their subversion of patriarchy across three generations, these women create a space for themselves in society and in the end, Alba realizes that women from many different lifestyles who are trying to accomplish these same goals surround her everyday. When she is released from the prison and left in a dump, Alba is rescued by a woman who she says

was one of those stoical, practical women of our country, the kind of woman who has a child with every man who passes through her life and, on top of that, takes in other people’s abandoned children, her own poor relatives, and anybody else who needs a mother, a sister, or an aunt; the kind of woman who’s the pillar of many other lives, who raises her children to grow up and leave her and lets her men leave too, without a word of reproach, because she has more pressing

things to worry about. She looked like so many others I had met in the soup kitchens, in my Uncle Jaime's clinic, at the church office where they would go for information on their disappeared, and in the morgue where they would go to find their dead. I told her she had run an enormous risk rescuing me, and she smiled. It was then I understood that the days of Colonel García and all those like him are numbered, because they have not been able to destroy the spirit of these women. (Allende 429)

The Trueba women serve as precursors in the female movement to subvert patriarchy; however, they are only examples of the many women who are standing in the shadows trying, in their own ways, to accomplish the exact same things as Clara, Blanca, and Alba did in their lives.

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**The Limbaugh and the Lily
On Lies, Liars, and Oscar Wilde**
Jacob Meranda (Political Science/Economics)¹

A Dialogue

PERSONS: *Rush Limbaugh and Al Franken.*

SCENE: *The greenroom of a Fox News station.*

RUSH: (*walks into the room, sees Al sitting*): There's no need for snippy looks, Al. Come here and sit, let us smoke cigarettes and enjoy the end of *Hannity*.

AL: Gee Rush, I didn't know you smoked.

RUSH: It is such a shame society won't accept the vices one chooses for himself. Actually, I'm writing an essay for my club on a similar subject, since you're here let us put that liberal-elitist education to some use for something other than Bush-bashing. Have a listen.

AL: Club? I think you're taking this "Rush Limbaugh Institute for Advanced Conservative Thought" too far.

RUSH: The Cato Institute? No, my club is a far more exclusive group--we call ourselves "the Haves." I'm afraid you're not eligible to join. Now, since we're at a Fox News station it is only fitting that you not interrupt me too often, if at all, so I can present as fair and balanced argument as possible. (*He clears his throat loudly, shuffles some papers*) The title of my essay is "Conservatives in the Closet: Oscar Wilde."

AL: You mean to tell me you read Oscar Wilde?

RUSH: Someone snuck it into the Stack of Stuff--I thought it was a Tom Clancy novel. But, how delighted I was to find that Mr. Wilde's degenerate filth is really a veiled conservative tract; there are some quite interesting parallels between his work and other conservative thinkers. Ayn Rand for instance, who is the foil against which I compare Wilde in my essay. She uses similar rhetoric to Wilde regarding her theme of personal liberty.

AL: Why did you pick Ayn Rand as a foil?

¹ Written under the direction of Dr. Felicia Ruff (Theatre) and Dr. Susan Bernardo (English)

RUSH: In the “Limbaugh Library” on my website it was this or Ted Nugent’s *Kill it & Grill It*.² Don’t get me wrong, I love the Nuge, but Rand seemed like a more representative conservative. Howard Roark’s climactic speech is a good summation of her novel and is quite comparable to Wilde. Now, since I was born to talk and you were born to listen would you please let me continue with my essay (*clears his throat again, reshuffles paper, begins reading*).

My friends, for too long we have merely banned the books of those with whom we disagree. I ask you, why ban degenerate art when one can simply repaint it as their own? What I will argue (*in this paper*) is that despite our misconceptions, Oscar Wilde is really a Rand disciple at heart. It’s time we forced his work out and revealed that even a liberal like Mr. Wilde could not long deny the power and logic behind Ayn Rand’s conservative manifest, *The Fountainhead*.

To begin, both Mr. Wilde and Ms. Rand are ardent Individualists. They both hold with the same contempt altruism in any form. In *The Fountainhead* the reader finds Howard Roark proclaiming altruism “the device by which dependence and suffering were perpetuated as fundamentals of life.”³ There is no grey area, the reader is either with Mr. Roark or against him. Any other relation “is a relation of slave to master, or victim to executioner.”⁴ Mr. Wilde sees the world in a similar light. Altruism is “part of the disease”⁵ of man’s wretched condition. Any efforts to alleviate poverty or pain only make the situation temporarily better, thereby prolonging whatever affliction man may suffer. Do not try to keep the poor alive!—he warns. Instead, look past your emotions, which are “stirred more quickly”⁶ than your intelligence, and you will see that a bleeding heart cannot feed man. Man must feed himself!

Wilde writes “Art is our spirited protest, our gallant attempt to teach nature her place.”⁷ Surely this is the same “man, unsubmissive and first”⁸ Roark exemplifies. They’re celebrating the same man, the same dominance over nature, the same contempt for altruism, and the same yearning for Individuality. “Individualism” for Wilde is “far freer, far finer”⁹ than man under the yoke of obligation to society. Howard Roark is The Individual, the “man who does not exist for others.” Only the individual can escape what

² www.rushlimbaugh.com

³ Rand 95

⁴ Rand 96

⁵ Wilde 1079

⁶ Wilde 1079

⁷ Wilde 970

⁸ Rand 89

⁹ Wilde 1083

Rand describes as the “orgy of self-sacrificing” from which “the world is perishing.”¹⁰

For both Rand and Wilde, escaping the snares of society and asserting their individualism is the only road to self-realization. Man’s mind is the defining characteristic of his humanity. His “own truth,” writes Rand, is “his only motive. His own truth, and his own work to achieve it his own way.”¹¹ Roark despises the man who is “forced” to accept altruism, nothing more than “masochism as his ideal.” Living for himself, Rand idealizes in Howard Roark “the creator... the egoist in the absolute sense.”¹²

Oscar Wilde too sees egoism as “so necessary to a proper sense of human dignity.”¹³ Human nature, for Wilde, is so homogenized and universal it must be escaped by the mind as well--through creativity. Individualism is that creation. Like Roark building his skyscrapers, Wilde builds his life. His tools are not steel and brick but the “conversion of fact into effect, and assigning to each detail its proper relative value.”¹⁴ Both are creators in the truest sense, rebelling against a society of altruists, dependents, and exploiters.

We see now a clear delineation between Roark and society, and for Wilde between the artist and society. They are essentially anti-democratic--a position I know this club is fairly comfortable with. For Rand, society and the artist are essentially antithetical, “The creator is the man who disagrees... The creator is the man who goes against the current... the creator is the man who stands alone.”¹⁵ Wilde holds similar contempt for the public’s taste. Realism, art recording the masses and their lives are without “distinction, charm, beauty and imaginative power.”¹⁶ Should the public even embrace a work, the artist will immediately begin to question if “it was not quite unworthy of him... of thoroughly second-rate order, or of no artistic value...”¹⁷ To create art that resembles society is not art, is not creation, and does not satisfy the individuals quest for self-realization. To be embraced by the public is to fail; such is the disdain for the public that Wilde and Rand suggest the superiority of the artist over the masses.”

AL: Are you sure about all this?

¹⁰ Rand 100

¹¹ Rand 90

¹² Wilde 94

¹³ Wilde 975

¹⁴ Wilde 1073

¹⁵ Rand 94

¹⁶ Wilde 974

¹⁷ Wilde 1092

RUSH: As sure as my talent's on loan from God. But here is my conclusion: "even Oscar Wilde's art cannot escape Ms. Rand's infallible truth, man can only be free alone. And while certainly his dangerous work has no place on the shelves of our public libraries and schools, make no mistake, Mr. Wilde is a conservative in sheep's clothing; the Zel Miller of liberal literature--we have exposed the truth, we have discarded his mask!"

AL: I wish I could say I was surprised that you do not understand Wilde at all. However, you get to read a prepared text while I must respond extemporaneously, that is hardly fair.

RUSH: Don't look at me, I'm not the one writing this dialogue.

AL: (*sighs*) At any rate, there are similarities between Howard Roark's speech and Wilde's desire for individualism, but these parallels are in rhetoric only. In their means, their ends, and the consequences for the artist and their art, Wilde would be extremely critical of Roark, and would consider Rand a bad artist, if an artist at all.

Look at the means towards which each author attains their individualism, they lead to different concepts of the word entirely. For Rand, "All that which proceeds from man's independent ego is good. All that which proceeds from man's dependence upon men is evil."¹⁸ So the aim of all should be to free humanity from dependence. Good society seeks to fashion a better world and it is ironic that this quest should lead, for Rand, to its dissolution. Roark could not sum this better when he states "Civilization is the process of setting man free from man."¹⁹ Howard Roark is only free when society ceases to exist and men interact as isolated, atomized individuals.

Wilde's quest for individualism takes the totally opposite route. He appeals *to* society to create the conditions necessary to free men from drudgery. Altruism prolongs problems, but love and compassion are not evil. Wilde seeks not so much the end of exploitation of men from other men, but the individual from labor. The assembly-line worker is relieved of the "sordid necessity of living for others"²⁰ when Socialism mechanizes his work. Wilde must walk a careful path, squaring his Socialism and individualism. Authoritarian Socialism, he clarifies, is not the answer. Rather a social construction where everyone benefits when released from drudgery.²¹ Where Rand destroys society to free the individual, Oscar empowers society to provide for the individual so he can freely pursue self-realization.

¹⁸ Rand 95

¹⁹ Rand 98

²⁰ Wilde 1079

²¹ Wilde 1080

These differing means hold very different consequences for the individuality they produce. In the end, Rand's individuality is focused on work. Man must be able to labor unrestricted. That which he produces must not be taken. As society steals that production it also steals the incentive to create, and slowly Rand argues, strangles itself to stagnation. Who will produce for themselves when it can be taken from others just as easily? This ideal leads to a view of the artist and art that is bound-up in their labor. It is the labor of the artist which gives value to the art, it is that labor which is to be appreciated.

Rush, let me move briefly to *Atlas Shrugged*. Richard Halley--an artist--states the bad artist is the artist who is "not restrained by such crude concepts as 'being' or 'meaning' ... he doesn't know how he created his work or why... he did not think... he just *felt* it."²² The labor is the art's value. The knowledge of the artist, the conscious desire of that which he seeks to communicate is his justification and meaning.

Wilde's individualism is also a liberation in a sense--but a liberation from manual labors which he considers without dignity.²³ In fact, here would be one of his largest criticisms against Rand, "private property has really harmed Individualism, and obscured it, by confusing a man with what he possesses... It has made gain, not growth, its aim."²⁴ Society ought to produce life's necessities. Then one is free to color-in the rest of the world, guided by aesthetics, living for beauty.

Wilde, freed from the practical, sees the duty of art to express the beautiful and to expand upon the numbing sameness of the world. Unlike Rand, art never tells the truth about the world, it creates the truth of the world. Art is the "abstract decoration, with purely imaginative and pleasurable work dealing with what is unreal and non-existent."²⁵ The truth it creates is a product of the artist's imagination. "What is true about Art" then, becomes "true about life."²⁶ In this work the focus is not on the intellectual message--there is none for Wilde, art justifies itself. The focus is on the pleasure, the beauty, the aesthetic. The artist exaggerates, elaborates, creates a life more beautiful and in doing so, individualizes it. Here now is the greatest gulf between Rand and Wilde: what does individualism make art?

Because Rand demands that her art be appreciated for its labor, for what the artist puts into it, art becomes a sort of commodity. Howard Roark begins this idea admitting that every architect needs a customer. This is expanded in *Atlas Shrugged* when Richard Halley demands payment for his art: "the payment I demand... I don't mean

²² Rand 140

²³ Wilde 1088

²⁴ Wilde 1083

²⁵ Wilde 978

²⁶ Wilde 1101

your enjoyment, I don't mean your emotions--emotions be damned!--I mean your *understanding*.²⁷ To be sure, Rand doesn't advocate dependence. The artist sacrifices nothing, the consumer nothing. They exchange without compulsion of altruism. However, they do need each other. Art has no value without someone to appreciate it, without someone to set its price.

That price is set, like a side of beef or a gallon of milk, by the market. The currency is the appreciation of the consumer. The artist asks that you "Judge my work by the standard of the same values that went to write it..." payment comes "not from the fact that you felt, but that you felt what I wished you to feel... [that which] I wished to be admired"²⁸ for. Art finds its final value, its justification, in transferring to the customer the idea the artist wishes to convey and the labor which went into the piece. "When I find a customer with that invaluable capacity" says Halley, "then my performance is a mutual trade to mutual profit."²⁹

For Wilde, art exists for its own sake. Its value is its own. Howard Roark and Richard Halley are dependant upon others to consume their art to give it value. For Wilde, the artist who creates for others is no longer an artist because art is its own justification, it can be "judged by no external standard."³⁰ Unlike Rand, art doesn't project a message and the artist's labor isn't a standard of excellence. Art exists to make the world, and make the world beautiful. It is not of the practical. Unlike Rand, art dominates the spectator's feelings³¹ without purpose--"the artistic temperament is always fascinated by beauty."³² It is not fascinated with political and philosophical statements. In an almost direct retort to Rand, "the highest art rejects the burden of the human spirit" and "gains more from aesthetic beauty than appreciation."³³ In the end, art reveals its own perfection, it creates its own value.

Finally, we see Wilde somewhat less scornful of society than Ayn Rand. Because Wilde's art creates one's vision of the world, the general mass of society is by default an appreciator of art. The appreciation may not be conscious, but to look at a sunset and see that sunset is to understand, on some level, the great authors who have written of a sunset and the painters who have painted them. He is, by comparison, a man of the people.

²⁷ Rand 139

²⁸ Rand 139

²⁹ Rand 140

³⁰ Wilde 982

³¹ Wilde 1096

³² Wilde 1060

³³ Wilde 987

RUSH: This is nothing more than the politics of personal destruction! You're just part of that reality-based community, we *create* truth here! If anyone is true to Oscar Wilde's ideals it's us!

AL: How far we have come, you began by arguing Oscar was true to your ideal. Rush, what do you think Oscar would have to say about Howard Roark or Richard Halley? What would he think of Ayn Rand? I don't think he'd be pleased. At first glance, Ms. Rand seems to accomplish exactly what Wilde wants from art: a fanciful story, an incredible lie. Oh what creativity must have gone into a world view as base and simplistic as Roark's! How utterly fantastic is his world and how unworkable it would be. Surely she presents this character in jest, a fairytale. A testament to the power of what unbelievable ideas humanity can produce.

Look closer. Howard Roark's speech doesn't exist for any aesthetic purpose, the prose is blunt and simple, Rand's purpose too evident. The man who created fire was burned at his own stake--she's trying to make a point. Roark's speech is at its core about expressing an idea, not beauty. In so far as that is the goal, Wilde wouldn't consider Rand a good artist. Moreover, the art exists for others. It's meaningless without an audience. After all, one doesn't stand-up on a soap-box to preach to the wind. Because she creates this for others Rand ceases to be an artist herself. Philosopher, pulp-writer, lunatic, call her what you will (lunatic); but she is not, by Oscar's criteria, a very good artist.

The truest test, I believe, is whether or not life imitates art. Do we see the world Howard Roark sees? Do we desire his brand of isolated individuality? Has Ayn Rand shaped through her art our vision of the world? No. To be sure, her books are well remembered; given his views on social popularity Mr. Wilde would certainly condemn her for ranking 2,087 on the Barnes and Noble best seller list--until he saw he was 871. Increasingly we see a world where truth is malleable, where people are obsessed with pop-cultural aesthetics, where a social conscious and outlook shape our self-conceptions, societies and ideologies. If we owe our world to art, more credit must be given to Wilde than to Rand.

Wilde is not in your closet Rush. You are in his. You disdain objectivism, building No Spin Zones from nothing but spin. Your leaders are Kennebunkport blue-bloods recasting themselves as ranching red-staters. Shock-and-Awe is the special-effects for primetime-warfare. The world is a stage! And what a representation for Wilde's advocacy of a reality created from whim, from rearranged facts, living for the aesthetic. His ideal has so influenced your thinking that you've actually convinced yourself to be a disciple of Ayn Rand--you must be a masterful liar to have accomplished that. You are Oscar's biggest success. We live in Oscar's world, not Ayn's, and that I think would be

his best judgment for her work. Ah, but I see your cigarette has gone out and *Hannity* has ended. Come let us leave, we have talked long enough--God knows Hannity has.

Works Cited

Rand, Ayn. For the New Intellectual. New York: Random House, 1961.

Wilde, Oscar. The Complete Works of Oscar Wilde. New York: Harper Collins, 1960.