

San Jose State University
McNair Scholars Research
Journal





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A MESSAGE FROM THE DIRECTOR

The San Jose State University McNair Scholars Program is pleased to present the tenth SJSU McNair Scholars Research Journal. This journal represents the diverse and practical research experiences of the McNair Scholars during the 2015-2016 academic year.

I would like to congratulate the scholars for their hard work, dedication, and accomplishments during the spring course and in the summer research program. My sincere appreciation to the faculty mentors for their guidance, time, and commitment to the scholars, their research and the program. A particular word of thanks goes out to the families and extended support systems that made these outstanding presentations possible.

A special thanks to President Susan Martin, Andy Feinstein Provost and Vice President for Academic Affairs, Stacy Gleixner Associate Vice President for Student Academic Success Services, and Pamela Stacks Associate Vice President for Graduate Studies and Research and for their continuing support and encouragement given to both the students and staff of this program.

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Fadi Bakour

Major:
Aerospace Engineering

Mentor:
**Dr. Perikles
Papadopoulos**

Reaction-Wheel Based Spin
Stabilization and Control System

Biography

Fadi Bakour is an Aerospace Engineering student at San Jose State University. Upon completion of his undergraduate degree, his ambitions are aimed toward achieving a doctoral degree in Astronautically Engineering with a specialty in Spacecraft Dynamics and Automatic Control System Design.

Fadi began his endeavor into the realm of aerospace by leading the Citrus College Rocket Team to the successful launch of a two-stage rocket in the NASA University Student Launch Competition. Since then, he has held positions at Jet Propulsion Laboratories as a summer intern (2014) and at NASA Ames Research Center as a Student Researcher (2015).

He is currently a proud McNair Scholar working on designing and manufacturing an Attitude Determination and Control System to be implemented in a CubeSat at NASA Ames under the supervision of NASA Engineer Marc Murbach and Dr. Perikles Papadopoulos of San Jose State University.

Reaction-Wheel Based Spin Stabilization and Control System

Abstract

This paper presents a framework for the development of a single axis attitude determination and control system (ADCS). The proposed system must be small enough to fit within the physical constructs of a standardized micro-satellite, called a CubeSat. This subsystem is intended to control the spin orientation of the sixth Technical and Educational Satellite, thereby allowing the transmitting antenna to aim towards Earth's surface while the satellite is in orbit. Throughout the paper, the mathematical modeling of the CubeSat dynamics will be presented, along with the simplest method of controlling the satellite's spin orientation. The prototype contains a steel fly wheel driven by a brushless DC motor. The motor-wheel assembly is mounted to an independent subsection of the satellite and is fully equipped with 'plug and play' capabilities. A torque control law has been designed and tuned to minimize overshoot and time delay characteristics, while simultaneously ensuring pointing accuracy. The simulated results matched the expected outcome, and hardware options were heavily discussed. Fabrication of the subsystem components is currently in process.

Nomenclature

ADCS	=	Attitude Determination and Control System
ISS	=	International Space Station
TES	=	Technical and Educational Satellites / TechEdSat
IMU	=	Inertial Measurement Unit
CAD	=	Computer Assisted Design
CNC	=	Computer Numeric Control
C	=	Dynamic Friction Coefficient
h	=	Angular Momentum
I	=	Moment of Inertia
m	=	Mass
T	=	Torque
λ	=	Longitude
θ	=	Angular Position of Satellite with Respect to Orbit Reference Frame

φ	=	Angular Position of Reaction Wheel with Respect to the Satellite
$\dot{(\)}$	=	First Derivative with Respect to Time
$\ddot{(\)}$	=	Second Derivative with Respect to Time
$(\)_b$	=	Parameter With Respect to the Body Frame
$(\)_w$	=	Parameter With Respect to the Wheel/Rotor Frame
Kp	=	Proportional Control Gain
Kd	=	Derivative Control Gain

I. Introduction

In 1999, Stanford University and California Polytechnic State University San Luis Obispo collaborated to standardize the specifications of miniaturized satellites used for space research. Although different versions have been established, the most utilized miniaturized satellites, called CubeSats, consume a volume of one liter (10 cm cube), and have a mass of no more than 1.33 kilograms.^[1]

This initiative created a pathway for university students all over the world, as well as a many commercial companies, to conduct state-of-the-art research from beyond the containment of earth's atmosphere at relatively low costs.^[2] To add to that, unification of payload structure and launch systems enables an exploitation of launch opportunities, even on short notice.

One such sequence of CubeSats are called the Technical and Educational Satellites, or TechEdSats. The TechEdSat series was developed by students of San Jose State University and University of Idaho in collaboration with principal investigator Dr. Perikles Papadopoulos of San Jose State University and Marc Murbach of NASA ARC.^[3] The first TechEdSat (TES) was jettisoned from the International Space Station (ISS) on October 04, 2012.^[4] The team is now working on the 6th edition of the small spacecraft.

While the mission payloads have changed over time, the primary objective remains the same: to continue to develop student-driven technologies that are tested in space. The current iteration of the TES is geared towards the development of a drag-based de-orbit system referred to as an "Exo-Break," as well as the testing of high speed data

transmission hardware.^[3] In order to maximize mission success, it is necessary to control the roll orientation of the spacecraft such that the transmitting antenna is aimed towards Earth's surface, as is seen in Figure 1.

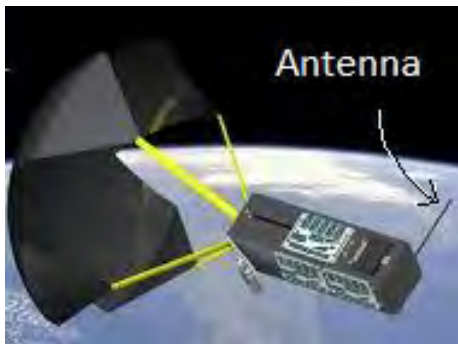


Figure 1. Exo-Break Antenna Configuration ^[5]

A number of satellite attitude control systems have been developed and tested on a larger scale.^[6] The primary variation between these control methods lies within hardware configuration as well as feedback sensing, and control theory application. Iwakura and Tsuda of the School of Science of Tokai University, for example, investigated the feasibility of utilizing a three dimensional, sphere shaped reaction wheel to control all degrees of rotational freedom of a spacecraft.^[8] Some of the more modern research endeavors closely examine three axis control by exploiting a two reaction wheel configuration.^[9-10] In all systems alike, accuracy and power consumption are meticulously monitored and optimized. Though, as commonly observed in engineering, there is a tradeoff between these two metrics. This must be taken into careful consideration when developing any subsystem configuration. Consequently, researchers such as Ismail and Varatharajoo^[6] inspect several arrangements of reaction wheel systems to minimize power consumption, while simultaneously attempting to retain the desired accuracy of orientation control.

The attitude control system under consideration in this paper is intended to control the spin orientation of the sixth TES, thereby allowing the transmitting antenna to aim towards Earth's surface while the satellite is in orbit. The proposed design must satisfy several constraints. The

subsystem must fit within half of a CubeSat unit, $10\text{ cm} \times 10\text{ cm} \times 5\text{ cm}$. The power consumption of the subsystem must be minimized in order to conform to the limited power budget supplied by the satellite's solar panels. Furthermore, spin control must be accurate within three degrees of freedom. Finally, the subsystem must be low cost and easily replicable by students that may work on the TES series in the future.

This paper presents a framework for the development and testing of a single axis attitude determination and control system for a CubeSat via reaction wheel. Section II presents the formulation of the system's equations of motion as well as an outline of the system's control law design. In Section III, prototype design and hardware options are investigated. The simulation results are presented in Section IV. Lastly, the outcome of the project is discussed in the conclusion, found in Section V.

II. Mathematical Modeling and Control Theory Design

The reaction wheel spin axis will be aligned with the principal axes of the spacecraft body. Ideally, the internal hardware of the system will be positioned to ensure symmetric mass distribution across the long axis of the satellite. With this configuration, the system will not have products of inertia, and the modeling of the CubeSat dynamics will be simplified. In addition to that, it will be assumed that the system as a whole will have a constant, initial angular velocity about the long axis of the spacecraft. The momentum of the reaction wheel is internal to the system. As a result, momentum will be exchanged between the reaction wheel and the body, but the momentum of the entire system will remain constant according to the principles of conservation of angular momentum.^[11]

A. Reference Frames

In order to develop and apply the dynamic equations, body and wheel reference frames must be established. The coordinate reference frames mentioned throughout the paper are defined as follows:

Earth Centered Inertial Frame. The Earth centered inertial reference frame has origins in the center of the Earth and will be denoted by the \vec{n}_x , \vec{n}_y , and \vec{n}_z orthogonal unit vectors, where the cross product relationship

of the unit vectors follow right hand rule conventions: $\hat{n}_x \times \hat{n}_y = \hat{n}_z$. Also, \hat{n}_x points towards the vernal equinox.

CubeSat Orbit Reference Frame. The CubeSat orbit reference frame has its origin in the center of mass of the CubeSat. The reference frame will be denoted by the $\vec{e}_x, \vec{e}_y,$ and \vec{e}_z orthogonal unit vectors with $\vec{e}_x \times \vec{e}_y = \vec{e}_z$. The orientation of the orbit reference frame is such that the \vec{e}_z points towards the center of the Earth, and \vec{e}_x points towards the South Pole.

Body Reference Frame. The body reference frame has its origin in the center of mass of the CubeSat. The reference frame will be denoted by the $\vec{b}_x, \vec{b}_y,$ and \vec{b}_z orthogonal unit vectors with $\vec{b}_x \times \vec{b}_y = \vec{b}_z$. The orientation of the Body reference frame is such that the \vec{b}_x points along \vec{e}_x , and \vec{b}_z and \vec{b}_y rotate about \vec{b}_x at a rate of $\dot{\theta} = \omega_{bx}$, where ω_{bx} denotes the angular velocity of the body about the \vec{b}_x axis.

Reaction Wheel Reference Frame. The wheel reference frame has its origin in the center of mass of the reaction wheel. The reference frame will be denoted by the $\vec{w}_x, \vec{w}_y,$ and \vec{w}_z orthogonal unit vectors with $\vec{w}_x \times \vec{w}_y = \vec{w}_z$. The orientation of the wheel reference frame is such that the \vec{w}_x points along \vec{b}_x , and \vec{w}_z and \vec{w}_y rotate about \vec{w}_x at a rate of $\dot{\phi} = \omega_{wx}$, where ω_{wx} denotes the angular velocity of the reaction wheel about the \vec{w}_x axis.

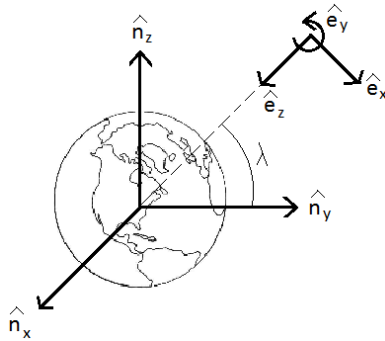


Figure 2. Earth Centered Inertial Frame and CubeSat Orbit Reference Frame

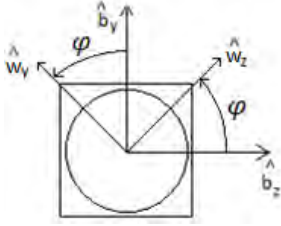


Figure 3.
Body Reference Frame

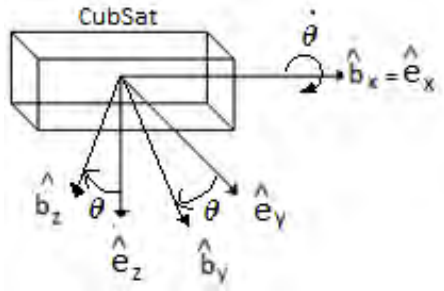


Figure 4.
Wheel Reference Frame

B. Equations of Motion

The equations of motion of the system can be described by Euler's well-known Moment Equation [11]:

$$T = \dot{h} = I\dot{\omega} \quad (1)$$

Here, T denotes the moment, substituted for M for practical reasons, h is Angular momentum, I is the moment of inertia about the spin axis, and ω is the angular velocity about the spin axis. It is important to note that if the \dot{h} vector is written with respect to the body frame, then equation 2 can be written as follows:

$$T = (\dot{h})_n = (\dot{h})_b + \omega_{b \rightarrow n} \times (h)_b \quad (2)$$

Where $\omega_{b \rightarrow n}$ is the angular velocity of the b frame with respect to the n frame. With the assumption of small Euler angle rotations, the attitude dynamic equation of a satellite body with no products of inertia can be approximated as follows:

$$(T)_b = (I_x)_b \ddot{\theta} \quad (3)$$

Similarly, the dynamic equation of the reaction wheel can be approximated as follows:

$$(T)_w = -(T)_b = (I_x)_w \ddot{\varphi} \quad (4)$$

Here, φ is the angular position of the reaction wheel as defined above.

C. Control Theory Design

The simplest control law for stabilizing and maneuvering this type of system is based on Euler's angle errors and may be stated as follows^[11]:

$$T_c = K_p(\theta_{comm} - \theta) + K_d\dot{\theta} \quad (5)$$

Here, T_c is the command torque, θ_{comm} is the desired body angle of the spacecraft as well as the user input for control purposes, θ is the angular position of the spacecraft, K_p and K_d are control gains that can be adjusted to modify system parameters, and $\dot{\theta}$ is the angular velocity of the spacecraft as defined above. Furthermore, the difference $\theta_{comm} - \theta$ is referred to as the error angle. The following Simulink^[16] model was created to represent this torque control law:

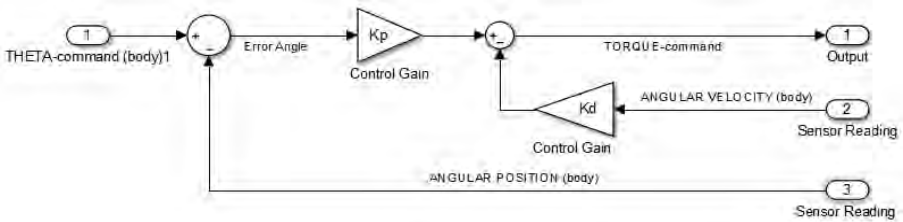


Figure 5. Simulink Model

The command torque can then be equated to the attitude dynamic equation of the satellite body, seen in equation 3. As a result, a theoretical closed-loop feedback model of the control system can be generated for simulation purposes.

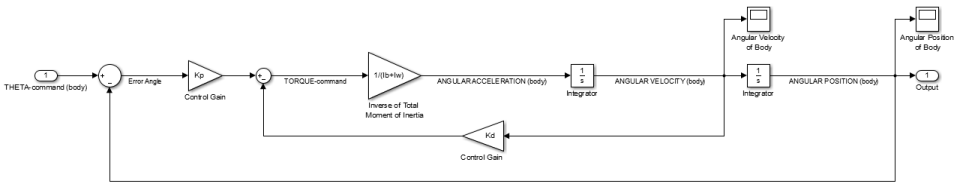


Figure 6. Simulink Model with Theoretical Feedback

Utilizing the relationship between torque command and reaction wheel dynamics seen in equation 4, the command torque signal can be exploited to establish a signal for reaction wheel velocity as follows:

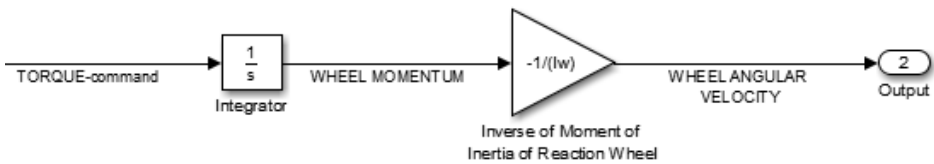


Figure 7. Torque Command to Wheel Angular Velocity

It is important to recognize that these models only exhibit theoretical results. They are made to assess the accuracy of the dynamic equations of motion. In order to implement the control system design, the block diagrams must be adjusted to interface with specific hardware targets. These modifications will be discussed in the hardware section below.

III. Prototype Design

Computer assisted design (CAD) software called Inventor Professional^[13] was heavily utilized to develop the prototype design. The physical constraints of the subsystem were predetermined based on the standardized CubeSat shape, as well as the availability of space inside the

satellite after all other scientific hardware is installed. The entire subsystem must fit within a $10 \times 10 \times 5 \text{ cm}^3$ square extrusion.

The form factor of the reaction wheel, on the other hand, must be optimized in order to ensure that it could supply a sufficient amount of angular momentum to the system. Furthermore, manufacturability and repeatability must be kept in mind throughout this optimization process. Again, one of the primary objectives of the project is to develop an Attitude Determination and Control system that can be replicated by aerospace students around the world with limited access to machining technology. A preliminary hardware layout can be seen in the figure below.

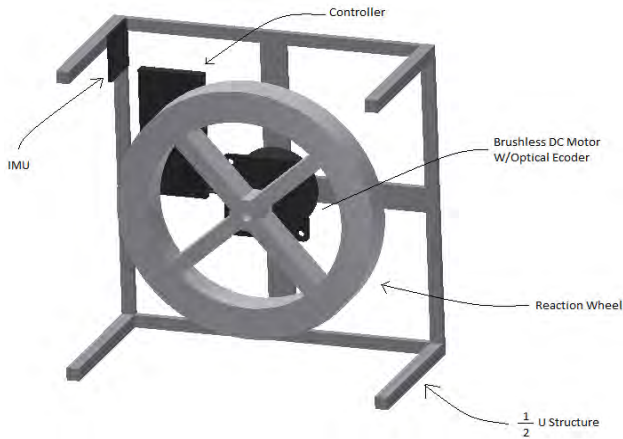


Figure 8. Proposed Hardware Configuration

A. Reaction Wheel Design

Figure 9 shows a promising model of the reaction wheel assembly as designed with Inventor Professional.^[13] The wheel is modeled to have the material properties of 4140 steel, with constant density throughout the part. With this data, the CAD software has the capability of approximating moments of inertia of the assembly. This information is useful in

determining the torque requirements of the brushless DC motor as well as the theoretical maximum angular momentum yield of the subsystem.

Moreover, given an explicit design, the CAD software has the ability to quickly produce g-code, which is a generic control language for Computer Numerical Control (CNC) machines. G-code dictates the tool path and milling parameters for any particular milling task. This is significant because it allows for several iterations of the reaction wheel to be fabricated and tested in a time effective, cost effective manner.



Figure 9. Reaction Wheel

B. Hardware Selection

The experimental setup can be seen in Figure 10, below. This setup was developed and tested by Gong and Turkoglu of San Jose State University.^[14]

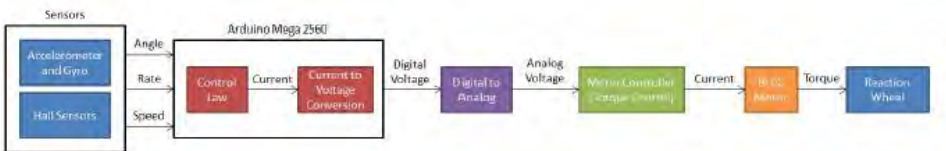


Figure 10. Overview of Experimental Setup^[14]

An Arduino Mega will be utilized to execute the established control law. This specific microcontroller is ideal for use in these types of

projects. Simulink is equipped with support packages for Arduino that autonomously generate and upload Arduino code directly from a Simulink model to an Arduino board. Also, an electronic speed controller (ESC) can be used with an Arduino to control the brushless DC motor with simple, standard servo commands instead of pulse width modulation (PWM) signals that energize individual stator coils in succession. This significantly reduces coding and computational complications. By employing the Arduino support packages in Simulink, the block diagram in Figure 6 can be adjusted to interface directly with the selected hardware, and the following control model can be developed and implemented:

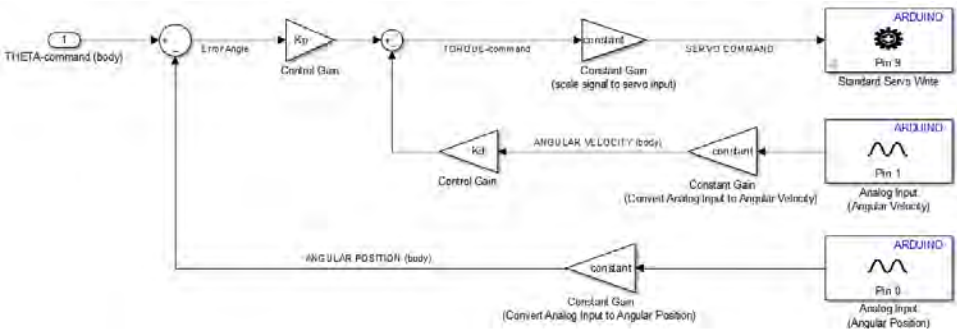


Figure 11. Simulink with Arduino Packages Employed

C. Feedback Methods

The analog inputs in Figure 11, above, are quantified by feedback sensors. It is essential that all applicable feedback sensing methods are investigated, and sensing hardware is carefully selected. Several options are available for the purposes of this project.

To begin with, inertial measurement units (IMU) are designed to measure and report a body's, or satellite's, angular position and velocity with a combination of accelerometers and gyroscopes. They are small in size, are easy to integrate into the system, and require very little power to run. However, due to the lack of strong gravitational forces in low earth orbit (LEO), IMU chips must be calibrated in space, which could take more than a week's time. Additionally, a redundant feedback system would be necessary in order to serve as a reference for calibration.

Another suitable method for measuring the satellite’s angular position and velocity is by use of a star tracker. A star tracker is an optical device that compares images taken on board, and in real time, to large star catalogs stored in memory. Most star trackers locate known navigation stars in the images, and thereby deduce the body’s position. However, they are typically very large in size, and extremely expensive. Furthermore, they are vulnerable to a number of errors, including contamination from different light sources, as well as a variety of optical sources of error.¹⁵

Another technique for gauging angular position and velocity of the body utilizes the solar panels on the outside surface of the satellite. Panels with more direct contact with the sun’s rays would output higher voltages. Position and velocity could be interpolated based on the knowledge of individual panel placement as well as individual panel power output. This approach uses hardware that is already integrated in the satellite. However, the satellite’s power supply board would require rewiring in order to measure and record power output from each panel.

IV. Simulated Results

Figures 6 and 7 can be merged to establish the full, theoretical closed loop feedback control system:

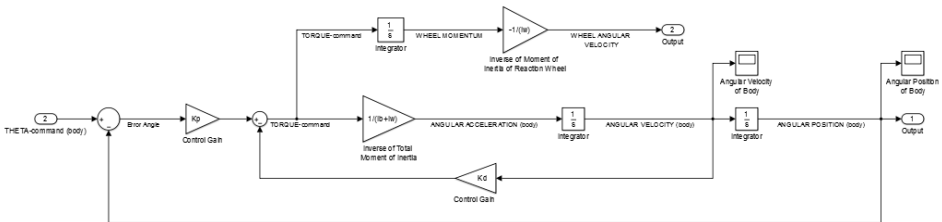


Figure 12. Complete Simulink Model (Theoretical)

In order to simulate the modeled dynamics, the following values were approximated using standard inertial calculation procedures:

$$\text{Moment of Inertia of Body} = I_b = 0.0067 \text{ kg}\cdot\text{m}^2$$

$$\text{Moment of Inertia of Wheel} = I_w = 0.0008 \text{ kg}\cdot\text{m}^2$$

Furthermore, a Matlab script was developed to run the simulation for every value of K_p from 0 to 10 in steps of 0.1, and every value of K_d from 0 to 30 in steps of 0.1. In accordance with the script, any control gain that made the system unstable was discarded, while any successful combination of control gains were stored. It was found that the following arrangement of control gains were most optimum for the given system:

$$K_p = 0.6$$

$$K_d = 19.8$$

In order to ensure the validity of the modeled control law, a range of desired angular body positions must be tested. For the purposes of this analysis, the response of the satellites angular position and required torque will be presented with for three different step inputs. The primary objective is to confirm that the system is stable and controllable for small and large input angles.

The following graphs depict the reaction of the system to a step input of 5 degrees, or approximately 0.0873 radians, applied 1 second after the start of the simulation. Figure 13 shows the angular position of the body with respect to time, while figure 14 depicts the control torque necessary for the step input maneuver.

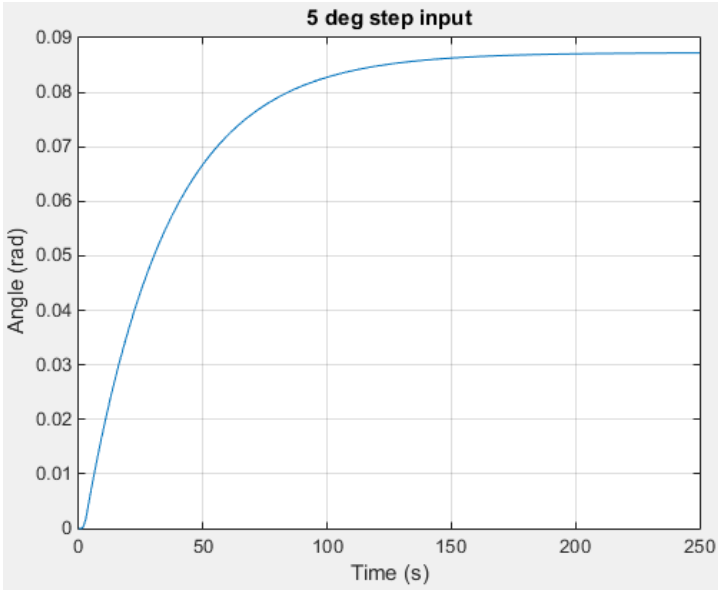


Figure 13. Position Response to Step Input (5 deg)

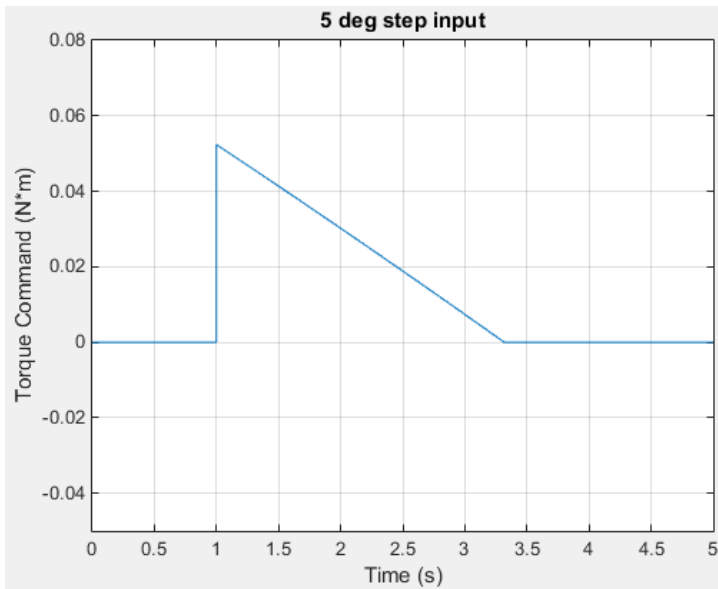


Figure 14. Torque Command Response to Step Input (5 deg)

The following graphs depict the reaction of the system to a step input of 20 degrees, or approximately 0.3491 radians, applied 1 second after the start of the simulation. Figure 15 shows the angular position of the body with respect to time, while figure 16 depicts the control torque necessary for the step input maneuver.

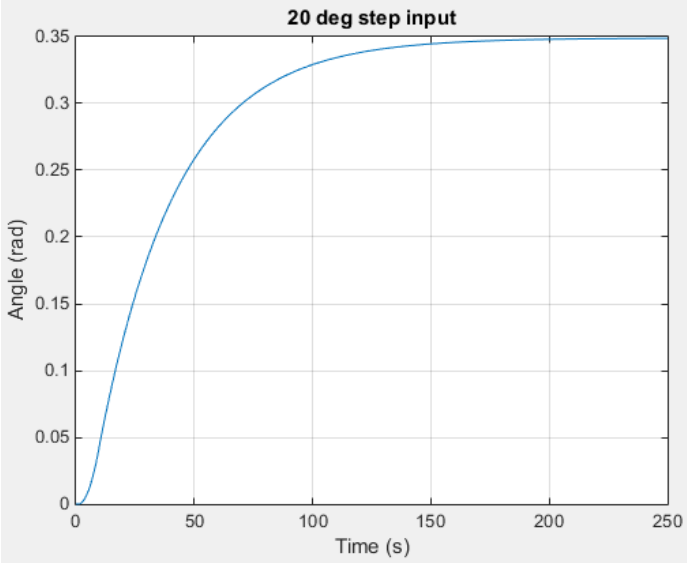


Figure 15. Position Response to Step Input (20 deg)

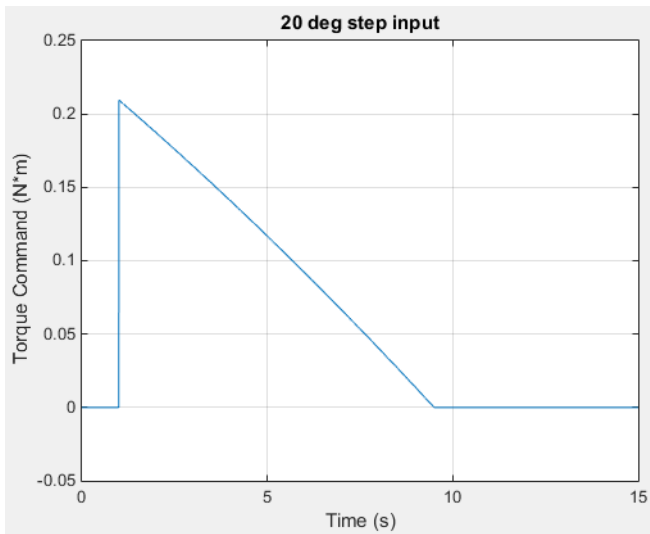


Figure 16. Torque Command Response to Step Input (20 deg)

The following graphs depict the reaction of the system to a step input of 270 degrees, or approximately 4.7124 radians, applied 1 second after the start of the simulation. Figure 17 shows the angular position of the body with respect to time, while Figure 18 depicts the control torque necessary for the step input maneuver.

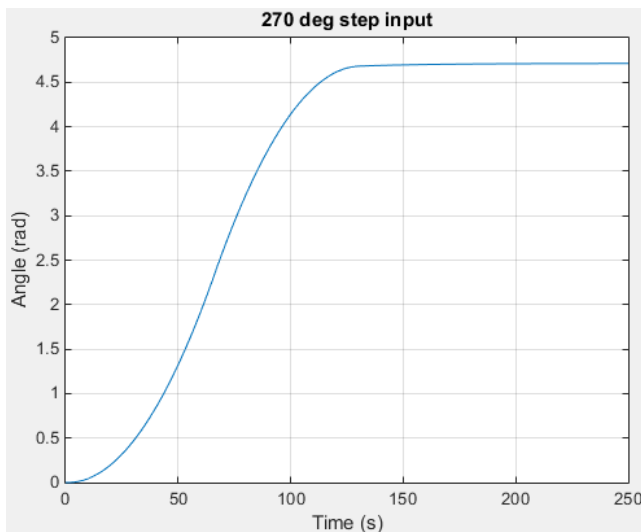


Figure 17. Position Response to Step Input (270 deg)

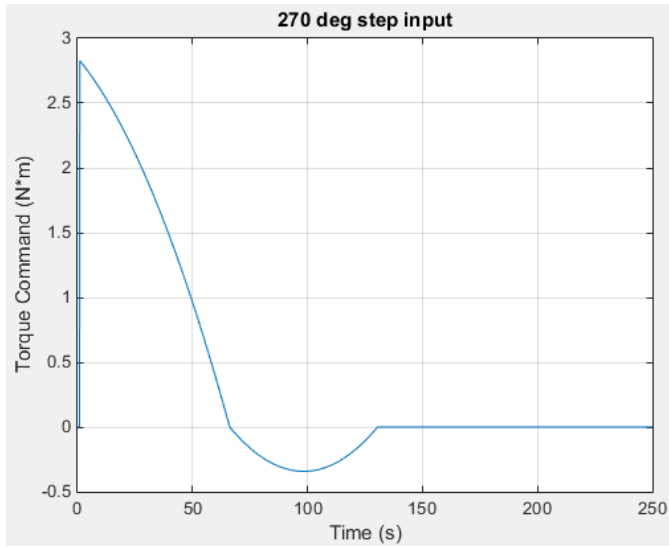


Figure 18. Torque Command Response to Step Input (270 deg)

For a 5 degree step input, the rise time of the system is around 175 seconds, and the command torque is only activated for 2.5 seconds, and has a maximum magnitude of less than 0.06 N*m. For a 20 degree step input, the rise time of the system remains around 175 seconds. However, the command torque in this case is activated for 8 seconds, with a maximum magnitude of over 0.2 N*m. For a 270 degree step input, the rise time of the system is, again, around 175 seconds. The command torque in this occasion is different than the others in shape and magnitude, with a maximum value of close to 3 N*m.

These results are consistent with the expected outcomes. As mentioned above, small Euler angle were assumed when developing the equations of motion of the system. Therefore, as the desired body angle increases in size, the required command torque increases as well, and the modeled system becomes less stable.

Again, these simulations are performed in a purely theoretical environment. The results merely demonstrate the validity of the modeled dynamic equations and control law. When implemented in hardware, though, certain signals must be saturated based on hardware limitations. For instance, the maximum amount of torque that the reaction wheel is

able to yield will depend on its moment of inertia, and maximum angular speed. Clearly, the absolute value of the command torque signal must always be less than the maximum amount of torque that the reaction wheel is able to yield.

V. Conclusion

This study presents the framework for the development of a single axis attitude determination and control system. A torque control law based on Euler's angle errors was utilized in order to simulate and verify spin control of a CubeSat by means of a momentum exchange device, or reaction wheel. A Matlab program was composed that ran through 30,000 iterations of the simulation, each with a different combination of control gains. The gains that produced ideal results were stored autonomously.

Additionally, potential hardware for system fabrication was investigated. The Arduino Mega was selected to execute the established control law. It was found that although Simulink does contain Arduino packages, the packages and libraries are not advanced enough to accommodate most sensor hardware. For that reason, it is necessary to create custom blocks in order to continue with the controller design process in Simulink. Otherwise, conventional programming methods must be used to create a functioning system.

When the final assembly of the subsystem is complete, system identification will be carried out to map the system's input to output relationship. Also, different controllers will be implemented in order to optimize power consumption and time domain characteristics, such as rise time and settling time. Finally, a three of these 1-D subsystems will be superimposed in order to create a three axis attitude determination and control system for a CubeSat in space.

Acknowledgments

I would like to thank the members of the San Jose State University McNair Program Staff. This past semester was especially challenging for me, and without their hard work, many students would not have the ability to express themselves through their education. I am very grateful and look forward to being positive representatives of the program.

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Examining the Hydration and
Mechanical Properties of Cement
Paste Containing Cellulose
Nanocrystals

Biography

Yvette Valadez-Carranza is a senior majoring in Civil Engineering with an emphasis in structural design. Her research interests include early-age strain effects of concrete specimens and sustainable concrete materials. She looks forward to graduating in Fall 2016 to continue pursuing graduate school and a career in researching concrete design and materials.

Examining the Hydration and Mechanical Properties of Cement Paste Containing Cellulose Nanocrystals

Abstract

Cellulose nanocrystals (CNCs) are a nano-scaled particulae material that has been shown to improve strength in cementitious pastes. One advantage of CNCs compared to other nano-materials is that CNCs are renewable and sustainable. The objective of this investigation is to investigate the influence of CNCs in cement paste. This work evaluates flexural and compressive strength as a function of heat of hydration—which measures the extent of reaction. Previous mechanical tests on cement paste containing cellulose nanocrystals (CNCs) have shown CNCs to improve the flexural strength of cement paste by approximately 30%. Isothermal calorimetry testing showed that degree of hydration of the cement paste containing CNCs increases compared to the plain system. Since properties of cement composites are time dependent, specimens were tested at degree of hydration. The hypothesis of this work is that CNC will improve the strength gain as a function of hydration. In addition, CNC will improve in the degree of hydration. To evaluate this hypothesis, cement paste samples were prepared using CNC of 0%, 0.2%, and 1.0% by volume. Heat of hydration quantities was related to specimen ages and mechanical properties at given ages. Results showed that specimens containing CNCs greatly increased flexural and compressive strength at the same degree of hydration as the plain system. Results indicate that CNCs are improving the strength of the cement paste by mobility of the microstructure.

1. Introduction

Cement has five major compounds known as—dicalcium silicate (C_2S), tricalcium silicate (C_3S), tricalcium aluminate(C_3A), tetracalcium aluminoferrite (C_4AF), and gypsum ($C\bar{S}H_2$). Mechanical properties such as strength are mostly attributed to C_2S and C_3S . When water is added to cement powder, heat dissipates as C_2S and C_3S chemically react with water to produce calcium silicate hydrate (CSH) and calcium hydroxide (CH). CSH forms as a poorly crystalline material whereas CH crystalized with a fixed composition [1]. As cement hydration occurs over time, a

series of reaction stages occur during the hydration of the calcium silicates.

In the first stage, known as initial hydrolysis, calcium and hydroxide ions are dissolved until the induction stage. In the induction stage, the ionization of the reaction occurs so that crystal nuclei may form as cement compounds. Next, hydration products began to form at an accelerated rate during the acceleration stage. Hydration becomes diffusion controlled and slows down thereafter. As hydration decelerates, the surface of the cement grain is no longer a smooth surface but a layer development of cement compounds occurring as needles into the pore space. The layer development acts as a barrier that slows down hydration [2]. The rate of deceleration helps determine the rate of early strength gain. Therefore, hydration is attributed with strength development of hardened cement paste. To optimize strength development during the hydration process, additional materials are introduced into the cement and water system. For this study, CNC content are added to the cement and water system to evaluate the degree hydration and strength development. CNCs are nano-particulae that improve hydration as a dual-mechanism. The first mechanism disperses the cement particle. The second mechanism increases the cement hydration by increasing the transport of water from outside the hydration product shell [4]. As a result, flexural strength of cement composites containing CNCs increases by 30% with only 0.2% volume of CNCs with respect to the reference [4]. However, it is yet to be determined whether improved hydration of cement composites containing CNCs is time dependent.

The objective of this experiment is to investigate whether CNCs additives improve strength development as a function of time or hydration. It is hypothesized that CNCs improve the strength gain as a function of hydration and not time. Therefore, CNCs improve the degree of hydration. Due to the breadth of this study, flexural strength test was the focal parameter to evaluate strength development of cement composites containing CNCs.

2. Materials and experimental testing procedures

Tested specimens contained CNC suspension, water, and cement powder. Isothermal Calorimetry (IC) was use to determine the degree of hydration

(DOH). To evaluate the mechanical properties of the testing specimens, compressive and ball-on-three-ball flexural test were performed to measure the strength development of the cement pastes at 2 different heat values and 1 age.

2.1. Materials

CNCs can be extracted from trees, plants, and paper waste. CNCs are extracted from fibers through sulfuric acid hydrolysis of the fibers. CNC suspension used for this study is extracted from Eucalyptus dry-lap cellulose fibers [5]. The CNCs nano-particles measure between 0.05 to 0.5 micrometers in length and 3-5 nanometers wide. The USDA Forest Service-Forest Products Laboratory, Madison, WI (FPL) provided the CNC material [5]. CNC material used was dispersed suspension in water as received from FPL. Type V cement with low aluminates and ferrite phases was used as the cement powder in the test specimens to maintain compositional purity.

Table 1 indicates the testing matrix used for this investigation. Specimens were prepared using CNC of 0%, 0.2%, and 1.0% by volume.

Mixture no.	wt. (g)		CNC/cement (vol.%)
	Cement	Water	
CP-0 (Reference)	1000	350	0.0
CP-1	1000	350	0.2
CP-2	1000	350	1.0

2.2 Cement paste preparation

A vacuum mixer (Twister Evolution 18221000 from Renfert USA Inc.) was used to mix materials [6]. To ensure consistency, the mixer was programmed to provide a low vacuum environment during the mixing procedure. Low air-entrained development occurred as materials mixed. The following procedures were done to prepare testing specimens: (1) the cement, CNC suspension (if needed), water were measured and added to the mixer bowl in the mentioned order; (3) materials mixed for 90

seconds at a speed of 400 rpm; (4) mixer was stopped for 30 seconds to help the mixture have a uniformity of materials; (5) materials in the bowl were mixed for an additional 90 seconds at a speed of 400 rpm; (6) Mixture was then casted in 2” by 4” plastic cylinders. Casted cylinders were sliced into 0.125” thick discs. Discs were sealed at 23 ± 1 °C until the age of testing. Additional alkali content was determined by weight fraction with respect to water. The CNC concentration was determined by volume fraction with respect to cement. For consistency, all testing specimens were designed and prepared with water-to-cement ratio of 0.35 with 2 different CNC concentrations.

2.3 Isothermal calorimetry

A TAM Air isothermal calorimeter was used to measure the heat flow rate and cumulative heat release [7]. Measurements obtained were used to determine the degree of hydration (DOH) of tested specimens. The calorimeter needed to reach equilibration for 45 minutes to establish isothermal conditions as the testing conditions. As soon as materials were mixed, 20-35 g of mixture was casted in a glass ampoule (22mm in diameter and 55 mm in height) and then sealed in testing channels. The glass ampoule containing the test specimen was placed in a designated chamber in the calorimeter—as shown on Figure 1. Data was collected for 7 days for the entire test matrix shown on Table 1.

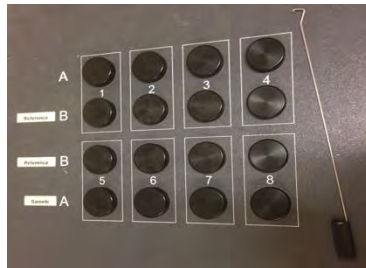


Figure 1. Isothermal Calorimetry Testing Chambers

2.4 Ball-on-three-ball flexural test

MTS Insight 10-Universal Tensile Machine and accessories were used to perform the multi-axial ball-on-three-ball (B3B) flexural test. The

testing stage consisted of setting a one-point load to pressure down at the center of a disc specimen. The disc specimen was supported at the corners of an equilateral triangle. The load at the center was loaded at a rate of 0.01mm/min. The B3B flexural test allow for a biaxial tensile state at the center of the specimen. By doing so, the test method is attuning to failures in the in-plane directions of the disk. Figure 2 shows the set-up of the B3B test performed. Each test was repeated 5 times and averaged.

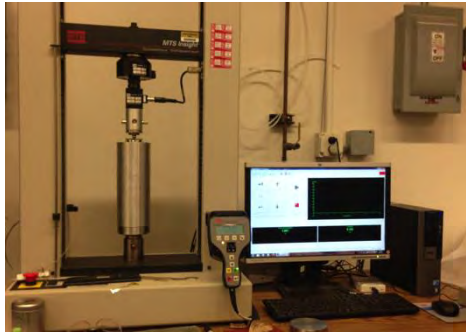


Figure 2. Ball-on-Three Ball Flexural Test Set-Up

Peak loads from the B3B strength test were used to calculate the flexural strength using the following equation derived by Borger et al. [8][9]:

$$\sigma_{\max} = \frac{F}{t^2} \left\{ (1+\nu) \left[0.485 \ln \left(\frac{R_a}{t} \right) + 0.52 \right] + 0.48 \right\}$$

where F, applied load;

t, sample thickness;

ν , Poisson's ratio of the disc material;

R, radius of disc;

R_a , support radius.

2.5 Compressive strength

A Forney FX700 compression testing machine was used to test the compressive strength of 2" cube specimens. The compressive strength was tested at a rate of 50 psi/s until the specimen failed under compression. Each test was repeated 3 times.



Figure 3. Testing Chamber Of Compressive Strength Machine

3. Results

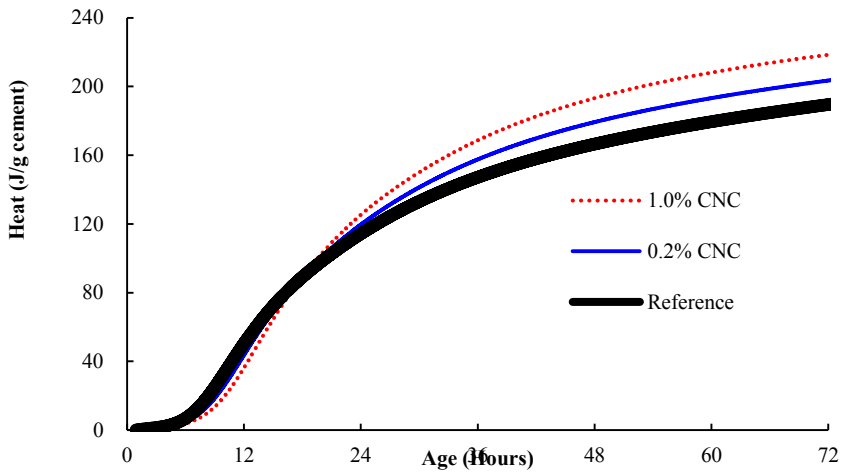


Figure 4. Time vs. Heat Flow of Entire Test Matrix

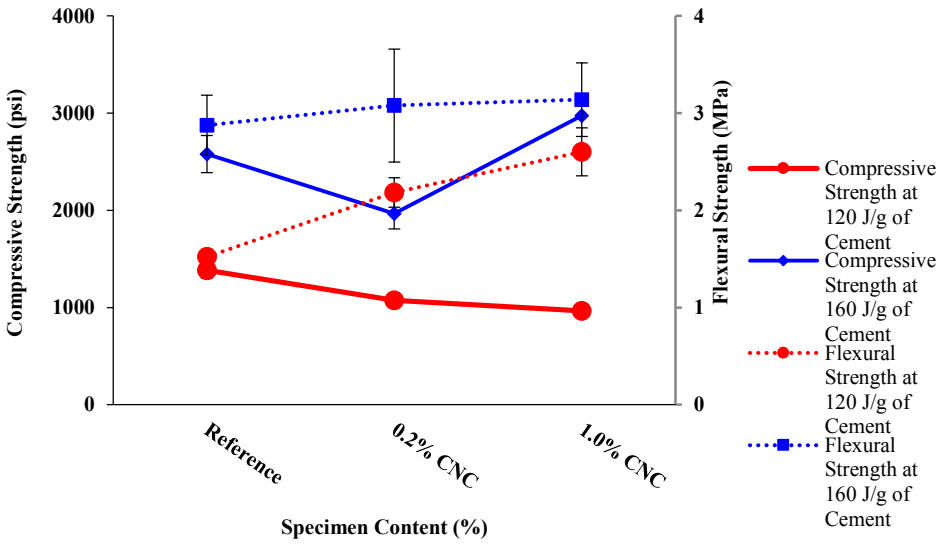


Figure 5. Specimen Content vs. Compressive and Flexural Strength of Specimens tested at two distinct heat of hydration Values

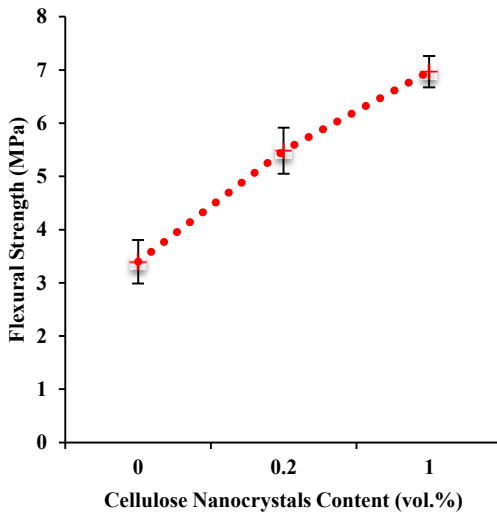


Figure 6. Specimen Content vs. Flexural Strength of Specimens tested at 3 days

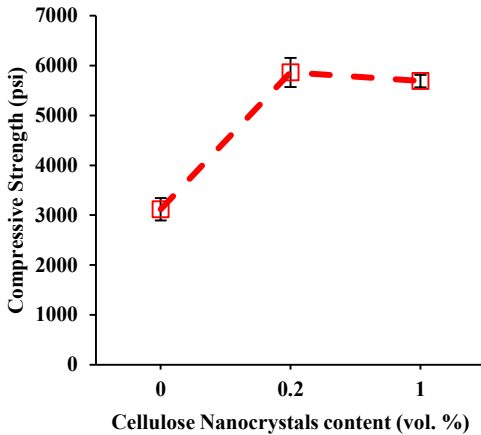


Figure 7. Specimen Content vs. Compressive Strength of Specimens tested at 3 days

4. Discussion

4.1 Heat of hydration

Figure 4 shows the accumulated heat for each tested item described on Table 1. Figure 4 demonstrates that heat of hydration was increased as CNC content is increased over the testing period. CNC content delayed cement hydration for the first 20 hours of age when compared to the plain system. Based on Figure 4, heat quantities, 120 J/g cement and 160 J/g cement, were related to a time interval for each mixture item on Table 1. Based on each time interval for each mixture item, compressive and flexural strength tests were performed to record strength development. Figure 5 shows average strengths recorded for each tested mixture item of Table 1. Figure 5 shows that the strength gain between 120 J/g cement to 160 J/g cement is not dependent on time because results do not follow a linear trend across all test mixtures. Moreover, Figure 5 shows a variation in strength development as CNC content was increased in the cement system.

4.2. Compressive and flexural strength at 3 days

Compressive and flexural strength of mix specimens were tested at 3 days. Figure 6 shows CNC content versus flexural strength of specimens containing CNCs. Figure 7 shows CNC content versus compressive strength of specimens containing CNCs. Figure 7 shows that as CNC content was increased from 0% to 0.2% and 1.0%, flexural strength was increased by 38% and 51%, respectively. Figure 8 shows that compressive strength increased to 47% and 45% CNC content is increased to 0.2% and 1.0%, respectively. Overall, CNC content in cement composites increased flexural and compressive strength in comparison to cement composites without CNC content.

5. Conclusion

In conclusion, the addition of CNC material improves flexural and compressive strength of cementitious pastes as high as 51% and 47%, respectively. Most importantly, CNCs improve the strength gain as a function of hydration and improve in the degree of hydration.

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Jaspinder Kaur

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Dental Services
in Rural and Urban Areas

Biography

Jaspinder Kaur is a 4th year nursing student at San Jose State University. Jaspinder is interested in pursuing a graduate degree in nursing in hopes of becoming a nurse researcher and working toward limiting health disparities among individuals in low socioeconomic neighborhoods.

In addition to being a first-generation college student, she is also the first woman in her family to go to college. Pursuing higher education is very important to Jaspinder because it would help her develop her potential, lead an independent life, and influence other female members of her family to attain a higher education. She hopes to break the sociological barrier to education in her family and community through her educational experiences.

In her free time, Jaspinder likes to sketch, read, listen to music, and watch comedy movies and TV shows.

Dental services in Rural and Urban Areas

Abstract

Dental health is essential to overall health, but some people suffer from dental problems due to financial hardship and limited access to dental services. Furthermore, people's health-seeking behaviors are linked to their ethnicity. Immigrants from developing countries have a higher chance of developing dental diseases than their native counterparts in the U.S. due to their financial condition, limited English speaking skills, and difficulty understanding the U.S. healthcare system (U.S. Department of Health & Human Services, 2016). This literature review explains how acculturation affects immigrants' perceptions of utilizing dental services. It also answers how immigrants' age at immigration, duration of stay in the U.S., and residency in urban areas all influence their dental-health-seeking behaviors.

Introduction

Tooth decay is the most common dental disease affecting children and adults in the U.S. (Center for Disease Control and Prevention [CDC, 2015). Immigrants from developing countries are at a higher risk of experiencing dental diseases than their native counterparts in the U.S., even if both groups are in the same financial condition, due to differences in their educational levels, cultural norms, and exposure to health services; these are leading factors contributing to oral health disparities (Vared, Zini & Sgan-Cohen, 2009).

Immigrants' perceptions and awareness of issues such as oral health are also shaped by their communities, traditions, and cultures. For example, immigrants who grew up in rural areas and did not have access to dental services are more likely to underestimate the importance of dental health even in the U.S. Even though immigrants physically immigrate to a new country, it can take them a very long time to acculturate. Low acculturation and shorter duration of stay in the U.S. can restrict immigrants' understanding of Western health care practices, which can discourage them from utilizing dental services (Scheppersa, Dongenb, Dekker, Geertzend, & Dekker, 2005; Xiaol & Colman, 2010). Furthermore, acculturation levels are different for immigrants **residing in** rural and urban areas. (Scheppersa, et al., 2005).

I have a personal connection to this topic because my parents are immigrants from a rural town in a developing country, India. It is interesting to see how my parents' lifestyles, community, and beliefs led them to underestimate the importance of preventive dental care. My parents' perspectives of dental health inspired me to start this project to learn if other immigrant parents from developing countries also hold similar beliefs and perceptions. The goal of my research is to understand how recent immigrants' perceptions of dental care affect their dental health and whether their perceptions of dental care change with acculturation.

It is important to understand how acculturation impacts immigrants' oral health to reduce oral health disparities (Xiaol & Colman, 2010). Research shows that acculturation has a positive influence on immigrants' systemic health because of better access to health care (Gao & McGrath, 2011 Xiaol & Colman, 2010). Although acculturation to a Western lifestyle can cause chronic diseases such as hypertension and diabetes because of the Western diet, research has also shown that acculturation is linked to a better oral health (Gao & McGrath, 2009). The goal of this literature review is to understand how length of stay in the U.S, age at immigration, and living in urban settings influence the acculturation of immigrant adults in urban cities.

Dental Services in Rural and Urban Areas

Immigrants in rural areas are less likely to use dental health services due to limited services and transportation problems (Georgetown Health Policy Institute, 2003). Only 59% of rural residents reported visiting a dentist last year compared to 66% of urban populations (Georgetown Health Policy Institute, 2003). The low number of dentists working in rural areas is a contributing factor to oral health disparities. For example, "rural areas have 29 dentists for every 100,000 people compared to 61 dentists for every 100,000 people in urban areas" (Georgetown Health Policy Institute, 2003).

Valencia, et al. (2012) conducted her research in Iowa with recently arrived Latinos, children in particular, to understand how Latino caregivers' acculturation affected their children's oral health. Latino children represent 4% of the Iowa population and 11.5% of the children

under the age of 5. Latino children have the highest rate of dental cavities compared to their native counterparts in Iowa, and it is important to address this issue to reduce disparities (Valencia et al., 2012). The study showed that children of immigrants who had been living in Iowa for less than five years had higher rates of dental problems because they were not aware of the available resources and they were scared to use health services because of their citizenship status (Valencia et al., 2012). In addition, the duration of stay was also linked to their oral-health-seeking behaviors. Latino parents' lack of education and dental insurance were linked to their children's dental problems (Valencia et al., 2012)

Immigrants' Dental Health in Urban Metropolitan Areas

Cruz, Chen, Salazar & Le Geros (2009) and Cruz, Shore, Le Geros & Tavares (2004) conducted studies with immigrants in New York and examined how acculturation affected their participants' dental health. Cruz et al. (2004) focused their study on Haitian immigrants in New York while Cruz et al. (2009) included immigrants of various ethnic backgrounds including Chinese, Asian Indians, Haitians, Dominicans, Puerto Ricans, other Hispanics, and other Black Caribbean.

Cruz et al. (2009) conducted their cross-sectional study with 1318 immigrants between ages 18 and 65. For this research, the age at immigration, length of stay in New York City, and country of birth were examined to understand the impact of these factors on immigrants' oral health. New York City was chosen because foreign-born individuals and children of foreign-born parents represent 56% of the total New York City population (Cruz et al. 2009).

The length of stay in the U.S. had a positive impact on immigrants' overall oral health. For example, Cruz et al. (2009) found that participants who had been in the U.S. for at least 14 years had a 66% lower rate of dental cavities or periodontitis than did those who had been in the U.S. for less than 5 years (Cruz et al. 2009; Cruz et al. 2004). Furthermore, participants who immigrated to the U.S. at or after age 44 were at a higher risk of experiencing dental diseases than those who immigrated at age 25 or younger (Cruz et al. 2009). The younger groups of immigrants still had unmet oral needs regardless of the country of birth, age at immigration, and length of stay, but their dental problems were less severe than those who were 44 or older at the age of immigration and those who had been in

the U.S. for only 4 years (Cruz et al., 2009; Cruz et al., 2004). Immigrants who were older than 44 years of age had fewer opportunities to access health care and were less acculturated because they had fewer opportunities to utilize health services in their haste to make a stable living (Cruz et al. 2009; Cruz, 2004).

Both of these studies showed that longer length of residency and younger age at immigration were related to higher rate of acculturation; therefore, these individuals were able to utilize the preventive services available by overcoming common barriers, such as language or education levels (Cruz et al., 2009; Cruz et al., 2004). More importantly, living in a diverse and economically stable city like the New York increased immigrants' chances of having better oral health because common barriers to health services such as limited fluency with the language, poor availability of dental clinics, and lack of transportation were reduced (Cruz et al., 2009; Cruz et al., 2004). Availability of interpreters and better access to dental services in cities like New York make it easy for non-English speakers to utilize health services that were not available to them in their native countries (Cruz et al., 2009; Cruz et al., 2004).

Discussion

These articles showed the correlation between acculturation and immigrants' improved dental health. Acculturation can change immigrants' norms or behaviors, which ultimately influences their perceptions of using preventive health care services. Acculturation can have a positive impact on immigrants' health outcomes. As they adapt to the new culture, they also learn to use preventive health services by observing others around them (Xiaol & Colman, 2010).

Acculturation rate is influenced by immigrants' age at immigration, their length of stay in the U.S., and their residency in urban areas. However, these studies cannot be generalized because of the limited number of participants that were interviewed. The results were not representative of all immigrant populations' health-seeking behaviors with consideration of their age at immigration, length of stay, and residency in urban cities. To the best of my knowledge, there has been no research examining how college students with immigrant parents interpret dental health. Such research could focus on how immigrant parents' dental

hygiene practices influenced college students' dental health and how the students' perceptions of dental health changed over time with education and acculturation.

Research has already been done to show how acculturation influences immigrant adults' oral health. I would like to explore the oral health experiences of college students who are children of immigrants to learn about their perceptions while growing up and how those changed over time with education. I would like to collect my research through simple surveys, one-on-one interviews, and focus groups.

Questions to be considered in future research include the following: What were students' interpretations of oral health while growing up? Has that mentality changed because of their middle, high school, and college education? What are some of the dental health issues that children of immigrant parents still face?

Conclusion

As of 2013, there were approximately 41 million immigrants in the U.S., and the immigration experience is a contributing factor to oral health disparities (Zong & Batalova, 2015). Depression, loneliness, financial stress, and low self-esteem are some of the outcomes of migrating to a new country. These often cause immigrants to neglect their health while they are trying to become financially stable (Vared, Zini & Sgan-Cohen, 2009). Studies have found that age at immigration and length of stay in the U.S. influence immigrants' dental-care-seeking behaviors. If the age at immigration is 25 years or younger and if the length of stay in the U.S. is at least 10 years, immigrants had better dental health. In this case, "better health" was defined as not being in serious need of dental treatment. Tooth decay and other dental illness might exist, but dental problems were less severe than those experienced by recent immigrants because they had either started using dental services or learned about proper dental hygiene practices (Cruz et al., 2009; Cruz, 2004). Low acculturation levels, shorter duration of stay in the U.S., and living in rural areas further increase oral health disparities among immigrants in the U.S. (Georgetown Health Policy Institute, 2013; Cruz et al. 2009).

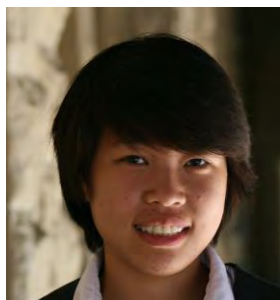
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Mentor:
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P-Nitrophenolate Colorimetric
Assay: A Tool for the Study of
Light-Driven Hybrid P450
Enzymes

Biography

Born in Vietnam, I came to the U.S. at the age of six. I am a first-generation college student and expect to obtain a degree in chemistry/biochemistry this spring. Over the past four years at SJSU, I have been fortunate to be mentored by great teachers and mentors. From the chemistry department, I thank Professor Lionel Cheruzel and Mallory Kato for giving me a research opportunity and for mentoring me the past 3 years. Since then, I have found my passion to study enzymes, how their structure relates to function and how we can harness them for synthetic and biotechnological applications. From teaching general chemistry workshops, an opportunity given by Professor Karen Singmaster, I also found my passion to work with students. Therefore, I hope to further my understanding of enzymes as well as to become a better scientist and teacher in graduate school. This endeavor would be much harder to reach without the help of our SJSU McNair program and the support of scholars and mentors from this family in the past year.

P-Nitrophenolate Colorimetric Assay: A Tool for the Study of Light-Driven Hybrid P450 Enzymes

Abstract

Organic wastes generated from industrial synthetic processes are constant threats to the environment's biodiversity. In the search for a solution to this problem, enzymes have become the center of focus for their ability to catalyze reactions in a green and highly selective manner. Among many, the heme-thiolate superfamily of Cytochrome P450s, already important in industries such as pharmaceuticals, has potential synthetic applications. However, the current use of these enzymes is expensive and complex. The Cheruzel group aims to improve the industrial applicability of P450s by engineering an alternative pathway using visible light to power the catalysis. We are now working to develop the next generation of light-driven enzymes with expanded functionality. This led to a need for a fast screening method to facilitate the large number of mutants being generated. Hence, a library of *p*-nitrophenolate derivatives were developed where different substrates are incorporated into the moiety. Enzyme activity can be measured when hydroxylation as the yellow chromophore, *p*-nitrophenolate is released and can be easily detected with UV vis spectroscopy. Having established the sensitivity and reliability of this assay, we then utilize it for exploring different parameters in our light-driven system as well as for comparing the activity between hybrid mutants. The library of *p*-nitrophenolate derivatives is now expanded towards mimics of non-natural substrates, which will aid in the process of generating mutants with new function and enhanced activity.

Introduction

Cytochrome P450 is an important superfamily of enzymes that catalyzes crucial reactions in metabolic pathways of organisms.^[1] With a diverse substrate library and wide range of catalytic reactions that they can carry out, these enzymes are widely studied in hopes of applying them for synthetic applications that will enhance our ability to synthesize valuable compounds with high regio- and stereoselectivity and in an

environmentally sustainable manner that is challenging to traditional synthetic processes.^[2]

Designed by nature, the enzyme is driven by a complex system. Cytochrome P450s require molecular dioxygen and two reducing equivalents. The latter is supplied through a complex and expensive electron transfer system where a partnering enzyme, the reductase, and a sacrificial electron donor, the NAD(P)H cofactor, are needed.^[2]

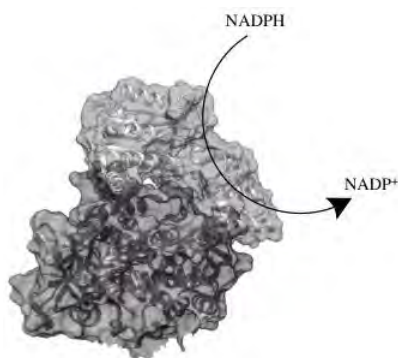


Figure 1: Depiction of P450 BM3 where the natural pathway consists of a FAD-binding domain interacting with the heme domain enzyme and delivering electrons, which it extracts from the NAD(P)H cofactor.

As a result, the industrial application of these enzymes is limited.^[2] To overcome these barriers, the Cheruzel group has developed the hybrid enzyme, using Cytochrome P450 BM3 as a model system, where the electron transfer system is engineered to eliminate the need for both a reductase and NAD(P)H cofactor. Here, a ruthenium diimine complex is covalently attached to the enzyme. When excited with visible light and in the presence of the quencher diethyldithiocarbamate (DTC), the electron can be delivered to the heme of the enzyme and drive the reaction.^[3]

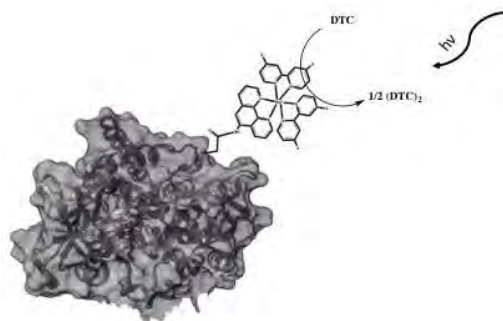


Figure 2: Depiction of P450 BM3 hybrid enzyme where the engineered electron transfer system drives the catalysis using visible light and diethyldithiocarbamate (DTC) quencher.

We recently reported that the hybrid enzyme is one of the has one of the highest activity among alternative pathways with a total turnover number of over 900.^{[4][5]} Having developed the methodology, we are working towards developing the next generation of hybrid enzymes for improved activity and towards catalysis of non-natural substrates. We hereby develop a library of colorimetric assays and adapt it to our light-driven system to measure the activity of P450 mutants being generated. This allows for fast analysis, compared to gas chromatography-mass spectrometry (GC-MS) and high-performance liquid chromatography (HPLC), which are time consuming and have analytical procedures that require extensive extraction. The first substrate synthesized was 16-p-nitrophenoxy-carboxylic acid (16 pNCA), a mimic of the enzyme's natural substrates (long fatty acid chains) incorporated into the p-nitrophenoxy structure. With this, we established the reliability of the assay through a series of controls and expanded the library towards non-natural substrates. The mutants used are sL407C-1, sL407C-2, and tK97C-1.

Methods

A. Generating Hybrid P450 Enzymes

Mutant enzymes tK97C and sL407C generated through site directed mutagenesis are ligated into an expression vector. Expression of these mutants is achieved in *E. Coli* cells and harvested by centrifugation as previously reported. Cell pellets are lysed through sonication and

purified with ion exchange and size exclusion columns. Following purification, proteins with R_z (absorbance at 420 nm/absorbance at 280 nm) of 1.6 are labeled with ruthenium (II) bipyridine phenanthroline iodoacetamide derivative at the non-native cysteine residue (L407C and K97C) where this covalent attachment is confirmed through several techniques: mass spectrometry, UV vis spectroscopy, and chymotrypsin digest.

B. Synthesis of p-nitrophenoxy substrates

A large family of chromogenic substrates has been synthesized following reported procedures.

C. Optimization of Light Reaction

Individual parameters within the light reactions are varied one at a time, including quencher concentration (25 mM to 150 mM), reaction pH (7.0 to 9.0), temperature (15C to 35C), tris buffer concentration (10mM to 100 mM), and light intensity (400W to 1000W). Each reaction is run for 15 minutes using 2 uM WTL407C-Ru(BPY). The standard reaction condition is 100 mM DTC at 25 C using 50 mM tris buffer pH 8.0.

D. Measuring Enzyme Kinetics

Kinetics of hybrid mutants tK97C-1 and sL407C-1 are measured using the substrate 16-p-nitrophenocarboxylate (16-pNCA), which contains a p-nitrophenol group that can be released and measured at 410 nm (extinction coefficient = 13200 M cm^{-1}) with a UV vis spectroscopy. The substrate concentrations are set from 5 uM to 200 uM. While 2 uM of K97C-Ru(BPY) is used in kinetic tests, only 1 uM of WTL407C-Ru(BPY) is needed for reliable absorbance reading of product formation. Each reaction contains 100 mM DTC as quencher and irradiated with 1000W Xenon Orion lamp for 1 minute.

Results

A. Establishing Reliability of the Assay

Upon adapting the p-nitrophenolate colorimetric assay, we ran a series of controls by taking out individual components of our light system, such as in the absence of the quencher, hybrid enzyme, visible light, or

when enzyme and photosensitizer are not covalently attached (Fig. 2). There was no activity observed unless all components were present, thus confirming the reliability and sensitivity of this assay. The reaction is tested with sL407C-1 mutant and 16-pNCA.

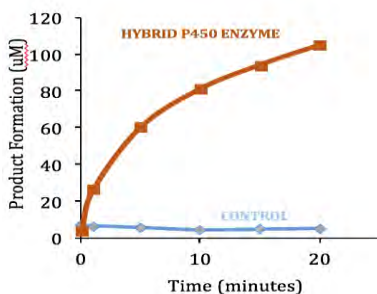


Figure 3: The control shown with lack of covalent attachment between enzyme and ruthenium photosensitizer and 2µM enzyme reaction for 20 minutes each.^[6]

B. Optimization of Light Reaction

Optimization of the light reaction conditions include the following parameters (Figure 3): DTC concentration, pH, tris buffer concentration, temperature, and light intensity. Ranging DTC concentration did not lead to changes in activity while only a decrease in pH led to a decrease in activity. However, ranging the temperature from 15C to 35C, we found the optimal temperature to be 30C, and that decreasing buffer concentration up to 10 mM tris led to a progressive increase in activity. We also varied the light power from 1000W to 400W and saw a decrease in activity with decreased light power after 800W (Figure 4).

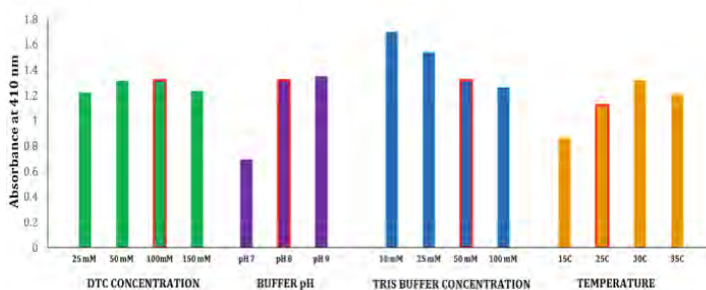


Figure 4: Varying parameters in light reaction for optimization of the assay.^[6]

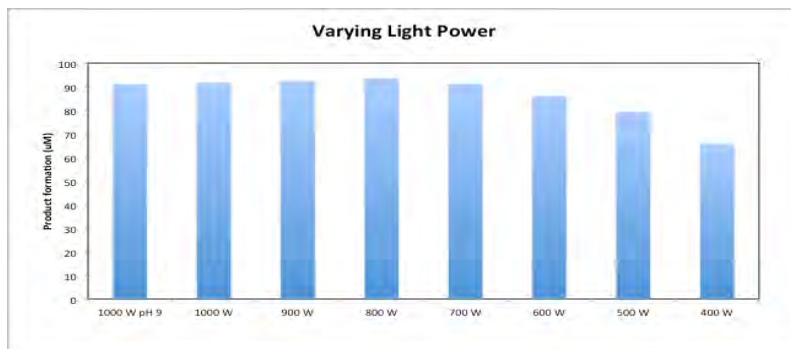


Figure 5: Activity of sL407C-1 with varying light intensity from 400W to 1000W.^[6]

C. Establishing Sensitivity of the Assay with Application to Enzyme Kinetics

Michaelis menten kinetics of mutants tK97C-1, sL407C-1, and sL407C-2 are performed to identify the parameters (K_m and k_{cat}) for substrate 3 (16-pNCA) and mutant sL407C-1 with p-nitrophenoxybenzene. The K_m for sL407C-1 and sL407C-2 are similar as expected since they are the same mutant enzyme that only differs in the ruthenium complex used. The rate of reaction for substrate 10 with sL407C-1 is much lower than 16-pNCA.

D. Testing With Different Substrates

The mutant WTL407C-1 is tested with different substrates where 1 uM protein, 400 uM of substrates, 100 mM DTC was used for each reaction. Only the reaction with substrate 8 (p-nitrophenoxyisopropane) had a concentration of 1 mM. Control involves the removal of protein and replacing is only thee ruthenium complex to ensure that there was no activity in the absence of the enzyme. We noticed that there is low activity with shorter fatty acid and non-natural substrates. The increasing chain length in fatty acid and alkanes led to an increase in activity. The p-nitrophenoxybenzene has the highest activity of all substrates other than 16-pNCA.

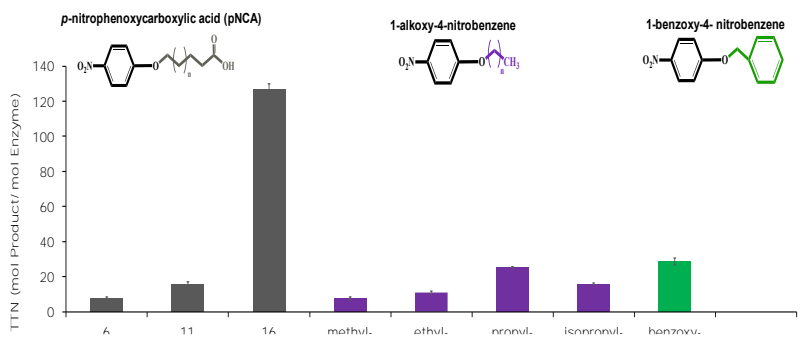


Figure 6: Graph depicting activity of 10 substrates with sL407C-1.^[6]

Discussion

In adapting the colorimetric assay, we first used substrate 3 to establish the reliability and sensitivity of the assay. We noticed that in the control reactions there was negligible background activity at 410 nm. Having this, we next optimized the assay for the light-driven system where individual parameters of temperature, pH, tris buffer concentration, and DTC quencher concentration were varied. We found that the optimal temperature was 30C and tris buffer concentration was 10 mM tris. Variation in DTC concentration did not lead to much change in activity. We then noticed that a drop in pH to 7 led to half the activity of the enzyme. Base was added after each reaction and before measurement to ensure that the pH was at least 10 for complete deprotonation of p-nitrophenolate product and protein contribution at 410 nm is eliminated. The protein, however, is also stable at pH 9 and the same activity was observed at this pH. Light intensity was analyzed where a drop in intensity led to a decrease in activity since the rate of electron transfer depends on this. We then continued to test the sensitivity of the assay by reproducing the trend between mutants previously analyzed with GC-MS. We previously reported that mutant sL407C-2 has much higher activity than sL407C-1, which in turn has higher activity to lauric acid than tK97C-1. This trend was seen with the colorimetric assay.

The library of the chromogenic substrate was expanded towards shorter chain fatty acid and non-natural substrates, also with varying chain length to see the effect on activity. Decreasing the chain length of fatty

acid and alkane led to a decrease in activity. The activity of all substrates is three- to five-fold less than 16 pNCA. To our surprise, p-nitrophenoxylbenzene, an aromatic ring, has higher activity compared to alkoxy and fatty acid substrates. This is exciting and gives us a better understanding of the active site of the mutant. Kinetics between 16 pNCA and p-nitrophenoxylbenzene shows that the K_m is similar while activity is much less as expected. We have also adapted the assay to the 96-well plate where difference in activity of substrates is visibly distinguishable.

Conclusion and Future Direction

We are working towards developing the next generation of a light-driven hybrid P450 enzyme. Knowing that this assay is reliable and sensitive, we have used it for the optimization of our light-driven system and analyzed the activity of our mutant enzymes. This assay not only deepened our understanding of the system but also provided an avenue for faster analysis with fewer resources needed. Now that this assay is also adapted to a 96-well plate, this will allow for rapid analysis and enable multiple conditions to be tested at once. We are generating more mutants and developing their activity towards non-natural substrates and better activity.

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Mentors:
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Social Anxiety and Values in
Relation to Acceptance and
Commitment Therapy

Biography

My academic interests today are to expand and contribute to the field of Psychology, and particularly to acceptance and commitment therapy (ACT). I finished high school many years ago in Greece. Since that time I have worked most of my life in clothing factories and as a hair stylist until I moved to the United States fifteen years ago. This experience changed my life completely and it gave me opportunities to improve myself personally and academically. I first became interested in ACT at San Jose State University in my mentor's lab. Working closely with Dr. Gregg helped me to realize how important ACT is and how to start my own contributions in the study of acceptance and commitment therapy with my own research on social anxiety and values.

Social Anxiety and Values in Relation to Acceptance and Commitment Therapy

Abstract

Individuals who suffer from social anxiety disorder (SAD) often isolate themselves from society. As a result, people with the disorder experience many negative thoughts and feelings. Social anxiety entails feelings of fear and avoidance in social interactions as well as the embarrassment of other individuals' negative judgment. Experiential avoidance and cognitive fusion are both pervasive and harmful for the individual. Reduced self-control prevents people from regulating attention, energy, and acceptance of emotional distress. As a consequence, individuals with heightened social anxiety avoid joining social events and avoid the aversive stimulus of fear. In addition, they occupy themselves with negative thoughts before and after the event if they are required to attend. Acceptance and commitment therapy focuses on one's values because values affect the individual's life. Studies have shown that focusing on one's values reduces symptoms of anxiety. Results indicate that symptom improvement is possible when a person is willing to join social gatherings and practice tolerating aversive emotions, which are recognized with one's values.

Introduction

Social anxiety disorder (SAD) causes a great deal of suffering. Social anxiety is one of the most common disorders (Niles, et al., 2014). The disorder forces individuals into isolation and despair due to their constant fear of rejection from others. When people are forced to choose between experiencing fear, embarrassment, and psychological anguish or the chance to escape the circumstance, they prefer the latter (Ossman, Wilson, Storaasli, & McNeil, 2006). As a result, individuals with social anxiety disorder lead very limited lives. Despite the attention researchers have given to social anxiety as it relates to individual values, more research needs to be done. Social anxiety is explained as the fear and avoidance of social conditions in which an individual might be exposed to adverse evaluations by other people, and during social gatherings, sufferers stand at the margins avoiding eye contact with other individuals

(Panayiotou, Karekla, & Panayiotou 2014). previous research has focused on how social anxiety affects an individual's values. For example, Kashdan (2007) found that social anxiety was related to having few positive experiences. The fear and avoidance of these experiences come from dysfunctional beliefs. These dysfunctional views set forth a series of unhelpful reactions. They increase attention to possible evidence of social peril such as yawns and frowns (Kashdan, et al., 2014). In this type of uncomfortable interaction, socially anxious individuals actively try to avoid the experience as much as possible. The current work is a literature review to better understand how values affect one's life. The review asks the following question: Do people live up to their values, or does social anxiety prevent them from living a fulfilling life?

Social Anxiety and Experiential Avoidance

Social anxiety connects to a person's level of experiential avoidance, which directly affects the desire to engage in social behaviors (Ossman, et al., 2006). Experiential avoidance is a behavior that is engaged in to control emotions, and the attention can be directed toward a particular experience, physiological arousal, or behavioral expression of emotion (Kashdan, et al., 2014). Experiential avoidance leads to an increase in anxiety symptoms. In social situations where two people give self-disclosing information to each other, the risk for social failure is high; as a result, experiential avoidance is heightened (Kashdan et al., 2014). When this happens, the dreaded stimulus cannot be easily avoided as these reactions are coming from inside. According to Kashdan (2007), social interaction increases anxious thoughts, feelings, and bodily sensations. In this view, it is easy to envision the degree to which social anxiety can inhibit enjoyment and positive experiences during any aspect of a person's general interactions.

Research on the meaning of experiential avoidance supports the influence of this particular emotion-directed strategy on decreased wellbeing. For instance, experience studies have found that individuals with increased social anxiety are more likely to hide emotions from those in their surroundings and to experience the fewest positive experiences when they attempt this strategy (Kashdan, et al., 2013). When individuals with SAD depend on such safety behaviors to hide their emotions, they

contribute to their social anxiety symptoms instead (Kashdan et al., 2013). Efforts to avoid or hide anxious thoughts or feelings in social gatherings hinder emotional processing, and thus prevent the person from acclimating to unpleasant circumstances (Kashdan et al., 2013).

Reduction of Self-Control and Positive Emotions

People who suffer from social anxiety disorder are more likely to view themselves as undesirable and inferior to companions (Kashdan et al., 2013). When individuals engage in cognitively challenging circumstances they may experience self-control reduction, defined as the fatigue of the person's ability to regulate attention, energy, and acceptance of emotional distress (Kashdan et al., 2013). Unwarranted focus on controlling oneself also reduces contact with present experiences, causing a person to be less reactive to reward possibilities in the environment (Kashdan et al., 2013). Routinely acting in ways to alter emotions during and after social interactions out of fear of experiencing anxiety may play a determinative role in how excessively social anxiety corrodes regulatory resources and positive outcomes (Kashdan, 2007). The motivation to avoid anxiety, negative emotions, and social rejection at the cost of cultivating positive experiences and social relationships can lead to an isolated and depleted existence (Kashdan, 2007).

Acceptance and Commitment Therapy

Acceptance and commitment therapy (ACT) is a third-wave behavior therapy that focuses unequivocally on changing one's connection with one's thoughts instead of changing the content of those thoughts (Brady & Whitman 2012). Clarification of acceptance and commitment therapy is based on a variation of functional contextualism. ACT views psychological occasions as a set of ongoing communications between individuals and situationally distinct conditions (Hayes, et al., 2004). Acceptance and commitment therapy highlights living with one's values over symptom reduction, which in turn may empower the individual to become more aware of his or her own values (Brady & Whitman, 2012). The general goals of ACT are to weaken the grip of the exact verbal content of cognition that supports avoidance behavior, and instead to build

an alternative concept where one's behavior is aligned with one's values (Hayes, 2004).

ACT asserts that strong change is possible and it can come quickly because the real problem is the general context and the purpose of action and not well-conditioned life difficulties (Hayes, et al., 2004). Social anxiety affects many people today and many of them avoid any social interactions to escape the aversive stimulus of fear. Therefore, it is important to know how their values are affected by the anxiety. Moreover, the basis of the values described by the individual could help to develop specific goals and actions. The committed-action procedure of ACT is to encourage behaviors that align with one's values even if obstacles occur (Brady & Whitman, 2012). The process of ACT is to detect cognitive fusion and avoidance, defuse and let go of negative thoughts (hence finding a new, more flexible function for these circumstances), and move along a valued route in a way that shapes larger patterns of operational behavior (Hayes, 2004). Values are important because they affect the quality of individuals' lives. When anxiety is heightened, the question is how this relates to whether or not individuals are living their lives according to their values.

Previous research has investigated social anxiety and experiential avoidance, while additional research examined the differences between cognitive behavioral therapy (CBT) and acceptance and commitment therapy (ACT) for treatment of social anxiety disorder (Niles, et al., 2014). The study investigated every session with the participants and the relationship between CBT and ACT in reducing social anxiety disorder. Participants consisted of 50 adult outpatients randomized to CBT ($n = 25$) or to ACT ($n = 25$) for social anxiety disorder (Niles et al., 2014). The study used treatment sessions and different questionnaires. Measures included the Acceptance and Action Questionnaire that was established to measure the proposed mechanisms of change (experiential avoidance) in ACT. The study used the 16-item version that is useful to detect small changes. Another questionnaire in the study used the Self-Statements During Public Speaking Questionnaire. The scale was developed to assess the cognitive factor of fear of public speaking. Results indicated that there was a difference in decline between the ACT and CBT. For example, negative symptoms decreased more rapidly in the beginning of

treatment for ACT, but it was linear for CBT. Experiential avoidance decreased to a greater extent in ACT than in CBT. Patients whose negative thinking decreased rapidly at the beginning of treatment had greater symptom reduction in both treatments, and those who were quickly willing to practice uncomfortable feelings had greater symptom reduction in ACT but not in CBT (Niles et al., 2014).

Another study investigated positive emotions, experiential avoidance, and self-control depletion to aid in determining whether individuals met diagnostic criteria for the generalized subtype of social anxiety disorder (Kashdan, et al., 2013). The study included 84 individuals. Forty-one of them were diagnosed with social anxiety disorder, and 43 were a healthy control group. Results indicated that experiential avoidance outperformed social anxiety in differentiating people with SAD, and this reveals that social anxiety consists of more than self-reported anguish. The healthy group generated and regulated emotions differently in everyday relations compared to the SAD group. The study demonstrated that the types of emotions, beliefs, and behaviors individuals with SAD referred to in laboratory conditions and methods also occur in real-world settings (Kashdan et al., 2013).

A recent study examined the influence of ACT in a group with social anxiety. People with social anxiety tend not to seek treatment because they are afraid of what others will say. Such individuals feel embarrassed and humiliated if they admit their problem to friends, relatives, or even their doctors (Ossman, Wilson, Storaasli, & McNeill, 2006). The study served as a preliminary small-scale investigation of the effectiveness of ACT in decreasing participants' level of experiential avoidance and change in participants' efficiency in the value domain of social relationships. Participants were 22 individuals, 11 men and 11 women. The results supported the expectation that ACT therapy would reduce symptoms of empirical avoidance. The study combined the use of four dependent measures, one outcome measure, and three process measures. The Value Living Questionnaire (VLQ) measures the importance of valued spaces and the degree to which individuals are living life according to their values. Scores from the VLQ showed a gradual ascendant trend throughout the therapy and a considerable increase at a three-month follow-up. The data showed a significant decrease of social

anxiety symptoms in post-treatment, and the decrease slightly improved at follow-up (Ossman et al., 2007). This finding suggests that symptom improvement could result from an increased willingness to practice aversive emotions and engage in social behaviors that are identified with the individual's values.

An additional study examined positive psychological practices in relation to social anxiety in a meta-analysis (Kashdan, 2007). Negative experiences come from an avoidant arrangement that inclines individuals to remove themselves from any possibly painful stimuli (Kashdan, 2007). The study was the first quantitative review that used meta-analytic process combined studies on the relationship between the social anxiety spectrum and positive practices. The investigator in this study examined three questions. First, to what degree was social anxiety disorder (SAD) related to positive feeling and inquisitiveness? Second, is social anxiety a gamut of the presence/absence of the disorder? Third, is social anxiety connected with diminished positive experiences? (Kashdan, 2007). The main concern of the meta-analysis was to investigate whether social anxiety was connected with diminished positive experiences. There are some limitations in this study. Discussions of cause and effect are not possible due to the correlational nature of the study, and it was not possible to define the temporal relationship between social anxieties and reduced positive functioning. The investigation was limited to two outcomes, positive affect and curiosity, from constructs that replicate hedonic and psychological wellbeing and character strengths (Kashdan, 2007).

Researchers in a pilot study examined the effectiveness of ACT in a variety of disorders, and the emphasis was on exposure-based approaches and procedures (Dalrymple & Herbert 2007). The study established a combined procedure of ACT plus exposure for individuals diagnosed with SAD. The study predicted that results would validate significant improvements. Researchers integrated many measures in the study, including the Valued Living Questionnaire (VLQ). Outcome measures from post hoc tests showed greater apparent quality of life from pretreatment to follow up. Participants found the treatment to be highly satisfactory, and they also reported higher agreement with the report, saying the treatment resulted in reductions in avoidance associated with fear in social circumstances. Results showed significant improvement

from pretreatment to follow up on self-report measures, as patients reduced their use of avoidance-based coping (Dalrymple et al. 2014).

A recent study examined an integrated acceptance-based behavioral approach for individuals who have depression and social anxiety (Dalrymple, et al., 2014). This study aimed to develop a pilot test for the effectiveness of ACT and behavioral therapy in a sample of patients with comorbid depression and SAD in a hospital-based practice. Therapy included pharmaceutical intervention as well as psychotherapy. Measures used were the Quick Inventory of Depressive Symptomatology (QIDS), the Quality of Life Inventory (QOLI), the Reaction to Treatment questionnaire, and a selective serotonin reuptake inhibitor (Dalrymple et al., 2014). The study examined thirty-one participants ($n = 31$) and included assessments at baseline, mid-treatment, and post-treatment. Dalrymple and his colleagues used interviewer-rated and self-report measures. The researchers found that the symptoms of SAD and depression were significantly decreased. The findings on quality of life and functioning were encouraging. The study suggests that ACT can be an effective method for individuals with comorbid conditions of depression and anxiety (Dalrymple et al., 2014). All these studies indicate the helpfulness of ACT and the connection to the VLQ. Therefore, I hypothesize that people who are very anxious and focused on their anxiety symptoms do not do things that are meaningful, such as focus on their social, family, or interpersonal values.

Conclusion

Overall, social anxiety disorder (SAD) makes people suffer and restricts their everyday life. Recent studies have shown that fear and avoidance in social interactions force individuals to be isolated from human contact when they have to attend social events. Experiential avoidance creates a behavioral process where the individual is unwilling to stay in contact with undesired experiences such as those producing fear or unpleasant memories. As a result, the person acts to avoid circumstances that increase these emotions. Acceptance and commitment therapy changes the method by which individuals cope with events that trigger and perpetuate the circle of psychological suffering (Ossman, et al., 2006). Social anxiety disorder can also lead to constant self-control reduction, as

defined by the exhaustion of the individual's ability to control negative emotions, such as feelings of emotional distress (Kashdan et al., 2013). Acceptance and commitment therapy highlights the priority of living with one's values over symptom reduction. In turn, the individual may be more aware of his or her own social and general values. Present-moment consciousness pinpoints the concept of acceptance. If acceptance does not occur, avoidance and escape behavior will continue (Brady & Whitman). Accepting negative emotions is a very difficult task when people are overwhelmed by anxiety and avoid talking or touching other people at social events. Therefore, acceptance and commitment therapy highlights the importance of personal values and refrains from focusing on symptom reduction. Being aware of one's values changes the trajectory of one's thinking. There is much work to do in the field of social anxiety and personal values, and I will continue with this research project. I will add to this literature by continuing to do my own research on how social anxiety affects the person and his or her social and general values. As a result, I will have a more developed analysis when I complete my methods, results, discussion, and conclusion in my next publishing.

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Homelessness—Emerging Trends
and Themes

Biography

Amanda Olson is a first-generation student pursuing a BA in psychology with a minor in sociology at San Jose State University. She anticipates graduating Cum Laude in June 2016. Her academic interests include psychology, sociology, social work, and social justice with an emphasis in homelessness and the foster care system. Amanda is honored to be a McNair scholar and a member and officer of Psi Chi International Honor Society. After completing an undergraduate degree at San Jose State University, she is interested in pursuing a doctorate in community psychology or social justice. She has a strong passion for research and education, especially in research that can be utilized to improve communities and provide social justice for underrepresented populations. Upon completion of a doctoral program, Amanda would like to be a university professor so she can contribute to the diverse knowledge and experiences within her department and community.

Homelessness—Emerging Trends and Themes

Abstract

The purpose of this literature review is to examine previous research, completed over a broad period of time, in order to illustrate the nature of the themes and trends regarding homelessness. Over time, personal, societal, and structural barriers have shifted along with public opinion regarding the causes that exacerbate homelessness. After a semi-thorough analysis of the personal, social, and structural barriers, it is clear that the current body of scholarly research excludes the perspective of the homeless in regards to the situation of homelessness. Scholarly articles were included to this study; some examples include Bogue (1963), Rossi (1990) Bullock (1995), and Mullins (2015). Some overarching themes that can be analyzed within the context of individual barriers include disability, disease, incarceration, societal perceptions such as victim blaming, compassion fatigue, stereotyping, institutional-like housing, and legal aid, and a current trend that emerged was the overall exclusion of the perspective of undomiciled persons. The researcher believes that current research is underutilizing this untapped resource by failing to notice the benefits of such first-hand-context viewpoints. It is believed that the single individual facing homelessness has been lost in the statistical values we replace them with in the name of research. This insight has the potential to help find more efficient evidence-based interventions to eradicate homelessness, but this potential will remain unknown until further research is conducted in this area.

Defining Homelessness and its Historical Background

The definition of homeless varies considerably across dictionaries, articles, social sectors, and so forth, but for the purpose of this article and as defined by the national health care for the homeless council, a homeless individual is one who lacks housing, including an individual whose primary residence during the night is a supervised public or private facility (e.g. shelters) that provides temporary living accommodations and an individual who is a resident in transitional housing. This includes people

living out of their vehicles, but does not include individuals partaking in “doubling up,” where many individuals or families inhabit one household.

Much of the research is based on the “expert view” of homelessness, and by gathering data only from service providers we are receiving only part of the story. Why as researchers, policy makers, social workers, health care workers, and individuals, do we not ask the homeless directly what they need? The author of this paper believes that a single individual facing homelessness has been lost in the statistical value we replace them with in the name of research. The words and jargon used in seminal research marginalizes the identities of such persons, and they are described solely within the context of their homelessness. It is a societal norm to call them homeless people.

Homelessness is a socially constructed idea that was coined after living in shelters became the norm and a nomadic way of life dissipated. According to Kusmer (2002), homelessness has been documented in the United States since the 1640’s. The population and the connotation placed on them have been evolving ever since its birth. For example, the Darwinian Theory contributes to victim-blaming of the homeless in an indirect manner due to the notion of “survival of the fittest.” This has been used as a causal explanation of homelessness and has led to a perpetuation of such people being ignored due to the failure of the privileged to ameliorate their plight (Eitzen, Zinn, & Smith, 2013). Before the 1930s, the main response to homelessness was emergency-based before institutionalized care, which offered long-term care, became mainstream across the states by 1890 (U.S. National Library of Medicine, 2006).

During the Great Depression in 1929, homelessness began to flourish, and a transient lifestyle became the new norm for many seeking work in other towns. The economy finally got much-needed relief during World War II. During this time, the economy flourished due to new employment demands for both men and women to make materials used in the war and to participate directly with the armed forces. The post-World-War-II era and deinstitutionalization of long-term mental health care led to the population of localized skid row inhabitants as the economy came to a standstill after the war ended (Rossi, 1990). The end of the war spelled an end to several manufacturing and production jobs, as now there was no use for such products. Deinstitutionalization meant that people suffering

from debilitating mental health conditions did not have the support they needed to lead a semi-normal lifestyle. The demographics of the homeless in Chicago during this time, according to Bogue (1963), were a median age of 50 with a majority being single men. Ninety percent of this population was white, twenty-five percent were chronic alcoholics, fifty percent had a physical disability, and a quarter suffered from chronic mental illness. Chicago's demographics were a reliable representation of the rest of the state's homeless population during this time period.

The New Deal era led to implementation of social safety nets and regulation laws that ensured the citizens of our nation some help during times of economic distress and a competitive market for jobs and consumerism. Between the 1940s and 1960s, America had the biggest middle class it has seen in its whole existence, which was aided by the creations that came with the era of the New Deal. When neo-liberalistic ideas of deregulation were set into motion and funds were scaled back from social safety nets is when the middle class began to shrink. Jobs went overseas, which led to mass job loss with time. The social safety nets were not enough to sustain those negatively affected by the job loss and stagnation of the economy.

Throughout the history of homelessness the highlight of the causes has shifted back and forth between individual and structural. This phenomenon can be explained through a theory of social constructivism in which individuals use the social context to interpret their experiences (Eitzen, Zinn, & Smith, 2013). Depending on the social climate of the time, public opinion shifts accordingly. It is apparent today that both individual and structural causes contribute to homelessness, and that they may be so intertwined that one cannot clearly distinguish one from the other, which will be further addressed in this review.

In the 1980s, the high rate of homelessness grew in response to the withdrawal of federal funds from low-income housing and social assistance programs for low-income families and the mentally ill (Rossi, 1990). This "new homeless" population was much younger, with an average age of 30, a majority were minorities, and many had high rates of mental illness and substance abuse. Today that evolution of the "new homeless" in the 1980s has grown and has become the norm in reference to the population's demographic representation.

According to Eitzen, Zinn, and Smith (2013), during the Great Recession of 2007 many Americans lost their jobs, homes, and way of life due to the negative consequences of the housing bubble and globalization of the labor markets. The housing bubble was caused by big banks and loan lenders selling subprime mortgages that were highly affordable initially but in the fine print stated that the cost would increase by an unsustainable rate after so many years. For most families, the rates that were implemented after the few years were greater than their gross monthly income, which led to loan defaults and foreclosures in mass numbers. The American people who were exploited by the lenders had a very hard time finding alternative housing after their foreclosure due to their credit being negatively affected. Globalization of the labor markets meant that companies could freely move their production from America to countries that have lower wage standards. As companies closed their manufacturing plants and factories in America people suffered from direct and indirect implications of unemployment and the recession. The American government used taxpayers' money to bail out "too big to fail, too big to jail" banks, and the American people were left to fend for themselves, and the negative effects are still being felt today and will continue to for years to come.

Consequently homelessness became a phenomenon and a reality for those who were thus rendered jobless. But this is not a topic of concern in daily conversations and more so within those corridors of power that actually can do a lot here. They can initiate social action to bring about an end to the malaise of homelessness. Homelessness is a social injustice that no one should have to face in one of the richest and modern countries in the world, yet it is still a part of our reality. The State of Homelessness in America (2014) reported that on any night there are approximately 578,424 people homeless in the United States. Approximately 1 million adults and 2.5 million children are likely to experience homelessness in any given year (National Law Center on Homelessness and Poverty, 2014). For a country that was worth 225 trillion dollars in 2015, it is unacceptable that there are individuals who are homeless and who want to escape poverty. So why does homelessness still exist? In this article we will address the individual, societal, and institutional contributions to the

cycle of homelessness and what can be done to render homelessness extinct.

Examining Barriers

Individual Barriers

Disabilities, both mental and physical, take a toll on a person's ability to function normally. Mental disabilities are found in approximately 20–40% of the homeless population (Richards, Garland, Bumphus, & Thompson, 2010). Physical disabilities limit movement and mobility of an individual, and when limited it may be difficult or painful to try and complete tasks at home or at work, and lifestyle changes would be necessary. Some individuals find their physical and/or mental disability so debilitating that it keeps them from partaking in the work force and limits them to use in-home supportive care. Hence, there are those who cannot survive on the amount of disability they receive and often fall into homelessness as a consequence. This includes a large portion of war veterans who were wounded during their time in the service. Many suffer from the detrimental effects of Post-Traumatic Stress Disorder, depression, anxiety, feelings of abandonment by the country they fought for, and/or missing limbs and other physical injury. An individual with PTSD or other disorders that are characterized with delusions and hallucinations may not seek help or care due to fear. On a single night in January, 2014, 11.3 percent of the adult homeless population that was accounted for were veterans (National Law Center on Homelessness and Poverty, 2014).

Illness, whether temporary or life threatening, takes a physical, emotional, and monetary toll. Individuals living paycheck to paycheck cannot afford to miss time off of work and decide to continue working, which in turn exposes others to the illness. Families with children who are also the working class may take time off of work when their children need to be taken care of. This can lead to being absent from work and subsequent financial loss. In the United States, the cost of doctor's' visits, hospital bills, and prescription medication is the highest in the globe, which means just one visit could cost an individual or family their livelihood.

According to Lee & Schreck (2005), when a person lacks shelter they are more susceptible to becoming a victim of crime. The homeless often become easy targets for criminals due to being isolated, out in the open, and not having a safe space to store their belongings. Due to reasons like disability, decreased energy, or past trauma such individuals are more vulnerable. Further, their possible involvement in illegal activities or their substance abuse puts them at further risk. An increased density of population coupled with a high crime rate means that in times of emergency first responders will not heed calls from such areas. The negative consequences associated with victimization among the homeless include “increased fear, psychological distress, substance abuse, and physical injury, and decreased employment, self-efficacy, and quality of life” (Lee & Schreck, 2005, p. 1076).

When a human experiences trauma it can have a profound impact on their functioning and can cause a life change. One form of trauma that is mostly commonly experienced by females is sexual trauma, which can lead to pregnancy, sexually transmitted diseases, cognitive dysfunction, inability to cope, depression, anxiety, and other adversities. “Prehomeless traumatic events such as childhood abuse or divorce could also foster marginality and ultimately increase risk” (Lee & Schreck, 2005, p.1057). After trauma is experienced it is common for that person to respond to their environment differently, which may be short term or long term. Addiction is one of the things that help individuals who have faced trauma cope. Addiction to substances, alcohol, or gambling allow for monumental escape from reality. Addiction may allow some form of coping, but those individuals who are not ready to give up the lifestyle will not seek help due to conditional services that do not condone substance and alcohol use. Losses tend to follow when addiction takes over a life, such as monetary resources and negative health consequences, but the most debilitating loss is the loss of family and loved ones. Some families who recognize that their caring response often enables the behaviors and actions associated with the disease cease contact with the person suffering from addiction. Money is replaceable but bonds are difficult to mend. These social relationships are seen as buffers to keep people out of homelessness, but when they are severed the individual is more susceptible to falling into

homelessness. The point to examine here then is how the role of gender impacts the homeless person per se.

Gender

As previously mentioned, men who are homeless are more likely than women to become victims of crime. According to Amato and MacDonald (2011), men make up the majority of the homeless population, approximately 75%, but that is constantly shifting as more women and children enter homelessness. Homeless men often face high levels of violence, which is often a survival tactic among that community. Violence may result in physical injuries and mental issues with extended exposure and fear of future violence. Men are often less likely to seek help for physical and mental issues due to self-dependence that is expected to meet the masculine label in the American culture. Help-seeking behavior can feel degrading to one's self-esteem and allow a person to become emotionally vulnerable during an already difficult time.

On the other hand, women who are homeless experience sexual assault more often than men. Female sexual abuse is a very common occurrence within the homeless community. Women are often vulnerable due to exposure to the open environment for long periods of time. Lack of living quarters also allows predators to have easy access to women who are living in isolation. Women are also at risk to be forced into sex trafficking due to coercion or threat of violence. "Homeless women are at high risk for mental health problems, substance use, high risk sexual behavior, and health issues such as injury and sexually transmitted diseases including HIV" (Ponce, Lawless, & Rowe, 2014, p.831). Homeless women who suffer from substance abuse disorders may have endured childhood abuse, which has been found as an indirect predictor of adopting substance use as a way of coping with past and present stressors and traumas. Women who have been or are victims of domestic abuse may have experienced coercion in order to isolate them from social support, which is a potential protective buffer from homelessness. Some services that are offered to women who are currently homeless and survivors of domestic violence use diagnostic criteria to assess the needs of the client, but these services can be seen as further stigmatizing by placing the "crazy" label. The National Law Center on Homelessness and Poverty

conducted a study in 2014 and found that of the 25 US cities considered, 15% of all homeless women were survivors of domestic violence, and domestic violence is the leading cause of female homelessness in the US. This label could also leave them at risk of future predation. Some women who sought services reported the service providers lacked sensitivity and empathy in regards to their situation (Ponce, Lawless, & Rowe, 2014). Homelessness causes strained relationships, which often ended in separations and divorces.

Divorce

Non-traditional families are becoming commonplace in the United States. One-parent families after divorce are increasing, as are the rates of familial homelessness. Kickham and Ford (2009) found that a majority of children living in a one-parent household will likely experience poverty and marginalization. Some of the families may seek assistance from the government in order to survive, such as the SNAP food program or Welfare-to-Work/TANF cash aid program. The programs promote marriage and two-parent families by limiting the amount of aid and the amount of time a family is eligible to receive aid. Data of a correlation between the rise in poverty and the decline of two-parent household prompted this promotion of marriage but could have been as easily attributed to cultural factors. The promoting of two-parent families and marriage may give domestic violence survivors a reason to return or continue to stay with their abuser. At times, relationships may be non-traditional.

Sexual Orientation

Youth that identify with an LGBTQ sexual identity label and/or gender identity label are more likely than their heterosexual peers to be homeless. In the United States, between 240,000 and 400,000 LGBTQ youth experience at least one incidence of homelessness each year (Ream & Forge, 2014). When a youth is rejected or feels like they may be rejected for their orientation by their communities, parents, and/or classmates, they may feel the only way to be accepted is to run away. Rosario, Schrimshaw, and Hunter (2012) stated that approximately

15–36% of all homeless youth identify as LGBTQ. They are also more at risk for substance abuse disorders and mental health issues when compared to heterosexual homeless youth. Being marginalized due to their sexual orientation and then suffering from homelessness denies individuals such basic rights as accessibility to education, which can in turn make them less employable.

Education and Employment

It is not always true that people who are facing homelessness do not have jobs and that the only pathway out of homelessness is through employment. “United States census shows over 2.6 million full-time workers were below the poverty line in 2010, as were another 8 million workers who worked part time” (Eitzen, Zinn, & Smith, 2013, p.161). In fact, it is quite common to be a part of the working class poor, people who have not had the opportunities to obtain higher education to gain special skills in order to have a well paying job. “The working poor are among the fastest growing segments of the poor, and this trend is projected to continue” (Hong & Wernet, 2007, p.362). These authors listed that 69% of the working poor have a high school diploma and 33% of the working poor have a post secondary education or college education. A majority of the working poor hold a common demographic of starting employment at a low wage, young in age, unmarried, an ethnic minority, have children, lack education/training, and have severe or numerous health issues. During 2009, the recent effects of the recession led to unemployment rates reaching an unprecedented 10%, and the sectors that were heavily impacted included manufacturing, legal, financial, real estate, service work, local-serving jobs, and low-skilled workers. Other individuals who had the opportunity to obtain skills in the past may have used them to earn a living but recently became homeless due to the job becoming obsolete. The advent of technology has replaced human workers with automated machines that are more efficient, resulting in more jobless individuals. It is difficult in most communities to make enough money to live a decent way of life working forty hours a week earning the federal minimum wage of \$7.25. The stagnant rate of the federal minimum wage has not shifted in six years and does not keep up with the inflation rates and local cost of living rates (Eitzen, Zinn, & Smith, 2013). Overall, the working poor have

less job security and employment benefits than those earning higher wages. Some places of employment will give an individual less than full-time hours in order to not have to offer health insurance or benefits, and this is known as underemployment. The indirect effects of economic vulnerability on the working poor are family stress, impact in individual functioning, increased risk of stress-related health conditions, lack of relationship satisfaction, and negative impact on parenting ability. According to the National Alliance to End Homelessness (2015), unemployment often precedes homelessness. Underemployment and unemployment all lead to an increase in the individual's lack of financial resources, which also puts them in the vulnerable position of not being able to qualify for loans and credit (Hong & Wernet, 2007).

Poor Credit

Sandy (2014) states that low or bad credit scores are common reasons why individuals and families are homeless. Good credit is needed for renting houses, apartments, or rooms. When affordable housing is scarce in local areas the landlords can be picky about who they rent to. To purchase a home or vehicle using a line of credit a person with a great credit score receives a better annual percentage rate (APR), or cost of interest, than those with little to no credit. People who are ethnic minorities are disproportionately denied loans or stuck with higher APR than those who are of the majority group (Ards, Ha, Mazas, & Myers, 2015). The people who are not approved for loans must find other ways to survive if they cannot purchase or rent housing due to poor credit. Lacking the wherewithal of being financially independent and self-sufficient leads the undomiciled into adopting means that are illegal to survive. Often, recourse to such means results in very negative consequences.

Parental Incarceration

Individuals who have been prosecuted and convicted of drug felonies cannot receive government aid, which has the potential to create tension amongst a family in need because the person with the conviction cannot even live in a household which is receiving aid. This law creates a break in family ties or the capacity for perjury to be committed if the family lies and says that no one in the household has received a drug-

related felony when in fact there is because that is the only choice they have to keep the family unit intact. Parental incarceration breeds inequality for generations due to the negative effects it creates within the family unit. According to Wildeman (2014) the invisible consequence of parental incarceration is the economic hardship when a parent cannot provide for their family while in prison. If the parent is a single parent and no immediate family is willing or able to take care of the child, they will be placed in foster care and this is often the case when there is maternal incarceration. The effects of maternal incarceration on children's risk of foster care placement have been well documented. While Wildeman (2014) found this to be true for maternal incarceration, he also found that childhood homelessness was likely to occur in the event of paternal incarceration due to the disruptive impact on family finances.

Criminalization of the Homeless

Due to lack of funding for rehabilitation programs in America, prison systems increase the risk for recidivism. When people exit prison they may not have anyone or anywhere to return to so they may have to commit crimes in order to survive. If they have a life of crime to return to that gives them a sense of community, security, and normalcy, they may continue with their old ways. When people do not know that there are resources to aid them or other ways to live without committing crime they will go back to what they know. "Former inmates wind up with no place to go because of inadequate pre release preparation, fragile finances, severed social relationships, and barriers posed by their stigmatized identities when seeking employment and housing," (Wildeman, 2014, p.76). Privatization of the prison system has led to a demand for prisoners and the militarized police are supplying what should be considered slave labor. Prisoners are used as free labor, they are criminalized, and when they are released they have been permanently scarred with the stigma of having been a former prison inmate.

Today criminalization of the homeless is how the government has learned to deal with homelessness. Seventy-four percent of homeless people do not know of a safe and legal place to sleep. The National Law Center on Homelessness and Poverty (2014) reports the reason this is a common occurrence is to not only to hide the issue from the general public

but also provide free labor to for-profit prisons. When a prison is in the business for profit there is a demand for prisoners in order to receive money from the government to house them or to have them work for cents on the dollar making products that are to be sold to the general public. Affordable housing is found to be less expensive than the criminalization of homelessness, which currently stands at a bill of 1.9 billion dollars a year (National Law Center on Homelessness and Poverty, 2014). Thus, criminalization of the homeless marginalizes and stigmatizes them, resulting in perpetuation of the cycle of homelessness. Recently reported by the National Law Center on Homelessness and Poverty (2014), the criminalization of homelessness is not only unconstitutional but is a violation of human rights, which is protected under a United Nations treaty; we have yet to reap the benefits of this report. Along with criminalization of homelessness, societal perceptions also do their fair share of perpetuating homelessness.

Societal Perceptions

Humans are a product of their environment, cultures, economies, political ideologies, religions, geography, and perceptions. Humans are socialized in a particular way that influences the way they see, act, and treat the homeless. Blame is a critical dimension in the history of poverty and homelessness and is still very applicable in this day and age. Victim blaming serves a purpose on the individual level because it separates a person from the population and reinforces the notion that “it couldn’t happen to me because I don’t express those types of behaviors or have those characteristics.” People who victim-blame attribute that person’s characteristics and behaviors as being the reason for their inevitable downfall in society but fail to address the structural deficits that contribute as well. “Stigma has been used as a means to psychologically, socially, economically, and politically control the poor and to maintain them in poverty,” (Belcher & DeForge, 2012, p. 936). For instance, it is a common held belief that a majority of people who are homeless caused their own downfall due to substance use, and while substance use is seen in 38% of adult homeless, it is not just a cause but often homelessness is a precursor to substance use (National Coalition for the Homeless, 2009). People who are addicted to alcohol, substances, or gambling do not choose to be that

way; they fall into that cycle of abuse for various reasons. Addiction may be something that befalls a portion of the homeless population and may contribute to the perpetuation in the homelessness cycle, but it is also prevalent in the general population. For the person facing homelessness, do we really know that their addiction caused their downfall or does that serve a purpose to clear our conscience and help us sleep at night? Overall, victim blaming is a tactic used to justify inaction and excuse a person's position over another in a hierarchical society. This is often used to reinforce society's perception, which contributes to the vicious cycle of homelessness.

Another way society reinforces their perception regarding the homeless is by way of the availability heuristic, which is a shortcut tool humans use to form conclusions based on what knowledge is available. The availability heuristic can be used to form a generalized opinion based on the number and the nature of interactions, whether in person, perpetuated by media, or by the few visibly homeless people a person may encounter (Phelan, Link, Moore, & Stueve, 1997). The generalization of the population of the homeless has the potential to further result in a phenomenon known as compassion fatigue. For example, if a person has one or two negative interactions with a member of the homeless "group," this will reinforce previous generalizations. Compassion fatigue is thought to occur while waiting for the issue of homelessness to be addressed and impatience and hostility is the by-product (Belcher & DeForge, 2012; Hambrick and Johnson, 1998). Feelings of compassion and empathy are seen to lessen over time, and being replaced with hopelessness, stress, anxiety, and a negative attitude toward the population. As the population adopts negative perceptions of the homeless, this can often times lead to dehumanization, in other words, immoral and inhumane treatment based on the public's perception of the homeless individual's social status. It is possible that the expectation the person places on the homeless by way of formed generalizations directly influences the way they treat and act toward them, leading to secondary deviance, where the person who is labeled deviant will internalize and act according to the label with time (Adler & Adler, 2016).

Labeling and stereotyping a group of people, in which certain traits are assigned to virtually all members of the group regardless of actual

variation among the members (Etizen, Zinn, & Smith, 2013), leads to marginalization, which is defined as a “lack of integration of individuals seen as the outsiders excluded from full membership in society” (Lee & Schreck, 2005, p.1056). This does not allow for personal contact to ensue and to aid in combating our widely held beliefs. The exclusion of this group is often perpetuated by way of the media, which allows for the public to absorb sources of information that aid in the creation of their own generalization and personal distinction that has the potential to lead to cognitive distancing (Toro & McDonell, 1992). A study by Phillips (2015) indicated that 25 percent of a group of 115 undergraduate students surveyed thought that homelessness was due to personal failings on behalf of the person experiencing homelessness. The personal attributes included being lazy and not working hard enough, but a majority of the participants also acknowledged structural causes of homelessness.

A phenomenon of not looking poor enough dates back to the middle ages when the citizens receiving public assistance had to wear clothing and accessories in order to distinguish their status (Phelan, Link, Moore, & Stueve, 1997). In relation to not looking poor enough, a study was conducted by Bullock (1995) where it was found that people receiving public assistance had encountered insults, embarrassment, degradation, belittlement, and scrutiny by clerks, service providers, schools, and by strangers in response to not fitting the cookie cutter stereotype of being poor. Corporations are the ones currently receiving subsidies and tax breaks from the American tax system that they do not need, yet they are not stigmatized, degraded, or challenged.

In the 21st century, if a person has a cell phone, a car, or internet and claims to be poor, it will cause confusion amongst some of the public who hold the poor stereotype. Conservatives are currently trying to do away with social programs because in response to this necessity, some social programs will provide free or low cost access to phone and internet and they do not penalize welfare recipients for owning one car. Such generalizing phenomena serve as tools to distance individuals from the reality of poverty and homelessness.

Social Distancing

As human beings we try to protect ourselves from negative feelings such as helplessness, sadness, and so on. When it comes to a portion of the public, some engage in an act known as social distancing in order to cope with the cognitive dissonance they feel when in contact with a person facing poverty or homelessness. Hodgetts, et al. (2011) defined social distancing as occurring when a stranger comes into contact with other groups, yet they are excluded from membership. Social distancing is similar to “in-group-out-group” theory where a person places themselves in a category based on a certain criteria into certain groups and categorizes everyone else that does not meet that criterion as outsiders. These outsiders are seen as foreign and strange, which can lead an individual to make assumptions based on what beliefs their in-group holds about the out-group. An in-group has a major influence on an individual’s belief systems, attitudes, understandings, language, images, and perceptions. With this in mind, if an in-group lacks interaction with the out-group, this may lead to assumptions about that out-group’s character, morality, and capability. Many social science studies regarding increased contact of domiciled individuals with a person who faces homelessness shows that this may either increase understanding in regards to structural causes of homelessness or reinforce their preconceived notions about the population depending on the nature of the interaction (Hodgetts, et al., 2011). The myth of meritocracy further adds to social distancing.

As Americans we are socialized to hold the ideals of the myth of meritocracy, in which we assume that with hard work and determination you can achieve your dreams, especially when it comes to educational attainment. Many of us are socialized at a young age to work hard in school to get where we want to go in life and this perpetuates the ideal of meritocracy, which is that social status, wealth, and power are dependent on level of education. (Liu, 2011) This is a simplistic ideology that fails to account for other greater structural social inequalities at play.

Institutional & Structural Barriers

Class is a social structure within mainstream culture that perpetuates values and norms held by various class levels. For those in the upper and middle class, the experience of homelessness is foreign to them

due to opportunities and resources allocated in order to protect them from befalling such a fate. For those who fall into homelessness are seen as lower class citizens by the other class structures. As mentioned previously, the sight of homelessness challenges an individual's reality of personal identity, system functionality, and social order. The response of the upper and middle class that stems from pity is to donate monetary funds or commitment of time to helping others achieve what they deem as an acceptable lifestyle. "The resources allocated towards assisting the homeless are usually derived from a mix of sympathetic responses to alleviate hardship and a perceived need to preserve order, aesthetics, and social norms in shared urban spaces" (Hodgetts, Stolte, Waimarie Nikora, & Groot, 2012, p.1212). The nature of this response also reinforces the social power balance, which justifies the dominant class making the decisions over the homeless population. Services are tailored to people conforming with the mainstream middle class lifestyle, and the dominant class, being the upper and middle classes, enforce this by determining who is eligible for services, including housing.

Housing

Etizen, Zinn, & Smith (2013) found that 1 in 4 renters are spending more than half their income on rent. The National Law Center on Homelessness and Poverty found that in 2014, 27% of all renters spent more than 50% of their income on rent. This is not sustainable living, which is defined as no more than thirty percent of income being dedicated to housing. As more affordable housing is supplied, the population of the homeless declines, but if less affordable housing is supplied then the homeless population will again rise. The population of homeless also increases as the growth of housing prices increases (Carter III, 2011). Gentrification, mostly in urban cities, and the desecration of 4 million units that were replaced by lavish living quarters, restaurants, and shopping outlets plus the decline in purchasing power between 1970s and 1990s has contributed greatly to the growing population of homeless (Jencks,1994). In 2014 it was discovered that 12.8% of low-income housing had been lost since 2001 (National Law Center on Homelessness and Poverty, 2014). Due to the lack of affordable housing, people facing

homelessness are forced to conduct private human needs out in the open and will continue to be criminalized.

Legal Aid

As American citizens it is our natural right to be appointed counsel who will represent us during a trial if we cannot pay for one. People who are homeless are often represented by public defenders that are underpaid, overworked, and are too busy to adequately handle their case to see that they get a fair trial. In an article by Mullins (2015) it was stated that often the individuals who are being represented are people of color, and the injustice of improper representation contributes to the disproportionate incarceration of minorities. In one county in California it was found that the average of felony cases a public defender handles per year is 1,000, but the Bar Association recommends only 150 felony cases per year, and this is a commonality across counties and states in the US. “Counties and states should not wait for the courts to tell them what they already know: public defenders need more resources in order to maintain the integrity of the Sixth Amendment” (Mullins, 2015, p. 3). In addition to improving our legal aid system, the system in which laws are made also needs to be revised.

Law Making

Vagrancy laws and laws that criminalize those who aid the homeless perpetuate stigmatization and influence popular opinion. “The visibility of such behaviors – sleeping, passing time, earning a livelihood, attending to bodily functions, resolving disputes – not only increases the stigma attached to homelessness but leads to differential treatment by the police, courts, and local government,” (Lee & Schreck, 2005, p.1076). Until recently the criminalization of homelessness was the sole way the governmental system dealt with homelessness aside from the temporary aid that was already being given. Trespassing laws are among the many laws that seek to enforce the criminalization of homelessness but maintain a façade that they are enforced in order to deter homeless inhabitants from setting up shelter in public and private places. Such laws leave one of our most vulnerable populations susceptible to confrontation, harassment, or arrest (Hodgetts, Stolte, Waimarie Nikora, & Groot, 2012). Instead of

criminalizing and victimizing the homeless population, an informal housing option should be permitted until permanent housing can be found for individuals facing homelessness.

Informal Housing

Informal housing such as tents or makeshift houses are seen as an eyesore by the community and a nuisance for the government-associated workers whose job it is to force the desecration of the community. Often those who live there lose what little they have when it is thrown away by the city workers cleaning up the area. Others are threatened, criminalized, and inevitably displaced without being given other housing alternatives. What is not really addressed when discussing informal living situations such as tent cities are the benefits. Granted there are reasons for concern in regards to sanitation and pollution, but this would not be the case if the city helped to provide this. When a person has nowhere to go and nothing to work with they do what they can with what they have. According to Loftus-Farren (2011) tent cities are a decent temporary solution to homelessness if provided the proper sanitary units and monitoring occurs. These communities serve as a way of engagement and security among members. For service workers and caseworkers it is easier to locate their clientele when they have some sort of stabilized housing and for mobile outreach programs that can provide to many that are localized to one area. Instead of the city and local government criminalizing people for trying to survive and forcing people to move elsewhere, they could provide some sort of temporary stability such as designated spaces for tent units until permanent housing arrangements could be made. In addition to temporary housing and permanent housing, an evidence-based program should be implemented to reduce recidivism among formerly homeless individuals.

Evidence-base Program

It seems common sense to conclude that the route to ending homelessness is by providing the population with housing, which is more cost effective and more humane than the current way the government is dealing with homelessness. Housing is only a portion of the issue of homelessness; reconnection and reintegration pose another challenge for the population. Gaining opportunities by reintegrating with the middle

class population and linking bonds to the community decreases the likelihood that a person recedes into homelessness. As found by Collins, Malone & Clifasefi (2013), the integration of a Housing First program into middle class neighborhoods reintegrates the previously homeless clients with the general population all while offering support during the transition. The housing is permanent and non-contingent, which allows the individuals to develop stability and a sense of acceptance. Reintegration is hindered by segregation of populations (Collins, Malone, & Clifasefi, 2013). Implementation of such programs would have to stem from the political realm to lessen population segregation.

Politics

Segregation of various populations is being enhanced by the neo-liberal rhetoric that is engulfing the political climate of the United States. This platform is being paraded as an enhancement for the American people and democracy, which perpetuates fear and uses scapegoat tactics as an avenue to separate various segments of the population and pit them against one another. Talk of privatization of public amenities, free trade agreements, and government deregulation has been a major topic in today's politics, but what is failing to be mentioned is the toll it will have on the American people. De-politicization of our society makes people afraid to lose what they have, and they unintentionally isolate themselves in order to safeguard what they have. This leads to more individualized thinking and lessens the chance of mobilization occurring in order to try and change the political issues (Berberoglu, 2013).

Politics in the civic and national realm define the relationship between the individual and the society. Those who do not participate in their civic duty of voting do not have a say in their own relationship with their government. Some states require a person has some form of identification or address in order to vote, but this excludes the homeless and the poverty-ridden. The lack of political and civic engagement has been found to lead to greater racial and class inequality (Wildeman, 2014). Political issues affect the social climate that enhances segregation between populations, and one of the main places where this is learned is within the educational system.

Education

Education is an institution that teaches language, values, norms, and knowledge. The educational system reflects and reinforces the current negative social climate in regard to homelessness; it could also aid in educating the public on the complexities of homelessness and offer a challenge to the stereotypes they may hold. A study by Tolomiczenko, Goering, and Durbin (2001) was conducted to research the effect of educating elementary school children on homelessness and found that negative attitudes toward homelessness were reinforced when just a film was shown depicting the nature of facing homelessness. The other condition of showing the film and engaging in a discussion thereafter did show promising effects of combating negative attitudes toward the homeless, but it was highlighted that the nature of personal contact with the group would be more effective at producing change in public opinion than solely relying on a method of education. Increased first-hand contact with an individual facing poverty and or homelessness can increase feelings of understanding and empathy for their situation but may not have the potential to change the feelings about the group as a whole but only for the individual as the exception. Hodgetts, Stolte, and Groot (2014) found when people from the general public take into account the hardships of life of a person facing homelessness they are likely to lessen the distance between the populations socially and physically. Belcher & DeForge (2012) advocate the inclusion of training and sensitivity programs at the community and state level to sensitize the general population to the needs of the homeless. In addition to education of the public, we should integrate the inclusion of the voice of the homeless.

Inclusion of voices of homelessness

Studies have found that homelessness is a concern for the general public and that they are supportive of building affordable housing and willing to support a tax increase in order to support the cause, but policy and laws reflect the exact opposite (Toro & McDonnell, 1992).

Exclusion in research and the type of care provided comes with a wide array of negative implications for both the homeless population and the validity of the research. Research is important in order for service

providers, mainly in social services, to provide adequate and effective care. It is recognized that homelessness is a complicated and multidimensional concept that is hard to generalize since it is a population based on second-hand research. Zufferey and Kerr (2004) highlight the importance of inclusion of the first-hand perspective and detail the negative implications of “the experts” being the only people to weigh in on the policy issues of homelessness. “The lack – or apparent lack - of recognition of the complex interplay of factors that makes unique each person experiencing homelessness is evident in policy and practice, which can be overwhelmingly generic, inflexible, and disempowering,” (Zufferey & Kerr, 2004, p. 349). These authors further suggest the negative implications of the service providers and researchers as taking on the role of the experts. This only serves to separate the population of homeless and their perspective from their own care, which may lead to the individual losing a sense of control over their own life course. The negative implications lead to underutilization of services, which in turn contributes to homelessness directly. The people who utilize the services often report that they feel belittled, judged, treated like a child, and lose their freedom despite being adults, which leads them to not seek those types of services, whether by the same or a different service provider, in the future (Acosta & Toro, 2000). Combining perspectives and opinions of the population being served and those who are serving it will improve the overall effectiveness, which will reduce the rate of homelessness. Ending homelessness not only improves the life of the individuals in that situation but it improves the lives of everyone within that society.

If we can lift those that are drowning in the quagmire of homelessness, we are not only ameliorating them but are also endeavoring to create a society that provides for basic human dignity to all its members, and that is the birthright of every human being. For then we set in motion a positive spiral effect that will be evidenced by more people employed in the workforce, earning their livelihood, working positively, and partaking in the very process of making this society a just and egalitarian one, a society that is the product of the cumulative voices of all.

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Marijuana Attitudes, Perceptions,
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Biography

Kristi Sadler lives in a small rural community in California. She enjoys the outdoors, traveling, and spending time with family and friends. Her studies at San Jose State University focused on psychology and chemistry, and she hopes to use her education in the field of autism research.

Marijuana Attitudes, Perceptions, Use, and Academic Achievement

Introduction

Across the United States, legalization of marijuana has changed from being legal only for the treatment of approved medical conditions to being legal for recreational use. Despite legalization in some states, marijuana still remains federally illegal for both medical and recreational use, and state marijuana laws can offer only limited protection from prosecution by federal enforcement. While there is a trend towards state legalization, there is no certainty that the issue will pass when it is presented to voters on a ballot measure. For example, Ohio voters defeated a marijuana legalization measure in 2015.

California was the first state to adopt medical marijuana use with the Medical Compassionate Care Marijuana Act in 1996 (Proposition 215, n.d.). Other states, such as Oregon and Washington, have passed less restrictive marijuana measures that allow recreational use. In 2010, California's voters were presented with Proposition 19 and asked to vote on whether marijuana should be allowed for recreational use. Though close, the recreational use proposition was defeated with 53.5% of voters against and 46.5% in favor (California Proposition 19, 2010). The last ballot measure seeking to address recreational use in California was attempted in 2012, when the "Regulate Marijuana Like Wine Initiative" was circulated for voter signature. The initiative did not collect the required number of signatures within the allotted timeframe needed for ballot approval, falling approximately 300,000 signatures short of the required 500,000 signatures needed (California Regulate Marijuana Like Wine Initiative, 2012) California voters may once again be presented with a ballot measure for the use of recreational marijuana in the 2016 electoral process. The Public Policy Institute of California conducted a poll on Californian attitudes in 2010 toward legalizing recreational marijuana use and reported that support for legalization was at 55% (Californians' Attitudes Toward Marijuana Legalization, n.d.). This is a 5% increase from past polling. This estimate of California voters' support is in line with the national average. The Pew Research Center found that 53% of Americans are in support of recreational use (Majority Now Supports

Legalizing Marijuana, 2013). Because medical research on possible therapeutic effects of marijuana recreational use is in the beginning stages, there are still many unknowns and research may find implications for recreational use. The next section of this paper analyzes the financial, social, and personal impacts of recreational use within states.

There is growing evidence that recreational use will have a positive financial impact from the collection of taxes on sales. In states where recreational use is legal, there is a boom in state tax revenues. The Colorado Department of Revenue reported the 2014 tax revenue collected from all marijuana sales (medical and recreational use), licensing, and business fees was approximately \$76 million. Recreational use alone added about \$11.6 million to the state's finances according to data from July 1, 2014 through June 30, 2015 (Colorado Department of Revenue, 2015). The collection of additional tax income is a driving factor for many voters, yet the debate over recreational use reaches beyond money and looks into other impacts on communities and individuals.

In addition to tax revenue, jobs are created within this industry. The creation of more jobs at a state level is viewed as a positive effect of recreational use. The growing marijuana industry is becoming a large employer in states that have legalized recreational use. Cannabis business fairs and expos are becoming commonplace events across the nation, encouraging individuals to create and work in marijuana-based industries. The business of marijuana involves growing, producing, packaging, and selling the final products in dispensaries (Cannabis Business Summit 2016, n.d.). In states where marijuana is an available commodity there is an unofficial reported increase in employment. This makes it difficult to quantify job creation rates, as there is no true reporting of jobs created within the burgeoning industry. Marijuana remains federally illegal, and as such, job growth numbers within the industry are not reported to federal databases.

There is fear that recreational use will negatively impact society and compromise the safety of communities. The concerns over crime are related to the perceived increase in costs to communities for extra police presence because of illegal marijuana-related activity and in court costs for individuals caught driving under the influence. There is an opposite view on crime and recreational use as well. An investigation into the crime rates

of states with medical marijuana laws by Morris, TenEyck, Barnes, & Kovandzic (2014) revealed no increase in the crime rate when medical use was enacted. In fact, some believe that prosecuting marijuana-related offenses is a waste of money and resources, and cartels and gang activity may lessen if recreational use is enacted. Miroff (2015) reported smaller profits to Mexican cartels as a result of legalized recreational marijuana. It has been reported that since 2011, 37% less marijuana has been seized crossing the border.

The active compound in marijuana, Tetrahydrocannabinol (THC), affects cognitive functioning (Aharonovich, Brooks, Nunes, & Hasin, 2008), executive functioning and manual dexterity (Bolla, Brown, Eldreth, Tate, & Cadet, 2002), episodic memory (Englund et al., 2013), associative memory, and it lowers vigilance (Jager et al. 2007). These cognitive effects could impair workers' ability to do their job safely without injury to themselves or others. The National Institute on Drug Abuse (n.d.) reports that among postal workers testing positive for marijuana during pre-employment screenings, 55% had more accidents and 85% had a higher rate of injury than those testing negative.

The effects of cognitive impairment from marijuana pose not only a problem with workers, but also problems on the roadways. Colorado and Washington state have defined impairment levels of marijuana drugged driving as having 5ng/ml of THC in their blood (NORML, 2016 a, b). Recent research in Colorado has shown a significant increase in marijuana-related driving accidents since recreational use was enacted in 2012 (Salomonsen-Sautel, Min, Sakai, Thurstone, & Hopfer, 2014). The Washington Traffic Safety Commission (2015) reported a 48% increase in fatal accidents involving marijuana since recreational use was passed. Hartman and Huestis (2013) found that driving under the influence of marijuana is associated with increased crash risks, but there was no direct correlation between the concentrations and driving impairment. The safest recommendation is never to drive under the influence of any substance.

The legal age for recreational use is 21 years; this is concerning because research by Jacobus and Tapert (2014) revealed that developing brains should not use exogenous cannabinoids. Recent research has shown that while states with medical use do tend to have a higher portion of the adolescent population using marijuana, there was no significant increase in

youth usage since medical use went into effect (Hasin, et al., 2015 Lynne-Landsman, Livingston, & Wagenaar, 2013). These reports suggest that once recreational use is legalized, minors may have less desire to engage in marijuana use.

There is also a fear that marijuana will lower the intelligence of younger users, causing them to do poorly in academic pursuits (Jackson et al., 2016). Advertisement campaigns in countries around the world are promoting this research through multiple mediums. There is evidence that legalizing marijuana will negatively impact learning performance. Multiple studies have shown lower GPA scores among users compared to non-users (Passarotti, Crane, Hedeker & Mermelstein, 2015). Marijuana use is associated with amotivation in academic areas. Researchers Arria, Caldeira, Bugbee, Vincent, and O'Grady (2015) reported that marijuana use among college students is a predictor of lower performance in academic pursuits. Users were found to be more likely than non-users to drop out of college and skip classes, and they were less likely to continue into graduate studies.

A growing body of research is being compiled on certain physical and health benefits of marijuana. Neurological conditions such as Alzheimer's (Eubanks et al. 2006), ADD and ADHD (Strohbeck-Kuehner, Skopp & Mattern, 2008), and seizure disorders (Porter & Jacobson, 2013) have been relieved by two of the compounds, THC and CBD, present in cannabis. The belief that marijuana is a safe and effective treatment for some conditions is becoming widespread and more accepted. Indications from reviewed literature shows that students with ADD or ADHD were more likely to use marijuana than alcohol (Advokat, Guidry, & Martino, 2008). Without negative consequences arising from medical use laws, the perception that marijuana is safe and possibly even beneficial for health can lead to higher public acceptance and the possibility of recreational use approval by voters.

Methods

Participants were undergraduate and graduate students at a large Northern California university. The only exclusion criterion for participants was age less than 18 years. Data collection was anonymous. Volunteers were recruited via email distributions from San Jose State

University (SJSU) organizations (Educational Opportunities Program, McNair Scholars, and Psi Chi), flyers placed in campus classrooms and multiple buildings with public postings boards, and social media (Facebook, both personal and campus confessions). Data were collected from September through October 2015. The participants were informed that consent for participation in the study would be given through the completion of the survey. Once the consent process was acknowledged, the participants began the survey.

The questionnaire was electronically disseminated through the Qualtrics system to current SJSU students. Once logged on, the participants were identified by a unique anonymous code reflecting the time the questionnaire was opened (timestamp). The questionnaire was presented in English and took approximately 15 minutes to complete. It consisted of two sections for reported non-users, and an additional section for users (discussed further below). Once completed, the participants were provided a debriefing form and thanked for their time.

The participants responded to a series of questions concerning their thoughts, beliefs, perceptions of users, and legalization issues taken from a previous survey (Cook & Chen, 2015). Participants were asked questions concerning three areas of perception and belief about recreational use. The questionnaire contained three scales on various aspects of legalization, including financial impacts from sales taxes, social impacts related to crime and traffic safety, and personal impacts on users and their loved ones. The participants were asked to rate their agreement with statements from all areas on a Likert scale of 1–5, with 1 being strongly disagree and 5 being strongly agree. The Cronbach's alpha for this survey was reported at $\alpha = .785$.

Participants were asked to rate their agreement on specific statements concerning the financial impact of marijuana legalization. Examples include the following statements: "The tax revenue raised from the sale of legalized marijuana will positively contribute to society," and, "I believe that legalizing marijuana will lead to economic growth."

Participants were asked to rate statements concerning the societal impacts in relation to crime rates. Samples of the statements include "The legalization of marijuana will lead to higher crime rates within the U.S."

and “Legalizing marijuana will reduce gang-related activities in the drug trade.”

Other statements on societal impacts addressed public safety and employment issues. Participants were asked to rate agreement with the statement, “If marijuana is legalized, companies should be allowed to drug test their employees to see if they are using marijuana.”

To measure the impact of recreational use on society, participants were asked a series of questions addressing the impacts of using marijuana in daily life. In this section, the statement, “Legalizing marijuana will lead to an increase in automobile accidents” was presented. This question relates to the perception that impaired driving and accidents from recreational use may increase, causing personal injury.

A large concern about recreational use is teen usage. Participants were presented with the statement, “Legalizing marijuana would lead to greater use of marijuana by adolescents.” This fear of higher teen usage is linked to the perception that marijuana will lead to learning impairments. To assess this view, participants were asked to agree or disagree with the statement, “Legalizing marijuana will negatively impact students’ school performance.” Performance may be diminished because of lower motivation among marijuana users. To rate belief that marijuana causes amotivation, participants were presented with the statement, “I feel that people can be productive members of society while using legalized marijuana.”

Statements concerning health issues included “Legalizing marijuana will result in an increase in health-related issues in our society,” and “Marijuana is beneficial to an individual’s health when used medically.” These statements assess whether public perception is that marijuana is harmful or if cannabis is now starting to be viewed as different than the lethal substance portrayed in the previous century.

Portions of the Cannabis Use Disorders Inventory Test (CUDIT-R) developed by Adamson et al. (2010) were employed to ascertain if individuals met the criteria for a marijuana use disorder. The CUDIT-R contains four subscales: dependence, psychological problems, cannabis problems, and consumption. For this study, the CUDIT-R question on cannabis problems that asked, “How often during the past 6 months did you fail to do what was normally expected of you because of using

cannabis?” was rewritten into a series of questions aimed at students and their expected actions. All participants were asked how often during the last semester they had turned in assignments late, or not at all, or if they had missed classes for reasons other than illness. The remaining CUDIT-R questions in the psychological problems and dependence scales were presented only to the self-reported user group. The consumption portion of the CUDIT-R was replaced with another questionnaire about use from the California MediCann patient form (MediCann, 2010).

The CUDIT-R scores fall in three areas. A score above 12 indicates a cannabis-use disorder, scores ranging from 8 through 11 indicate hazardous cannabis use, and scores below 8 indicate no use disorder.

The self-reported user group was asked to complete a portion of the New Patient History Form (Medicann, 2010) used for medical-use license applications. These questions asked how much marijuana they used and how often they used it, what variety (Sativa vs. Indica), the reason for use (attention, pain, etc.), the form of ingestion (edible or inhaled), and if they had a medical marijuana card. This portion also asked two questions from the CUDIT-R: if the participant had tried to stop using anytime previously and was unable, and if they were developing a tolerance to marijuana.

Participants were asked to provide general demographic information including age, sex, race and ethnicity, and academic information such as self-reported GPA, academic aspirations, and their parents’ educational level (high school, bachelors, master, or Ph.D). Other information including area of residence and commuter status was also collected. Lastly, a checklist of neurological conditions (ADHD, autism, PDD, bipolar disorder, depression, Alzheimer’s, dementia, epilepsy, learning disability, dyslexia, or “other”) for both themselves and their familial relatives was presented.

Analysis

The online survey was opened 145 times, and of those, 15 individuals failed to begin the survey and 16 individuals did not complete the entire survey. Only those surveys which reflected viewing of the debriefing form were kept for analysis. The sample of 113 participants

included 46 individuals who reported marijuana use and 67 non-users. There were more women ($n = 78$) than men participants ($n = 32$), and 3 did not report gender ($n = 3$). The demographics were White/European (27.4%), Latino/a (36.3%), Asian (23.9%), African American (1.9%), American Indian (1.9%) and Biracial (2.7%). The age range was from 18 to 60 years.

Approval of recreational use with governmental regulation on sales was 73%, with the same number reporting that they would vote yes on a ballot measure. Independent sample T tests showed that marijuana users ($M = 92.619$, $S.D = 11.87$) rated higher than non-users ($M = 76.49$, $S.D. = 16.71$), $F(1,95) = 28.203$, $p > .000$ for recreational use approval.

On personal issues, 58% of the sample disagreed that recreational use would contribute to more auto accidents. On the issue of employers testing employees, 37% agreed that testing should be allowed, and disagreement with employer testing was 47%. Overall, 80% of respondents did not agree that recreational use would increase the crime rate, and 85% agreed that time and resources could be better spent on other crime than on marijuana-related offences.

Eighty percent of participants agreed that recreational use would bring a positive contribution to society, and 89% said that it should be taxed by the government in a manner similar to other commercial products such as alcohol. Seventy-four percent believed that recreational use would increase economic growth.

On academic achievement measures, T tests were conducted on users' vs. non-users' grade point averages (GPA). The mean GPA of users ($M = 3.17$, $S.D = .723$) was lower than that of non-users ($M = 3.37$, $S.D = .444$), but failed to reach significance, $F(1,98) = 2.801$, $p > .097$. See Figure 1. This perception was reflected in the study, as 64% agreed that recreational users could be productive members of society, and 58% disagreed that recreational use would result in a decrease of motivation in society.

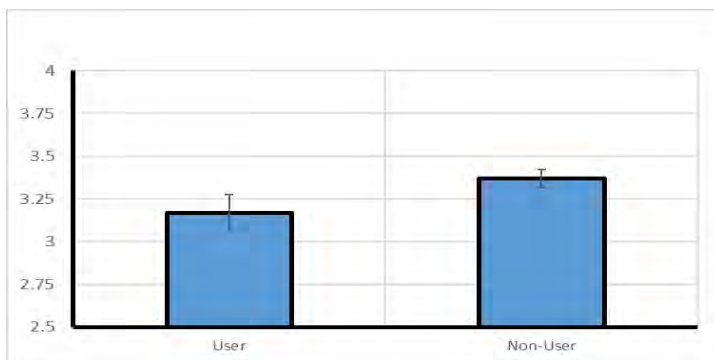


Figure 1. Mean GPA of users and non-users

The section of the CUDIT-R on responsibility measures did show users as less responsible in turning in work on time $F(5,107) = .592$, $p = .706$ ($M = 0.90$, $S.D = 1.79$) and attending classes $F(5,107) = .440$, $p = .819$ ($M = 0.110$, $S.D = 0.291$), but failed to reach significance. There was also no significant difference in unmotivated behaviors, but users ($M = 2.70$, $S.D = 1.79$) reported slightly higher motivation than non-users ($M = 2.80$, $S.D = 1.71$), $F(110) = .979$, $p > .749$. The results also showed users ($M = 3.60$, $S.D = .989$) working longer hours per week than non-users ($M = 3.35$, $S.D = 1.377$), $F(111) = 6.939$, $p = .651$. In romantic relationship measures, more of the user group ($M = 1.50$, $S.D = .506$) reported having a current relationship than the non-user group ($M = 1.44$, $S.D = .501$) $F(111) = .304$, $p > .582$.

The results of the CUDIT-R showed a majority of the users ($n = 25$) scored above 12, which signifies a cannabis-use disorder. A few scored between 8–12 ($n = 3$), which signifies hazardous use, and some participants ($n = 4$) were classified as having no cannabis-use disorder.

Discussion

The results of the CUDIT-R showed a majority of the self-reported user group having met the criteria for a marijuana-use disorder. With other reported data from the user group (GPA, motivation, job status, and relationships) the criterion that defined a marijuana use disorder may be viewed as excessive and restrictive. The individuals in the user group were able to maintain standards of coursework, maintain high motivation, demonstrate financial responsibility, and maintained both romantic and

social relationships. The criteria for a marijuana-use disorder by the CUDIT-R should be reassessed and is perhaps too stringent.

The current study found a non-significant but slightly higher motivation to complete coursework within the user group. The lessening of stress and open mindedness brought on by the use of marijuana may lead to greater motivation on projects in the user group than in the non-user group.

A majority of the participants agreed that recreational use would bring a positive impact to society through tax revenue and job creation. The marijuana business is a driving force in economic growth because it is a sought-after commodity. More individuals are entering the business due to increasing demand and state reforms.

A majority of responses indicate a perception that crime rates would not increase from recreational use and that communities would benefit from a less rigorous enforcement of criminal marijuana laws.

Limitations

The small sample size of the current study limits the ability to research moderating factors on participants' GPA and marijuana use. With a larger and more diverse sample, future research could look at moderating factors such as work and relationship status and the possible effects such time restraints may have on the participants' GPA.

The data was collected online, increasing the likelihood of false answers to the questionnaire. Demand characteristics may have played a role in exaggerating reported GPA in the user group. As data collection was anonymous, there is no verification of the self-reports.

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Rating RateMyProfessors.com:
A Comparative Analysis of
Official Student Evaluations and
Unofficial Online Comments

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Biography

Anna Santana is a senior double majoring in sociology and Spanish. In her junior year, Santa Clara County selected her as a Social Impact Intern. During her internship, Anna developed and implemented a college-going culture in various schools. In addition, Anna has served as a Field Interviewer for Mathematica Policy Research in which she conducted math assessments for the Evaluation of the Early Learning Mathematics Initiative study. She was also a Field Interviewer for the Human Agenda's Apoyo Campesino (Migrant Farmworker Children's Education) project. For this project, she interviewed migrant farmworker parents residing in one of the largest state-sponsored migrant housing centers. Currently, she is the Early Learning District Liaison for the Franklin-McKinley School District. Lastly, Anna aspires to obtain a master's degree in education and a Ph.D. in educational policy.

Rating RateMyProfessors.com: A comparative analysis of official student evaluations and unofficial online comments

Abstract

RateMyProfessors.com is the largest and most popular website that allows college students to find out about professors' personalities, helpfulness, easiness, and clarity. Although many debate the credibility of the website, RateMyProfessors.com is only one of the limited resources students can count on to learn about faculty performance. This research is composed of two studies: In study 1, 400 students were questioned about their beliefs and perspectives with respect to RateMyProfessors.com. This part of the study found that nearly three-fourths of the participants have selected most of their professors based on the ratings found online. In study 2, the official teaching evaluation results from six faculty members were compared to the unofficial comments posted online. The formal and informal evaluations were found to be similar, making RateMyProfessors.com a great tool for students.

Introduction

College students are like customers who purchase learning services from higher education institutions. Before selecting a professor, like any another customer, some students find it indispensable to read the reviews of prior buyers. In recent years, the popularity and usage of teacher evaluation websites have been growing significantly. The most prevalent website is RateMyProfessors.com (hereafter RMP), and since 2006, RMP has gone from having ratings of 770,000 professors to 1.4 million professors (Viacom International Inc, 2015). As the use of RMP continues to increase, so do doubts about the website's validity because many argue that the ratings are either vastly high or vastly low and can be entered by anyone and at any time (Otto, Sanford, & Ross, 2008). Many faculty and staff also debate the credibility of RMP because they believe students can be confused with emotion and evaluate faculty based on the grade received rather than on faculty performance. To determine if students should continue utilizing informal websites such as RMP, a number of studies have examined the correlations between official and unofficial ratings (Brown, Baillie, & Fraser, 2009; Coladarci & Kornfield, 2007). Yet, many studies have failed to research the qualitative portion of both the official and unofficial evaluations, which is fundamental because it is there that students can openly express their own thoughts and opinions.

Therefore, this research focuses on comparing and contrasting the comments of San José State University's official teacher evaluations with those posted on RMP. We expect the focus and content of the official and unofficial comments to be different due to the informal structure of RMP.

Background on RateMyProfessors.com

During his time as a graduate student at San José State University, John Swapceinski created the website RateMyProfessors.com after an unpleasant experience with one of his professors (Furtado, 2007). Swapceinski is now the co-founder of many review sites, including LawyerRatingz, RealEstateRatingz, and RateMDs. Those websites emerged after he successfully launched RMP in 1999. Six years later, after launching RMP, Swapceinski sold his website to Viacom International Inc. As of today, RMP is the most popular online destination for college students to rate and post comments about their professors and the school they attend. Every year, RMP continues to grow in ratings; as of 2015, the webpage contains more than 15 million ratings for thousands of colleges and universities across Canada, the United Kingdom, and the United States (Viacom International Inc, 2015).

When students rate a professor, they are asked 14 questions, six of which are optional. Of the 14 questions, the most essential are questions 2–4, which ask about *helpfulness* (“Is this professor helpful when needed?”), *clarity* (“Is this professor clear about the class requirements and subject matter?”), and *easiness* (“How hard did you have to work for this class?”) because those three questions determine the “overall quality” of a professor. When reviewing and reading the ratings on the website, it is important for students to understand the RMP definitions:

Overall Quality (Good: 5–3.5, Average: 3.4–2.5, Poor: 2.4–1) The average of a professor's Helpfulness and Clarity ratings determines the type of "smiley face" the professor gets. The Easiness and Hotness ratings are not included in the Overall Quality calculation.

Helpfulness (Very Helpful: 5, Not Helpful: 1) Is this professor approachable, nice and easy to communicate with? How accessible is the professor and is he/she available during office hours or after class for additional help?

Clarity (Crystal Clear: 5, Confusing: 1) How well does the professor teach the course material? Were you able to understand the class topics based on the professor's teaching methods and communication style? (Viacom International Inc, 2015, para. 7).

Under a school's Rate My Professors page, students can search for a professor by selecting from multiple categories, such as the "Most Rated," "Highest Rated," "Most Helpful," "Clearest," "Easiest," or "Alphabetical." Although a professor can be ranked as number one in the categories of "Highest Rated," "Most Helpful," "Clearest," or "Easiest," it is important to consider the number of student ratings that a certain professor has on her or his RMP profile. Overall, the RMP website claims to be doing what students have been doing for generations, discussing with their school peers their experiences with former or current professors to try to find out who the good or bad educators are, but in a more systematic, modern approach through the use of the internet.

Background on Student Opinion of Teaching Effectiveness (SOTEs)

At San José State University, full-time and part-time faculty members are evaluated every semester on their teaching effectiveness using two different methods. One of the methods is an observation by a full-time professor from the same department as the faculty member being evaluated. The observer evaluates the instructor's knowledge of the subject matter, quality of course content, and teaching style, and makes an overall assessment of classroom performance and unfavorable conditions beyond the instructor's control.

The second teaching evaluation method is conducted by students and is officially referred to as the "Student Opinion of Teaching Effectiveness" (SOTEs). A few weeks before the end of each semester, students are reminded electronically by the university, and often verbally by some professors, to complete the SOTEs for each course they are enrolled in that semester. Before filling out the survey online, students are reminded of the following:

"This instrument is designed to evaluate only your instructor's teaching performance. It is NOT designed to measure your reaction to the subject or to the facilities, such as the physical conditions of the classroom. Your individual ratings will be anonymous and a summary of items 1–13 will be available to your instructor after the grades are turned in. This summary may enhance your instructor's teaching. It will also be

used in evaluation of your instructor for personnel matters such as retention, tenure and promotion” (San José State University Office of Institutional Effectiveness and Analytics, 2015).

Prompts such as “Was responsive to questions and comments from students,” “Was responsive to the diversity of students in the class,” and “Used intellectually challenging teaching methods” are some examples included in items 1–13. After the 17 closed-ended prompts in the SOTEs, students are given three open-ended prompts: (1) “Discuss the strengths of this instructor’s teaching;” (2) “Discuss the weakness and/or areas in need of improvement of this instructor’s teaching;” and, (3) “Please provide any other comment you feel would be helpful to the instructor regarding his/her teaching performance/ability.”

A few years ago, to encourage students to complete the SOTE questionnaires before the deadline, the university added a new policy dictating that students who do not complete all evaluations will not be allowed to view their grades from their most recent semester until three weeks after the final semester grades are posted online. San José State was partially influenced by San Diego State University (SDSU) because after transforming the SOTEs from a paper to paperless process in 2008, SDSU attained an 80 percent response rate by applying the grade reporting delay rule (Martinez, 2012). Students also have the choice to opt out of the SOTEs without experiencing a grade report delay. However, many students who either forgot or declined to complete their SOTEs have still found ways to access their grades.

Literature Review

Before enrolling in classes and selecting faculty members as their professors, some college students visit www.RateMyProfessors.com, the most popular and largest teacher evaluation website. Specifically, this website contains ratings for over 1.4 million instructors from over 7,000 colleges and universities (Viacom International Inc, 2015). However, many administrators and scholars question whether the anonymous comments and numerical ratings regarding professors posted on RMP are reliable and, perhaps most importantly, whether these ratings provide an actual representation of the teaching performance and quality of the instructors being rated. A study by Brown, Baillie, and Fraser (2009) investigated two essential components related to RMP: (1) college students’ beliefs about RMP and (2) comparing and contrasting the official student evaluations of Brooklyn College Student Evaluations of Teaching

(SET) to the ratings posted on RMP. It was hypothesized that little to no correlation would exist between the official and unofficial ratings due to the prior literature review the authors had completed. The methodology used for the first part of their investigation, which researched college students' beliefs about RMP, was primary data. The authors surveyed 110 Brooklyn College students; 80 percent of the participants were psychology majors and 71 percent were seniors (Brown et al., 2009). The majority of the participants were psychology majors because Brown is an instructor in the Department of Psychology at Brooklyn College of the City University of New York.

In the survey, the students were asked close-ended questions, such as whether or not they have visited RMP, failed to enroll in a course with a specific instructor because of the ratings he or she had on RMP, have ever posted a review of one of their professors on RMP, and if they believed the reviews were truthful (Brown et al., 2009). The authors found that more than three-fourths of the participants had visited RMP, but only one-third had rated and posted comments on the webpage; 71 percent of the students surveyed had chosen not to select certain instructors based on the "low" and/or "unsatisfying" ratings such professors had received on RMP (Brown et al., 2009). When the participants were asked if they believed students were more honest in their RMP ratings than in the SET questionnaire, 58 percent said they believed that students rated their instructors most honestly on RMP (Brown et al., 2009). Lastly, when the participants were asked about the validity of RMP and SET ratings, 47 percent believed that the RMP ratings were more representative than the SET ratings (Brown et al., 2009). These disclosures reveal that many students are dependent on the comments posted by anonymous users. The ratings posted online have a real effect on students when it comes to selecting their course faculty members. Likewise, these results illustrate that the student participants from the study trusted the RMP ratings more than the SET ratings because they believed that the RMP ratings were more honest and valid compared to the official college ratings.

The second part of the study focused on comparing and contrasting the ratings posted on RMP to those of SET. If a large number of students rely on the professor reviews posted on RMP, then it is fundamental for researchers to investigate how reliable RMP is compared to the results of certified student evaluations. Once again, the authors attained their sample population from Brooklyn College, but this time 312 instructors were randomly selected. The SET from Brooklyn College consists of 23 close-

ended questions, but to adequately represent the rating categories of RMP, only three questions were selected: (1) “Teacher availability to students outside of class” epitomized helpfulness; (2) “Teacher’s ability to communicate clearly” epitomized clarity; and (3) “Rate the difficulty of examination in this class” epitomized easiness (Brown et al., 2009). Brooklyn College’s evaluation uses the scale of ordinal measurement (excellent, good, fair, poor, and unacceptable), while RMP uses a 5-point scale for the questions of *helpfulness* (1: No help here; 2: You have to beg for help; 3: If you ask for help, it’s there; 4: Most likely to help; 5: Saved my semester), *clarity* (1: Say what?; 2: Confusing; 3: Pretty clear; 4: Clear-cut; 5: Crystal-clear), and *easiness* (1: Hardest thing I’ve ever done; 2: Makes you work for it; 3: The usual; 4: Easy A; 5: Show up & pass). To be able to compare the SET ratings to the RMP ratings, Brown et al. coded the results with 1 representing the lowest rating (unacceptable) and 5 representing the highest rating (excellent).

The results in this study did not support their hypothesis. “Statistical comparisons between RMP and SET ratings revealed moderate to strong correlations. Furthermore, [they utilized] regression analysis [and] found that RMP ratings are significant predictors of instructor’s performance as measured by SET ratings” (Brown et al., 2009, pg. 91). For this reason, the authors of this study recognized RMP as a reliable alternative for college students to review and rate their instructors’ abilities and performance.

Conceivably, verifying whether or not RMP ratings adequately and honestly represent colleges’ official evaluations may not help us without first investigating *why* students are saying what they are saying (Ritter, 2008). One limitation of the article is that it does not provide readers with explanations of why students perceive RMP the way they do. Another limitation to the study is the sample, especially the number of student respondents (n = 110). To gain a better understanding of why students use RMP and their beliefs about unofficial ratings compared to official ratings, a variety of students from different majors and class standings should have been included in the study. For this investigation, more than half of the participants were seniors majoring in psychology. In addition, although the researchers discovered moderate to strong parallels between the official and unofficial ratings, some of the variances between RMP and SET could not be clarified.

Similar to Brown et al.’s (2009) research, Coladarci and Kornfield (2007) investigated the correlation between the reviews posted on RMP to

those submitted on the SET. However, the researchers increased their sample size of teachers and selected all the instructors from the University of Maine who had ratings posted on RMP, excluding graduate-level instructors and teaching assistants. In this study, the total number of participants was 426. For their research, the variance was left unexplained; however, they suggested two policies: (1) As the RMP's reviews and comments increase each year, administrators and faculty in higher education should encourage students to post and evaluate their professors on RMP. If students were to rate their professors on RMP, the input information would vastly enhance the value and accuracy of the whole structure of RMP. (2) If policy one were implemented, policy two would place an emphasis on students posting respectful and constructive feedback in an academic format on RMP (Coladarci & Kornfield, 2007). With this stated, more research should be done on faculty members' and administrators' thoughts and beliefs about RMP and whether formal evaluations should be public.

Research Methods and Procedures

Faculty Subjects

Before selecting faculty members for this study, three colleges were selected. San José State University's Institutional Effectiveness & Analytics webpage on "Retention and Graduation" lists the university's seven colleges in the following order:



All the colleges in the first row were selected for this study (College of Applied Science & Arts, College of Engineering, and College of Social Sciences). Six faculty members from SJSU participated in the study by voluntarily providing their Spring 2014 SOTE results to the study's investigator. The titles of the six faculty members included "Lecturers," "Associate Professors," "Professors," and "Chairs." Two of the faculty members belonged to the College of Applied Sciences, two belonged to the College of Engineering, and the remaining two belonged to the College of Social Sciences. Within each college, one faculty member had the "highest" rating, while the other faculty member had the

“lowest” rating posted on RMP.

The following rules were applied for selecting the six faculty members:

1. Category designated: “Highest Rated”
2. More than 10 but fewer than 60 ratings on the faculty member’s RMP page
3. Last review was posted less than two years ago.

It should be noted that RMP does not have a “Lowest Rated” category; therefore, the “Lowest Rated” subjects were selected based of the opposite end of the category of “Highest Rated.” Rule number 2 and 3 were still applied. After selecting the six faculty participants, e-mails were sent to each individual inviting them to participate in the study. The e-mail included how they were selected, an explanation of what the study was investigating and exactly what would be required from them, and the consent form, which was an attachment to the e-mail.

Confidentiality

In order to maintain confidentiality of the SOTE results, which identify a faculty member, course name, and course section, pseudonyms were used for faculty names, and no course name or section is mentioned in the study. Faculty members’ personal identity was kept confidential throughout the research, as were course names and sections.

Student Subjects

Between November 2014 and May 2015, 423 SJSU students participated in this study by completing a questionnaire that contained 12 closed-end questions. Before the surveys were handed to the students, they were informed about the purpose of the study and were told about the elements of informed consent. The participants were told that no identifiable information would be included and that their responses would be kept anonymous due to the structure of the survey. In addition, they were informed that their consent was voluntary, that they could refuse to participate in the questionnaire or in any part of the questionnaire, and if they did decide to participate in the study, they were free to withdraw at any time.

Group 1. The data were gathered from the following sources: 202 of the surveys were collected from engineering classes including Geotechnical Engineering (33), Introduction to Construction Engineering (11), Mechanics of Materials (18), Plane Surveying (17), Structural Analysis (31), Theory and Application of Statics (19), and Thermodynamics (10); student organizations (Society of Latino Engineers and Scientists (21), Society of Women Engineers (13)); and an educational program (Mathematics, Engineering, Science Achievement (MESA) Schools Program (29).

Group 2. The remaining 221 surveys were collected from a nursing class (Professional Role Development I, (59)); sociology classes (Masculinities and Femininities (25), Non-Conforming Behavior (26), Political Sociology (18), Race and Ethnic Relations (27), Social Theory (24)); a Writing Workshop (13), and a Spanish class (Hispanic American Culture (29).

Note: Due to the difference in the number of participants in group 1 (n = 202) and group 2 (n = 221), 19 surveys were randomly eliminated from group 2, resulting in 404 participants in total.

Results and Data Analysis

Student Survey

All data collected from the student surveys were analyzed using Statistical Package for the Social Sciences Statistics (IBM Corp. IBM SPSS Statistics for Macintosh, Version 22.0. Armonk, NY). Of the 404 SJSU students surveyed, 43 percent were female and 57 percent were male. One of the most significant differences between group 1 (24 percent female and 76 percent male) and group 2 (62.6 percent female and 37.4 percent male) was the gender difference. This might be because women are underrepresented in the science, technology, engineering, and mathematics (STEM) fields. The differences in major by gender are extreme. For example, in 2007, 21 percent of bachelor's degrees in education were granted to men, compared to 83 percent of bachelor's degrees in engineering (Rose, 2010). Overall, researchers do not have a specific explanation for the gender disparities in college majors, but they suggest it happens because of several factors. These include personality traits and attitudes, socioeconomic status, social institutions, and labor market expectations. However, in sociology, theorists explain gender

differences in careers using the gender socialization theory. This theory proposes that at a tender age girls are encouraged, expected, and sometimes forced to play with toys that make them develop nurturing skills and have a focus on beauty, fashion, and housework, resulting in females eventually gaining an interest in nurturing careers and losing interest in STEM careers. By contrast, toys for boys encourage and prepare them for STEM careers, as most of their toys are focused on systems (videogames) and on building (Smith, 2015). To increase the number of women in STEM careers and the number of men in nurturing careers, girls and boys should be exposed and encouraged to play with different types of toys.

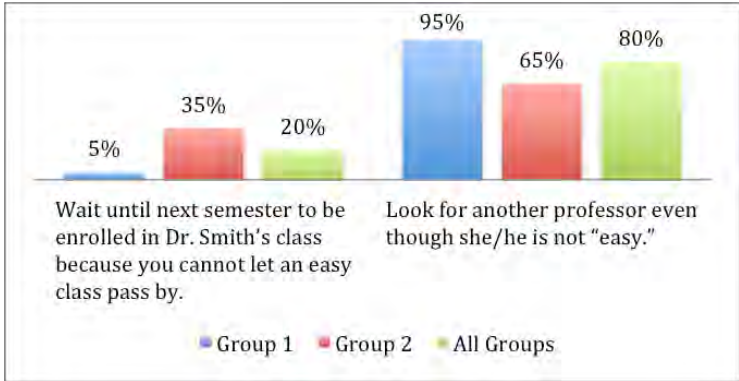
With respect to class standing level, the majority of the surveys were collected from upper division courses, which explains why there is a greater percentage of juniors and seniors in the sample (7 percent freshmen, 15 percent sophomores, 38 percent juniors, 28 percent seniors, and 12 percent seniors +). It was essential for the study to have a majority of juniors and seniors as participants because they have been in school for several semesters, which may make them more likely to be familiar with RMP compared to first-year college students.

Although many debate the validity of RMP, many researchers are now testing assumptions about students' use and misuse of this website. Previous research suggests that most of the students who visit RMP are more interested in the end product of the class (the grade) than the process of building on their frame of references and acquiring knowledge; these types of students are said to be "grade-oriented" (Bleske-Rechek & Michels, 2010). Our results indicated that two percent had a grade point average (GPA) below 2.0, 44 percent had a GPA between 2.0 to 3.0, and 54 percent had a GPA between 3.0 and 4.0 on a 4-point scale. We identified grade-oriented students in the sample as those with a GPA of 3.0 to 4.0 who selected either "strongly agreed" or "agreed" when asked if they looked for the "easiest professors." Using these criteria, 27.7 percent of those with a GPA between 3.0 and 4.0 were considered grade-oriented.

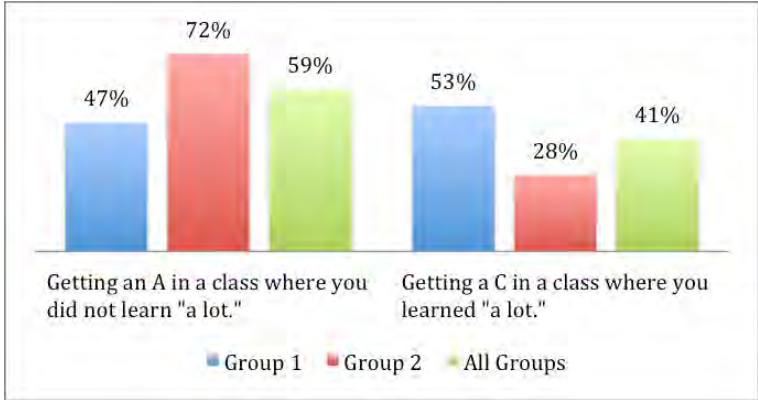
In the survey, students were questioned about two scenarios. In Scenario 1, they were asked what they would do if they wanted to enroll in "Dr. Smith's" class, a professor who has a reputation for being "easy" based on the comments posted on his RMP profile, but whose class is too full to enroll. While 80 percent said they would look for another professor, even if he or she was not rated as "easy," 20 percent confessed they would wait a semester long, if necessary, to be able to enroll in Dr. Smith's class

because they could not let an “easy” professor pass by. In Scenario 2, students were asked to select between two learning and grades options. Fifty-nine percent of participants would prefer to obtain an A in a class where they did not learn “a lot,” while 41 percent preferred to obtain a C in a class where they learned “a lot.” Surprisingly, in the two scenarios the answers between group 1 and group 2 were vastly different:

Scenario 1



Scenario 2



When participants were asked about the accuracy of the comments and ratings posted online, 46 percent believed the comments and ratings posted on RMP are accurate and represent instructors fairly. In fact, 72 percent of the participants have selected most of their professors based on the RMP website. Prior research shows that it is common for students to perceive both the comments (qualitative) and the ratings (quantitative) on RMP as useful and dependable (Hayes & Prus, 2014). For students, one

format is not more valid than the other; the information of both formats is equally pursued and believed to be reliable. With regard to contributing to the website, 12 percent of the participants had posted at least one positive comment and eight percent had posted a negative comment. However, when participants were asked which type of professor they were most likely to post a comment about on RMP, 70 percent said they would prefer to comment about an “inspiring, caring professor” rather than an “unprofessional, rude professor.” One explanation of why students choose to post either positive or negative comments is the individual’s locus of control. A study by Grimes, Millea, and Woodruff (2004) found that students with a “highly internal locus of control were more likely to give the instructor a positive rating than students with an external locus of control” (Risser, 2010, pg. 403). When students have an external locus of control they believe that other factors, such as teachers, workload, or the curriculum are the forces that determine their grades and their overall experience in the classroom. These students believe they are not responsible and cannot control the external forces around them, concluding in blaming others and having a negative perception of professors when they do not understand the material or receive an unpleasant grade on their midterms.

Comparative Analysis of Official and Unofficial Comments

The following tables contain representative samples of comments made by students from the official evaluations and the web site RMP.

College Of Social Sciences

Case 1. Professor A: Highest Rated

SOTEs	RMP
“...keeps us interested and makes class fun.”	“His humor makes going to class fun.”
“He is really friendly and makes us feel that we can ask any questions.”	“Funny, approachable, and responds to students.”
“I loved his attitude and sense of humor when he is teaching. Makes the class fun and interesting.”	“Super easygoing guy. Loved him. His lectures were interesting.”
“One of the best professors at	“We are lucky to have such an amazing

SJSU!”	professor here at SJSU.”
“Makes things interesting.”	“This class was interesting... his teaching style are [<i>sic</i>] interesting...”
“He was very approachable.”	“This guy is amazing! Listens to what you'll say and gives really in depth answers to any questions that you may have in mind.”
“Good instructor was very funny.”	“His class was very interesting, and he was very comical.”
“He is very nice and teaches clearly.”	“He was so nice...he made the material super interesting and fun to learn.”

Case 2. Professor B: Lowest Rated

SOTEs	RMP
“Very passionate about the subject.”	“Very passionate about course subject.”
“Very passionate and knowledgeable on the course.”	“This professor LOVES [course name] and is very passionate when he lectures.”
“He is very knowledgably [<i>sic</i>] about the subject matter...”	“Professor B is a very intelligent.”
“Nice teacher who is passionate about what he does.”	“He is a very enthusiastic prof. knows his stuff...”
“I appreciate Professor B strong passion and interest for the subject and for teaching it...”	“Very knowledgeable.”
“Class can become very boring, dry, and uninteresting...”	“His teaching style is pretty dull and dry.”
“His personality is unknown...the class was boring sometimes.”	“Awkward & impersonal.”
“Professor B needs to just get more on a personal level with students.”	“Needs to work on personal skills a little.”
“When questions are asked he does	“Whenever I asked a question he

not really give you an answer.”	did not respond or responded with a question.”
“When I went to him for office hours it seemed that he didn’t even want me there. I felt very unwelcomed and rushed to ask my question.”	“...not very nice/helpful when they meet in his office.”

College of Applied Sciences and Arts

Case 3. Professor C: Highest Rated

SOTEs	RMP
“Very engaging with students, despite this being an online course [<i>sic</i>].”	“Completely online course...She's good at replying, gives clear instructions...”
“Fantastic, fun personality made class a joy and helped keep students engaged.”	“Professor C is hilarious and made class relaxed and fun. She is has [<i>sic</i>] this care-free attitude about her the [<i>sic</i>] makes her highly approachable.”
“I always enjoy class; fun personality and humor go far.”	“She always made us LAUGH! Very hilarious with us. Quite interesting class.”
“Knowledgeable. Uses humor and sarcasm.”	“She is very knowledgeable, funny, and willing to work with you if you need extra help.”
“Professor C was very knowledgeable about the subject and made it fun to learn! Very great personality.”	“Great teacher who loves teaching! She was very funny always had great personal stories to add.”
“She was a great instructor who made learning a great experience.”	“The class is super fun! Many labs make up the semester and I couldn't wait for the next lab to come.”
“Professor C is very enthusiastic and keeps the class interested in her lectures.”	“She’s funny and keeps the class interesting with her personal stories.”
“Great teacher, personable, experienced and very respectable.”	“Professor C is such a personable professor, very knowledgeable and

An inspiration to me for my future careers.”	experienced in her field. She's funny and friendly but professional at the same time.”
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Case 4. Professor D: Lowest Rated

SOTEs	RMP
“Professor D obviously was excited to teach the course and he knows his stuff.”	“Prof D. is GREAT! Great sense of humor, laid back, knows the subject.”
“He says a lot of random things and starts acting ranting [<i>sic</i>] which makes it difficult to take notes.”	“He has no lesson plan, just rambles on and on about off topic things.”
“He needs to create some form of a teaching curriculum. He is all over the place and distracted.”	“He should teach a class called Ambiguity. There is no structure in his class, he is vague with instructions...”
“The teacher talks about his drug life almost once a week. During the class, he skips chapters just because he doesn't like or agree with the author.”	“Horrible professor. Has no structure when grading, all depends on how much he has had to drink or smoke.”
“He criticizes and humiliates students for stating information that the book states.”	“When he asks a question and you answer it he makes you feel like an idiot...”
“I like that he allows the class to use books on the quizzes and exams.”	“Exams were open book & open note so anyone that can read can pass this class.”

College of Engineering

Case 5. Professor E: Highest Rated

SOTEs	RMP
“Approachable, enthusiastic and	“Very organized, friendly and

keeps class engaged, well organized.”	clear. A true team captain. Take him!”
“When I asked Dr. E questions, he always had many different ways to explain the material (whether physically with demos or conceptually).”	“Ask questions and he will answer, go to his office hours and he is more than willing to help.”
“lack of problem variety (overuse of simple machines).”	“Gives poor examples, meaning they are really simple and the exam problems are way different.”
“My only critique is I would have liked to see you execute more problems in class.”	“he spend too much time doing easy stuff in lecture...”
“Professor E is very helpful in his office hours and answering question during class...”	“He is concerned on student's needs and available for help in class and office hours.”
“Obviously enjoys the subject witch [sic] makes the lectures more plesent [sic].”	“Very well prepared, enthusiastic and engaging lectures.”
“Instructor is very knowledgeable and enthusiastic when teaching. His small demonstrations are very helpful.”	“GREAT professor. Tries to keep the class interested. Very clear and understandable lectures.”

Case 6. Professor F: Lowest Rated

SOTEs	RMP
“Writing on the board is not very legible, but responds when we ask what written.”	“This guy has the WORST handwriting [sic] ever...Just make sure you ask him if you don't understand something.”
“Great at keeping lectures interesting”	“He has a good experience, is funny and has interesting lectures.”
“His teaching style is effective.”	“He always keeps his lesson attractive and alive. He also knows how to teach.”

“Course reader is very helpful.”	“...The reader is a godsend.”
“Very knowledgeable in the subject matter and showed an interest in students.”	“...very helpful during office hours and to all students!”
“Professor F is a very straight forward easy to understand professor.”	“Sharp teaching skills, excellent communicator...”
“The strengths are his strong knowledge in the class materials, he engages the student to the subjects, and very helpful to the students.”	“He might seem like KNOW ALL but he really does know a lot, I believe he is one of the best in his area. He always keeps his lesson attractive and alive. He also knows how to teach.”

Overall, our hypothesis was not supported because when the SOTE comments were compared to the RMP comments, in all six cases the focus of the students’ comments was found to be similar. When analyzing the content of students’ comments, six observations were made. First, RMP tended to have biased statements, such as “The worst teacher I have had in my life,” “HORRIBLE PROFESSOR,” and “By far the worst teacher at SJSU,” while the SOTEs had no more than one negative statement per faculty member. Although some students do post extreme statements on RMP, those are balanced by the majority of the other non-extreme comments (Otto et al., 2008). If students do depend on RMP to select their professors, then it is recommended that they do not take into consideration the extreme statements and instead focus on the other non-extreme ratings.

Second, students are more likely to be more respectful on the SOTEs than on RMP. Disrespectful words, such as *stupid* and *retarded* were found on RMP, but not on the official evaluations.

Third, on the SOTEs, no comment mentioned a physical trait of a professor. However, on the unofficial RMP evaluations, students commented about the physical appearance of professors. Professor D has two comments that state, “he is completely unprofessional (smelly, dirty)” and “[do not be] fooled by the way he presents himself...” On Professor E’s RMP profile, a chili pepper icon exists, and has a comment which states that he/she is “super nice, super interesting, super cute...” Students claim Professor F looks like a certain celebrity (“[name of actor] look alike” and “Two words: [name of actor]!!!!”).

Fourth, some people believe RMP is unreliable because comments contain grammatical mistakes and typos, but as seen above, grammatical mistakes and typos are also apparent in official comments. However, students tend to judge comments according to content and not grammatical errors.

Fifth, when students were asked to “discuss the weakness and/or areas in need of improvement of this instructor’s teaching” on the SOTEs, the comments tended to be similar. Professor C received 16 written comments on her SOTE summary of ratings for her online class, and 25 percent of the students shared similar thoughts (“...wish it was available to be on campus;” “see some of the topics in person;” “It would be more effective if this wasn’t online class;” “I would have like to do this in class in a lab rather than online”). In total, Professor E received 32 written comments on his SOTE summary of ratings. Of the 32 comments, 31.25 percent mentioned that the book that was required for class was not helpful (“Did not think the book was very helpful,” “The book is not helpful...,” “The textbook is horrible...,” “The textbook used was not very useful...”).

Lastly, from the professors who participated in this study, those ranked the “lowest” had more student ratings on RMP compared to the “highest” rated professors. For example, professor A had nearly 30 ratings, while professor B had over 55 ratings; professor C had 25 and professor D had nearly 50 ratings; professor E had 22 ratings and professor F had 36 ratings. Regardless of the number of ratings or comments each professor has on his/her RMP profile, students are seeking a public sphere to find out which professors they should take and which professors they should avoid.

Conclusion

As customers, students should be provided with reliable data that informs them about faculty performance in relation to student learning. Students can be provided with such data by being able to view the SOTEs, but because SOTEs are considered private property, students are not allowed access to them in any way. Since SOTEs are confidential, students seek informal ways to learn about professors. One of those informal ways is the online phenomenon of RateMyProfessors.com. Since the creation of RMP, many have and continue to doubt its credibility due to the many biased ratings the website contains and the comments that are from one end of the spectrum to the other. If SOTEs are not accessible to

the public and if many argue RMP contains information that is not credible, then where exactly should students turn for information? Based on prior research and on the finding of this study, as long as the SOTEs remain private, students should continue utilizing RMP. Based on the similarity of the SOTEs and RMP comments, RMP can be considered a useful alternative for students to learn about a professor's personality, class assignments, "helpfulness," "clarity," and "easiness." Although RMP serves as a substitute for formal evaluations, users should be cautious about comments that are extremely judgmental or that make generalizations.

Due to the limited numbers of students and faculty participants in this study, future researchers should increase the number of participants and the number of formal and informal evaluations that are compared and contrasted. In addition, future researchers should investigate the perspective of faculty and school administrators with respect to making the formal evaluations accessible to the public. Professors who are comfortable sharing their SOTE results with students could post their results on their official faculty webpages. This would start a new trend that could eventually influence other professors to do the same, which would then allow students to have more choices and information when deciding which professors to avoid and which professors are a must to take.

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Tanjit Singh

Major:
Psychology

Mentor:
Dr. Camille Johnson

Title:
Effects of Gender, Need for
Leadership and Positive Affect
Between Transformational and
Transactional Leadership Styles

Biography

Tanjit Singh is graduating from San Jose State University with a B.A. in Psychology. Originally from Fresno, Tanjit came to San Jose State to continue college. As a student, he was not only a McNair Scholar, but also the President of Psi Chi, the International Honor Society for Psychology Students, and Vice President of Operations for the Society for Human Resource Management at San Jose State University. He has taken great initiative in being involved on campus with both the faculty and students. Through his leadership positions he was able to help students with their academic and personal growth as well as aid his peers in their endeavors. In addition, Tanjit worked in Dr. Hosoda's Workplace Diversity Lab and was able to help host and coordinate various events through his leadership positions in both the business department and the psychology department. Tanjit is pursuing a PhD. in Industrial-Organizational Psychology and hopes he can build upon his previous research in the future and contribute to his field with momentous findings.

Effects of Gender, Need for Leadership and Positive Affect Between Transformational and Transactional Leadership Styles

Abstract

Overall, past leadership researchers have neglected to study followers and thus have missed a crucial component of the leadership process (Uhl-Bien, Riggio, Lowe, & Carsten, 2014). Followership theories state that the qualities and perceptions of followers have a huge impact on a leader's behaviors and outputs (Kelley, 1988). This study took a follower-centric approach to examine the significance of several variables on followers' perceptions of and attitudes toward leaders. Researchers have hypothesized that when a follower identifies with and has positive feelings toward a leader (i.e., the leader is relatable and likable), the favorability of the leader would increase. Another hypothesis is that participants would be fonder of transformational leaders. Researchers also hypothesized that male leaders would be rated higher than female leaders. In this study, researchers sampled college students ($N = 99$) and randomly assigned each participant to one of four conditions in which they read about either a transformational or transactional leader. The leader's gender was also manipulated in each condition. Participants were then given an online survey. Results indicated that for male transformational leaders, need for leadership was positively associated with positive affect, perceived effectiveness, and higher recommendation ratings. In addition, transactional male leaders were associated with higher recommendations and positive affect when participants had a higher need for leadership. Results also indicated that a follower's perception of being able to identify with the leader was positively associated with higher levels of recommendation of that leader and higher levels of perceived effectiveness. Positive feelings were also positively associated with higher recommendation ratings. Participants that were assigned to the transformational leader conditions were significantly more likely to have higher positive feelings toward their leaders than were those in the transactional leader conditions. In conclusion, this study exemplifies the importance of the effects of psychosocial variables in creating followers' perceptions of a leader. The results and conclusions from the analysis are discussed further in the paper.

Keywords: transformational leadership, transactional leadership, gender, need for leadership, positive affect

Introduction

The purpose of this study was to examine the effects of gender on several aspects of the leader-follower relationship while taking a follower-centric perspective. Recently, there has been an increase in the number of women entering leader-based positions in the workplace (Carli & Egaly, 2001). Since female leaders are becoming more common, one of the most important questions to ask is, what are the general perceptions of female and male leaders from the follower's point of view? In addition to these perceptions, would different leadership styles for each gender have an effect on follower perceptions? Previous research has explored these questions but with a leader-centric approach, and very few studies use a follower-centric approach (Uhl-Bien, Riggio, Lowe, & Carsten, 2014). Followers are a crucial component of the leadership process and an organization's potential for success; however, followers are often neglected by leadership researchers (Uhl-Bien et al., 2014). This study provides information to help fill in this gap and explore associations with the various perceptions followers made in the study. Information regarding a follower's perception of gender and leadership styles is important for researchers and organizations to understand so they can create better leader-follower relationships.

Background

Followership theory

Followership has been defined as when an individual, group, or organization takes a formal or informal subordinate position, follows when the leader leads, and commits to behaviors that were influenced by the leader's actions (Uhl-Bien et al., 2014). Theoretically, followership can be seen as a rank, a social process, or a combination of both. It is conceptually a theory that combines role theory, constructionist views, and behavioral observations. Followership is one of the four major components of the leadership process along with the leader, the context, and the outcomes. However, as mentioned previously, followership is often not discussed or taken into serious consideration. Kelley (2008) provides the most widely accepted and modern definition for an effective follower and claims that an effective follower has the ability and interest to self-manage, perform his or her job, stay committed to the group or

organization, and be ethical even in the face of an unethical superior. Riggio, Chaleff & Lipman-Blumen (2008), argue that highly effective followers have the capability to influence the leadership process so strongly that they can become the root cause of what makes a leader a good leader.

Gender

Past researchers have reported exceptional findings regarding gender and leadership. Carli & Eagly (2001) found that in the United States most citizens believe that if the U.S. government had more female leaders the country would be better, and only a few respondents believe it would be worse. The interesting part is that although most respondents had positive perceptions of hypothetical female leaders, when evaluated in scientific studies the results contradict these positive perceptions. Bass (1999) states that although women have slightly higher transformational behaviors they still must be better than their male counterparts just to be seen as equivalent in leadership capabilities. In conjunction with this theory, Eagly (2005) found that it is significantly harder for female leaders to be perceived as authentic when compared to men committing to the same behaviors. It is obvious from previous research that female leaders need to work harder to get recognition similar to male leaders, and they are more likely to be perceived as inferior to a male counterpart for doing the same quality of work. Johnson, Murphy, Zewdie, & Reichard (2008) found significant results in their study and state that female leader evaluations are negatively affected primarily due to the evaluator's gender expectations. Johnson et al. (2008) concluded that both strength and sensitivity were primary indicators of a good leader, however female leaders needed both strength and sensitivity to be rated good, while male leaders only needed strength to be rated good. A meta-analysis on transformational, transactional, and laissez-faire leadership found that aspects of leadership styles that are associated with higher effectiveness were more common in female leaders than male leaders (Eagly, Johannesen-Schmidt, & Van Engen, 2003). In summation, female leaders are found to be just as competent as men, however almost all the research shows they are evaluated much more harshly, especially when they are compared to a male counterpart.

Transactional Leadership

Transactional leadership is a leadership style that uses contingent rewards, management by exception-active (ME-A), management by exception-passive (ME-P), and commits to laissez-faire behaviors to lead a group or an organization (Bass, 1991). These leaders use contingent rewards to reward a follower's good performance. The intent is to get the contingent reward to become the primary motivator for a follower to achieve a certain objective. ME-A is a leadership behavior in which the leader actively observes for behaviors that might lead to a deviation from expectations and then takes action to correct the behavior. ME-P is when the leader only takes action after the outcome of a behavior does not meet expectations. Laissez-faire behaviors are when the leader renounces responsibilities and becomes avoidant of decision making. The relationship between transactional leadership and the follower is about what the organization can do for the follower, such as pay, recognition, and other external incentives.

Transformational Leadership

Transformational leadership was coined by Burns (1978) and then later refined and heavily researched by leadership researchers. Transformational leadership is a leadership style that uses charisma, inspiration, intellectual stimulation, and individualized consideration (Bass, 1999). Charisma is used to express the leader's vision and assimilate rapport with followers. Inspiration is used as a means to express and communicate expectations and purpose. Intellectual stimulation is a component that is designed to promote intelligence, performance, and competency. Lastly, individualized consideration provides each follower with personal attention to effectively provide coaching and advice. Research has shown that transformational leadership has a positive impact on follower development of self-efficacy, extra effort on work, job satisfaction, and performance (Dvir, Eden, Avolio, & Shamir, 2002). Transformational leadership emphasizes what the follower can do for the organization and uses internal incentives such as purpose and job satisfaction as primary motivators.

Identity theory

One interest of this study was the effect of participants being either able or unable to identify with the leader and if that has an effect on their perceptions of that leader. Identity theory deals with chronic identities and with interpersonal social interactions that a person

experiences (Lührmann & Eberl, 2007). This common social psychological theory is not highly prevalent in leadership studies; however, researchers in this study hypothesize that it has an important role in followership perceptions.

Hypotheses

The study's main focus was differences in perceptions in accordance with gender, leadership style, need for leadership, and a follower's perception of social identifiability with the leader. Several hypotheses were made for this study in accordance with previous research.

Hypothesis 1: Male leaders would receive more positive ratings than female leaders.

Hypothesis 2: Male leaders would receive higher recommendations than female leaders.

Hypothesis 3: Transformational leaders would receive more positive ratings than transactional leaders.

Hypothesis 4: Being able to identify with the leader would increase positive ratings.

Hypothesis 5: Those with higher need for leadership would prefer male leaders.

Methods

Participant Recruitment

Participants were recruited using San Jose State University's (SJSU) SONA online participant pool system (<http://cobsjsu.sona-systems.com/>). Members in the system receive notifications when study opportunities are posted and are then able to log in to their accounts and receive course credit for their participation. Participants needed to be over the age of 18 and be registered in SJSU's SONA system.

Procedure

The study was an online survey that was taken through sjsu.qualtrics.com. When participants opened the study they would first have to agree to the consent form and then start filling out the survey. There were 99 participants in the study, and each was randomly assigned to one of four conditions. The first condition was a male transformational leader ($n = 24$), condition two was a female transformational leader ($n = 27$), condition 3 was a male transactional leader ($n = 22$), and the last condition was a female transactional leader ($n = 26$).

Materials

The leader was presented in two aspects. The first was a vignette of the leader at work and what they wanted to do with the company. This is where the leader was shown in a work setting. Figure 1.1 and 1.2 show examples of the vignettes used in the study. Gender pronouns were manipulated to fit the leader's gender in the specific condition. The second part was a chart that broke down the leader's general leadership behaviors. Figure 1.3 is the breakdown in the transformational conditions and figure 1.4 is the breakdown in the transactional conditions. The participants then filled out the Need for Leadership Measurement Instrument (De Vries, Roe, & Taillieu, 2002) to measure their need for leadership. Positive affect was measured by combining scores of how likeable the follower thought the leader was and how comfortable the follower would be around the leader.

Leader A just took a CEO position at a very successful company. When he comes in, the first thing he does is set new goals. He then implements a program in which he rewards anyone who helps hit certain milestones to reach the goal. While this happens he goes about his own business, only to intervene when he sees that the other workers are deviating from his expectations. When this happens he decides to punish the people who aren't pulling their weight, however he rewards the ones that are doing exceptional work. While he is CEO he insists that the company should not change their culture because it is fine the way it is. He is also uninterested in new ideas that have yet to be proven to be effective.

Figure 1.1. The male transactional leader vignette. The female version is the same except all the male pronouns are replaced with female pronouns.

Leader B just took a CEO position at a very successful company. His first act was to give a speech in which he states the new goals he wants to make and says that it will only be possible if the whole company works together. He does not provide any external rewards, but he challenges his employees to do their best for inner satisfaction and he strives to be an inspiration for his workers. He is a very personable man. In addition, he is trying to change the company's culture to meet the new standards of the industry and to help the company feel more like a home. He is also constantly seeking out new ideas and innovations from his employees and is willing to try out many of them.

Figure 1.2. The male transformational vignette. The female version is the same except all the male pronouns are replaced with female pronouns.

This leadership is proactive.
Leader B is always trying to change the culture of his organization.
Employees achieve objectives through higher ideals and moral values.
Motivates followers by encouraging them to put group interests first.
Leadership behavior is directed to each individual to express consideration and support.
Promotes creative and innovative ideas to solve problems.

Figure 1.3 The breakdown of the transformational leadership style.

This leadership is responsive.
Leader A prefers to keep the culture of an organization the same. Works within the organizational culture.

Followers achieve objectives through rewards set by leader.
Motivates followers by appealing to their own self-interest, e.g., cash bonus, recognition, promotion.
Only intervenes in a follower's work if it deviates from the norm in order to keep the status quo.
Sets goals and provides explicit clear guidance and responds to deviations to wanted outcomes to improve performance.

Figure 1.4 The breakdown of the transactional leadership style.

Results

Gender

ANOVA's were used to compare means of male leaders and female leaders across recommendation rating, positive affect ratings, and perceived effectiveness. Results of the ANOVA testing did not indicate any significant differences between male and female leaders in any of the conditions.

Need for leadership

For female leaders, need for leadership was not associated with positive ratings, recommendations, or perceived effectiveness. However, for male transactional leaders, followers' need for leadership was positively associated with higher positive affect scores ($r = .44, n = 22, p = .40$) and also significantly associated with higher recommendation ratings ($r = .598, n = 22, p = .003$). Also, the male transformational leader was perceived as more likable and comforting (positive affect) as the participants' need for leadership scores increased ($r = .49, n = 24, p = .016$). For the male transformational leader, need for leadership was associated with higher perceived effectiveness ($r = .47, n = 22, p = .022$) and higher recommendation ratings ($r = .58, n = 24, p = .003$).

Identity & Positive Affect

Analysis of the how well the participants could identify with the leader in their condition revealed that higher ratings of social identifiability led to higher ratings of effectiveness ($r = .66, n = 99, p < .001$), recommendations ($r = .57, n = 99, p < .001$), and positive affect ($r = .63, n = 99, p < .001$). An independent t-test was conducted to compare positive affect scores between transformational leadership conditions and transactional leadership conditions. The independent t-test shows a

significant difference of positive affect between transformational leadership conditions ($M = 26.93$, $SD = .55$) and transactional leadership ($M = 26.03$, $SD = .78$) conditions: $t(97) = -6.83$, $p < .001$.

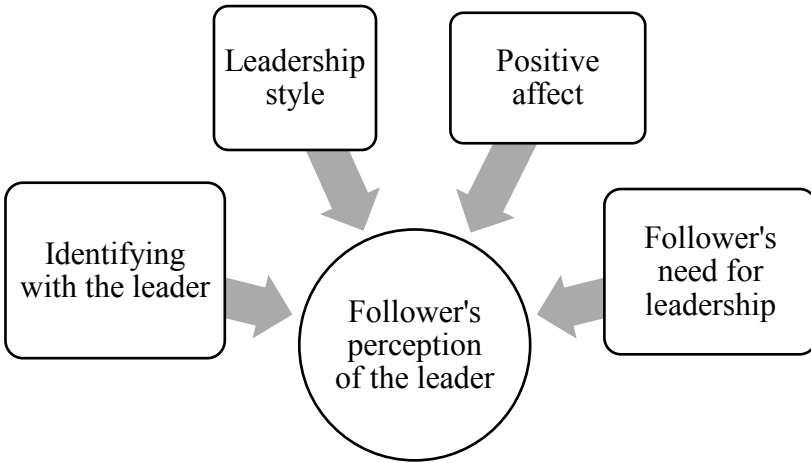


Figure 2.1. The model proposed in this study of variables that affect followers' perceptions.

Discussion

Based on the analysis of the data, the evidence for the gender variable was inconclusive and suggests that gender does not influence follower perceptions of a leader. These results contradict the majority of research that looked at the interaction of gender and follower perceptions. As previously mentioned, most leadership research has found that female leaders are subjected to harsher evaluations when compared to male leaders. It is probable that this study's manipulation of gender was ineffective. The manipulation of gender in this study was to change the pronouns of the leaders in the vignettes, however other gender biases were not manipulated. Although no definitive conclusions can be made from a non-significant result, it may be possible that if gender differences in leadership positions were subtle in both real-world and experimental settings, then gender would not be a highly influential factor during evaluations. However, further research is needed to test this possibility.

The analysis of need for leadership had more interesting results. No significant results were found when looking at need for leadership and female leaders, however when male leaders were evaluated there were

significant results. For male transactional leaders, need for leadership was associated with greater follower positive affect and higher recommendation ratings. In other words, participants that prefer highly involved leaders saw that the male transactional leader was likeable. Transactional leadership incorporates behaviors that are more power based, thus making it more attractive to those who want masculine leaders. Transactional leadership is based on rewards and performance and is highly concerned with outputs. The follower could see this output-orientation of the leader as a sign of productivity or effective behavior. In addition, positive affect for the male transactional leader could explain why the male transactional leader received positive recommendation ratings. Positive affect could be a result of how comfortable and how likable the leader was perceived to be. This positive affect influenced the perception of the leader and led to higher recommendation ratings.

In addition, for transformational male leaders, there were positive correlations for positive affect, perceived effectiveness, and recommendation ratings in accordance with higher need for leadership scores. Transformational leaders are attractive because of their charismatic behaviors. Those who want a more involved leader see the characteristics of the transformational leader, such as individualized consideration, to be attractive and comforting. Perhaps there is a cycle of positive affect affecting recommendation ratings and perceived effectiveness. Positive affect may be a key component to follower perceptions. Positive affect is not something that is commonly studied by leadership studies. Although there was no significance for the female leaders, male leaders in both styles had significant positive correlations for need for leadership and both positive affect and recommendation ratings.

Lastly, an analysis of participants' response to how well they identified with their leader showed that being able to identify with a leader leads to higher ratings of effectiveness, positive affect, and recommendation ratings. This result indicates the importance of followers' ability to see themselves in their leaders in order to develop positive perceptions of them. A comparison of means also showed that positive affect for transformational leaders was significantly higher than positive affect scores for transactional leaders. It should be taken into consideration that this statistical difference in means is very slight. This result implies that transformational leaders are more likable and comforting than transactional leaders, however it is not a practical finding because the

difference in the statistical analysis between the two leadership styles was slight.

In summary, as the workforce becomes more diverse in aspects such as gender, it is becoming even more important for researchers to evaluate follower perceptions of leaders from various backgrounds. Figure 2.1 portrays the model that is proposed from the results of this study. This study indicates that followers' ability to identify with their leaders and the follower's level of positive affect towards a leader are crucial factors in what the perception of the leader will become. This study provides some evidence of the importance of these variables that are often not examined or considered in leadership research studies. Followership is a crucial component of the leadership process, and if positive affect, social identifiability, and need for leadership have significant impacts on follower perceptions, then it is essential for organizations and researchers to take these variables into consideration when developing and selecting future leaders.

Limitations

Several limitations are present in this study. One of the biggest limitations in this study was the number of participants. Future research should have a greater number of participants in each condition. The sample size limited the ability of the statistical analysis to find effects in the quantitative analysis. A recommendation for future research is to provide a picture of a confederate alongside the vignette. This would increase the saliency of the leader's gender in the condition. The Need for Leadership Measurement is also not a very well documented and tested instrument. Future researchers could revise the Need for Leadership Measurement tool or develop another way to assess a participant's need for leadership. A questionnaire that examines the need for leadership with valid psychometric properties could greatly benefit future followership studies. Future studies should also consider sampling from business organizations rather than a college campus. Lastly, most of the analysis and interpretation of the data was based on correlations. A future study should try to design research that allows for other forms of statistical analysis to help demonstrate or infer causation rather than just correlations.

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Private Embarrassment: An
Empirically Informed
Philosophical Analysis

Biography

Kalahan Stoker graduated with a BA in Philosophy at SJSU and will be pursuing a graduate degree in the Fall of 2016. She presented her research at the 2016 American Philosophical Association, Pacific Division, in San Francisco. Meanwhile, she has opened a small business to help finance her education. Additionally, Kalahan has accepted an offer to be the managing editor for the new Philosophy Journal of Emotion. She is blessed with all the opportunities that await her, and she is striving to be the best she can be in and outside of academia. Kalahan Stoker is very grateful for the patience, care, and support of her friends, family, and mentors during her time at San Jose State University (SJSU).

Private Embarrassment: An Empirically Informed Philosophical Analysis

Abstract

The term “embarrassment” has descriptive ambiguity in philosophical literature, even if scholars generally assent to a degree of certainty regarding what a construal or evaluation of embarrassment essentially involves (e.g., an aversive exposure to an interpersonal interaction). This ambiguity pervades common usage, in and across disciplines, even if philosophers and psychologists alike have tried to clarify the term. Two philosophers in particular, Béla Szabados and Luke Purshouse, have given accounts of embarrassment in two categories—public and private. While public accounts tend to fit the standard interpretation of embarrassment, private embarrassment proves to be slightly problematic. But, in light of people's ability to recount privately embarrassing events that do not fit the standard interpretation of embarrassment, philosophical projects that wish to give an adequate theory may now also need to demonstrate how intrapersonal (or private) models of embarrassment are construed or evaluated. Whether these views are incommensurable with interpersonal models of embarrassment, or theories of embarrassment in general, is what I address in this paper.

Broadly stated, there are at least two competing views in the philosophy of emotion about embarrassment. The first and more pervasive view is that embarrassment is essentially a social emotion, while the competing and less common view is that it is possible to experience embarrassment as a private emotion. Together, these views afford an interesting and educational debate about whether or not private embarrassment is a genuine kind of embarrassment. A convincing argument for private embarrassment will need to be theoretically consistent with the standard interpretation of embarrassment as a social emotion, and only after may it seriously be considered as a genuine kind.

This essay begins with a general discussion of embarrassment. Then, I review the literature of Luke Purshouse (2001) because it is a contemporary response to the position previously advocated by Szabados in *Embarrassment and Self-Esteem* (1990) on self-embarrassment. Based on these philosophies, I suggest three speculative reasons why self-embarrassment has not been discussed in philosophical literature. Then, in the style of empirical philosophy, the data from the psychological study

will be used in a critique of self-embarrassment. Finally, potential objections will be evaluated and suggestions for further research will be made.

Before continuing, I will mention a few key terms that will be used throughout this paper. First, the term emotion is going to be used to describe embarrassment quite frequently. I am using this term to refer to embarrassment as a conscious phenomenon that we may associate with specific mental states, behaviors, desires, and intentional objects. Furthermore, the differences between these specific mental states, behaviors, desires, and intentional objects may help explain another important idea, which is about individuating or differentiating emotions from one another. This can be done to group emotions sharing similarities into families or to distinguish two very similar emotions from one another by their subtle differences.

We may easily acknowledge the experience of our emotional lives in the absence of others, yet we may encounter difficulties when we seek to explain the role of social emotions in our private lives. To be clear, embarrassment is normally considered as a social emotion that seems to become theoretically problematic when examined in a private context. In a social context, there may be more explanatory factors to which we may point to determine the nature and basis for experiencing social emotions. But, in the absence of social interaction, explanatory factors are limited by the context of our person.

I say embarrassment has only been categorized as a social emotion because there have not been many arguments made to challenge this position (Damasio, 2003, pp. 45-6; Harris, 2006, p. 524; Krishna, Herd, & Aydınoglu, 2015, p. 473). On this view, embarrassment's intentional object is described as an interpersonal interaction. In psychology, several theoretical positions have been put forth in favor of this conclusion, including the social evaluation model and the dramaturgic or awkward interaction model (Harris, 2006). In other words, this view has been widely accepted and has found support and explanatory power in evolutionary psychology (Harris, 2006, p. 526) and philosophy.

But there has been a general lack of concern for and attention to the phenomena of self-embarrassment in philosophy and psychology. As I see it, there is only one theory of self-embarrassment in philosophy. This theory is that any self-embarrassing event is analogous with an interpersonal embarrassing event; if it is not, it is not embarrassment (Purshouse, 2001). That self-embarrassment has only had one theoretical

explanation signals to me that this is a phenomenon worth further investigation.

It was not until recently that self-embarrassment was formally studied in the empirical sciences (Krishna, Herd, & Aydınoglu, 2015). This research has several significant and immediate theoretical and practical implications for our philosophical theories. In particular, I am primarily concerned with the contextual implications. The contexts in which embarrassment has been explored thus far have been largely public—parties, classrooms, workplaces, stores, and the like. The contexts that are still largely open to investigation occur in private settings. These can include places where there is no one present (i.e., in one's own home) and those where others are present but we still construe ourselves as alone (i.e., the bus or a crowded venue).

There are several contexts (i.e., faux-pas, center of attention, and sticky situations) where we may find ourselves embarrassed. Generally, these are aversive experiences for oneself. But for others, embarrassment is sometimes considered a gesture of appeasement and seems to promote pro-social behavior (Harris, 2006). For instance, a person who is embarrassed by knocking over a glass of water at dinner may desire to escape the situation, but her displays of embarrassment, like blushing, averting eye contact, and having an urgent sense of motivation to repair the situation, may affect others' perception of her as an agreeable and trustworthy person. Here, others may feel more assured about her intentions, while at the same time being able to express her embarrassment may be helping her overcome it. Also, when people feel less embarrassed, they are more likely to disclose intimate information to others, and this is one reason it is considered to promote pro-social behavior.

Taken together, these theoretical perspectives provide the concept of embarrassment with a rich description. As philosophers, I suggest we begin by reviewing these theories as a means of informing our conceptual analyses with psychological studies. In effect, this may bring clarity to our understanding when it comes time to discuss the relevant psychological study about self-embarrassment in this paper.

I would like us to begin by imagining someone tripping. The embarrassment that this person may feel could be attributed to their concerns about being poorly viewed by another person. This explanation reflects aspects of the social evaluation model of embarrassment. On this account, embarrassment is essentially the anticipation of a negative evaluation by another person (Harris, 2006). But we can also re-imagine

the same situation, except in this example we can see this person's concerns are more accurately associated with the anticipation of a disruption of smooth social interaction or the exposure to a situation wherein they are not sure how to act next. In this case, embarrassment may be better explained by the awkward interaction model or dramaturgic model (Harris, 2006). Other models propose different ways of describing why embarrassment happens to us, but each is grounded on a similar assumption. That is, embarrassment is always about social interaction.

These models may show how a person's concerns may vary even when the given action is the same. What these do not immediately reveal is how these concerns specifically pick out an emotional phenomenon as embarrassment rather than some different emotion. Questions of this kind are about individuation, and including shame and guilt in discussions of this kind is common. Physiological responses and action tendencies specific to embarrassment may be sufficient to accomplish this aim for the projects of some psychologists. In developmental psychology for instance, physiological responses and action tendencies specific to embarrassment are known to develop earlier in childhood than those of shame and guilt (Harris, 2006). Though shame and guilt share familial resemblances to embarrassment (i.e., thoughts, behaviors, and feelings), each develops at a different time in our lives and thus signals critical evolutionary differences and functionally different roles in human life. Psychologists too, but philosophers especially, seem to emphasize a need to find theoretical consistency between the concern-based construals of mental states specific to embarrassment.

The writings of Béla Szabados (1990) on self-embarrassment give two examples where a person may feel embarrassed but interpersonal contact does not occur; but then, further investigation ends at the analogy with interpersonal embarrassment. The first example is about a person writing an autobiography in the privacy of his own home, and the other is about a person recalling his first sexual encounter. As a further investigation on this topic, Luke Purshouse's (2001) philosophical analysis on embarrassment is also interesting and informative; as such, it makes a significant contribution to our knowledge of this phenomenon. This author adopts the concern-based construal approach that was originally advocated by Roberts (2003). This approach is used to identify what is common to all paradigmatic cases of embarrassment and what is not. At the same time, this is a project of individuation—specifically, how to individuate embarrassment from shame. The main thesis of Luke

Purshouse's essay is, "...that embarrassment involves a construal of oneself as involved in an interpersonal exposure to which one is averse" (Purshouse, 2001, p. 532). In this view, embarrassment can be meaningfully differentiated from shame only in that interpersonal contact is not a necessary condition for shame but it is for embarrassment. This theory implies that any self-embarrassing event is analogous with an interpersonal embarrassing event; if it is not, it is not embarrassment. The overall strength of this argument is that it captures a wide selection of embarrassing events, but the weakness may be that it selects from one type of category—public and interpersonal. If there is truly only one category to choose from, there may be nothing notably problematic with using these examples. However, if it is plausible that we should also be selecting from a private and intrapersonal category, the analysis would exclude potentially relevant information. Luke Purshouse himself speculates on the implications of a genuine self-embarrassment category. Hence, the following claims:

There is, however, another kind of objection which might be put to my account, which claims that, in a few central cases of embarrassment, the subject does not construe himself as involved in an exposure at all. Szabados discusses one case of this kind, which he uses to deny what I have so far taken as a fundamental assumption, namely that embarrassment is always formed about interpersonal situations. He proposes that, on the contrary the emotion occasionally occurs in circumstances where the subject has no contact with any other person. If, as this implies, embarrassment is not always about an interaction between self and other, this would cast serious doubt on my suggested analysis of it. (Purshouse, 2001, p. 534)

What this excerpt demonstrates is that self-embarrassment does not follow from an interpersonal theory (at least not apparently). In this view, the following responses can be inferred. Self-embarrassment is not a genuine category of embarrassment; rather, the name picks out some other phenomena. If self-embarrassment is a legitimate phenomenon, these cases of embarrassment are odd and marginal; hence, not paradigm. Or, in each case of self-embarrassment, an analogy to interpersonal contact can clearly be made by saying the subject construes "...another human subject as being exposed to him, and evaluates this exposure negatively" (Purshouse, 2001, p. 536).

In what follows, I name and support three speculative reasons why I think self-embarrassment has not been discussed in philosophical literature. For one, embarrassment has more often been used in public contexts than not. The validity of this claim is made apparent by the models and examples that have been made available thus far; if not by these, the lack of models and examples for self-embarrassment should prove this point. What this implies is that the emotional concept and perhaps vocabulary used to explain embarrassment has not been apt to include private contexts. Hence, it is plausible that we may very well experience self-embarrassment, but have failed to pick out what it is and analyze what it means due to a conceptual gap in academic and public discourse.

Notably, the concern-based construal approach accommodates for what are relevant contextual considerations of a person. A construal, Robert (2003) claims, is a kind of subjective logic that allows for necessary and sufficient conditions to be placed on a phenomenon to determine whether or not it may be called an emotion (Roberts, 2003, p. 47;64). This approach in particular motivates the usage of paradigm cases of embarrassment and acts to pick out the phenomenon of embarrassment as an emotion (Roberts, 2003, pp. 64-5). Moreover, this may accommodate paradigmatic shifts when warranted. Take the following excerpt:

Whether an emotion is in our repertoire with respect to a given situation will depend on such factors as the character of the situation in its relation to our system of beliefs, our history of practicing emotional self-control, our personality in the sense of the master concerns of our life as well as our more particular cares and desires, some of which are elicited by passing features of the environment and/or our present state of mind or body (especially mood), our habits of attention, our skills at conceptualization and visualization, our understanding of our own emotions and feelings, and who knows what else. (Roberts, 2003, p. 81)

Significantly, this view allows adjustments to be made to our emotional lives through the addition or subtraction of existing or novel emotional concepts—all without compromising our ability to assent to a degree of certainty regarding the necessary and sufficient conditions we ascribe a particular emotion. Take the example of a therapist or friend offering up different ways to interpret a situation. This allows us to expand our

emotional repertoire and allows us to access a better understanding of our emotional lives (Roberts, 2003, p. 81).

Even though the concern-based construal approach is said to accommodate paradigm cases of emotion, self-embarrassment has not been taken seriously as a paradigm case (Purshouse, 2001; Roberts, 2003, p. 65). Under the concern-based construal model of emotion, we may be able to explain why the behavioral dispositions or action tendencies associated with public embarrassment differ from those of private embarrassment. More simply, one does not need to feel embarrassment in order to legitimately construe the situation as embarrassing. If this is correct, the data of the psychological study mentioned earlier may strengthen the arguments for Robert's concern-based construal theory of emotion.

Luke Purshouse's (2001) choice to apply this kind of characterization to embarrassment in terms of a certain property seems appropriate (p. 517). But I am suggesting that under this framework, the resistance toward seriously considering self-embarrassment may be a mistake. The difficulties of placing this phenomenon within the emotional taxonomy signals a need to reconsider our standing concept of embarrassment or at least a closer examination of how the term interpersonal is being applied to a context which lacks contact with others. That is because an explanation that simply writes this off as shame is not as informative, and in neither example given by Szabados (1990) and Purshouse (2001) are the examples of self-embarrassment clearly shameful. The conclusions being implied here construct an argument, which is that private embarrassment exists but our concept of it may be underdeveloped or misunderstood.

The paradigm case argument in philosophy as elucidated by J. W. N. Watkins (1957) contains the following steps:

(1) The meaning of a word is determined by its uses.

(2) There are typical situations or paradigm cases to which anyone who understands a certain descriptive expression would be prepared to apply it unhesitatingly.

(3) Such an expression acquires its meaning from its regular application to, and its meaning is usually taught by reference to, such paradigm situations. (p. 25-6)

Essentially, a paradigm case is supposed to be representative of the overreaching lay intuitions about some concept. Though, as we have learned from the data and data analysis of experimental philosophy, our

intuitions about what “we” think we think may be inaccurate or misrepresentative of what “we” actually think (Knobe 2008). In other words, when making assumptions about lay intuitions it is imperative to examine what warrant we have for making the claim that the majority of people hold the same intuitions about a concept as we do.

The overall validity of the paradigm case argument has been disputed since its proposal (Bunnin & Yu, 2004). Rather than disputing the overall validity of this method, I first hope to argue that when this is being used as the preferred method of conceptual analysis, there is a good explanation for why self-embarrassment may be thought of as odd, marginal, or insignificant, as Luke Purshouse (2001) claims. In what follows I will argue that a substantial positive characterization of private embarrassment is what excludes it from being used in ordinary discourse, not its absence in our emotional experiences.

One reason interpersonal embarrassment may have seemed to be the paradigm case is that it represents a greater sample size and thus an analysis that privileges this view is likely to more accurately represent the phenomenon. Though, besides providing more examples of public embarrassment than for private, Purshouse (2001) does not provide evidence that public embarrassment occurs more frequently. Nor is it made clear that people experience private embarrassment more frequently, just as frequently, or less frequently. And significantly, the intensity, or what some call valence, of self-embarrassment is thought to be on par with interpersonal embarrassment (Krishna et al., 2015, 478).

The psychological study on private embarrassment does note that the behavioral tendency to escape an embarrassing situation in public is not seen in cases of self-embarrassment. This may simply be due to the fact that in self-embarrassing situations, the person has nowhere to flee. Though, if the kinds of embarrassment do not differ in many respects, one may logically conclude that behaviors associated with the desire to escape may be exhibited in subjects of self-embarrassment. One consequence of not being able to escape the embarrassing situation is an increasing sense of self-awareness for the purpose of avoiding the self-embarrassing event in the future (Krishna, Herd, & Aydinoglu, 2015, p. 479).

Perhaps the motivation of philosophers to assume public embarrassment is a better example is the ease of generating examples. This may have an influence of, “...the lay understanding of embarrassment as one that occurs in the presence of others” (Krishna et al., 2015, 478). Hence, there could be an inherent bias for selecting

embarrassing events that occur in a public context with interpersonal contact. Admittedly, even I have found it challenging to give strong examples of self-embarrassment. Thus far, I have briefly mentioned a study that further supports the idea that private embarrassment is a legitimate category. What follows is a more detailed account of how this data relates to the topic of this essay.

In what follows, I hope to show that the assumption that embarrassment is always about interpersonal contact is unwarranted and at least needs to be revised in light of the psychological study previously mentioned. To warrant this claim, I will use the example given in this study to help describe how a person may experience embarrassment by construing themselves as involved in an unwanted exposure to aspects of themselves (Purshouse 2001). I will argue that this is not implausible, better characterized as shame, or a somewhat marginal use of the term embarrassment as Luke Purshouse (2001) has claimed.

To reconcile the existing knowledge about embarrassment with the evidence on intrapersonal embarrassment I will suggest that we need not always appeal to social interaction, but rather, we must always appeal to social rules and norms that influence behavior and affect our self-concepts. This view has an affinity with the theory put forth by Krishna, et al. (2015). The main thesis I wish to defend is that embarrassment, public and private, does involve a construal of oneself as involved in an exposure to which one is averse; however, this may also be in respect to one's beliefs about social rules and norms or one's self concept. So, embarrassment can also be thought of as an intrapersonal phenomenon. This thesis avoids having to describe private cases matching the psychological profile of embarrassment as shame. More generally, one implication of this revision to Purshouse's thesis is that social emotions may now be discussed in a private context and in terms of oneself without having to appeal to an analogy of interpersonal interaction.

In the study by Aradhna Krishna, Kelly B. Herd, and Nilüfer Z. Aydınoğlu, psychologists attempted to elucidate a typography of embarrassment (2015, p. 474). The study conceded that embarrassment does not require a real audience, whether the person is in private or in public (Krishna, Herd, & Aydınoğlu, 2015, p. 475). The explanation primarily regards an appraisal by others or the self as the essential condition for embarrassment. This implies that substituting the interpersonal contact aspect of embarrassment for an appraisal by others or self allows four possible categories (Krishna, Herd, & Aydınoğlu, 2015, p.

475), two of which are private and the other two are public. Common wisdom in philosophy has, until now, been narrow to the extent that it primarily regards Category 1 (public and interpersonal) as the paradigm for conceptual analysis.

That embarrassment seems to happen only in public may be attributed to the absence of its concept from our emotional repertoire rather than an absence of the experience in our phenomenal field. To presume that the ease of generating examples constitutes sufficient reason to forgo addressing a phenomena altogether may be not be the better way to understand the complexity of our emotional lives. I suspect the resistance to modifying our conception of embarrassment has been influenced by the problems that arise when trying to discuss a social emotion when a person is not in, imagining, or remembering contact with other people. Béla Szabados (1998) seems to grapple with an example of a person embarrassed while writing an autobiography. In order to arrive at an analogy of an audience he must posit a division between the child-self and the adult-self over time; the memory had by the adult-self; the description being given by the adult-self; the identification of the adult-self with the child-self; and the distance and detachment of the writer/reader as a unified observer and critic.¹ While this analysis does take a few extra steps, it does successfully show us how the self may constitute its own audience.

Luke Purshouse (2001) himself also gives a different explanation of a self-generated example of a person examining aspects of his past

¹Szabados (346). Well, I am tempted to go in the same direction. But I cannot. For such conceptual remarks restrict our appreciation of our emotional life. I for one can picture situations where a person is all by his lonely self and feels embarrassed. A candidate for self-embarrassment offers itself in the writing and subsequent reading of one's autobiography. Suppose I am attending to my early memories and come across scenes of remarkable naiveté, awkwardness accompanied by an overwhelming sense of being at a loss of what to do. Say, one's first sexual encounter. This was embarrassing. And if it was not embarrassing then, one may find it embarrassing now. If this is not "self-embarrassment" or "being embarrassed in private," what is it? A person finds himself embarrassed when writing or reading about his early experiences in the privacy of his own study seems to be a counterexample to the claim that an external observer or audience is essential to being embarrassed. (Well, at least on one interpretation of the idea of self-embarrassment which is admittedly not pellucid.) For in such a situation, ex-hypothesi, there is only me working on myself (Szabados, 346).

selves.² Both accounts seem to give an analogy of the self being able to provide an audience for itself; yet, the question is still better raised by Luke Purshouse (2001)—in what sense could a unified self construe himself as involved in an unwanted exposure (535)? The notion of interpersonal exposure is central to the thesis that embarrassment involves a construal of oneself as involved in an interpersonal exposure to which one is averse (Purshouse, 2001, p. 532). He states:

Embarrassment, I claim, is essentially about the *exposure* of one person to another. Interpersonal exposure occurs when an aspect of one person, whom I shall term an *exposee*, enters the experience or thoughts of another, the *recipient*. The aspects of the exposee that can be exposed include his physical body, mental states, dispositions of character, and actions. Exposure also takes place when one person obtains knowledge about someone else (Purshouse, 2001, pp. 530-1 italics in original text).

Some other writers, John Sabini and Maury Silver for example, also take embarrassment to require an audience (Silver, et al. Footnote 13). But Purshouse's (2001) view of exposure is distinct from the idea of an audience on the basis that contact, real or imagined, must be made between two distinct agents. Hence, the notion of private embarrassment from this view becomes a person who "...views a human subject as being exposed to him, and evaluates this exposure negatively" (Purshouse, 2001, p. 536).

The argument implied here resonates with a view proposed in a phenomenological analysis of embarrassment by Brent Dean Robbins and Holly Parlavecchio. Notably, "The self-reflexivity of embarrassment may involve a kind of proto-self that understands itself through an empathic, imaginative projection of one's self through the other. However, in contrast to shame and guilt, embarrassment may not claim this evaluation of the self as its own evaluation" (Robbins & Parlavecchio, p. 326). This view must accept, in part, that emotions are imagination-based thoughts

² Take, for instance, someone who is embarrassed upon recalling the way he used to look, think, or behave, perhaps when examining old photographs, or reading diaries he has written long ago. Here, the memories that embarrass him might not specifically be memories of past interpersonal incidents which he imagines occurring all over again. Nor need his embarrassment involve imagining anyone else seeing or knowing about the pictures or writings in question. Instead, the emotion might obtain simply on account of his perceiving certain facts about his past self (Purshouse 535).

(Prinz, 2004, 9). Since no one is actually present in the case where you are embarrassed when you are not making contact with other people, in the instant you are embarrassed, you must also be imagining that an act or aspect of yourself is being exposed to someone who is really not there. These theories are said to be consistent with construal-based approaches to emotion which have been mentioned throughout this paper (Prinz, 2008).

These claims seem to also support the idea that it is exposure, or aspects of one's physical body, mental states, dispositions of character, or actions coming into contact with another person; opposed to my original intuitions, this phenomenological characterization effectively differentiates embarrassment from shame and leads to the conclusion that embarrassment, even private embarrassment, can still be thought of interpersonally. Until now, I have been encouraging a view that acknowledges the concept of intrapersonal embarrassment as a legitimate one without the need to posit interpersonal contact. But now, I would like to revisit and reconsider my original intuition.

It seems to me the explanation from a phenomenological standpoint provides a convincing account of the interpersonal aspect of private embarrassment defined in the introduction. I am not implying that there is nothing more to say about this topic. I still have yet to show how examples of private embarrassment can teach us anything new or useful extending beyond an analytic distinction. If the context in which we experience our emotions were not relevant to issues of concern or value, then we could expect to see no significant difference between the experience of social emotions in private or private emotions in public.

If there is a difference, however, this may be an appropriate place to begin a critical inquiry. Many aspects are shared between public and private emotions, and this can make it difficult to pick out significant differences. For example, how intense the feeling of embarrassment is in both contexts was not found to be significantly different (Krishna, Herd, & Aydınoglu, 2015, p. 480). Yet, there are still significant differences to be named, one being the associated physiological reactions and action tendencies (Krishna, Herd, & Aydınoglu, 2015, p. 485).

At the beginning of this work I promised to show how the examples given in the private embarrassment study help describe how a person may experience embarrassment by construing themselves as involved in an unwanted exposure to aspects of themselves. I was originally motivated to answer this question because it seemed to me it cannot both be true that embarrassment specifically requires conceiving of

an interpersonal situation and can still occur without requiring the conception of an interpersonal situation. So, the original intuition held that either (1) private embarrassment would be shown to be impossible or (2) the notion of interpersonal contact is present in some way in all cases of private embarrassment.

The self-reported example of embarrassment given in the private embarrassment study is given as a person tripping over a shoelace and falling while no one was present, feeling embarrassment over the event, and then walking away quickly (Krishna, Herd, & Aydınoğlu, 2015, p. 479). While this example may not offer immediate insights into the concerns or values associated with embarrassment, it does show, significantly, that premise (1) is doubtful. The example presented by Szabados, and the subsequent example of Purshouse (2001), also support the rejection of this premise. So, we arrive at the following:

(1) It is possible for people to be embarrassed in private.

(2) No real contact is being made in cases of private embarrassment.

(3) Interpersonal contact is a necessary element of embarrassment.

(4) It is plausible that an account of private embarrassment must appeal to some analogy of interpersonal contact.

There is, however, one more avenue of inquiry that I would like to pursue before deciding on the cogency of premise (3). Both the private embarrassment study and philosophical reasoning point to self-embarrassment being grounded in an evaluation of oneself in relation to one's self-concept, or identity. Thus, we are now in a position to distinguish between two different approaches. The *diachronic identity* approach "...refers to changes in the content (and consequences) of a single identity over time" (Urmitsky, et al. p. 282). The idea is that aspects of the self located in the temporal past can be thought of in relation to aspects of the self located in the temporal present. On this approach the aversion instantiated from the exposure to aspects of one's past self is grounded in an identity relation between the past and present self.

We were reminded by Szabados that if the self does not identify with past aspects of the same self, it is unlikely for the aversive exposure of these to instantiate embarrassment. The examples presented thus far take this approach when looking to explain the analogy of intrapersonal embarrassment to interpersonal embarrassment. There is, however, a different approach which, I will argue, is more fitting to use when trying to make sense of the notion of exposure in instances of knowledge—that

is, how it is possible that aspects of one, unified self may be exposed to that same self. This is the *synchronic identity* approach and it "...refers to the relative salience of different aspects of an individual at one point in time" (Urminsky, et al. p. 282). For this analogy, we will have to borrow from the phenomenological tradition and first bracket the embarrassing event so it may be discussed as a unified, singular temporal event.

Imagine a person has never tripped in his life. This example is not strictly limited to tripping. The act of tripping could easily be substituted for some other action or aspect of one's person. So, he knows himself to be a person who never trips. To his surprise, while walking alone, this person trips for the first time. The physiological reactions are sufficiently similar to those associated with embarrassment. Has Charlie learned anything new about himself? Yes, Charlie has learned what it is like to trip and what it is like to no longer be the person who never trips. So, we now have an example where, when Charlie is embarrassed, there is no interpersonal contact imagined or otherwise. Thus, this is an exposure to aspects of one's current self against one's self-concept at one point in time. Hence, a possible answer to the question of how a unified self could construe himself as the subject of exposure.

At the start of this essay I set out to answer the question: is it possible to be embarrassed in private? My initial intuition led me to believe that I could show how self-embarrassment is possible without appealing to interpersonal interaction and that perhaps legitimizing the concept would help to place us in a better position to notice and bring awareness to the influence of social rules and norms on what we may consider our private thoughts and behaviors.

To do this, I would have had to clearly demonstrate how individuals could be exposed to aspects of themselves that they feel aversely towards. So, I advocated that some previously undisclosed aspect of oneself can be the object of one's exposure and evaluated by an individual's self-concept. The empirical study provided a significant psychological profile of private embarrassment, and my own analysis provided a logical structure that can be used to explain the possibility of private embarrassment.

Before, the possibility of private embarrassment was considered to be a hindrance to standing theory and to the distinction between embarrassment and shame. I tried to avoid confusing this distinction by giving a more substantial account of what interpersonal interaction is in cases when no other person, real or imagined, is present. While this

conclusion does not escape an argument from analogy, it does take the audience in each case to be meaningfully distinct. The target audience in one case is the self and in another is other people.

The implications of this philosophical analysis on the study of emotions in philosophical literature are twofold. First, it may be the case that the intuitions we share about the context in which an emotion occurs most regularly may be subject to error. In which case, it may be helpful when using the paradigm case style of philosophical reasoning that we seek and review evidence for crediting or discrediting the possibility of having an emotion in a certain context. As was demonstrated in this essay, it is sometimes the lack of an explanatory concept that excludes some emotions from being attributed in a private context. Hence, we have an explanation for the initial exclusion, but no longer a warrant.

Second, at this point, I hope to have demonstrated that private embarrassment is not implausible, shameful, or a marginal use of the term. It is not implausible because it has been shown to be possible in real life contexts. The role private embarrassment seems to play is different than public embarrassment, and this may suggest a difference in the relevant concerns or values of our person. One further question we may ask is: are there larger implications for including the different contexts in which embarrassment may occur?

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Common Core: The
New Labyrinth

Biography

Erik Ugalde is a senior at San Jose State University majoring in sociology and minoring in Mexican American studies. He participated in the Leadership Alliance Summer Research Early Identification Program at Stanford University. He is currently doing work with the California Mini-Corps, a state-funded Butte County Office of Education program. It is an academic-year program that hires educators to assist K–12 migrant students who have low performance levels in math, English, or other subjects. He facilitates college and career workshops. His goal is to make college a reality for all students. He believes the first step is to inform families not only about the importance of staying in school, but also about the significant impact a college degree can have on an entire family. He is a dedicated student who belongs to the Leadership Alliance Mellon Initiative and Alpha Kappa Delta International Sociology Honor Society. He plans to receive his Ed.D in K–12 Leadership in Urban School Settings or Teacher Education in Multicultural Societies.

Common Core: The New Labyrinth

Abstract

According to the Common Core State Standards Initiative (2015), 43 states, the District of Columbia, four territories (Guam, American Somoan Islands, US Virgin islands, and Northern Mariana Islands), and the Department of Defense Education Activity (DoDEA) have implemented the Common Core State Standards (CCSS). The CCSS represents a model for all students, including English Language Learners (ELL), designed to advance their critical reading competency by developing proficient understanding of difficult text and analytical writing skills in response to complex text. The purpose of this article is to examine the methodology of scholars who suggest to school districts the actions needed to successfully prepare ELL students for college and career readiness. I analyzed the methods of high schools participating in the Understanding Language, Stanford Graduate School of Education “Schools to Learn From” research project (STLF), which is supported by the Carnegie Corporation of New York and involves schools that are preparing high percentages of ELL students for college and career readiness (Castellón et al., 2015). College and career readiness is defined as the level of development required for students to enroll and succeed without remediation in a postsecondary institution that offers a baccalaureate degree or to transfer to a baccalaureate program or high quality certification program in order to advance in their careers (Conley, 2011). The determinants that schools can control to assist ELLs are acceleration, critical thinking, equitable practices, and support (ACES), which can be associated with curriculum, instruction, and structure to bring students to college and career readiness (Burris & Garrity, 2012). I will be applying the ACES framework to High School A and High School B featured in the STLF project (Castellón et al., 2015).

Introduction

My interest in this topic comes from my educational background. As a student of immigrant parents, Spanish was my first language. At home, my family would only speak Spanish to me because they believed that I would moderately learn English by attending school; unfortunately, this was not the case. In elementary school, I struggled in writing and math because of the English barrier. Above all, my scores on standardized tests revealed that I was performing far below a basic level. Because of these scores, I had to repeat fourth grade. This disappointed my family and made me interested in understanding the effects that standardized testing has on English Language Learners in K–12 public schools. Before I began to write my project, I researched a variety of articles from the Academic Search Premier Database, *Sociology of Education Journal*, and *Special Education Journal*, and I analyzed various books. Furthermore, I researched scholars’ proposals to prepare ELL students for college and career readiness and compared their methods to the high schools participating in the STLF project that are preparing high percentages of ELL students for college and career readiness.

Methodology

The purpose of this article is to examine the various methods scholars suggest should be put into action by school districts to successfully prepare ELL students for college and career readiness, and to compare their methods to the high schools participating in the Stanford University “Schools to Learn From” research project (STLF). Through the literature review, I found the determinants schools can control to prepare ELLs for college and career are acceleration, critical thinking, equitable practices, and support (ACES), which can be associated with curriculum, instruction, and structure to bring students to college and career readiness. This information is derived from a research-based ACES framework described in *Opening the Common Core* (Burris & Garrity, 2012).

Literature Review

The Common Core Standards (CCS) are redefined academic standards in mathematics and English language arts/literacy with learning objectives established for each grade level. According to the Common

Core State Standards Initiative (2015), these standards are in place to assure that all students graduate from high school with college and career readiness. The Council of Chief State School Officers (CCSSO) and the National Governors Association Center for Best Practices (NGA Center) detail the various components of the CCS. First, the measures are considered research and evidence based. Secondly, they are characterized as comprehensible and logical. Thirdly, the standards are designed to prepare students for college and career anticipation. Fourthly, the standards are based on rigorous operational applications and require the use of advanced thinking skills. Fifthly, these standards are founded on the principles of current state standards. Lastly, they are informed by the standards of top-achieving countries with the intention to prepare students for a global society (Common Core State Standards Initiative, 2015).

Common Core State Standards (CCSS) introduced a new shift for students and also for instructors. A study by Laborda (2013) found that Common Core advances have forced instructors to not only teach English language arts, but also to implement literacy skills during content-area instruction. Consequently, each instructor has the shared responsibility to teach necessary literacy skills to advance students' reading, writing, and communication skills throughout different disciplines (Laborda, 2013). Simultaneously, students are learning to become independent researchers, develop plausible arguments, and have academic conversations with peers. As a result, students have to shift their mentality because they are no longer reading for the purpose of completing an assignment; instead, they are required to read analytically to develop logical reasoning. Diverse students are required to receive scaffolded instruction to develop content learning, literacy development, and writing skills to interpret intricate text (Laborda, 2013).

Hawkins and Manley (2013) created a discourse for multiculturalism awareness. The researchers found that studies of immigrant and poor children support the notion that teacher relationships with students are imperative (Gunn & Lucaites, 2010; Kieffer & Lesaux 2009). It is important to note that a positive correlation exists between English Language Learners (ELL) and immigrant or poor students. Adapting to multiculturalism requires teachers to be sensitive and have a positive attitude to fully understand what knowledge students possess as a

foundation to serve as a baseline for learning. David Karen (2005), an expert in sociology of education and a researcher from Bryn Mawr College, addressed the impact that former No Child Left Behind (NCLB) policies had on students and the motives behind President Bush's decision to pressure Congress to pass the NCLB Bill. In 2000, Bush stated, "Too many American children are segregated into schools without standards, shuffled from grade to grade because of their age, regardless of knowledge" (Karen 2005:166). Karen acknowledged that the President believed educational problems are associated with discrimination; however, this policy failed to recognize sociological investigations on the fundamental roles schools and communities have in promoting discrimination and inequality by tracking students into college or non-college courses based on test scores. Sociologists of education evaluate schools by examining how institutions establish instruction among different populations and the disparities in funding amid states.

Failing test scores are linked to low socioeconomic backgrounds, racial groups, and English barriers. Joanne Carris (2011) found that economically disadvantaged Black and Latino students in the U.S. are miseducated due to institutionalized prejudices and practices. Carris (2011) agrees with Karen (2005) showing that students are separated from other students based on academic performance on standardized tests in writing and math. In elementary school, students are divided into red and blue groups where one group receives basic and the other advanced instruction in writing and math. However, once students reach high school, these red and blue groups become transformed into college preparatory and vocational tracks (Carris, 2011).

Research by Hakuta, Santos, and Fang (2013) uncovers the hardships that exist for ELL students in regard to the CCSS and the Next Generation Science Standards (NGSS). The standards require students to develop a high degree of language refinement to contribute to the level of discourse required across multiple subjects (Hakuta et al., 2013). Hakuta et al. (2013) introduced the standards students are exposed to in English language arts/literacy, mathematics, and science. A common denominator shared by these subjects is that students are required to participate in classroom exercises and rhetoric that satisfies the content discipline. Content area is defined as a realm of familiarity and skills to thoroughly

perform academically. For ELLs to successfully adapt to the new CCSS, they first need satisfactory language comprehension instruction (Hakuta et al., 2013). Hakuta et al. (2013) agrees with a thesis by Gervasi (2012) that disapproves of isolated instruction. Specifically, ELLs miss crucial direction when they are secluded from direct language instruction and are not exposed to common language used by other students and teachers; thus, they do not learn content exercises or the language of the various disciplines.

Burris and Garrity (2012) call attention to the change in the competitive market of the 21st century. Before, during the mid 20th century, a high school diploma allowed for prosperous employment and economic stability (Burris & Garrity, 2012). High school graduates now have an unemployment rate of 32 percent (Dillon, 2009). International competition for jobs and advancements in technology have caused a significant shift in the value placed on high school graduates versus those with a postsecondary education. College graduates earn nearly 74 percent more than those with a high school diploma (Ames, 2010). The Organization for Economic Cooperation and Development (OECD), an economic organization for industrialized countries, fosters economic growth and the importance of research (Burris & Garrity, 2012). According to OECD members, the United States ranks 24 out of 29 participating countries in reading, mathematics, and literacy (Organization for Economic Cooperation and Development, 2004). Policy makers have found that the previous standards in No Child Left Behind (NCLB) resulted in asymmetrical performance among students across the United States. As a result, the CCS were designed to have students practice critical thinking, form sound arguments, and develop skills to perform proficiently in all subjects (Burris & Garrity, 2012). Reform requires educators' eagerness to implement nationwide standards to develop students for college and career readiness.

Students throughout the country will be exposed to redefined standards that follow the principles of acceleration, critical thinking, equitable practices, and support (ACES).

Acceleration instruction is founded on three key principles. First, preparation emphasizes the importance of utilizing a superior approach to instructional practice to increase student learning. Second, a spiraled

curriculum, with an instructional approach that introduces difficult concepts to students at a young age with increased intricacy by grade level, is implemented. Lastly, an enriched curriculum is constructed with the belief that all students are talented and gifted (Burris & Garrity, 2012). Students' learning is accelerated by building on prior knowledge.

Critical thinking, the second instructional principle, serves an anchoring function to challenge students to attain proficiency inferring from text, evaluating arguments, and analyzing documents. It is important to note that students are now developing critical thinking skills beginning in elementary school instead of the previous standards where students learned these skills during the final years of high school.

The development of college and career readiness (CCR) varies with each student. For instance, some students will be acclimated to the process of becoming CCR due to having parents who are college advocates because of their education. On the other hand, many students depend on educators to be their advocates (Burris & Garrity, 2012). Equitable schooling is defined as meeting the needs of all students. Specifically, educators provide students with various resources to facilitate different learning styles. Additionally, students will be prepared to distinguish the difference between standards and instruction. The fourth principle, support, focuses on providing entry for learners who struggle with accelerated and cultivated understanding in order to create certainty and competency to be CCR. Students need to be challenged and supported to fully satisfy the four instructional principles whether they are English Language Learners or not. Lastly, teachers need to be fully trained to assess the needs of various students.

Kirp (2013) argued that Union City, a poor Latino community in New Jersey, represents a trail of progression and not stagnation. He described the previous NCLB standards that fired teachers and principals when students did not perform to academic standards. Standardized tests were utilized to measure academic progress in K–12 public institutions. President George Walker Bush implemented NCLB with aspirations to improve all student test scores to a proficient level on state examinations by 2014. This act included various components that required public schools that received federal funding to administer standardized tests statewide once a year. States were required to begin their examinations

when students were in third grade, and students in grades three to eight would heavily focus on reading and math. School districts were obligated to provide test scores according to demographic classifications such as African American, Latino, Native American, Asian American, special education, and low income. States must set “adequate yearly progress” (AYP) goals for each school to assure that they were improving each year, and schools that failed to meet AYP goals were labeled “in need of improvement.” More importantly, students were encouraged to attend another school if their original institution failed to improve test scores. Lastly, teachers were to be highly qualified to teach the core academic subjects—English, language arts, science, math, and history (Karen, 2005).

Union City is prosperous due to the promotion and commitment to assist schools and their staffs to properly assess students’ needs through the use of bilingual instruction and a quality preschool curriculum (Kirp, 2013). Young students are given the opportunity to attend high quality preschool by age three. It is important to note that these students are required to attend full-day preschool classes, where most preschools in the United States have half-day programs (Kirp, 2013). Language development is the emphasis of the curriculum in the Union City school district; as a result, immigrant students become fluent in their native language before acquiring the English language. Also, parents are treated as collaborators in their children’s education by outreach from the districts to educate parents on different methods to assist their children at home. The school system sets high expectations for all students, and this creates a culture of promise because non-English learners will develop trust in their educators and peers (Kirp, 2013).

Acceleration

Acceleration instruction is established on three prominent propositions (Burriss & Garrity, 2012). First, for ELLs, the maximum use of instructional time is fundamental for the development of early literacy skills, phonics, and survival English. Second, a spiraled curriculum is implemented in this structure to introduce difficult concepts to young students with an increment in difficulty as the grade level increases.

Finally, an enriched curriculum incorporating difficult concepts applies for all students.

Peterson (1989) conducted intensive research in which he compared the outcome of classifying junior high math students as remedial, average, or accelerated. He found that students placed in remedial classes navigated through the math curriculum at a slower pace compared to students placed in accelerated pre-algebra courses. Students in accelerated courses considerably improved their math skills compared to their counterparts. Peterson concluded that remedial students benefit from accelerated education compared to slower paced programs (1989). Hank Levin, former Stanford University professor, identified the diversity among learners and introduced accelerated instruction as the best use of instructional time.

School A, a high school located in a rural agricultural area, has a substantial graduation rate for the large English Language Learner population it serves. In 2013–2014, 60.5% of the student population was considered ELLs. The high school graduation rate for these students at this school was 83% compared to 53.68% in the state. Additionally, 36% completed all courses required for UC/CSU entrance compared with 9.9% of ELLs from across the state. This school has also experienced an inflow of newcomer students immigrating from El Salvador and Honduras. As a result, this institution faces a unique challenge to assist students who are ELLs, newcomers, or both. Mr. A, the principal of this high school, quickly observed that the current school curriculum at this institution was not meeting the needs of ELLs and newcomer students.

When the principal first arrived, newcomer students were being placed in one session of an English language development class and one of high school English based on age. As a result, students faced difficulties in acquiring foundational skills required in English classes. According to the California's Together Organization, the CCSS creates assumptions for ELLs (Burris & Garrity, 2012). The National Governors Association (NGA) and the Council of Chief State School Officers (CCSSO) inaugurated the state standards to help prepare students for college and career readiness by falsely inferring that all students have a basic level of English proficiency. Under these standards, students are required to identify, construct, and write arguments derived from specific text. These

are intense skills that require speaking, writing, listening, and reading. The standards do not target the foundational, communication, and social-domain skills such as social awareness and the use of appropriate language.

Mr. A conducted intensive research on practical English language development curricula that granted the maximum use of instructional time to develop ELLs' and newcomers' basic English proficiency skills such as constructing and writing arguments on a given text. The principal designed an academy at this institution to promote a spiraled curriculum that is adjusted to the needs of these students. He hired educators with a comprehensive understanding of cultivating early literacy skills, and he integrated foundational reading programs, *System 44* and *Read 180*, that reinforce targeted skills in phonemic awareness, phonics, vocabulary, fluency, and reading comprehension. The principal transitioned the bell schedule for ELLs to a double block of English classes; thus allowing for longer instructional activity focusing on the intended skills.

Critical Thinking

Critical thinking, the second determinant, is a fundamental component for students to progress in college and career readiness. The Common Core State Standards (CCSS) expect students to be able to interpret text and documents and evaluate the validity of arguments. The development of these skills needs to begin before the last years of high school. Students are now developing critical thinking skills beginning in elementary school instead of, as required by the previous standards, during the final years of high school. Burriss and Garrity (2012) find the best way to improve critical thinking skills is using Bloom's Taxonomy of the Cognitive Domain, a structure that organizes learning objectives and activities by the kind of thinking required to be successful. Krathwohl (2002) describes Benjamin Bloom, an educational psychologist, as an envisionist who focused not only on finding tools to measure learning, but also on communicating to educators the importance of curricula, standards, assessments, and learning goals.

The morphology of higher-level thinking consists of six classifications organized by increasing complexity. Knowledge is the least complex in cognitive development, followed by comprehension,

application, analysis, synthesis, and evaluation. Knowledge is the level of examination regularly used to teach ELLs. Specifically, students respond to questions derived from the text utilizing pictures, drawings, and objects to compose a written response. Comprehension is the level that shows if students have understood the details from the text and if they can interpret the facts. In this case, students are asked to use graphic organizers such as Venn diagrams, T-charts, or cycles to construct knowledge and organize information. Application is the skillset with which students practice problem solving by using previously acquired skills in different ways. ELLs require scaffolding and a foundational word bank to successfully problem solve. Analysis is a task that must be completed with teachers scaffolding to classify, categorize, and compare text. Synthesis is the ability to compile information from the text and to offer a proposed solution by designing and developing thoughts. Evaluation, the most complex form of thinking, is the last component of Bloom's Taxonomy of the Cognitive Domain. At this stage, students are asked to judge the value of the material. To accomplish this, students analyze and appraise the text's consistency, determine if the conclusion is supported by any given criteria in the material, and evaluate the purpose of the literature.

High School B, located in a rural town on the east coast, is an institution that is designed to assist immigrant and ELL students. Students in this high school are enrolled in an academy that assists students who are new to the United States school system and have narrow English dexterity or a division in their formal education. In 2013–2014, the school had an 89.9% ELL population compared to 29.9% in the district and 7.9% in the state. Instantly, it is apparent that this school has a majority of students considered ELLs. ELL and former ELL students have an English Language Arts Composite Performance Index (CPI) score. This is a 100-point scale that measures how well students are advancing towards proficiency in English language arts and mathematics. Students at High School B have an average score of 75.9 compared with 67.8 in the state. In mathematics, these students earned an average CPI of 94.3 compared to 67.8 across the state. In 2014, the high school graduation rate for ELLs and former ELLs was 61.5%.

Ms. B, the principal at this school, has a reputation for holding herself and the staff to high standards to ensure that students are being

taught well. Teachers are only hired if they have extensive knowledge in their content area and can fully assess the needs of the students. Ms. B analyzes the applicants' experience instructing ELLs and invites students to ask a candidate questions about support and after school tutoring. In the classrooms, teachers are required to write and display the content and language objectives. The researcher from the STLF project found that students were enthusiastic, comfortable, and prepared to participate in classroom discussions. This student engagement is derived from the teachers' approach that encourages maximum use of language in English and the native language of the students. In one of the English classes, the researcher observed a classroom discussion that centered on whether students should be paid to attend school. Instantly, students began discussing the issues by generating an opinion and providing support for their answer. One student at a time either agreed or disagreed with others; however, they demonstrated a proficient level of evaluation, the last component of Bloom's Taxonomy of the Cognitive Domain, by judging the validity of the proposed arguments of the other students. Teachers use a classroom structure that follows Bloom's Taxonomy of the Cognitive Domain at this school to develop critical thinking skills for ELLs.

Equitable Practices

Equitable practices are defined as meeting the needs of all children (Kirp, 2013). Carris (2011) examines the barriers that interfere with equitable schooling. In New York, K–12 students are stigmatized by their standardized test scores and are placed into educational tracks according to their scores. Students that show academic potential by scoring high on standardized tests are placed on college tracks. For instance, elementary schools divide students into groups, one of which serves as the intellectual group while the other is defined as the remedial group. Unfortunately, once these students enter high school, they are either placed in college or push-out groups. Those placed on college tracks will be encouraged to participate in extracurricular activities and take advanced placement courses, and they will be offered assistance with college applications. However, students in push-out groups are expected to take remedial classes, enroll in continuation school, or drop out (Carris, 2011). Low standardized test scores are associated with students with low

socioeconomic status. As a result, African American and Latino youth lead high school dropout rates and are prone to criminal activities. Carris (2011) finds that juvenile detention facilities are mostly filled with African American and Latino youth.

For students to become CCR, they must be placed in an environment that promotes challenges and holds high standards for all students. ELLs need to be placed in classrooms where other students are critical thinkers and are ready to engage in high-level discourse. In order for ELLs and other students to develop an academic vocabulary, they must be placed in classes where this terminology is being incorporated in the rhetoric (Calderon & Minaya-Rowe, 2011). To successfully assess students, Gardner (1993) suggests educators incorporate differentiated instruction, a constructivist approach to teaching and learning.

Differentiated instruction is composed of four criteria: content, process, product, and learning environment. Content meets fundamental learning standards by designing exercises to fit the needs of various backgrounds. For instance, students who are unfamiliar with the lesson are asked to complete assignments focusing on recollection and comprehension, while students with higher mastery are given assignments that focus on evaluating and formulating discourse.

Process is defined as applying different learning styles, such as covering lectures through visual, auditory, kinesthetic, and verbal methods (Kirp, 2013). Educators who practice this technique supply textbooks for visual and word learners, grant auditory learners audio books, and allow kinesthetic learners to complete interactive assignments.

Product is considered the end result of a lesson that validates the mastery of the content based on learning preference. For instance, students might be asked to write a book report, create graphic organizers, prepare an oral presentation, or create a diorama.

Learning environment refers to an adaptive classroom design that allows for a supportive learning environment. An ideal classroom arrangement will support students working in reading groups and allow for independent reading. When students are given a variety of options to learn, they take the initiative to be accountable for their learning (Calderon & Minaya-Rowe, 2011).

Mr. A from high school A is not only focused on developing an academy for ELLs and newcomers, but he also has merged into participating in professional development that is coordinated to the CCSS. He hired an educational specialist who provides teachers with a framework to assist ELLs in the classroom and to increase opportunities for students to speak in the classroom. The specialist executed sample lessons for teachers and provided a model for these educators to follow when instructing mathematics, science, social science, and English in a supportive learning environment that accommodates all types of learners. The specialist develops practical instructional models by administering research-based methods to check for comprehension, engagement, and student proficiency. Once these sessions of professional development are completed, teachers then follow these models in the classroom and receive feedback from the specialist to assure all students are given a variety of ways to learn.

Support

Support, the fourth determinant, is the provision of potent supports for ELLs by granting equal access to the same accelerated material to attain the essential skills to be college and career ready (Burris & Garrity, 2012). When students are failing or having difficulties in certain subjects, many educators believe the most beneficial option is to place them into remedial classes; unfortunately, this causes students to fall behind in their studies (Heubert, 2002; Levin, 1988; Peterson, 1989). In 2004, the Individuals with Disabilities Education Improvement Act (IDEA) was passed to improve the education of students with disabilities. This framework provides a model for intervention to assist ELLs. Tier 1 is established in the classroom and Tier 2 deepens support in separate groups (Brown & Doolittle, 2008).

Tier 1 focuses on cooperative learning; students learn to collaborate with others by participating with a range of partners (Felder & Brent, 2005). The following conditions increase partnership: positive interdependency, face-to-face interaction, and group stratagem. Positive interdependency provides a network for students to work with others by understanding that failure to complete group work will result in a consequence that is applied to all members of the group. Face-to-face interaction allows for group members to provide constructive feedback to

one another. This skillset fosters critical thinking by asking students to think of alternative ways to complete an assignment. Lastly, group stratagem is a stage constructed for group members to collectively create and adjust goals.

Tier 2, support classes, is crucial for the development of content for ELLs in various subjects. Burriss and Garrity (2012) recommend that educators prepare support sessions by scheduling sessions regularly, individualizing instruction, and providing a specialist who concentrates on teaching reading, math, or English. Additionally, a fundamental approach to supporting students in didactic programs is to use a team model that includes a reading or math specialist, an ELL teacher, and a special education instructor. The goal for elementary, middle, and high school teachers is to commit to serving the needs of future diverse students and preparing them for higher education. Kolodziej's (2011) research focuses on standards where teachers are evaluated to determine if they are qualified for teaching positions. In order for educators to be considered for employment, they must have a bachelor's degree, a state teaching credential, and established knowledge of the subjects they will be teaching (2011).

These standards are known as the Highly Qualified Teacher Requirements (HQTR). One of the conditions under HQTR is that educators must have established knowledge of the core subjects they will be teaching, such as reading, writing, and math. New teachers are required to pass a state-approved multiple-subject test such as the California Subject Examination for Teachers (CSET) to demonstrate subject matter capability (Carris, 2011). These standards fairly evaluate teachers because in order for ELLs and other students to fully prepare for CCR, they need highly qualified educators to be proficient in the subjects.

Ms. B, the principal of school B, has dedicated her career to creating a community where all students and parents feel a connection of support with all members of the school. To complete this task, school officials analyze the demographics of the student population to understand what type of support services will benefit them. Because the school has a large Latino, African, and Caribbean immigrant population, the principal believed extra support services would be beneficial for these students and their families. When students first arrive at this high school, a counselor

meets with them and their family members and speaks in their native language. Two weeks later, another counselor meets with these individuals to understand their living situation and conditions. At this time, the counselor decides if the student and family require emotional or physical services. The counselor will then carefully examine how the student is transitioning and, if needed, will direct families to social services or community care programs. The objective for this type of intervention is to demonstrate to students and family members that school officials will assist them academically and also with support services they may not have been exposed to.

Conclusion

Based on the review of literature on English Language Learners (ELL) and the analysis of the case studies in the Understanding Language, Stanford Graduate School of Education “Schools to Learn From” research project (STLF), we have identified four content areas that successful schools are employing to prepare ELLs for college and career readiness. The determinants that schools can control to assist ELLs are acceleration, critical thinking, equitable practices, and support (ACES), which can be associated with curriculum, instruction, and structure to bring students to college and career readiness (Burriss & Garrity, 2012). Acceleration instruction is defined as the maximum use of instructional time for all students, including ELLs. This is fundamental for the development of early literacy skills, phonics, and survival English. Additionally, ELL students need to be exposed to a spiraled curriculum, the introduction of difficult concepts to young students with an increment in difficulty as the grade level increases. Traditionally, K–12 curricula require teachers to simplify content for ELL students; however, the content does not tend to increase in difficulty or challenge these students academically (Kirp, 2013).

Critical thinking, the second determinant, is an underlying component for students to advance in college or careers. The Common Core State Standards (CCSS) require students to infer from text, interpret documents, and evaluate the validity of arguments. The development of these skills needs to begin before the last years of high school. Students are now developing critical thinking skills beginning in elementary school

rather than during the final years of high school, as was the case under the No Child Left Behind standards. Krathwohl (2002) examined Benjamin Bloom's morphology of higher-level thinking, consisting of six classifications organized by complexity. These skills are designed to build on one another. Equitable practices, the third determinant, are defined as meeting the needs of all children (Kirp, 2013). The development of college and career readiness (CCR) varies among students. For example, some students are acclimated to the process of becoming CCR due to having parents who are college advocates because of their education. Equitable practices highlight the need for teachers and administrators to provide the mentoring and guidance necessary to be successful in college. All students and parents, regardless of socioeconomic status, need to understand information on scholarships, types of financial aid, advanced placement classes, and how to apply to a job or college.

Lastly, support, the fourth determinant, is the adaptation of potent supports for ELLs by granting equal access to the same accelerated material needed to attain the essential skills to be college and career ready (Burris & Garrity, 2012). This principle requires studying a population and making adaptations to support their needs. Burris and Garrity (2012) recommend that educators prepare support sessions by scheduling sessions regularly, individualizing instruction, and providing specialists who concentrate on reading, math, or English. The principal and teachers from School B studied their population and found they had a large Latino, African, and Caribbean immigrant population. The principal believed extra support services would be beneficial for these students and their families. A counselor will meet and examine how the student is transitioning and, if needed, will direct families to social services or community care programs.

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Booty, Beauty, & Fame:
Media Portrayals of Jennifer
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Biography

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***Beauty, Booty, and Fame:
Media Portrayals of Jennifer Lopez and Sofia Vergara***

Abstract

Through an analysis of the careers of Jennifer Lopez and Sofia Vergara between 2010 and 2015, this paper examines the ongoing misrepresentation of Latinas in films, primetime television shows, and the music industry. Latina celebrities like Jennifer Lopez and Sofia Vergara have risen to fame by characterizing Latina beauty as an unrealistic, hyper sexualized, exotic otherness. Previous work has failed to address the impact of fame on these Latina entertainers in the 21st century. Through analysis of Latina racialization and Latina assimilation into American popular culture, I will demonstrate that celebrities like Jennifer Lopez and Sofia Vergara have skewed the societal perspective of Latinas. An examination of Lopez's musical career and Sofia Vergara's acting career reveals ongoing ideologies of Latina sexuality in American media. Current Latina celebrities are creating a two-dimensional portrayal of Latinas in the media that is limiting the opportunities, roles, and positions for other Latina entertainers.

Background

Many films and television shows have misrepresented minority groups, including Latin American women. In 2009, ABC's *Modern Family* show reinforced one of those misrepresentations with their character Gloria Pritchett. Gloria, played by award-winning Colombian actress Sofia Vergara, is a stereotypical character resembling the Latina Spitfire stereotype: a loud, sassy, and aggressive woman with a thick accent (Rodriguez, 2004). Aside from Gloria's revealing and fitted outfits, she is often characterized by her outspoken attitude, aggressive speech gestures, and mispronunciations of English words. With this depiction of Gloria Pritchett in mind, it is no wonder I was shocked when, in spring 2014, a colleague of mine said I reminded her of Gloria. At the time, I was baffled by the comment and unfamiliar with the character; I did not comprehend how my opposition to a discussion reminded my colleague of this television character. In that moment, I was unable to respond to her

comment because I was not familiar with her reference, which inspired me to research the various ways Latinas are represented in popular culture.

One of the common media representations is the Latina Spitfire (Rodríguez, 2004). This stereotype was connected to Latin American women as early as the early 20th century with actresses like Dolores Del Río, Lupe Vélez, and Rita Moreno. As Río, Vélez, and Moreno opened doors for Latina entertainers in Hollywood, they also helped create barriers by playing stereotypical roles. One of the original Latina Spitfires, Vélez contributed to Latina stereotypes by playing similar roles in many of her films, including seven of the Mexican Spitfire films (Rodríguez, 2004). On a larger scale, Dolores Del Río reached international fame for her roles during the Golden Age of Mexican Cinema. However, as long as she remained in Hollywood, Río was still considered an exotic other with her roles as a female Latin Lover (Rodríguez, 2004). Río, like many other actresses at the time, did not have many acting role options, which led her to chase a career outside of American cinema where she could expand her acting opportunities. Lastly, Rita Moreno, widely known for her role as Anita in *West Side Story* (1961), opened the door for multi-talented Latinas in the world of acting, dancing, and singing. Despite the fact Moreno won many awards, including a Grammy and an Emmy award, she was not able to break free from stereotypical and hyper sexualized Latina roles (Ovalle, 2011). Vélez, Río, and Moreno are just some of the few who paved the way for more Latina entertainers in Hollywood. However, they also contributed to the limitation of Latina entertainers (Ovalle, 2011; Rodríguez, 2004).

As these stereotypes misrepresent the Latina community, they also affect the perspective of Latinas in viewers' minds. A study conducted by the Bureau of Labor Statistics found that on an average day 95% of Americans ages 15 and over engage in five hours and five minutes of leisure and sports activities, which included 2 hours and 49 minutes of watching television ("American Time Use Survey: Leisure and Sports Activities," 2015). As the majority of Americans spend most of their leisure time watching television, it is important to examine the impact characters like Gloria Pritchett have on their societal values and beliefs. Before exploring the issue, it is important to establish who is being represented by these stereotypes.

The Latino population in the United States is approximately 52 million, making up about 17% of the country's population. It is one of the fastest growing minority groups in the United States; however, it is also the least represented in American mainstream media (Negrón-Muntaner, 2014). Between 2010 and 2013, Latina actresses played 11.8% of supporting female roles in the top-rated television shows, compared to Latino actors who only played 4.9%, but neither making lead roles (Negrón-Muntaner, 2014). As the appearance of Latina actresses in Hollywood productions slowly increases and the majority of the U.S. population watches, it is important to analyze how Latinas are being represented and by whom. Thus, keeping these points in mind, I pose these questions: Why are characters whose portrayals are misleading so appealing and entertaining to American audiences? How are these misrepresentations affecting the Latina image in the minds of non-Latino viewers? Finally, how much do these Latina entertainers contribute to these media misrepresentations?

Rise to Fame: Jennifer Lopez and Sofia Vergara

Jennifer Lopez and Sofia Vergara have made names for themselves in Hollywood and have a significant presence in mainstream media today. Forbes' "Celebrity 100: The World's Highest-Paid Entertainers" in 2015 listed both entertainers among the fifteen highest paid women in the world and the only Latina entertainers (Greenburg and Robehmed, 2015). Jennifer Lopez and Sofia Vergara both landed 95th on the list with a net growth of \$28.5 million dollars each. Additionally, in Forbes' "The World's 100 Most Powerful Women" in 2015, Vergara landed the #57 spot for 2015 alongside powerful CEOs, politicians, and even the Democratic candidate for the presidency, Hillary Clinton (Howard, 2015). Today, Lopez's and Vergara's fame continue to rise and remain some of the most influential Latinas in Hollywood.

Jennifer Lopez began her career as a dancer in New York City in the late 1980s after dropping out of New York University's Law School. Lopez did not get her break into the entertainment industry until 1991 when she was cast a *Fly Girl* for the show *In Living Color*. The show introduced Lopez's dancing talents as she took the stage with various types of hip-hop dancing, including a provocative dance solo (Ovalle,

2011). *In Living Color* was followed by small television series, *South Central* (1994), where Lopez played a sassy store clerk. She continued to work her way up by performing as a backup dancer for Janet Jackson and acting in other small film roles, like *Mi Familia* (1995). But it was not until 1997 when she had her breakthrough moment with her performance in *Selena*. After the film, Lopez rose to stardom as *Selena's* success grew, which led her to a successful career in both the film and music industry. Lopez now holds 40 acting roles, 10 albums, worldwide tours, 4 books, and has appeared in numerous magazines covers, magazine articles, and has various sponsorships (“Jennifer Lopez,” 2010). But what truly makes Jennifer Lopez unique is that in 2001 she reached number one in the box office with her film *The Wedding Planner* (2001), and she had the number one record, *J.Lo*, simultaneously (Rodríguez, 2004).

Unlike Lopez, Colombian-born actress Sofia Vergara obtained Hollywood fame much later in life. Vergara began her career in entertainment when a modeling scout found her on a Colombian beach at the age of seventeen and offered her work as a model. Shortly after, Vergara dropped out of dentistry school in order to pursue a career as an entertainer (Moreno, 2015). Even after a few modeling gigs, including a few Pepsi commercials, Vergara did not hit television until the late 1990s. Crime in Columbia began affecting Vergara and her family, so she decided to move to Miami where she became the host of Univision’s show, *A Que No Te Atreves* (I Dare You) in 1998 (Moreno, 2015). Shortly after battling thyroid cancer in 2002, Vergara made her way into the American film industry with films like *Big Trouble* (2002), *Chasing Papi* (2003), *Soul Plane* (2004), and *Four Brothers* (2005), playing similar hyper sexualized roles. Vergara grew in popularity by appearing in shows like *Hot Properties* (2005), *The Knights of Prosperity* (2007), and Televisa’s *Fuego en la Sangre* (Fire in the Blood) (2008) soap opera, playing similar seductive roles as in her previous films (Moreno, 2015). Vergara received more attention with her appearances in tabloids and by being seen with famous celebrities like Tom Cruise (Moreno, 2015). However, it was not until 2009 when Vergara marked her presence in Hollywood as Gloria Pritchett on ABC’s *Modern Family* that she was to become one of the highest paid female actresses on television today.

Literature Review

American popular culture has established many misrepresentations of minority groups in films, primetime television shows, and the music industry. Many of the media's portrayals impact women of color, clearly misrepresenting them by stereotyping them as hyper sexualized, exotic beauties. (Ovalle, 2011) Throughout the history of American entertainment, African-American women have been stereotyped as Mammies, Jezebels, Welfare Mothers, and Tragic Mulattoes (Collins, 2004). Similarly, Asian-American women have been stereotyped as Lotus Blossoms, Dragon Ladies, and China Dolls (Hagedorn, 1997). And finally, Latina women have been portrayed as Seductresses, Spitfires, and Harlots (Rodríguez, 2004; Berg, 2002). Before discussing the Latina media portrayal in American culture, it is essential to discuss how these stereotypes can impact an audience's perception of racial groups and cultures.

Forming Generalizations

Scholars have studied media portrayals of Latinas, and many scholars also discuss the influences that contribute to the creation and sustainability of these stereotypes. Charles Ramirez Berg (2002) places the process of developing a stereotype into a simplified and visual form of an equation:

$$\text{Category-Making} + \text{Ethnocentrism} + \text{Prejudice} = \text{Stereotyping}$$

According to Berg's equation, by categorizing new experiences, individuals, and groups, a person will sort new information based on previous experiences. Additionally, some of these stereotypes reflect ethnocentrism (placing your culture before everyone else's culture) and prejudice (believing that races different from yours are inferior). These ethnocentric and prejudiced portrayals of people of color, like the Latina stereotype, have been ongoing for a long time. Therefore, we hold beliefs from periods in history in which racist ideologies against people of color were the norm through these evolved stereotypes. In comparison, modern culture, films, and television shows have become popular forms of media

that reach out to large audiences across the country. In addition, these media platforms can play an enormous role in influencing the perceptions of their audiences. Thus, if Latinas are only represented as house cleaners, sensual immigrants, and spitfires in American media, a false representation is created in the audience's minds.

Societal and Celluloid Curriculum: New form of Education

Aside from the misrepresentations in the media, Carlos E. Cortes (1992) explains how negative portrayals transform viewer's ideas into realities by arguing that media acts as an everyday educator. Alongside the American educational system, a more influential structure known as the societal curriculum and the celluloid curriculum helps shape people's perspectives and judgments (Cortes, 1992). The societal curriculum is the extreme and informal influence of family, peer groups, communities, religions, institutions, and other societal forces that educate people through their life experiences. Relating back to media, within the societal curriculum, media serves as a "pervasive educator," an unwelcoming and inescapable form of information that audiences consume through film, television, and advertisement.

Even though the societal curriculum influences individuals through human interaction and environmental factors, individuals are largely influenced by culture, race, and ethnicity through entertainment media (Cortes, 1992). Cortes argues that a single individual's ideas or beliefs are less likely to make an impact on a large group with an opposing view. However, a large group is more likely to influence an individual with an opposing view. Although the level of intentionality from stereotypical films is debatable, these films do "contribute to intercultural, interracial, and interethnic understanding and misunderstanding" among audiences (Cortes, 1992). In the same way that Berg (2002) explained how media impacts viewers through a simplified equation, Cortes demonstrated how media acts as an everyday educator. In addition, scholars have also examined what misrepresentations in Hollywood productions reveal about the Latina identity in the United States.

Media Portrayal of Latinas

In addition to research on how the media impacts an audience's thinking, scholars have also discussed Latina portrayals in American popular culture. Berg (2002) has identified three archetypes that define Latina characters in mainstream media: the Harlot, the Female Clown, and the Dark Lady. The Harlot is a secondary character, portrayed as lusty and hot-tempered, usually caused by her inherent, uncontrollable sexual desire for the Anglo male. The Harlot is seen in characters like Cici, played by Sofia Vergara in the film *Chasing Papi* (2003), and more recently, in Salma Hayek's role of Sofia Reyes in the hit show *Ugly Betty* (2006–2010). As an illustration, Hayek's character Sofia is able to seduce the Anglo male with her body and control his emotions towards her because of his attraction to her voluptuous curves. In comparison, the Female Clown exemplifies the characteristics of a Jezebel and an "easy" character, usually rejected by the Anglo male in films due to her promiscuous ways. This stereotype is seen in characters like Angelica, played by Jacqueline Obradors in *Six Days, Seven Nights* (1998). In the film, Obradors tries to seduce the Anglo male character by pretending to be intoxicated and taking her clothes off right in front of him in the hopes of having sexual relations. Lastly, the Dark Lady stereotype is a virginal Latin lover, characterized by her unwillingness to take risks and often distancing herself from the Anglo male, making her irresistible to him. This stereotype is seen in characters like Nina, played by Sofia Vergara in *Big Trouble* (2002), and Marisa played by Jennifer Lopez in *Maid in Manhattan* (2002).

Scholars have discussed the Latina Spitfire as a common image in Hollywood for the past century (Rodríguez, 2004). Originally known as the Mexican Spitfire in the 1930s and 1940s, the Latina Spitfire has been played by many Latina celebrities like Lupe Vélez and Rita Moreno. This stereotype still has characteristic similar to the original from the 1940's Mexican Spitfire: a loud, aggressive, and hot-headed character with a thick accent. This character is usually irresistible to the Anglo male with her exotic otherness compared to her competition, the Anglo female. The rivalry of the Anglo female character with the Latina Spitfire is frequently caused by their attraction to the Anglo male lead. In today's popular culture, a new Latina spitfire actress has come into the spotlight: Sofia Vergara. Widely known for her outspoken and overly sexualized roles,

Vergara's Gloria character in ABC's *Modern Family* resembles the characteristics of the Latina Spitfire. However, instead of being of Mexican descent, she is portraying Colombian Latinas. During season one, episode four, titled *The Incident*, Gloria's husband's ex-wife, Dede, returns to visit her family and to apologize for ruining Gloria's wedding celebration. The episode flashes back to the wedding reception where Dede, who was visibly intoxicated, decides to make a toast to the couple and refers to Gloria as "Charo," the iconic Latina Spitfire of the 1970s. As she continues her speech, Dede begins to state "I knew they were perfect for each other when I saw his wallet and her boobs." Thus, the show itself promotes the Latina Spitfire stereotype and rivalry with the Anglo female by using comedy to mock Vergara's character.

In contrast to the Latina Spitfire, scholars have discussed a more modern Latina portrayal in popular media, the Latin Maid (Molina-Guzman, 2010). Inherited from the African-American Mammy stereotype, an enslaved African-American woman housekeeper or nanny for an Anglo family (Collins, 2004), portrayals of the Latina Maid have increased immensely in mainstream media since 1996. The Latina maid stereotype represents 69% of iconic maids in films and television shows since the late 1990s (Negrón-Muntaner, 2014). In recent years, this portrayal has been seen in films like *Maid in Manhattan* (2002), *Spanglish* (2004), and *As Good as It Gets* (2009). *Maid in Manhattan* (2002) was one of the first films to show the "maid" as the protagonist. Considered to be a "fairytale romance" comedy and a "rags to riches" story (Padilla, 2009), a Bronx-born maid and single mother played by Jennifer Lopez falls in love with an Anglo male lead character played by Ralph Fiennes. In the film, Lopez's character Marisa resembles the stereotypical "noble immigrant" and exotic other (Padilla, 2009). Marisa believes that the Anglo male character will never be interested in her because they are from different economic and social classes. The feeling of not being good enough compared to the Anglo male character illustrates the ideology of Latina women being inferior to Anglo males.

Yajaira Padilla (2009) states in "Domesticating Rosario: Conflicting Representations of the Latina Maid in the US Media" that *Maid in Manhattan* is the perfect example of how the Latina Maid stereotype is used to reiterate the "in/visibility" of Latina servitude in the

United States. Due to high labor servitude from Latina immigrants, films like this romanticize the idea of the “American Dream” for immigrant workers. For instance, Lopez’s character in the film pretends to be of a higher social class, fearing that the Anglo male character would not be interested in her because of their occupational differences. Throughout the film, her co-worker Stephanie persuades Lopez to join the Anglo male in his formal business party. Feeling guilty about the lies, Lopez’s character begins to have second thoughts about attending the party, but Stephanie attempts to convince her with a motivational speech: “It’s more like a dream, you know? And for one night, you’re living it for all of us. Don’t think about tomorrow. Don’t think about anything but tonight. Tonight, the maid is a lie.” Thus, Stephanie hints at the romanticizing ideology of the American Dream in the minds of Latin American women.

Although the Latina Maid has become a familiar image of Latina women, Priscilla Peña Ovalle (2011) claims that hyper sexualized Latina portrayals are reflected more through their performances, skin color, and assimilation to American culture. Ovalle argues that Jennifer Lopez’s musical success can prove all those points. First, she states that Lopez’s musical career was obtained by the influence of black popular culture, much like her song “Jenny from the Block.” Lopez’s success is a result of a “hierarchy of light non-whiteness that is marketable as both urban and multicultural.” For instance, artists like Shakira and Jennifer Lopez are widely known for dancing in their music videos and live performances; however, Shakira’s dancing would be limited because her belly dancing is thought to appeal to a smaller ethnic audience. In comparison, Jennifer Lopez’s musical career has expanded to different genres of music and dance. Lopez has the flexibility to write a hip-hop song, pop song, and a song in Spanish. Ovalle argues that Lopez’s fair skin tone and American accent allows her to be flexible with the type of music she can perform because her skin color lands her in this “in-betweenness” of ethnicity.

This scholarly research demonstrates how representations of Latinas in the media have evolved from hyper sexualized Latina beauty and exotic otherness ideologies in American popular culture. Therefore, analyzing these misrepresentations can illustrate how these ideologies are still representing Latina women today. Jennifer Lopez and Sofia Vergara are two of the most influential Latinas in Hollywood, and examining their

work as entertainers, the way they represent themselves, and how they are being represented will shed light on the different representations of the Latina community. This deeper analysis demonstrates the way that they are represented as artists, as women, and more importantly, as Latinas.

Analysis

According to previous research, a common theme in media representations of Latinas is their overt sexuality (Berg, 2002; Ovalle, 2011). These images have been implemented in today's media through costumes, performances, and explicit language. While analyzing the work of Jennifer Lopez and Sofia Vergara, I chose to incorporate and build from Berg's (2002) equation by structuring a new and continuous equation that acts as a visual aid of the various media portrayals in American popular culture:

Stereotype + Popular Media Platform + Repetition = False Realty

The stereotype forms as an idea of a certain race, culture, or group of people. The popular media platform is the mass communicator of those ideas. However, it is the sum of the stereotype being distributed in popular media platforms plus the act of repetition that turns this stereotype into a false reality. In other words, when stereotypes are the only images representing a group of people in American media, a false reality about that group of people is created in the minds of the audience. Keeping this equation in mind while analyzing the careers of Jennifer Lopez and Sofia Vergara will illustrate the damaging effects of media misrepresentations on the audience's perception of Latina identity. This analysis will focus on Lopez's and Vergara's careers between the years of 2010 and 2015, specifically on Lopez's musical career and Vergara's acting career. This analysis will also expand to their appearances in magazines, on tabloid covers, and on television to reach diverse entertainment areas.

Jennifer Lopez: A.K.A Album, Music Videos, & Commentaries

An international superstar, Jennifer Lopez has remained in the entertainment industry due to her numerous film roles, musical albums, and live performances. In 2014 she released her 10th album, A.K.A,

describing it as a combination of all the identities she has had throughout her career (i.e., JLO, Jennifer Lopez, JLo, and Bennifer). In her own words, it is “encompassing everything that I was and everything I am” (JenniferLopezVEVO, 2014a). Lopez’s top chart singles from that album include songs “Booty” and “I Luh Ya Papi,” according to 2014 Billboard’s The Hot 100 for the months of October, July, and April, respectively (“Chart History-Jennifer Lopez,” n.d.). Additionally, the music videos have had millions of views on Youtube: “Booty” at 164,458, 972 (JenniferLopezVEVO, 2014b) and “I Luh Ya Papi” at 82,866, 196 (JenniferLopezVEVO, 2014d).

Booty

With the most views and ratings from fans, Lopez claims that “Booty” is about a woman embracing her curves, being confident with her body, and using dancing as a form of self-acceptance. In a YouTube VEVO interview (JenniferLopezVEVO, 2014e), Lopez claims that her rear end has become the main focus throughout her career in American tabloids, and she wanted to “poke fun” at that fact. Yet, in the same interview, Lopez contradicts herself by going on to state that she wanted to steer away from that focus. Although she claims that the song is about embracing womanly curves and having confidence with them, the music video illustrates a different picture, resembling Ovalle’s argument of Latina dancers being hyper sexualized. The video embodies Latina sexuality through Lopez’s dancing and clothing. For instance, Lopez, wearing a fitted one-piece bikini, is dancing seductively alongside featured artist, Iggy Azalea. Lopez’s dancing consists of the new adolescent dance craze, twerking: hip movements that consist of a low squatting stance while shaking your bottom. Additionally, for some of the scenes Lopez is covered in oil and wearing a one-piece bathing suit or two-piece bikini. The clothing and dancing of this video create the image of an exotic Latina dancer, adding to the ideology of the hyper sexualized Latina beauty.

In addition to Lopez’s dancing and clothing, the song lyrics depict a similar theme of Latina sexuality (Lopez, 2015a). In the original song featuring Pitbull, Lopez tells a story about a girl catching a male’s attention at a nightclub with her dancing and her womanly curves. The

song portrays Lopez as a girl demonstrating how to embrace a big booty on the dance floor, which can be seen in the beginning lyrics of the chorus, “I’ll show you how it’s done.” Throughout the song, male desire for the stereotypical Latina body is emphasized. For instance, Pitbull describes Lopez’s physical beauty as *gorgeous, fine, sexy*, and more importantly, *booty-full*. Additionally, Pitbull accentuates this Latina sexuality and Latina beauty by referring to her as *booty* or *it* rather than by name. He continues to refer to her bottom by describing its quality, which can be shown in the following lyrics:

I wanna take that big ole booty shopping at the mall
I wanna pick it up and put that booty in my car
Baby your booty is a movie star
Oscar award winner of them all

Pitbull objectifies Lopez by calling her “booty,” and this is encouraged more in the following verse as Lopez describes her curves as mesmerizing. Although Lopez’s intentions for the song were about women embracing their curves, the song’s lyrics and the music video’s dance choreography objectify Latina beauty and sexuality.

I Luh Ya Papi

Much like “Booty,” common themes in “I Luh Ya Papi” revolve around Latina sexuality. The song is about a woman expressing her love to a man. In a video commentary on VEVO (JenniferLopezVEVO, 2014f), Lopez claims that “I Luh Ya Papi” ties back to her musical roots from “Jenny from the Block” by combining genres, like Hip-Hop and Pop, in her verses (JenniferLopezVEVO, 2014c). In the same commentary, Lopez states that the song is intended to be something fun and playful. In addition, Lopez claims to pull inspiration for the video from her outfits in previous years and wearing a jumpsuit that resembles her 2000 Grammy Versace green dress, which got a lot of attention at the time.

Furthermore, when discussing the music video’s message and theme, Lopez expresses her attempt to challenge the objectification of women in Hip-Hop videos by objectifying men. All through the video, Lopez imitates the persona of a wealthy rapper with a big house and

luxurious cars surrounded by physically attractive, half-naked men. Yet, she is still provocatively dancing around the men in revealing clothing. In contrast to her attempt to objectify men, Lopez still sexualizes Latina women with her clothing and dancing. Of the five different outfits Lopez wears in the video, several consist of short shorts, exposing some of her backside, cropped shirts, and high heels. In fact, she seems to be attracting more attention to her womanly curves because many of her outfits expose them. Additionally, the video attracts more attention to her bottom because the poses consist of Lopez facing away from the camera.

Lopez tries to change perspectives in the “I Luh Ya Papi” video; the song lyrics convey a wholly different message (Lopez, 2015b). The song describes a girl expressing her love and dedication to the male character but also her ability to satisfy him sexually. All through the song, Lopez makes references to sex, stating she can put it down (have sex) with him all day, 24 hour(s). In comparison to Pitbull in “Booty,” featured artist French Montana in “I Luh Ya Papi” addresses Lopez as a person; however, he expresses his “love” by illustrating his desire for her to perform oral sex on him, stating “take the pants out here, drop to her knees.” In brief, a combination of Lopez’s exposing outfits, camera angles, and explicit lyrics draw more attention to her body, and more importantly, contribute to a larger ideology of Latina sexuality in American entertainment.

Sofia Vergara: Modern Family

Sofia Vergara had a successful acting career in American entertainment in previous years, but her fame rose to its highest point with the role of Gloria Pritchett on ABC's *Modern Family* (2009–Present). The show has won numerous awards, like Sofia Vergara’s Screen Actors Guild (SAG) Award for Outstanding Performance (“Modern Family,” 2015b) and a Golden Globe award for Best Television Series – Musical or Comedy (“Modern Family,” 2015a). *Modern Family* has had great success throughout its seven seasons, reaching 14 million viewers watching live and a total of 4.5 million viewers recording on DVR’s in 2014 alone (“Wealthier People Watch Parks & Rec, Modern Family,” 2013). The show is a mockumentary that follows the lives of multigenerational and multicultural interconnected families. It pokes fun at the interactions and

dynamics found in today's American families by having an interracial couple, a homosexual couple, and a same-race couple. However, Gloria's character still stands out from the rest of the cast as an outsider because of her outfits, characteristics, and sexuality.

Throughout the *Modern Family* series, Gloria is known for dressing in skin-tight, low-cut, or bold patterned clothing. In the "Snip" (2012) episode from season four, Gloria is a couple months pregnant and her stomach is beginning to show. All through the episode her son, Manny tries to convince Gloria that she needs to start wearing maternity clothes, but Gloria refuses. She continues to wear her regular clothes until her top rips open at the end of the episode. Throughout that season, Gloria's outfits still had bold colors and patterns but more importantly, her clothing exposed some her chest. Even while pregnant, many of the maternity dresses, shirts, and blouses Gloria wore were low-cut, usually exposing some of her cleavage and drawing attention to her breasts, contributing to perceptions of Latina sexuality in American media. For instance, in some of the scenes, Gloria's gestures involve big hand movements, which occasionally cause her breasts to shake. Due to Vergara's highly exposed cleavage, these hand movements direct the audience's attention towards her breasts and away from the actual scene.

Gloria is also well known for her aggressive, loud, and hot-tempered personality and her thick accent. In the same episode and throughout the series, Gloria becomes the comedic part of the show for mispronouncing English words like yes as *jes*, Jay as *yay*, and talk as *thalk*. As an illustration, in the "Manny Get Your Gun" (2010) episode, Gloria's aggressiveness and loudness is directed towards Jay, who tries to teach Gloria a life lesson of staying organized by misplacing her car keys. After a few hours of searching, Jay, Gloria, and her son are on their way to a restaurant when Jay confesses to having hidden her keys. Gloria reacts by socking him the arm multiple times and yelling at him. At the end of the episode, Jay attempts to hide the keys again but as he is placing them in an ice bucket, Gloria shoots his hand with a BB gun. These types of violent gestures echo the Latina spitfire stereotype and create an image of a hot-headed Latina in the audience's mind.

Gloria's overall character on the show depicts a hyper sexualized Latina and her irresistibility to the male characters. As seen in the episode,

“Dance Dance Revelations” (2010), Claire (Jay’s daughter) feels threatened by Gloria when she becomes a co-chair for the decorating committee at their son’s school dance. Claire gets jealous when everyone pays more attention to Gloria, especially the custodian, Gus, who Claire was innocently flirting with. Towards the end of the episode, Claire gets upset after spilling her drink on her dress and begins to break down. She confesses to being jealous of Gloria for having *too much thunder*, referring to her breasts and the amount of male attention she gets. In brief, this episode demonstrates how Latina sexuality is portrayed in the media. Gus’s sudden attraction to Gloria over Claire illustrates male sexual attraction to the stereotypical Latina body and Latina curves. In addition, Claire’s jealousy of Gloria’s curves echoes the rivalry between the Anglo woman, who is stereotyped as thin and flat chested, and the Latina woman.

Aside from the misrepresentation of Latina identity in American media, there is a greater issue. The show reaches out to a large number of non-Latino viewers who can watch this and misinterpret the Latina portrayal as fact. *Modern Family* has millions of viewers across the country and can have an immense impact on the way that Latinas are portrayed in the audience’s minds. The show’s demographics include 18–49 year old Americans (Wealthier People Watch ‘Parks & Rec,’ ‘Modern Family’, 2013) with an annual income between \$81,000 to over \$100,000 (Hamedy, 2014). In 2014 alone, the show reached 18.5 million people across the country (Hamedy, 2014). On the other hand, the annual income of the Hispanic population, including Latinos, between 2010 and 2014 was from \$40,337 to \$42,491 (DeNavas-Walt and Proctor, 2014). Thus, if the Hispanic population is not the targeted audience, these figures indicate that Gloria is representing the Latina identity to high-income, non-Latino, American families. As Latinas only represent 11.8% of supporting roles in popular television shows, and media portrayals of Latinas revolve around maids, spitfires, and exotic dancers, characters like Gloria create a common theme in the non-Latino audience’s minds and create a false ideology of Latina women in American society.

Magazines, Tabloids, and Television Shows

Lopez and Vergara have been featured on various magazine covers, in tabloid news stories, and on television shows, creating another representation of them as entertainers. A common theme in these media platforms has been their physical beauty, sexuality, and love lives. Magazine covers of both Lopez and Vergara usually emphasize their curves and age. The majority of these covers show them in tight fitting or revealing clothing. In June 2015, US Weekly's "The Best Bodies Issue: Starring JLO and 78 Sexy Stars" (Baker and Hapler, 2015) honored Lopez for her womanly curves because of her sexy body and for being the best body on the block, referencing her single "Jenny from the Block." Although Vergara didn't make the cover, she did make the list. In the same magazine issue, Vergara describes her diet routine, including her love for cake, while posed in her underwear and a long-sleeve, low-cut shirt.

Many of Vergara's magazine covers mirror this hyper sexualized view of Latina women as very voluptuous, sexual, and exotic. Vergara's cover of Vanity Fair in May 2015 (Anorak, 2015) shows exactly that. On the cover, Vergara is wearing a tight, revealing dress and is leaning forward, exhibiting her breasts to the camera. In the article, she is described as "an effortless, unapologetic sex-symbol" based on her successes in *Modern Family*. In this particular issue, photos show her posed in various sexual positions and revealing outfits. In one of the pictures, Vergara is posing in a fitted leopard bathing suit, leaning forward and exposing her breasts once again. In another photo, Vergara is nude in a bathtub, having only bath bubbles covering her breasts and midsection. These two photos seduce the viewers of the magazine by attracting attention to these sexualized poses but more importantly, to her body.

The majority of Lopez's and Vergara's magazine appearances have graced various tabloid magazines. Lopez has a history of being front and center in tabloids. She is known for her outfits, like the 2000 Grammy Award Versace Dress, her dating life, her relationship with Ben Affleck (also known as Bennifer in 2003), and more recently, her body at the age of 46. Hollywood is known for weeding out actresses once they start looking older than 40. Therefore, Lopez has surpassed that standard and remained relevant in Hollywood. In 2015, Lopez made tabloid covers,

including US Weekly and Star Magazine, because of her love life and secrets to her diet. An article in the July 2014 issue of US Weekly, “JLo’s New Body at 44” (Graosbart, 2015), emphasized her dieting and exercise routines; however, the article concluded with questions about men in her personal life, indicating that Lopez has no other motive to look good than for a man. In comparison, Sofia Vergara’s common theme in the tabloids is her love life and the men she has dated or has been seen with. From her leaving a party with Tom Cruise in 2005, her lawsuit with ex-husband Nick Loeb over frozen embryos, to the gown at her wedding with Joe Manganiello (Morena, 2015), Vergara’s coverage mostly involves her love life, what she wears, and how she looks in what she wears.

Lopez’s and Vergara’s physical beauty and love life are talked about on television shows as well. In 2010 Sofia Vergara appeared on Lopez Tonight with host George Lopez to discuss her new successes in Modern Family (Donald, 2014). In the interview, Lopez introduces Vergara as unbelievably gorgeous and a real Latina woman with curves and beauty. All throughout the interview, Lopez makes jokes about Vergara’s physical attractiveness, even stating that if Vergara had followed her original goal of becoming a dentist she would have had men kicking each other in the mouth. Vergara has made multiple appearances on the Ellen DeGeneres show, where she often makes fun of herself and her tabloid issues. For Halloween 2013, DeGeneres dressed up like Vergara, mocking her wardrobe malfunction at the Golden Globes that year. DeGeneres continued to mock Vergara’s endorsement deals, how hard being that beautiful can be, and her successes with her fake accent. But the most shocking part is that Vergara participates in these skits along with DeGeneres and many other talk show hosts. These skits or television parodies not only misrepresent Latinas in the media but also use comedy to make fun of Latina stereotypes.

Conclusion

In brief, from spitfires to seductresses, misrepresentations of Latinas in American popular culture have two common themes: Latina sexuality and exotic otherness. This research opened my eyes to the reality that Latina celebrities are categorized in Hollywood depending on physical attractiveness and their assimilation into American culture. For

instance, Jennifer Lopez is one of the few Latina entertainers who have been successful in the music and film industry. Lopez's fame illustrates Latina *in-betweenness* of ethnicity that gives her many options as an entertainer. In addition to her opportunity to shift from one musical genre to another, her *in-betweenness* allows her to play more "white" acting roles due to her fair skin and American accent, resembling others like America Ferrera and Eva Mendes. In comparison, Sofia Vergara is limited in her acting roles by her physical appearance and her thick accent, much like Salma Hayek and Penelope Cruz. Despite Hollywood limitations, Latina celebrities, especially older women, are constantly pressured and admired for their beauty, keeping them relevant in the public eye.

Unconsciously or consciously, Latina entertainers have skewed the perspective of Latina beauty in American media. Jennifer Lopez and Sofia Vergara have had to make sacrifices to keep up with this standard of Latina beauty. In Lopez's VH1 *Behind the Music* episode ("Jennifer Lopez," 2010) she states that she spends countless hours in dance rehearsals and has strict workout routines that keep her body in shape. In addition, Lopez claims to keep a strict diet in order to do all that she does. In comparison, being a natural-born blonde, Sofia Vergara had to dye her hair dark in order to be cast as Gloria on *Modern Family*. In the Lopez Tonight interview in 2010 (Donald, 2014), Vergara shared that many producers commented that she sounds Latin, she moves like a Latin, and her body is Latin but she's blonde? Now that the success of *Modern Family* has grown, Vergara has slowly been dyeing her hair back to her natural color. She has also spoke briefly about her body, explaining that having big breasts is genetic and that she worries about following a healthy diet. Thus, Jennifer Lopez has to continually keep up a workout routine and Vergara follows a healthy diet to look the way they do, and this causes a false idea of what Latina beauty should be. As the most successful Latina entertainers today, Lopez and Vergara have portrayed Latina beauty with the belief that they should have large breasts, thin waists, and voluptuous bodies because that has been a major key to staying relevant in Hollywood. This creates the idea that all Latina women should look like them, but it hides the fact that it takes a lot of work, time, and even genetics to look the way they do.

Some Latina celebrities believe that these media portrayals do not misrepresent the Latina community. According to Sofia Vergara, characters like Gloria are not stereotyping Latina women in American entertainment. Vergara claims that Gloria resembles many women in her family, including herself. In an article for the Latin Times, Vergara stated: “Gloria has a lot of my mom and my aunts in her...it makes me proud to play her as a symbol of many Latin women, but not all of them” (Valdez, 2013). In a different article for the Huffington Post, Vergara states she is not afraid of stereotypes since Latina women are *yellers*, *sexy*, and *scandalous* (“Sofia Vergara: Is She Taking The Latino Stereotype Too Far?,” 2012). Bergs (2002) refers to this “truth” behind the characters as an unconscious bias. Stereotypical Latina roles like Gloria are a combination of Latina lived experiences and Latina media portrayals in the United States. In other words, stereotypes like the Latina spitfire may be accurate in Vergara’s case in relation to the women in her life; however, these stereotypes cannot capture a group or culture and its full experience. Thus, the issue is not if there are or are not Latina women who resemble Gloria but that these hyper sexualized images are representing Latinas as a whole as one of the few media representations of Latinas in American popular culture.

In future research, I wish to explore other media representations in the Latina community: Latina LGBT, various cultures, and mixed race Latinas. Media representation of Latina women needs to steer away from an idea of what a Latina should be and focus on what Latinas are: people. Thus, in forthcoming research, I plan to delve into these communities and the effects that representations have on the Latina community, but more importantly, on the effect they have on the development of self-identity and self-awareness.

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