Meeting of Minds XIX

Journal of Undergraduate Research

May 13, 2011
Hosted by Oakland University
About the Meeting of Minds:
Journal of Undergraduate Research

The *Meeting of Minds Journal of Undergraduate Research* is specifically designed to offer undergraduate students the opportunity to experience the manuscript submission and review process. Students who participate in the Meeting of Minds Conference are invited to submit a written version of their presentation to the Journal Review Board for publication in the volume, which corresponds to the presentation year. The initial volume, published in 1998, incorporated submitted papers from the inception of the conference through that year (i.e. 1993-1998). This volume presents papers from the nineteenth conference held at Oakland University in May 2011.

The articles in this journal represent the work of undergraduate students, with the assistance from a faculty mentor. The first author is always an undergraduate student. The relationship between the mentor and the student is noted by the use of *with*.

This journal represents the culmination of many years of experience in the collaboration process between three undergraduate universities in Michigan. It also represents the strong personal commitment of many individual faculty members to undergraduate research and creative endeavors.

The Meeting of Minds Conference and this journal are a shared responsibility between the University of Michigan-Dearborn, the University of Michigan-Flint, and Oakland University. Each university accepts the responsibility to host the conference and subsequently to publish the journal on a rotating basis. The order of the responsibility follows the subsequent pattern: the University of Michigan-Dearborn in 2009, the University of Michigan-Flint in 2010, and Oakland University in 2011.

The Editorial Board reviewed submissions for documentation and compliance with manuscript guidelines. The authors were ultimately responsible for the content, information, and any interpretation within the manuscripts. Manuscripts accepted for publication become the property of the Journal Editorial Board.
Preface

On May 13, 2011 hundreds of undergraduate students, dozens of faculty, and countless community and family members gathered on the campus of Oakland University for the 19th annual Meeting of Minds Undergraduate Student Research Conference. The annual Meeting of Minds event is a joint effort of three campuses that pride themselves on the quality and quantity of undergraduate research: the University of Michigan-Dearborn, the University of Michigan-Flint, and Oakland University.

As a celebration of the research, scholarly and creative accomplishments that emerge when undergraduates have the opportunity to work closely with faculty mentors, Meeting of Minds has grown significantly since its inception in 1993. At the 2011 conference there were over 180 student presentations with topics ranging from art, chemistry, philosophy and psychology, just to name a few. Music performances were included in the program as well. Sessions were programmed to be interdisciplinary so attendees could learn to value the ways diverse disciplines express their intellectual findings. Making a professional-level public presentation of one’s own work is an extremely valuable experience for an undergraduate student. All of the knowledge and skills of their undergraduate years are brought together in the formulation of a unique question or quest and the completion of a significant research project or creative task. Rightfully, students and faculty alike take great pride in the final presentation.

Thirty-nine of the participants in Meeting of Minds XIX have chosen to take their commitment to their scholarship a step further. They have prepared and submitted the professional-level manuscripts that you will find in this volume of Meeting of Minds: Journal of Undergraduate Research. This edition of the journal is different from those of previous years. After faculty mentors affirmed that their student’s submissions were publication-ready Maia Proulx and Zac Budrow, two undergraduate students at Oakland University, undertook the task of compiling the submissions into a web-based, interactive document. Students today rely far more on web-based journals than on bound-paper volumes, and it seems appropriate for the Journal to make the transition to employ this technology. Your perusal of these pages will affirm the excellence and diversity of our students’ work. We hope you enjoy the read.

Finally, I want to thank the faculty, staff and students from all three campuses who worked cooperatively to make the 19th Meeting of Minds gathering a great success. Support begins with the commitment of the Provosts from each campus; their continuous endorsement of the event and their financial contributions are critical to the success of the day and the publication of the journal. We are grateful to our faculties for their willingness to mentor student projects, their assistance in presentation and journal preparations, and their supportive attendance. My colleagues, Dr. Jennifer Zhao and Susan Gedert at the University of Michigan-Dearborn and Andre Louis at the University of Michigan-Flint assured a great turnout from their respective institutions. The faculty, staff, and students on the Oakland University Committee for Meeting of Minds XIX were terrific. I especially recognize the technical support Laura Schovan provided throughout the Meeting of Minds event; her contribution is greatly appreciated.

Robert Stewart, Associate Dean
College of Arts and Sciences, Oakland University
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A BRIEF EDUCATIONAL INTERVENTION TO INCREASE SLEEP KNOWLEDGE AMONG COLLEGE STUDENTS

Kate Adams, Maria Dopierala, Niccole Malone, Ashley Sullivan, Jessica Pomaranski, Erin Pyykkonen, Stephanie Vogel
Faculty Sponsor: Florence Dallo
Department of Health Sciences, Oakland University

Introduction
According to the Centers of Disease Control and Prevention (CDC, 2010), sleep deprivation is when someone experiences daytime sleepiness, sluggishness, or has difficulty concentrating or making decisions due to lack of sleep. In the United States (US), approximately 25% of Americans (77.5 million) are sleep deprived (Ruddy and Concise, 2002; US Census, 2010). Of this population, college students are highly affected. In fact, 70% of college students report sleeping less than seven hours a night (Tsai et al, 2004).

Sleep deprivation is associated with many negative outcomes in the general population and specifically among college students. Sleep deprivation can lead to cardiovascular disease, diabetes, obesity and depression (Ruddy and Concise, 2002). Poor sleep quality is associated with psychosocial distress (e.g. anxiety and depression), reduced physical health, general cognitive difficulties, and increased use of drugs and alcohol (Brown et al., 2002). Among college students, those who are sleep deprived have lower grade point averages than students who have had a normal night of sleep (Gaultney, 2010; Buboltz et al., 2001). Moreover, students who work and are sleep deprived tend to be less involved in campus life, less likely to interact with faculty, and more likely to have a lower GPA (Miller et al., 2008).

One way to potentially alleviate the negative consequences of poor sleep among college students is through educational interventions. However, very few interventions have been conducted to disseminate knowledge on the importance of sleep quantity and quality. In fact, only four intervention studies among college students related to sleep have been published. The first compared a brief image-based multiple-behavior intervention to a standard control among 303 college students over a three-month period. They found that the students receiving the brief image-based intervention got significantly more sleep than those in the control group (Werch et al., 2008). The second study was similar to the first except it included three arms (behavior health contract, one-on-one tailored consultation, or combined consultation plus contract) and occurred over one-month (Werch et al., 2007). The authors found all three methods improved sleep quantity. The third study enrolled 166 college students to engage in 15-week Pilates and similar exercise techniques to increase mindfulness. They found that greater changes in mindfulness were related to better sleep quality (Caldwell et al., 2010). The same authors conducted an intervention to compare whether Pilates versus regular exercise improved sleep quality. They found that students who participated in Pilates classes experienced the largest improvements in sleep quality over the course of a semester compared to students engaging in their regular exercise routine (Caldwell et al., 2009).

While these studies are important, they suffer from several limitations. One is that improving sleep quantity and quality was not their focus; rather, it was one of several outcomes. Second, many of the interventions were staff and resource intensive. Third, the authors followed students
over time, which may prove difficult with a college population. Brief educational interventions that disseminate knowledge about the negative consequences of inadequate sleep and tips for sleep hygiene may be an effective, inexpensive, quick, and feasible way to improve sleep hygiene among college students.

The proposed intervention will overcome these limitations by providing a brief, educational, and interactive intervention to college students. The overall **objective** of the study was to improve sleep knowledge among college students. More specifically this study: 1) Assessed whether knowledge about sleep has increased in the areas of burden and consequences of sleep deprivation and sleep hygiene; and 2) Examined whether demographic, health behavior, sleep quality, sleep patterns, and mental health characteristics were associated with pre-post changes in sleep knowledge (burden and consequences and sleep deprivation).

**Method**

*Setting and Subjects*

The intervention took place at one of the dining halls on the campus of Oakland University in Rochester, Michigan. All students were eligible to participate. The program was advertised using table tents, flyers, banners, Oakland University web pages, professors and residence hall directors.

*Procedure*

On the night of the event, once all participants were seated, researchers introduced themselves and the agenda for the evening. The researchers distributed a general survey and a knowledge survey (the pre test) to all subjects along with a numbered index card, and a numbered sticker (so each participant had a questionnaire, a numbered index card, and a numbered sticker to put on their shirt, all with the same number). After 15 minutes, researchers collected both the general and knowledge questionnaires and asked participants to wear their sticker.

The intervention component began with a skit, presented by the researchers, which demonstrated the negative consequences of sleep deprivation on the student and her friends, family, roommate, and faculty. The skit then showcased what the student can do to alleviate these poor consequences and obtain adequate sleep. This lasted approximately 10 minutes. Researchers then presented the 45-minute PowerPoint main intervention presentation about sleep. Researchers distributed the post test, which took approximately 5 minutes to complete. Once subjects completed and turned in the survey, they received a $5 food voucher.

*Instruments*

Students completed two surveys. The first one, the general survey, included 39 multiple-choice and yes-no questions that collected demographic (i.e., age, sex, race/ethnicity, academic standing), sleep quality (i.e., sleepiness, sleep difficulties and disturbances), and health behavior (i.e., substance use, nutrition, exercise, stress levels) information. To assess sleep quality, the study used the Pittsburgh Sleep Quality Index (PSQI). The PSQI (Buysse et al., 1989) consisted of 18 validated questions and measured sleep quality, habits, and disturbance in the previous one-month period. Questions about health behaviors were adopted from the American College Health Association - National College Health Assessment (ACHA, 2009). The ACHA-NCHA is a 65-item questionnaire addressing the health habits, behaviors, and perceptions of college students’ (ACHA, 2009). Questions pertaining to tobacco and alcohol use were adopted from the Youth Risk Behavior Survey (YRBSS, 2010). Finally, the survey included the Epworth Sleepiness Scale, which presented eight different situations to assess the likeliness of the
participants to doze off (Johns, 1992). The second survey, the knowledge survey, consisted of 15 true and false questions based on the information from the Power Point presentation.

**Statistical Analysis**

First, we used means (±SD) and percents to describe the sample. Second, we used a t-test to examine whether there were statistically significant differences in knowledge between pre and post tests. Third, we specified a Fisher’s exact test to test the significance of the statistically significant variables from the t-test. We used SAS version 9.2 (SAS Institute Inc., 2002-2008)

**Results**

Of the 94 surveys distributed, 93 were returned. Of these, 86 were used in the analysis, for a 91.5% response rate. The mean age was 19.7 (SD = ±3.37), 72.9% were female, 65.9% lived in residence halls and 44.7% were freshman. Furthermore, 75.3% rated their health as very good or good (see table 1). Of the 15 knowledge questions, there was a statistically significant change from pre to post intervention for 9 questions. For example, prior to the intervention, 52.3% of the sample answered correctly to the question, “[y]our brain rests during sleep” and this increased to 97.7% after the intervention (see table 2). Approximately 60% of the sample reported poor sleep quantity and quality. Also, 51.2% reported sleepiness that warranted seeking medical advice (see table 3).

Table 4 shows results for the association between sleep quantity/quality (using the PSQI) and selected characteristics. Students who reported poor sleep had higher GPAs (3.4) compared to those who reported poor sleep (GPA = 3.3) (p = .0058). Of those who reported good sleep quality, 18.8% were non-white and of those who reported poor sleep quality, 39.6% were non-white (p = .0489). Students were presented a hypothetical situation to assess how they would react to an invitation to spend time with a friend, even though the student wanted to get to bed early. Of those who reported a poor sleep quality score, 52.1% said they would decline the invitation. However, a higher percentage (78.8%) of those who reported a good sleep quality score said they would decline the invitation (p = .0323) (see table 4).

**Conclusion**

This study assessed whether knowledge about sleep increased from pre to post intervention and whether various characteristics were associated with pre-post changes in sleep knowledge. The findings suggest sleep knowledge increased for 9 if 15 questions and that whites, those with a lower GPA, and those who recognized the importance of sleep quality were more likely to report good sleep quality compared to their counterparts.

The current differs from previous research, which used behavioral and exercise interventions to improve sleep (Werch et al. 2007, 2008; Caldwell et al. 2009, 2010). The current study suggests that sleep knowledge and behaviors is poor among college students. However, sleep knowledge can be improved using an inexpensive and feasible educational intervention.

Some limitations, however, are that most of the students who attended lived in residence halls. This missed a large proportion of the student population who lives off campus or with parents. It is not possible to generalize our findings to all college students, because the sample was limited to Oakland University. Similar studies should be conducted at other universities and include more of the student population.
The information from this study can be used to develop longitudinal studies and interventions to better understand and improve sleep quantity and quality among a population that is vulnerable to sleep deprivation and its negative consequences.

Table 1: Descriptive Characteristics of Sample, N=86

<table>
<thead>
<tr>
<th>Demographics</th>
<th>N</th>
<th>Percent or Mean (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (±SD) age</td>
<td>85</td>
<td>19.7 (±3.37)</td>
</tr>
<tr>
<td>Female</td>
<td>62</td>
<td>72.9</td>
</tr>
<tr>
<td>White</td>
<td>58</td>
<td>69.1</td>
</tr>
<tr>
<td>Live in residence hall</td>
<td>56</td>
<td>65.9</td>
</tr>
<tr>
<td>Freshman</td>
<td>38</td>
<td>44.7</td>
</tr>
<tr>
<td>Sophomore</td>
<td>25</td>
<td>29.4</td>
</tr>
<tr>
<td>Junior or higher</td>
<td>25</td>
<td>25.9</td>
</tr>
<tr>
<td>Mean (±SD) GPA</td>
<td>55</td>
<td>3.35 (±0.49)</td>
</tr>
<tr>
<td>Employed</td>
<td>41</td>
<td>48.2</td>
</tr>
<tr>
<td>Volunteer</td>
<td>30</td>
<td>34.9</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Health Behaviors</th>
<th>N</th>
<th>Percent or Mean (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Self-rated health</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Excellent</td>
<td>7</td>
<td>8.2</td>
</tr>
<tr>
<td>Very good/good</td>
<td>64</td>
<td>75.3</td>
</tr>
<tr>
<td>Fair</td>
<td>14</td>
<td>16.5</td>
</tr>
<tr>
<td>Had at least one drink of alcohol on 1 or more days in past 30 days</td>
<td>45</td>
<td>52.9</td>
</tr>
<tr>
<td>Ever tried cigarette smoking</td>
<td>24</td>
<td>28.2</td>
</tr>
</tbody>
</table>

Academics have been very difficult/difficult to handle in past 12 months | 30 | 34.9 |

Level of stress has been tremendous/more than average in past 12 months | 39 | 45.4 |
Table 2: Percent Correct and Comparison of Pre- and Post-Knowledge Responses, N=86

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre</th>
<th>Post</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Twenty-five percent (25%) of Americans are sleep deprived (True)</td>
<td>73.3</td>
<td>96.5</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Seventy percent (70%) of college students sleep less than 7 hours per night (True)</td>
<td>95.3</td>
<td>98.8</td>
<td>.0030</td>
</tr>
<tr>
<td>People who are sleep deprived have the same rates of conditions such as obesity, diabetes, and depression as people who are not sleep deprived (False)</td>
<td>58.1</td>
<td>47.7</td>
<td>.0526</td>
</tr>
<tr>
<td>Your brain rests during sleep (False)</td>
<td>52.3</td>
<td>97.7</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Lack of sleep has been shown to affect students’ academic performance (True)</td>
<td>97.6</td>
<td>97.6</td>
<td>.9816</td>
</tr>
<tr>
<td>Alcohol does not interrupt your sleep patterns during the night (False)</td>
<td>90.1</td>
<td>93.8</td>
<td>.1818</td>
</tr>
<tr>
<td>Turning up the radio will help keep you awake while driving (False)</td>
<td>65.9</td>
<td>96.3</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Establishing a regular bed time and rise time will help you get better sleep (True)</td>
<td>96.3</td>
<td>97.6</td>
<td>.4565</td>
</tr>
<tr>
<td>If you wake up in the middle of the night, it is best to lie in bed and force yourself to fall back asleep (False)</td>
<td>67.1</td>
<td>93.9</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Foods, such as bananas and peanuts, high in the amino acid tryptophan, help you sleep (True)</td>
<td>76.8</td>
<td>95.1</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Activities like meditation, yoga, and deep breathing will not help you fall asleep (False)</td>
<td>92.7</td>
<td>87.8</td>
<td>.1767</td>
</tr>
<tr>
<td>Taking naps will help you “catch-up” on your sleep (False)</td>
<td>61.6</td>
<td>84.9</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Over the past 40 years, the amount of sleep college students get has decreased (True)</td>
<td>95.4</td>
<td>95.4</td>
<td>.9819</td>
</tr>
<tr>
<td>Eating large quantities of food before bedtime will help you fall asleep (False)</td>
<td>73.3</td>
<td>95.4</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Eleven percent (11%) of students meet the criteria for “good sleep quality” (True)</td>
<td>84.9</td>
<td>96.5</td>
<td>&lt;.0001</td>
</tr>
</tbody>
</table>

*Meeting of the Minds 2011*
Table 3: Sleep Quantity and Quality, N=82

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Percent (%)</th>
<th>Mean (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PSQI</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Good sleep quality (score ≤ 5)</td>
<td>33</td>
<td>40.2</td>
<td>6.8 (±3.10)</td>
</tr>
<tr>
<td>Poor sleep quality (score &gt; 5)</td>
<td>49</td>
<td>59.8</td>
<td></td>
</tr>
<tr>
<td><strong>Epworth Sleepiness Scale</strong></td>
<td></td>
<td></td>
<td>10.1 (±4.41)</td>
</tr>
<tr>
<td>Getting enough sleep</td>
<td>17</td>
<td>20.7</td>
<td></td>
</tr>
<tr>
<td>Getting average sleep</td>
<td>11</td>
<td>13.4</td>
<td></td>
</tr>
<tr>
<td>Very sleepy/seek medical advice</td>
<td>42</td>
<td>51.2</td>
<td></td>
</tr>
<tr>
<td>Dangerous levels of daytime sleepiness</td>
<td>12</td>
<td>14.6</td>
<td></td>
</tr>
</tbody>
</table>

Table 4: Associations between PSQI and Selected Sample Characteristics, N = 86

<table>
<thead>
<tr>
<th></th>
<th>Sleep Quality (PSQI)</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Good (Score &lt; 5)</td>
<td>Poor (Score ≥ 5)</td>
</tr>
<tr>
<td>Mean age (17-22 years)</td>
<td>19.3 (1.40)</td>
<td>18.9 (1.33)</td>
</tr>
<tr>
<td>Mean GPA</td>
<td>3.3 (±0.63)</td>
<td>3.4 (±0.37)</td>
</tr>
<tr>
<td>Sex</td>
<td></td>
<td>.7522</td>
</tr>
<tr>
<td>Males</td>
<td>30.3</td>
<td>27.1</td>
</tr>
<tr>
<td>Females</td>
<td>69.7</td>
<td>72.9</td>
</tr>
<tr>
<td>Race/Ethnicity</td>
<td></td>
<td>.0489</td>
</tr>
<tr>
<td>White</td>
<td>81.3</td>
<td>60.4</td>
</tr>
<tr>
<td>Non-white</td>
<td>18.8</td>
<td>39.6</td>
</tr>
<tr>
<td>Invitation to spend time with friend</td>
<td></td>
<td>.0323</td>
</tr>
<tr>
<td>Accept invitation – can keep this pace forever</td>
<td>9.1</td>
<td>6.3</td>
</tr>
<tr>
<td>Accept invitation – feel obliged</td>
<td>6.1</td>
<td>14.6</td>
</tr>
<tr>
<td>Accept invitation – can catch up on sleep</td>
<td>6.1</td>
<td>27.1</td>
</tr>
<tr>
<td>Decline invitation</td>
<td>78.8</td>
<td>52.1</td>
</tr>
</tbody>
</table>

References


OTTO DIX: WOOED BY THE GREAT WAR

Barbara Bauer
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World War I left Germany and the rest of Europe in turmoil. The casualties Germany alone suffered were around 2.5 million. However, interestingly enough, many German artists and intellectuals were surprisingly enthusiastic about the war when it began. They felt that the war would cleanse the German soul and make way for an idyllic future. 1 Otto Dix (1891-1969) shared this view and tried to explain his feelings towards it, “The war is something beastly: hunger, lice, mud, insane noises. [...] The war was a hideous thing, but nonetheless overwhelming. In any case, I could not miss that! One had to see man in this chaotic condition in order to know something about him.” 2 It is clear that Dix was fascinated by war and no surprise that his first hand experience of the Great War became the dominating theme of his oeuvre. His paintings Die Skatspieler (The Skat Players) (fig. 1) and Schützengräben (Trench) are perfect examples of how Dix often depicted the war. However his print portfolio Der Krieg (War), consisting of 50 prints subdivided into five portfolios each containing ten prints, paints a picture of the Great War which no one had seen before. Dix’s Der Krieg, 1924, was neither meant to serve as a judgment of humankind nor as an anti-war artwork, he merely wanted to represent war for its truth.

Otto Dix was born in 1891 in Untermhaus, Thuringia, the son of an ironworker. He volunteered for his fatherland in 1915. He had been trained as quickly as possible as a machine gun guard in a field artillery regiment, and was sent off to the western front in the fall of 1915, a year after the war began. 3 In the Champagne province of France he experienced the most horrible and deadly trail of the war – mustard gas attacks. Soon afterwards he was transferred to Flanders and promoted to corporal. 4 After two years of fighting in the trenches and taking part in the major allied offensive at the Somme in 1916, he was sent to the eastern front. He arrived in Russia in 1917 as a sergeant. 5 During the last years of war he returned to Belgium, where he reported to the air force for training as an aerial observer. He had requested this post as he was curious to see the bombed and devastated landscape from the air. 6 When he returned home he used his experiences from the war in his art and showcased the war in a light that was unfamiliar to many.

When it comes to interpreting the print cycle Der Krieg, there seems to be a tendency to view them in two ways. On the one hand, some scholars agree that with this cruel depiction of

4 Ibid.
5 Ibid.
6 Ibid.
the war, Dix wanted to ruthlessly accuse the war and on the other hand other scholars agree that he wanted to free himself of the accumulated visions. Both of these perspectives are widely respected and can be supported by ample evidence. However, these perspectives do not represent Dix’s initial intentions and motifs of depicting war for its truth. Creating Der Krieg can be seen as a cathartic experience for Dix. By forcing himself to relive these memories and engraving them on the sheets, he is purging his mind and releasing them as though he is now free of them. It was perfectly normal to go through post-traumatic-stress-disorder after undergoing the horrific events of the Great War and one way to treat this disorder is to face the events and make peace with them. Dix even said “I had dreams in which I must crawl through ruined houses, through corridors where I couldn’t get through. The ruins were constantly in my dreams.” By displaying his experience of the Great War in such a public manner, it very well could have allowed him to make peace with the devastating events and reoccurring nightmares. Although Dix never made a comment upon these matters scholars still believe this to be one of the reasons Dix depicted the war so realistically.

Der Krieg is also repeatedly and most commonly interpreted as Dix’s stand on war. Many scholars believe that this print cycle perfectly depicts Dix as a pacifist. They believe that by showcasing the cruelty and awfulness of the war in such a realistic and almost repulsive way, Dix wanted to warn the people of the true impact of war and thus influence their stand on war. It was commonly thought that he meant to emphasize the stench and gore of the battlefield in the hope that he could sway the opinions of those unacquainted with the war’s grim realities. However, these scholars fail to see Dix’s true intend. Dix was never interested in taking a political stand in his prints and neither did he believe that this series would change people’s stand on war. He simply wanted to show the Great War the way he and millions of others soldiers experienced it. He wanted the truth to be seen. Moreover, he let the viewers decide for themselves how their stand on war might change after seeing these images. His prints were just another tool the pacifists used to show the horrors of war but Dix never stated that he agreed with the stand the pacifists were making with the support from his prints.

One reason these scholars do believe that Der Krieg takes a pacifist stand is that they compare it to Francisco de Goya’s (1746-1828) series Los Desastres de la Guerra (Disasters of War) consisting of 82 etchings (fig. 2) representing the atrocities committed during the Spanish War of Independence in 1808. However, there is one major difference between the two print cycles. Goya was a spectator of the war; Dix depicts his first hand experience. The Disasters of War as Goya reported them are a record of inhumanity and brutal folly, but Dix’s Der Krieg demonstrates the dissolution of matter and spirit into putrescence and senselessness. The emotional intensity, the wild multiple details, and the sense of personal involvement with men who are completely overtaken by evil are more apparent in Dix’s than in Goya’s prints. Moreover, Goya’s Spaniards are generally seen as honorable and oppressed, in contrast to the vicious French soldiers. There are no heroes in Der Krieg, only endless pitiful degradation.

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A more appropriate comparison to Der Krieg is Ernst Friedrich’s (1894-1967) book Krieg dem Kriege! (War against War!) (figs. 3 and 5 with comparison to Der Krieg in figs. 4 and 6). Krieg dem Kriege! is a collection of Friedrich’s photographs documenting the events of the Great War. Both Dix and Friedrich took part in the war and experienced it firsthand. And both Der Krieg and Krieg dem Kriege! depict war for what it really was. Nevertheless, there is still a major difference between the two. Krieg dem Kriege! was created with the clear intentions to end war and to prevent any future war from happening. Der Krieg was created to depict the true experience of war, to show the general public the truth with no political stand behind it.

As Dix’s popularity grew, so did his critiques. He received a major review from the art critic Julius Meier-Graefe, who was writing for the conservative nationalist newspaper, the Deutsche Allgemeine Zeitung on July 3, 1924, “The brutality of this demonstration” was a “public affront”; the prints were “not just badly but atrociously done, with an obtrusive fondness for detail…. Brains, blood, and guts can be so painted as to make one’s mouth water….This Dix – forgive the harsh word – makes you puke.”11 And in a pamphlet that accompanied Dix’s first solo exhibition at the J.B. Neumann’s Gallery in Berlin in 1923, Paul F. Schmidt described Dix as “the most artless of this revolutionary circle. He takes the object by the throat: he says ugly things with ugly words; he makes not the least concession for what is commonly understood as art.”12 Dix was never really involved in politics and it is said that he was more of a moral rather than a political reformer.13 Even though his exhibitions were financially supported by pacifist groups and were attacked by right-winged nationalists for being anti-military, it is almost certain that he himself did not intend his works to be taken as propaganda for any kind of political position at all.14

Much of this success was due to the publishing of the print cycle Der Krieg, but also the fact that the Berlin art dealer Karl Nierendorf took Dix under his wings and from then on represented his work.15 What earned him this success was not his supposed stand as a pacifist nor was it his trying to make peace with himself through the use of art. What brought him the big breakthrough was his reliance on the emotional expressiveness of his mature critical realism to convey the hideous chaos war has brought upon the German people.16

Two elements that can be witnessed throughout the works that were influenced by the destructiveness of the Great War are (1) the existential shock and traumatizing images the viewer experiences and (2) the cynical calculation aimed at the sensation-seeking public.17 It could even be said that Dix thrived on the war, unlike his fellow artists George Grosz and Max Beckmann who both suffered breakdowns. Dix’s art flourished under the influences of war and never in his

12 Quoted in Dennis Crockett, German Post-Expressionism: the Art of the Great Disorder, 1918-1924 (University Park, PA: Pennsylvania State University Press, 1999) 91.
14 Roy Forward’s summarization of other scholars’ perspective.
years of service did he look for a way to escape the chaos. In a late interview Dix explained his reasoning for volunteering:

I had to experience how someone beside me suddenly falls over and is dead and the bullet has hit him squarely. I had to experience that quite directly. I wanted it. I’m therefore not a pacifist at all – or am I? Perhaps I was an inquisitive person. I had to see all that for myself. I’m such a realist, you know, that I have to see everything with my own eyes in order to confirm that it’s like that. I have to experience all the ghastly, bottomless depths of life for myself; it’s for that reason that I went to war, and for that reason I volunteered.19

Here it is clearly stated that Dix was truly fascinated by the war and it was his urge to represent the truth and reality that ultimately inspired Der Krieg. Dix is not swayed from any faith in the creative possibilities of destruction and violence, devoting himself instead to the grisly inhumanity he had witnessed.20

Dix’s technique in his cycle is sophisticated and masterful. He uses every process available to the etcher, from clear linear plates, complex aquatint to white images on black backgrounds, simulating objects under the glare of the constant nighttime flares. The subjects in Der Krieg range from a variety of soldiers’ experiences, from the death ever present in the dugouts, shell holes, and trenches to the brothels and civilian victims of the war. The portfolios include some landscapes of bomb craters, ill-formed mudholes full of decay and poisonous fumes, shelters for the terrified corpses, and for pools of mustard gas. There is still a horrific quality to these prints; “an uncanny quiet reigns amidst the echoing shrieks of wounded soldiers.”21 The Wounded Man (fig. 7) grimaces in collapsed terror, as he confronts the viewer directly, staring out, sharing his pain and shock. He clutches his shoulder as he experiences the shock of the constant bombing which is occurring during the night. Here Dix uses the splotchy effects of aquatint to suggest the muddy explosion that shattered the man.22 In the Machine-gunners Advancing (fig. 8), the strongly delineated men are seen dragging their heavy equipment down an endless hill of corpses. They are compelled to step upon the dead bodies and the disgust can clearly be witnessed on some of their faces. In Shock Troops Advance under Gas (fig. 9), the contrast of the pale masks to the dark night sky creates a nightmare in the viewer because it feels like they are about to attack. In Dead Man in the Mud (fig. 10), the lines between what makes out the body and the earth seem to run together, transforming a human corpse into a desecrated landscape, making it seem like they will be forgotten and left to rot in the mud until they become part of the earth again. Dix also seems to mock death with his sardonic humor, showcased in the print Skull (fig. 11), which disdainfully grins, while uncannily agile maggots pass through empty eye sockets and nasal openings.

Dix conveys the immediacy of authentic experience through these techniques and the fact that the prints are based on diary sketches that Dix made while fighting in the trenches, which were neither published nor ever seen by the public.23 His quality of sensuousness and almost

22 Ibid.
pervasive delight in the rendering of horrific detail suggests that there was perhaps, in Dix’s case, an almost addictive quality to the hyper-sensory input of war.  

Although it is reasonable to say that Dix created the print series Der Krieg from a pacifist standpoint to enlighten the naïve or that he used his art as a mean of creating cathartic experience, it is much more appropriate to point out that Dix was truly fascinated by the war. He wanted to experience it first hand, he wanted to know what it feels like to be terrified of dying at any moment. And it was only after his return from the trenches that he felt the need to showcase the truth of the war in a realistic manner that only a soldier at the front line could.

**Figures**

Figure 1. Otto Dix, *Die Skatspieler (The Skat Players)*, 1920.

Figure 2. Francisco de Goya, *Ravages of war*, 1810-15.

Figure 3. Ernst Friedrich, *Der Krieg ist ein Element der von Gott eingesetzten Ordnung (Graf Moltke) (War is an element in the order ordained by God [Count Moltke]), 1924.

Figure 4. Otto Dix, *Abend in der Wijtschaete-Ebene (November 1917) (Evening of the Wijtschaete Plain [November 1917]), from the portfolio Der Krieg, 1924.

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Figure 5. Ernst Friedrich, *Landschaftlicher Arbeiter, 37 Jare alt. Verwundet 1917. Nase und linke Wange ersetzt aus Fleisch von Kopf, Brust und Arm. (20 Operationen)* (Agricultural worker, 36 years of age. Wounded 1917. Nose and left check restored with flesh from head, breast and arm. [20 operations]), 1924.

Figure 6. Otto Dix, *Transplantation* (Skin Graft), from the portfolio *Der Krieg*, 1924.

Figure 7. Otto Dix, *Verwundeter (Herbst 1916, Bapaume)* (Wounded Man [Bapaume, Fall 1916]), from the portfolio *Der Krieg*, 1924.

Figure 8. Otto Dix, *Maschinengewehrzug geht vor (Somme, November 1916)* (Machine-gun Squad Advances [Somme, November 1916]), from the portfolio *Der Krieg*, 1924.
Figure 9. Otto Dix, *Sturmtrupp geht unter Gas vor* (Shock Troops Advance under Gas), from the portfolio *Der Krieg*, 1924.

Figure 10. Otto Dix, *Toter im Schlamm* (Dead Man in the Mud), from the portfolio *Der Krieg*, 1924.

Figure 11. Otto Dix, *Schädel* (Skull), from the portfolio *Der Krieg*, 1924.
References


EXPLAINING GENDER DIFFERENCES IN SEXUAL BEHAVIORS: BIOLOGICAL AND SOCIOLOGICAL APPROACHES

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The present study examines gender differences in reproductive health outcomes (e.g., use of protective barriers) and the expression of sexuality (e.g., age at first sexual encounter, number of sexual partners), use and communication of protective barriers (i.e., methods of birth control and condom use), and expectation of faithfulness to first vaginal partner. In doing so, the study investigates how evolutionary, developmental, social learning, script theory, and feminist perspectives contribute to our understanding of the sexual decision making process in males and females.

Evolutionary theory focuses on mating strategies and how they affect the various approaches males and females take to engaging in sexual behaviors (Oliver & Hyde, 2000). According to Oliver and Hyde (2000), males will be more approving of casual sex than females will for the reason that males produce millions of sperm per day, in contrast to females who produce only one egg per month. This disparity in reproductive ability in turn may explain why females may be more interested in seeking long-term relationships in order to secure continued resources for their offspring (Oliver & Hyde, 2000). In addition to the rarity of egg production, females invest considerable time to prenatal and postnatal care of potential children, leading them to be more selective and prefer males who are willing to invest resources and commit to a long-term relationship (Jonason, Li & Carson, 2009). In support for this claim, a meta-analysis of 128,363 research subjects ages 14-22 (58,533 males and 69,810 females) highlighted that males reported higher incidences of sexual intercourse than females (Oliver & Hyde, 2000). Differences in initiation of sexual activity were also evident in a study conducted among college students by Morgan & Zurbriggen (2007) which reported that 92% of the females in the study received messages of initiation of sexual intercourse from males.

Evolution also plays a part in males and females reactions to their partner’s sexual infidelity as well as explaining reasons why both sexes may engage in sexual infidelity (Buunk & Dijkstra, 2004). Empirical evidence suggests that males are more likely to experience greater sexual jealousy as a response to threats to the continuation of their genetic lineage, compared to females who appeared to experience greater emotional jealousy in response to potential loss of investment and resources provided by a male partner (Buunk & Dijkstra, 2004; Shackelford, Schmitt, Buss, Weekes-Shackelford, & Michalski, 2004). When, comparing reaction to sexual and emotional infidelity among 234 undergraduates from a large U.S. Midwestern university, 62% of males reported distress over their partner's sexual infidelity compared to only 13% of females (Shackelford et al., 2004). For a male, sexual infidelity by his partner may have multiple costs. First, a partner’s infidelity may limit a male’s ability to pass on his own genetic material. Second, if a male is unaware of his partner’s infidelity he may unknowingly expend precious resources in support of another male’s offspring. Within the male perspective, greater sexual jealousy arises as an evolutionary response to these threats, providing a method of protecting
one’s own ability to continue his genetic lineage (Buunk & Dijkstra, 2004). Males are three times more likely to feel distressed over instances of sexual jealousy (Tagler, 2010). In contrast to males, evolutionary theory states that females are more inclined to become jealous whenever their partner shows signs of emotional infidelity because there is a potential loss of resources provided by the male in the relationship (Buunk & Dijkstra, 2004). Additionally, a male committing sexual infidelity does not necessarily mean a loss of resources to support a female’s offspring; in contrast to women’s sexual infidelities, which may result in the misuse and loss of a male’s reproductive resources (Buunk & Dijkstra, 2004).

Buunk and Dijkstra (2004) explain one reason a female may be sexually unfaithful to her partner is due to her attraction to “good genes” (p. 397). Accordingly, physical attractiveness in a male may be viewed as a sign of good genes, which may contribute to a female’s children’s future ability to procreate, extending her genetic line. Similarly, for males attractiveness in a female may be a sign of health and a female’s ability to produce offspring that would contribute to his genetic line. Due to this fact, the reaction to and behavior of infidelity may have an evolutionary component for both sexes (Buunk & Dijkstra, 2004).

Developmental theory ascribes an important role to pubertal development in observed gender differences in sexual behaviors. The origin of gender differences may be traced to a period in early adolescence just after puberty (Oliver & Hyde, 2000). According to Flannery, Rowe, and Gully (1993) chronological age and sexual maturation (puberty) may play a significant role in predicting the onset of sexual activity in adolescents. Data suggests that chronological age predicts the onset of male sexual activity, while physical maturation and the onset of menarche (Anderson & Must, 2005) is a better predictor for females (Flannery et al., 1993). In support of this claim, Fortenberry, Schivk, Hebernick, Sanders, Dodge, and Reece (2010) observed that 12% of female participants reported engaging in vaginal intercourse as compared to only two percent of 14 year-old male participants.

Additionally, Flannery et al. (1993) explained that females who reach puberty early become more attractive and gain more attention from males increasing the likelihood of sexual encounters. Flannery et al. (1993) reported that females, who reach puberty earlier than their chronological age deems appropriate tend to engage in more sexual behaviors than females who matured later. One reason for this increase in sexual behavior in females may be attributed to an increase in “androgenic hormones” (p. 36), which is said to enhance sexual drive in females (Flannery et al., 1993). Although age was the most significant predictor of sexual behavior in males, both early, maturing males and females displayed greater instances of sexual behavior than individuals who matured later (Flannery et al., 1993).

Lastly, Miller, Norton, Fan and Christopherson (1998) noted that even though pubertal timing played a significant role in predicting adolescent sexual behavior; individual values and intentions played a larger role. The values and intentions that affect the sexual behaviors of adolescents in their study were attributed to parental communication (Miller et al., 1998).

Social learning theory integrates principles of learning and social cognition (Hogben & Byrne, 1998) and suggests that the environment (i.e., media) in which individuals learn to behave will shape the development and internalization of behavioral norms associated with sexuality (Oliver & Hyde, 2000). Social role expectations pressure males into adhering to masculine roles of having a high sex drive and females into adhering to feminine roles as shy yet responsive to male sexuality (Morgan & Zurbriggen, 2007). According to Baumeister (2000), female sexuality is more subject to the influences of social factors than male sexuality. “Social learning theory (Bandura, 1977) states that television is a source of observational learning; viewers model the
behaviors they see being rewarded, avoid the behaviors that are punished, and are drawn to characters who they perceive as likeable or similar to them” (Kim, 2007, p. 3). Females are socialized to act as passive partners during sexual experiences and therefore, less likely to communicate their own sexual needs, desires or pleasure and instead, are more likely to focus on pleasing and fulfilling their partners (Kim, 2007).

Similar to Social Learning Theory, Script Theory suggests that female sexuality is characterized by submissiveness to male advances, while male sexuality is distinguished by being the initiator of sexual activity (Kim et al., 2007). According to Kim et al. (2007), social scripting theory suggests that culturally available “sexual scripts” determine how sexuality is learned and define how to recognize sexual situations (i.e., “what counts as sex”) and actions to perform during sexual encounters (i.e., “adolescent females are more likely to perform oral sex on their male peers”) (Kim et al., 2007). According to sexual script theory, male and female adolescents are often exposed on prime time television to gender scripts representations of males pursuing sexual intercourse and females being portrayed as the “gatekeepers” of sexuality (Kim et al., 2007). Recent findings tend to support gender scripts of sexuality, for instance adolescent males are more likely to report receiving oral sex and engaging in vaginal sex (Herbenick, Reece, Schivk, Sanders, Dodge, Fortenberry, 2010), and to use condom in comparison to birth control or female condoms (Centers for Disease Control and Prevention, 2009).

According to the feminist perspective, contemporary gender oriented scripts direct sexual encounters and often makes it difficult for females to express sexual desires as freely as males do (Morgan & Zurbriggen, 2007). Heteronormative scripts, according to the feminist perspective, also reinforce male dominance as well as attitudes and behaviors that support a sexual double standard (Morgan & 2007). According to the CDC (2009), there are discrepancies between male oriented protective barriers (e.g., condom) and female contraceptive methods (e.g., pills). For instance, sexually active high school students report 61% use of male condoms during their last sexual encounter, and only 20% of students report using birth control pills (CDC, 2009).

**Hypotheses**

Hypotheses guided by an evolutionary perspective: compared to females, males will more likely (a) report higher number of vaginal partners, (b) discuss initiating vaginal intercourse, (c) display negative attitudes about birth control use, (d) expect sexual faithfulness from their partners as opposed to emotional faithfulness, and (e) report sexual infidelities. Hypotheses guided by a developmental perspective: compared to males, females will report being younger at first vaginal experience. Hypotheses guided by social learning perspective: compared to females, males will be more likely to (a) display higher number of sexual partners, and (b) discuss initiation of vaginal sex as opposed to protective methods. Hypotheses guided by script theory. Compared to females, males will be more likely to (a) display a higher number of sexual partners, (b) report higher rates of condom use, (c) not be certain about their partners’ birth control method, (d) expect sexual faithfulness from their partners as opposed to emotional faithfulness, (e) be younger at first sexual encounter, and (f) receive oral sex. Hypotheses guided by feminist theories: both males and females will be more likely to report condom use as opposed to other protective methods (i.e., birth control pill).
Methods

Participants and Procedure
Seventy-nine students (71% females, 82% Caucasians) enrolled in Psychology courses took part in the study. Participants were between the ages of 19-25 (M = 20.9) and filled out paper and pencil questionnaires in a classroom setting. Sixty-five percent of respondents were dating one person exclusively, 26% were not dating, 5% were engaged/married and 4% were dating more than one person.

Measures
A paper-pencil questionnaire was developed for the present study which assessed gender differences in the context of the first vaginal encounter including age difference between partners, number of sexual partners, the length of the relationship, and the decisions made about having sex, using condoms and using birth control methods (i.e. pill), and expectations of faithfulness. Terms were clearly operationalized using familiar language (e.g., vaginal intercourse means “penis in the vagina”), and items included both behavioral counts and relative frequencies of behaviors.

Data Analyses
SPSS version 12.0 (Chicago, IL, USA) was used to conduct all analyses. First, descriptive data pertaining to the gender differences in sexual behaviors (i.e. giving/receiving oral sex, engaging in vaginal sex), age difference between partners, number of sexual partners, and length of the relationship. Second, Chi-square tests for independence were used to determine whether there was a significant association between categorical variables (e.g., gender differences in communication about birth control and condom use, and engagement in vaginal sex). Third, Analyses of Variance (ANOVAs) were performed to determine if there were significant mean differences on continuous variables across gender.

Results
In accordance to evolutionary perspective, males reported engaging in vaginal sex (95%) more than females (80%) in the past six months. In addition, 43% of male participants reported bringing up the subject of vaginal sex compared to 23% of female participants. Within the context of the first vaginal encounter, 48% of females stated that their partner brought up the subject of engaging in vaginal sex compared to only 19% of males. However, only 11% of the total sample reported both partners bringing up the subject of engaging in vaginal sex. In contrast to our hypothesis, 72% of female participants wanted to use birth control methods consistently as opposed to 85% of male participants. Although all partners involved with their first vaginal partners expected and were expected to be emotionally and sexually faithful, about five percent reported engaging in sexual intercourse with other individuals.

Developmental theory is supported as results indicate that females are more likely to be younger than males the first time they engaged in oral sex and vaginal intercourse. Females reported first time giving oral sex as young as 13 years old (M=16.4), while the youngest age for males was 15 (M=17.47). The mean age for first time receiving oral sex was similar in both males and females (M=17.25, M=16.70). In addition, the age at first vaginal sex is also similar between male and female participants (M=17.76, M=16.67), both reporting the earliest vaginal sex at 14 years old. In support of the social learning theory, significantly more female participants report that their male partners brought up the topic of engaging in vaginal sex. No
male participants and 13% of female participants report that both partners brought up the subject of using birth control.

Script, evolutionary and social learning theories are supported as results suggest higher rates of sexual partners for male participants. Male participants also report receiving more oral sex from females. In accordance with Feminist perspective, 57% of male and 51% of female participants report only condom use at first vaginal sex.

Table 1 *Sexual and Protective Behavior Rates*

<table>
<thead>
<tr>
<th></th>
<th>Male</th>
<th>SD</th>
<th>Female</th>
<th>SD</th>
<th>F</th>
<th>(X^2)</th>
<th>df</th>
<th>p</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age at 1st time giving oral sex</td>
<td>17.47</td>
<td>2.37</td>
<td>16.40</td>
<td>1.43</td>
<td>5.17</td>
<td>1</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td>Age at 1st time receiving oral sex</td>
<td>17.25</td>
<td>2.75</td>
<td>16.70</td>
<td>1.42</td>
<td>1.10</td>
<td>1</td>
<td>.29</td>
<td></td>
</tr>
<tr>
<td>Age at 1st vaginal sex</td>
<td>17.76</td>
<td>2.32</td>
<td>16.67</td>
<td>1.58</td>
<td>5.05</td>
<td>1</td>
<td>.03</td>
<td></td>
</tr>
<tr>
<td># of Vaginal partners past 6 mo.</td>
<td>1.72</td>
<td>0.59</td>
<td>1.19</td>
<td>1.17</td>
<td>59.51*</td>
<td>1</td>
<td>.00</td>
<td></td>
</tr>
<tr>
<td>Engaged in vaginal sex</td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brought up the topic of engaging in vaginal sex</td>
<td>21</td>
<td>96%</td>
<td>45</td>
<td>80%</td>
<td>2.85</td>
<td>2</td>
<td>.24</td>
<td></td>
</tr>
<tr>
<td>Condom only/No birth control at 1st vaginal sex</td>
<td>12</td>
<td>57%</td>
<td>23</td>
<td>51%</td>
<td>1.69</td>
<td>3</td>
<td>.64</td>
<td></td>
</tr>
<tr>
<td>Condom and birth control use at 1st vaginal sex</td>
<td>1</td>
<td>5%</td>
<td>3</td>
<td>7%</td>
<td>1.69</td>
<td>3</td>
<td>.64</td>
<td></td>
</tr>
<tr>
<td>Did not want to use birth control</td>
<td>1</td>
<td>5%</td>
<td>5</td>
<td>12%</td>
<td>1.30</td>
<td>2</td>
<td>.52</td>
<td></td>
</tr>
<tr>
<td>Partner did not want to use birth control</td>
<td>3</td>
<td>15%</td>
<td>1</td>
<td>2%</td>
<td>10.04</td>
<td>3</td>
<td>.02</td>
<td></td>
</tr>
<tr>
<td>Both partners brought up birth control</td>
<td>0</td>
<td>0%</td>
<td>6</td>
<td>13%</td>
<td>4.74</td>
<td>3</td>
<td>.19</td>
<td></td>
</tr>
<tr>
<td>Certain of partner’s birth control because of asking her</td>
<td>10</td>
<td>48%</td>
<td>1</td>
<td>100%</td>
<td>1.05</td>
<td>2</td>
<td>.59</td>
<td></td>
</tr>
<tr>
<td>Certain of partner’s birth control use because she told me</td>
<td>8</td>
<td>38%</td>
<td>0</td>
<td>0%</td>
<td>1.05</td>
<td>2</td>
<td>.59</td>
<td></td>
</tr>
<tr>
<td>Not certain of partner’s birth control</td>
<td>3</td>
<td>15%</td>
<td>0</td>
<td>0%</td>
<td>1.05</td>
<td>2</td>
<td>.59</td>
<td></td>
</tr>
<tr>
<td>Dating partner, expecting/were expected to be faithful, and who did not have sex with others</td>
<td>13</td>
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<td>89%</td>
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**Discussion**

Several of our hypotheses derived from evolutionary, developmental, script, social learning, and feminist perspectives were supported. The results of this study show that males generally hold more sexually permissive attitudes and sexual activity is often male oriented and male initiated. This is supported by the findings that males receive more oral sex from females. Males report having more vaginal partners and the male condom is the most often used protective barrier by both males and females, though more often reported by the male participants. Females in our sample are still more likely to use birth control pills than males are and are slightly more likely to be unfaithful. Small sample size limits the interpretation of the results.
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HONOR AND ART: THE PARALLELS IN *THE DOCTOR’S DILEMMA* AND *AMADEUS*

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One of the Western world’s greatest playwrights, William Shakespeare, said in his play *Troilus and Cressida*, “Life every man holds dear; but the dear man / Holds honour far more precious-dear than life.”¹ In his play based on the Trojan War, honor certainly is a proper question to bring up; the question was just as relevant when the blind poet Homer constructed the tale over a millennium ago. This statement is echoed again by the man who came to be known as a successor to Shakespeare,² George Bernard Shaw. In his play *The Doctor’s Dilemma*, his protagonist declares, “The most tragic thing in the world is a man of genius who is not also a man of honor.” Seventy-three years later, Peter Shaffer wrote the play *Amadeus* with the question of honor in mind, this time with honor to higher powers, as his protagonist strikes a deal with God, saying, “Signore, let me be a composer! – And I will honor You with much music all the days of my life.” While there are several similarities between the two plays, Shaw and Shaffer seek to deliver the same idea: that the honorable man can become jaded by the wily starving artist.

The similarities between the two pieces begin right away, as both plays have minor characters set up the background information for the audience. In *The Doctor’s Dilemma*,³ Shaw uses two characters, Emmy and Redpenny, who are in the show strictly to give background information on the plot and then are never heard from again. With this duo, Shaw sets up his play to be a comedy, as Emmy and Redpenny are foils of one another. Redpenny is the shameless medical student learning under Sir Colenso Ridgeon, the title character of the play. Shaw describes the character as “not proud, and [who] will do anything he is asked without reservation of his personal dignity if he is asked in a fellow-creaturely way.” Emmy is the long time “serving woman” of Sir Ridgeon, likened to a “never-washed gypsy, incurable by any detergent,” adorned with mole hairs and a duster. She is the funny man to Redpenny’s straight man.

Shaffer uses a similar approach to introduce exposition. The beginning stage directions of his play *Amadeus*⁴ have “darkness” followed by “savage whispers fill[ing] the theatre.” Right away, he clearly sets the tone for a cerebral drama. The sources of these whispers are the Venticelli, or Little Winds, that continually repeat the name “Salieri” in low tones, coupled with the occasional “assassin.” These two minor characters are described as “purveyors of fact, rumor and gossip throughout the play.” They fill in the audience with the back-story of Salieri as a musician who taught some great composers including Beethoven, but who is now a reclusive old shut-in who can be heard crying out “Perdonami, Mozart! Il tuo assassino ti chiede perdono!”

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which translates to “Forgive me, Mozart! Your assassin asks you for forgiveness!”⁵ He is confessing that he killed Mozart, but the Venticelli give doubts to his claim, trying to work out why now, after thirty-two years, Salieri is admitting to the crime. The Venticelli’s immediate disbelief allows the audience to also disbelieve Salieri’s confession.

The storyline of Shaw’s work is linear, while Shaffer tells his story via flashback sequences. While Shaw continues on to introduce the other characters, doctors who rush to congratulate Sir Ridgeon on his newly appointed title, Shaffer breaks the fourth wall entirely and has Salieri engage with the audience. Salieri invokes the “ghosts of the future,” meaning the audience, and when the house lights come up, Salieri says, “There. It worked. I can see you!” He proceeds to tell them about his weakness, gluttony, as it pertains to wanting more than what a person can handle. He is referring to sweets, but the play tells us that it can also be applied to talent: he wants more talent than he is capable of handling. Salieri then shares the moment he made his deal with God, which granted him the ability to become a composer in exchange for becoming God’s servant for life.

Shaw’s protagonist is seemingly capable of handling any medical cases that come his way, except when it is a case presented by a beautiful woman. Sir Colenso Ridgeon, the protagonist in Shaw’s play, has been knighted for finding the cure to tuberculosis. After all his colleagues come over to congratulate him for this feat, the woman who had been waiting patiently to see him is finally shown up. Enter Mrs. Jennifer Dubedat, a woman possessed of “the grace and romance of a wild creature, with a good deal of the elegance and dignity of a fine lady.” She is the main antagonist. Her husband, Louis, has tuberculosis, and when Jennifer reads in the paper of Sir Ridgeon’s discovery, she comes to plead her husband’s case to the newly knighted doctor, who flatly refuses to listen. Sir Ridgeon only has ten cures made up and lacks the “time, means and skill” to produce more. He has already selected the ten recipients for the cure. Sir Ridgeon tries to make her understand from his point of view what she is asking him to do: sacrifice the life of another human being whose case was judged by him personally as a worthy cause to save. It is in this moment that Sir Ridgeon is most likening himself to a God, one who is worthy to determine who should live and who should die based on his judgments of their merits. Jennifer then produces a drawing of herself done by her husband and presents it to Sir Ridgeon as proof that Louis’s talents are worth saving. The almost farcical turn-around that follows shows that Sir Ridgeon has a weak spot for artistic talent.

This scene echoes Salieri’s plea to God in that both scenes have a person in dire want of something (not need but want); this person appeals to a higher power to have that want granted. Jennifer and Salieri both want things that are not necessary for their lives and are both willing to appeal to those with the power to make it happen. Both figures of higher power, however, ultimately deny the wants that are laid before them. Shaw has Sir Ridgeon deny this boon because Sir Ridgeon is taken with Jennifer and does not believe Louis is a good person, thus allowing the husband to die so that Sir Ridgeon can take up with his wife. Shaffer has God accept Salieri’s request of being a composer but makes his talents mediocre in a time when greatness abounds in others, making Salieri’s gifts seem worthless in comparison to the gluttonous composer.

The artistic talents of the two antagonists are astounding. Wolfgang Amadeus Mozart is considered to be a musical prodigy who composes heavenly pieces of music. When Salieri hears it for the first time, his experience is like a sexual encounter. He listens to the beginning: simple enough with some low notes, when out of the orchestra comes a “single note on the oboe. It hung

there unwavering, piercing me through—and a clarinet withdrew it out of me, and sweetened it into a phrase of such delight it had me trembling.” This sensational music is juxtaposed to the encounter that Salieri had observing the composer of the piece. Only moments before, Salieri was able to watch the young composer make a fool of himself, devoid of honor with his love interest Constanze. Salieri made it very clear in the opening monologue that he was not interested in the temptations of the flesh, saying that he required one thing of a wife—“lack of fire”—meaning that his interest was serving God and that he did not have time to waste with passions for Earthly things. After seeing how immorally and immorally Mozart acted with Constanze, Salieri is appalled. From Salieri’s point of view, he sees the blessings of his Lord bestowed upon one hardly worth anything but damnation. Likewise, when Sir Ridgeon discovers all the money that Louis tries to scheme out of himself and his friends, when he finds that Mr. and Mrs. Dubedat are not even married, and when he sees that Louis practically stole the life savings from his lawful wedded wife, Sir Ridgeon realizes that he could easily tell the dying artist that he will not cure him, except that his wife would be terribly upset by this. Besides, Ridgeon is also taken with Louis’s artistic abilities. When Louis draws a group sketch during the time when all the doctors are turning against him and his case, he easily brings them back to his side when he unveils the portrait and starts a bidding war. Even Sir Ridgeon is pulled over to Louis’s side for a moment.

Louis is also eloquent; he knows just what to say to turn the tide in his favor. He appears to be a simple man, but he is by no means a stupid one. By keeping his wife believing that his actions are righteous to the very end, he proves his skill with words and, to some extent, shows her naiveté. He is even able to keep the doctors from calling him a scoundrel in front of his wife, using the ploy of upholding honor when he sees fit to do so. When Louis retrieves his wife after he and the doctors had been discussing who should take over his case, he says to them, “You’ve all been talking here pretty freely about me--in my own house too. I don’t mind that: I’m a man and can take care of myself. But when Jennifer comes in, please remember that she’s a lady, and that you are supposed to be gentlemen.” While Louis does not believe in traditional honor through his own actions, he still expects the doctors to uphold themselves in their own codes of honor, and his ploy works. The doctors say nothing to her about his actions.

When Mozart is amongst the members of court, he shows that if he tries, he can be rather sophisticated. When Salieri first greets Mozart at court, Salieri offers his welcome to Mozart in Italian, hoping to embarrass Mozart. Mozart, not missing a beat, returns a flood of gratitude and respect to Salieri for his talents as a composer. When Joseph the Second switches languages to French to say goodbye to Mozart, Joseph is a little surprised to find that Mozart is just as knowledgeable of that language as Italian. These two antagonists have a command of language that shows they have been educated. Their use of language is what sets them apart from each other. Louis uses his words as a chief tool of survival, talking people out of their money and manipulating others as he sees fit; it has a malevolent tone in its execution. Mozart, on the other hand, uses language to expose that he is a naïve genius. He does not try to offend with his intellect, but he accidently ends up bruising the wrong people’s egos, especially when he does not get his way.

Both protagonists have a group of associates with whom they consort. These circles of friends or colleagues act as a means to validate the protagonist’s thoughts. For instance, when the group of doctors is talking over Louis’s case, they find out that he is not so much a gentleman as they had supposed him to be. One of the reasons that help Sir Ridgeon to pass off Louis’s case to B.B. is Sir Ridgeon is able to see the multiple wrongs that Louis causes amongst his
colleagues. Salieri does not use his friends to share his thoughts as much as he uses his influence with them to achieve his own goals. It is by Salieri’s suggestion that Rosenberg, the director of the Imperial Opera, seizes part of Mozart’s opera that has a dance piece written into it because at the time ballet was forbidden to be placed on stage. Another example of malice is when Salieri suggests to Mozart that write an opera about the Masons, of whom Mozart had become a member. Salieri knew that if Mozart did so, the Masons would see it as an outrage and cut off their financial support as well.

Financial problems and women are a problem for both artistic antagonists. Mozart may be a musical genius, but he also quickly forms a reputation for sleeping with his female students, including Salieri’s prized pupil Katherina Cavalieri. This leaves Mozart penniless without students. Through this weakness in Mozart’s character, Salieri begins to extract his revenge. When Princess Elizabeth is in need of a musical tutor, Salieri makes sure not to give her over to Mozart, due to Mozart’s lustful flaw. Louis is framed in much the same light. He is seen as a scoundrel by the doctors because he is not married to the woman he lives with, he abandons his legal wife after taking what little money she had, and he leaves behind unpaid debts to his widow.

The women who follow these men are painted in similar colors of naïveté. Jennifer, from the beginning until the very end, does not doubt for a moment her image of her husband. She believes him to be a sincere, honest, and unfortunate man. The only time she comes close to doubting him is when she reprimands him for borrowing money from the doctors, insisting that the next time he needs money, he should go straight to his wife. Once he dies, he becomes a virtuous, shining beacon that guides her good will, spotless and perfect. Jennifer’s character development suffers somewhat in that she only sees Louis from one limited perspective and is unwilling to see him in any other light. Constanze is much the same. She loves her “Wolferl” very much, but practical things do matter to her, such as getting Mozart’s father’s blessing on their marriage or finding ways to support the two of them. When Salieri tries to ruin Mozart by sleeping with Constanze to get back at Mozart for sleeping with Katherina, she denies his advances. However, after she thinks over Salieri’s proposal to sleep with her so Mozart can get the job with Princess Elizabeth, she decides to do it for Mozart’s benefit. This shows Constanze’s level of commitment to her husband. It is not until after she hears Mozart continually talk about the ghostly figure that haunts his dreams that she becomes unnerved enough to realize that her husband might be a madman. This idea proves too much for her to handle. The moment the baby is born, she is gone. Constanze leaves to protect the new-born child from the child she married. In this single act, she shows that she has more than one dimension of character, opposed to Jennifer’s blind, unwavering, undying faith in her husband. After their husbands have died, both women sell off the legacies of their companions. While Louis’s art show was already planned in Jennifer’s case, she is there to see it though and to sell the book she has just written on the greatness of Louis. She is determined to see his legacy untarnished. Likewise, through one of Salieri’s monologues, the audience learns that Constanze has moved to Mozart’s birth place and has become the keeper of his “shrine.” Both women have remarried, not to starving artists. Salieri explains that Constanze married a Danish diplomat, a position with enough money to support her and her child. It is not known whom Jennifer marries, but it is said that her new husband has purchased all the original paintings for her as a birthday present: this establishes him as a person of wealth.

Shaw devotes an entire act to the death of his antagonist, while Shaffer manages to kill Amadeus in a few pages. It is this fourth act that starts to muddy up what kind of play Shaw has
written. It has been referred to as a farce,\(^6\) a tragicomedy,\(^7\) or a tragedy,\(^8\) depending on the
director’s interpretation of Shaw’s writing. The scene is set in Louis’s art studio, where he lives.
While the doctors start to blame each other for the death of Louis, a Newspaper Man is admitted
to see the dying artist. Shaw chose to make the Newspaper Man illiterate, a comedic twist in a
scene he had designed to be serious.\(^9\) When the Newspaper Man asks about Louis’s condition
and what his plans are for the future, his reply is, “My plans for the season are very simple. I’m
going to die.” This line could be delivered either in a comedic or serious tone, but considering
the melodramatic tone of the entire act, it seems to come off comedic. When Louis asks B.B. “I
say, B.B., do you think anything would stop you talking?” the reply comes back “He’s confuses
me with you, Paddy. Poor fellow! Poor fellow!” Not only is this exchange completely
unprovoked, in that B.B. has remained quiet for some time, but B.B.’s response is equally
senseless. Sir Ridgeon has the line that describes this scene well: when advised to leave by Sir
Patrick, Sir Ridgeon replies, “Would you deprive the dying actor of his audience?” Just before he
dies, Louis declares that he “shall recover after all” and then says he wants to sleep. With his
dying breath, he inquires if the Newspaper Man is still in the room. Then he dies, nestled in the
arms of his wife, who does not realize that he is dead. In one of the original reviews, this act is
where the play flopped.\(^10\) The reviewer encourage people to see it “in spite of its fourth act,”\(^11\)
suggesting this was the weak spot of the play. The structure of the entire show suddenly and
unexpectedly shifts from comedic to dramatic. The problem is that the death of Louis does not
affect the audience in a profound way.\(^12\)

Shaffer handles the death of Mozart in a way that is seamless and uncontrived. Salieri
prepares the death of Mozart in a way that is seamless and uncontrived. Salieri
prepares the phantom that haunts Mozart’s dreams to see the artist when he is at his lowest
point. Mozart welcomes him as a friend and invites him in. He shares with Salieri that he feels
poisoned and that he suspects the Masons have done it in revenge for the opera he has written
about them, not realizing the source is sitting in front of him. Mozart asks Salieri to look over his
Requiem Mass that he has written. Shaffer nicely ties in Salieri’s first experience of hearing
Mozart’s work; Salieri is once again deeply moved by the beauty of the piece. In that moment,
Salieri realizes that the Requiem has been written for the death of Mozart’s youth. Salieri tells
them that they are both poisoned with each other. Mozart cannot comprehend, as he believed
Salieri to have been on his side all along. Salieri insists he is responsible for the poisoning of
Mozart, and by extension, the poisoning of God. Salieri even chews part of Mozart’s requiem as
a communion wafer, considering it to be from God. As Salieri fervently confesses to Mozart, he
begins to frighten the young composer much in the same way that Mozart frightened Constanze
away. This all proves too much for Mozart to handle, and before Salieri can get the forgiveness


\(^{7}\) Jamie Portman. “Puncturing the pretensions of the medical profession; Doctor’s dilemma. Shaw Festival
play highlights choices of life and death.” *The Gazette* (Montreal). Arts & Life; Pg. CS. *LexisNexis Academic.* 29
Jul. 2010, Web. 08 May 2011


Apr. 2011.

\(^{10}\) “Opsonins On The Stage.” *The British Medical Journal.* Vol. 2, No. 2395 (Nov. 24, 1906), pp. 1511-

\(^{11}\) Ibid.

Apr. 2011.
he seeks, Mozart’s mind cracks and he becomes the child he used to be, the child he had abandoned to survive in the court, the child he had written his Requiem for. As Salieri leaves without forgiveness, Constanze comes back to see Mozart again. What she finds is the child-composer babbling nonsense and saying that Salieri has killed him, which she does not believe. Mozart dies in the arms of his wife, who, like Jennifer, does not realize that he has died.

Louis’s death is in front of his audience of doctors and a Newspaper Man; Mozart’s is private, between just him and his wife. Mozart is killed from excessive work on the Requiem and the shock of what Salieri confesses to him, while Louis’s cause of death happens between scenes, as he is poisoned by B.B.; the audience gets to watch his lengthy death. Both artist die in the arms of their respected loved ones, who will think them forever great in the feats they have accomplished. While Mozart tells Constanze that it was the fault of Salieri, she does not believe him. Louis never directly says whose fault it was, but Jennifer blames Sir Ridgeon because he passed the case to someone else when she pleaded with him to undertake the case. When Sir Ridgeon finally confesses, it does not surprise Jennifer; what shocks her is the remorseless tone he uses to confess the crime. Salieri’s motives are to get back at God; Sir Ridgeon does it because he is in love with Jennifer, who immediately rejects him on the points that Sir Ridgeon is much older than she and that she has remarried already. Both women end up selling off the art that their respective loved ones created in their life. While Shaw ends his play on that note, Shaffer has Salieri explain God’s revenge for killing his vessel on earth: that Salieri should live long enough to watch Mozart’s music rise to greatness while his own fades into the forgotten folds of history. He attempts suicide, but he fails at that as well. As the Venticelli enter, informing Salieri of Mozart’s increasing success and doubting Salieri’s claims, Salieri gives the audience a benediction and ends the show.

The theme of each show is identical: the true legacy of an artist lives on in the greatness of the work he leaves behind. By most standards, Mozart and Louis Dubedat were tactless, crass, and selfish people. Their main redeeming quality was in the finely crafted arts they created in musical compositions or on blank canvases. They rarely treated their significant others with the love and respect they may have deserved, but the material possessions the artists left behind were enough to enable Constanze and Jennifer to look past the artists’ faults and left them to focus on the good they did accomplish. Both of the protagonists fall into the same trap as well: they are driven to focus on the wrongs that the antagonists accrued in their lives. Where Sir Ridgeon blindly follows his assumption straight to his downfall when he confesses his love to Jennifer, Salieri recognizes both the wrongs and the rights of his adversaries and still consciously chooses to pursue his revenge on God through Mozart.

The main conflicts of The Doctor’s Dilemma reside in man versus self. It is the doctors who have a problem dealing with the rude behavior of Louis because they all hold to their morals of honor. Sir Ridgeon is championing the traditional definition of “honor” while hypocritically having none in his actions. Louis never places himself in the position where the code of honor can affect him; in fact, he outright says, “All your moralizings have no value for me. I don’t believe in morality. I’m a disciple of Bernard Shaw.” Louis further clarifies his point by saying that his “ideal” is that of a superman, a philosophical idea from Nietzsche whereby man “through integrity and creativity would rise above good and evil [, representing] the goal of human evolution.”13 However, because of the farcical nature in which Shaw presents the actions of his antagonist, Louis lacks the integrity to ascend to the true definition of a superman. However, this

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could also be taken as an inside joke by Shaw as well, as *Man and Superman* won him major acclimations for its performance in 1905,\(^\text{14}\) he may have been giving a nod to the piece that made Shaw a name. In the last act of the show, when Sir Ridgeon is rejected by Jennifer, he acknowledges his defeat, speaking to the dead with “Dubedat: thou art avenged!” Not only does he feel he has lost the hand of Jennifer, but he may also be alluding to how his code of honor has failed him in his goal and given way to Louis’s superman philosophy. After that outburst, Sir Ridgeon abandons his code in a desperate attempt to get back the woman he has longed for and fails.

Shaffer centered his main conflict on man versus god. Salieri is fighting to cleanse his faith and love for the higher power. A god figure is represented by Salieri’s association of Mozart with God, only in Salieri’s mind. Salieri has a monologue at the end of Act One that shows he feels abandoned by his God and sees the gifts He should have lavished upon Wolfgang Amadeus Mozart. The name itself is another cause of pain to Salieri; Amadeus means “loved by God.”\(^\text{15}\) Salieri devotes himself to the destruction of God’s incarnation on earth and attempts to humble God himself. Man does not tend to win against the Christian God, however, and this irrational devotion to the end of His incarnation eventually leaves Salieri to find out that he has wasted ten years of his life in this foolish pursuit that consumes both Mozart and himself. Salieri lives to regret his choice. He then attempts to end his life and become a true ghost, one that will haunt people in their own failures so that he may forgive them for being mediocre, but he does not succeed. This appropriate ending shows that fate is not within Salieri’s hands to control.

While Shaw and Shaffer were both prolific playwrights for the English, they themselves were actually from the margins of English society. Shaw was not English at all; he was Irish and so proud of his heritage that he refused a knighthood in 1923.\(^\text{16}\) Shaffer is Jewish, having survived the Second World War in the coal mines as a conscript in his teenage years.\(^\text{17}\) He was also chosen to be knighted and accepted it in 2001.\(^\text{18}\) Both playwrights crafted plays about artists who do not fit in to societal norms. In *The Doctor’s Dilemma*, Shaw wanted both to send a message of revenge from a foot surgery gone wrong and to make his opinions on the medical world public.\(^\text{19}\) He crafted his play around an artist who still gets the better of his protagonist, despite his numerous failings. Shaw painted the doctors in a very spiteful color, trying to make them look petty and foolish, but he only succeeded in making himself look foolish, as doctors of the day laughed at him, not with him.\(^\text{20}\) *Amadeus* was the third in Shaffer’s series of plays that revolve around a God figure dying, coming after *The Royal Hunt of the Sun* and *Equus.*\(^\text{21}\) The


main complaint of critics was that Shaffer had Mozart use too much “lavatory graffiti”\(^{22}\) in his speech. Shaffer designed his play along the same lines as Shaw, having the artistic antagonist who does not fit the norms of his society still get the better of his protagonist in death.

Shaffer incorporates selections from the works of Mozart into *Amadeus* to set the mood; this masterful use of Mozart’s legacy sets Shaffer’s work apart from Shaw’s. Be it when Mozart rewrites Salieri’s *March* to become a part of *Figaro* or when *Lacrimosa of the Requiem* is playing during the death of the grand composer, the musical aspect of *Amadeus* is what brings this play to the level of splendor. Music is a theatrical element that Shaffer’s story can well exploit; what would a play about the starving musical artist be without some proof of his greatness?

Shaw wanted to make the medical world look foolish for making a mess of his foot surgery.\(^{23}\) Shaffer wanted to flesh out a musical composer who fell through the cracks of history. Both of the protagonists are symbolic of the honor in society, and both proved that the honor of society is a flawed system, as neither protagonist upheld honor in his actions. The two playwrights, both from the sidelines of mainstream English society, showed that all it takes to expose the illusion of honor in their societies is the starving artist who has everything to lose and nothing to lose.

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**References**


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AN EVENT-BASED APPROACH TO UNDERSTANDING THE RELATIONSHIP CONTEXT OF SEXUAL BEHAVIORS AMONG COLLEGE STUDENTS

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Abstract
The current study used an event-based approach (i.e., examining a specific event in time) to compare relationship characteristics and sexual behaviors between first and last sexual encounters. In addition, the study focuses on the relationship context associated with specific sexual encounters. Seventy-nine participants (71% female, 82% Caucasian) participated in this study, between the ages of 19-25 (M=20.96), enrolled in psychology courses who volunteered for class credit. Participants were administered a paper and pencil questionnaire in a classroom setting assessing their sexual history. Results indicate that 40% and 55.4% of participants who engaged in heavy petting or oral sex, respectively, also engaged in vaginal sex for the first time with the same partner. Condom use was the most frequently recorded form of contraceptive used in the context of the first (last or both) sexual encounter. The majority of sexually active participants did not discuss condom or birth control use with their first vaginal partner. The findings from this study can further the development of sound preventative health interventions by identifying relationship factors associated with patterns of sexual behavior.

According to the World Health Organization (2011), “sexual health is a state of physical, mental, and social well-being in relation to sexuality. It requires a positive and respectful approach to sexuality and sexual relationships, as well as the possibility of having pleasurable and safe sexual experiences […].” Sexual health is not merely the absence of adverse health outcomes; it is a complex, multidimensional part of human development that encompasses understanding the responsibilities, benefits, and consequences that accompany sexual activity (Elders, 2010; Satchel, 2001).

Engaging in protective behaviors (e.g., use of condoms and birth control) reduces adverse sexual and reproductive health outcomes (e.g., sexually transmitted infection [STI] and unintended pregnancy). Young people aged 15-24 represent a quarter of the sexually active population yet account for nearly half of all reported STI (Weinstock, Berman, & Cates, 2004), and women aged 18-24 experience higher rates of unintended pregnancy (Finer & Henshaw, 2006). Despite being aware of adverse sexual and reproductive health outcomes, nearly half of all sexually active college students reported no contraceptive use at last vaginal encounter (American College Health Association, 2010). Thus, it is important to identify factors that promote engagement in protective behaviors among young adults in order to foster development of sound preventative interventions.

The relationship context of sexual behaviors is an important factor to target in the development and maintenance of positive sexual health. For example, the likelihood of discussing contraception before first sex co-varies positively with relationship length before first intercourse (Ryan, Franzetta, Manlove, & Holcombe, 2007). Moreover, discussing contraception increases the likelihood of its use (Coleman & Ingham, 1999).
Most research focuses on behaviors that occur within a time period of many collapsed sexual encounters (i.e., time). Another approach focuses on specific sexual encounters and investigates how characteristics of encounters relate to sexual and reproductive health (i.e., event). Event-based research allows for a clearer understanding of associations between relationship characteristics and sexual behaviors (Sanders et al., 2010).

The present descriptive study used an event-based approach in order to enrich existing sexual health literature. The goals are to describe and compare the relationship characteristics (e.g., relationship length, time elapsed until first vaginal encounter, expectation of faithfulness, age difference between partners, communication about engaging in vaginal sex, decision to use birth control and/or condoms, and alcohol use) and sexual behaviors (e.g., whether or not the first and last vaginal partner is the same, whether the first vaginal partner is the same person with whom first engaged in heavy petting and/or oral sex, and patterns of birth control use) of first and last sexual encounter in a sample of college students and to examine whether sexual and reproductive health outcomes vary with relationship characteristics and sexual behaviors.

Method

Participants
Seventy-nine students (71% female, 82% Caucasian) enrolled in psychology courses volunteered to take part in the study. Participants were between ages 19-25 ($M=20.96$). Sixty-five percent of respondents were dating one person exclusively, 26% were not dating, and 4% were dating more than one person.

Measure
A paper and pencil questionnaire was administered in a classroom setting and assessed sexual behaviors and relationship characteristics of first and last vaginal encounter including age difference between partners, length of relationship, and decisions made about having sex, using condoms and using birth control methods (e.g., pill). Of the 300 survey items, the current analysis focuses solely on items pertaining to first and last sexual encounter.

Results

Data Analysis
SPSS version 12.0 (Chicago, IL, USA) was used to conduct all analyses. Descriptive data pertaining to the relationship context and sexual behaviors of first and last vaginal encounter are reported. Chi-square tests for independence were used to determine whether there was a significant association between categorical variables (e.g., relationship characteristics and reproductive health outcomes). Analyses of Variance (ANOVAs) were performed to determine if there were significant mean differences on continuous variables (e.g., relationship length, time elapsed until engaging in vaginal sex, and age differences between partners) across reproductive health outcomes associated with the first vaginal encounter.
### Table 1  
*Comparison of First and Last Sexual Encounter*

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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Reproductive health outcomes</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Age difference (yrs)</td>
<td>0.71 (M) 0.95 (SD)</td>
<td></td>
<td>0.95 (M) 7.76 (SD)</td>
<td></td>
</tr>
<tr>
<td>Relationship length (mos)</td>
<td>26.57 (M) 23.30 (SD)</td>
<td></td>
<td>8.63 (M) 13.59 (SD)</td>
<td></td>
</tr>
<tr>
<td>Time elapsed until first vaginal</td>
<td>10.84 (M) 18.02 (SD)</td>
<td></td>
<td>9.46 (M) 18.96 (SD)</td>
<td></td>
</tr>
<tr>
<td>Age at first vaginal encounter</td>
<td>17.02 (M)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>33 (N)</td>
<td>% 61.1</td>
<td>33 (N)</td>
<td>% 65.8</td>
</tr>
<tr>
<td>First vaginal partner the same as:</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First heavy petting partner</td>
<td>26 (N) 40.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>First oral sex partner</td>
<td>35 (N) 55.4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expectation of faithfulness</td>
<td>29 (N) 43.9</td>
<td></td>
<td>29 (N) 70.7</td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Condom</td>
<td>46 (N) 69.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Birth control</td>
<td>26 (N) 39.4</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Vaginal sex</td>
<td>51 (N) 78.5</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Alcohol use</td>
<td>41 (N) 61.1</td>
<td>25 (N) 65.8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dual use at first vaginal encounter</td>
<td>4 (N) 6.1</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Condom OR birth control at first vaginal</td>
<td>15 (N) 22.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Control followed by condom OR birth control later</td>
<td>15 (N) 22.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Condom at first vaginal encounter and no birth control at first or later</td>
<td>35 (N) 53.0</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>No condom or birth control at first vaginal encounter</td>
<td>12 (N) 18.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Withdrawal method</td>
<td>11 (N) 16.7</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Emergency contraception</td>
<td>12 (N) 18.2</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
</tbody>
</table>
As indicated in table 1, several patterns emerged from using an event-based approach in assessing the relationship context of sexual and reproductive health outcomes of first and last vaginal encounter among a heterosexual sample of college students. Table 1 presents frequencies and percentages as well as means and standard deviations for first and last vaginal encounter. The pattern of results suggest that 84% of the sample was sexually active (mean age at first vaginal sexual encounter = 17.02 years). Forty percent and 55.4% of participants who engaged in heavy petting or oral sex, respectively, also engaged in vaginal sex for the first time with the same partner.
Table 2
The Relationship Context of Sexual Behavior

<table>
<thead>
<tr>
<th>Variable</th>
<th>Dual use at first vaginal encounter</th>
<th>Condom OR birth control at first vaginal encounter followed by condom OR birth control later</th>
<th>Condom at first vaginal encounter and no birth control at first or later</th>
<th>No condom or birth control at first vaginal encounter</th>
<th>ANOVA</th>
<th>df</th>
<th>P</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship context</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td>M (SD)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Relationship length (mos)</td>
<td>13.48 (7.40)</td>
<td>41.58 (35.22)</td>
<td>23.73 (18.46)</td>
<td>24.55 (20.65)</td>
<td>2.094</td>
<td>50</td>
<td>.114</td>
</tr>
<tr>
<td>Time elapsed until first vaginal encounter</td>
<td>4.32 (2.67)</td>
<td>13.73 (26.19)</td>
<td>9.64 (10.04)</td>
<td>12.69 (25.42)</td>
<td>0.375</td>
<td>60</td>
<td>.771</td>
</tr>
<tr>
<td>Age difference between partners</td>
<td>1.00 (2.83)</td>
<td>0.67 (0.58)</td>
<td>0.94 (1.21)</td>
<td>1.83 (3.13)</td>
<td>0.429</td>
<td>28</td>
<td>.734</td>
</tr>
<tr>
<td>Expectation of faithfulness (and were faithful)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brought up condom use:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Only one partner</td>
<td>4 100.0</td>
<td>6 40.0</td>
<td>20 57.1</td>
<td>5 41.7</td>
<td>7.178</td>
<td>9</td>
<td>.619</td>
</tr>
<tr>
<td>Both</td>
<td>0 0.0</td>
<td>3 20.0</td>
<td>6 17.1</td>
<td>2 16.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No one</td>
<td>0 0.0</td>
<td>6 40.0</td>
<td>9 25.7</td>
<td>5 41.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brought up birth control</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>19.935</td>
<td>9</td>
<td>.018</td>
</tr>
<tr>
<td>Only one partner</td>
<td>3 75.0</td>
<td>7 46.7</td>
<td>8 22.9</td>
<td>2 16.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both</td>
<td>1 25.0</td>
<td>2 13.3</td>
<td>1 2.9</td>
<td>2 26.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No one</td>
<td>0 0.0</td>
<td>6 40.0</td>
<td>26 74.3</td>
<td>8 66.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Brought up vaginal sex</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>7.998</td>
<td>9</td>
<td>.534</td>
</tr>
<tr>
<td>Only one partner</td>
<td>4 100.0</td>
<td>10 71.4</td>
<td>24 68.6</td>
<td>6 50.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Both</td>
<td>0 0.0</td>
<td>3 21.4</td>
<td>2 5.7</td>
<td>2 16.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>No one</td>
<td>0 0.0</td>
<td>1 7.1</td>
<td>9 25.7</td>
<td>4 33.3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alcohol</td>
<td>4 9.8</td>
<td>122 29.3</td>
<td>19 46.3</td>
<td>6 14.6</td>
<td>6.139</td>
<td>3</td>
<td></td>
</tr>
</tbody>
</table>

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Table 2 presents data about the association between reproductive health outcomes and relationship context of first vaginal encounter. Among sexually active participants who expected mutual faithfulness with their first vaginal partner, condom use was more likely to be reported as the only method used over the course of the relationship. Among sexually active individuals who reported various patterns of condom or birth control use with their first vaginal partner, the vast majority had not discussed using birth control with one another. In addition to these significant results, several non significant trends emerged. Among sexually active individuals, those who reported longer relationships also appear to report using condoms or birth control at first and continued to use condoms or birth control later. Among sexually active individuals, those who reported the largest age differences with their first vaginal partner also appear to report no condom or birth control use. Across topics discussed (e.g., condom use, birth control use, and vaginal sex), rarely did both partners communicate. It appears that either one or none of the partners initiated communication. Sexually active participants that reported mutual expectations of faithfulness also reported condom use at first, but no condom or birth control use later.

Discussion

Although this study provides valuable information about the relationship context associated with sexual and reproductive health outcomes, several limitations to these analyses need to be mentioned. First, although 79 students participated in the study, only 66 reported vaginal intercourse. A small sample size, comprised mostly of Caucasian students, may not adequately depict sexual behaviors and relationship characteristics of the college population. Second, the questionnaire focuses on vaginal sex thus excluding participants who do not engage in vaginal sex. Third, some participants did not complete items or answer items consistently in the latter part of the survey thus compromising some of the validity of the results. The participants’ ability to respond to the questionnaire may have been impacted by testing fatigue. As a result, only age difference, length of relationship, time elapsed until first vaginal encounter, expectations of faithfulness, and alcohol use between first and last vaginal encounter could be assessed. In addition, some participants may have been primed by previous questions thus impacting the validity of the results. Future data collection should include alternate forms.

Understanding normative sexual behaviors and relationship context among young people can inform the development of preventative interventions. Recognizing how sexual behavior patterns change as a function of relationship context may better equip parents and educators in supporting healthy sexual development of young adults. More event-based analyses are needed to better understand specific associations between the relationship context of sexual behaviors and sexual health outcomes.
References


EVALUATION OF A STD KNOWLEDGE INTERVENTION AMONG COLLEGE STUDENTS

Jennifer Dodt, Brandon Elliott, Michael Gerasimovich, and Johnna Lozenkovski
Faculty Sponsor: Florence Dallo
Department of Health Sciences, Oakland University

According to the Centers for Disease Control and Prevention, the national incidence of sexually transmitted diseases (STDs) among adolescents and young adults has increased in recent years. For example, chlamydia rates for individuals 15 to 19 and 20 to 24 years of age increased by 10.7% and 8.9%, respectively, between 2007 and 2008. The increase in syphilis rates was more striking, 36% and 31.9% for individuals 15 to 19 and 20 to 24 years of age, respectively. Estimates in some states were higher than national estimates. In Michigan, for example, chlamydia rates for individuals 15 to 19 and 20 to 24 years of age increased by 17.8% and 10.7%, respectively, between 2007 and 2008.

One way to reduce the number of new STD cases is to implement educational interventions among at-risk populations, such as college students. However, these studies are limited in number. One study used a brief, theory-based STD-prevention program for female college students and showed that an information-motivation-behavioral skills model reduced sexual risk behavior. In Sweden, researchers evaluated whether a mass media campaign with peer education among university students would increase knowledge about STDS, improve attitudes toward condom use, and encourage students to get checked for STDs. The campaign proved successful in leading students to discuss STD prevention, but the number of students who received a STD did not change. Another study developed and evaluated a HIV-risk reduction program for female college students in Wisconsin. They found that females in the skills training group scored higher on sexual assertiveness skills, specific knowledge of HIV infection, and self-efficacy to perform lower risk sexual behaviors compared to those in the education-only group. The former group also reported a reduction in risk-related behaviors at post-intervention and follow-up assessments.

Given that the incidence of STDs is increasing, and that few studies have implemented and evaluated a brief STD education intervention among college students, the objective of the current study is to evaluate pre- and post- STD knowledge after a brief and interactive education intervention among college students.

Methods

Setting & Participants
The intervention took place at a predominantly undergraduate university in one of the residence halls on a Friday night during the Winter semester (January – April). It was led by a nursing student and overseen by a nurse from the student health center. Individuals who attended the program were mostly students affiliated with the university, who learned about the event from residence hall signs/flyers and by spreading the word.

Instrument Development
To evaluate STD knowledge of students attending the program, we developed a questionnaire. The questions were obtained from two different sources: the majority of the
questions were obtained from the material used by the nursing student who delivered the intervention. We also borrowed questions from STD questionnaires used in regional studies. We obtained feedback about the survey from the nursing student and nurse before we pre-tested and finalized the survey. The pre survey included 3 demographic, 8 behavior, and 16 knowledge questions. All of the 16 knowledge questions included true/false responses. The 8 behavior questions included both closed-ended and partially close-ended questions. The latter included an “other (please specify)” category to allow respondents freedom to identify possible responses that may have been overlooked. The 3 demographic questions asked the respondent’s sex, date of birth and race/ethnicity (with an “other” category). The post survey included only the knowledge questions. There were 2 open-ended questions that asked respondents how they heard about the intervention and if they had any questions or comments. There were a total of 29 questions.

Procedure

To ensure that we would be able to match the pre and post intervention for each individual, we included an index card in each survey packet. Each index card had a number on it. First, the nursing students introduced the evaluation team. Then we explained the reason for the study and provided instructions on how to complete the survey. We asked the participants to write the number shown on the index card on both the pre- and post-tests and to keep the index card. Second, the pre-test was given to the participants. The pre-test took the participants approximately five minutes to complete. The pre-tests were collected from the participants before the intervention.

Immediately after the intervention, the participants were given the post-test to complete and were reminded to write the number of their index card on their post-survey. The post-tests were collected as the participants left the intervention, and each student received a $5 food voucher to be used in the university food court. The post-tests took approximately two minutes to complete. Both the pre- and post-tests were handed out by the students who conducted this evaluation.

Intervention

This was a one-group pre and post test intervention. It included an experiment group without randomization. The intervention lasted approximately one and one-half hours. The educational material was presented in a Jeopardy style presentation. Participants were asked to be “contestants” and were grouped into three teams. In between the game, the nursing student would provide other important information using visual aids to assist in the game show. For example, the nursing student (with the help of other students) acted out different scenarios that students may encounter with their partner and how to confront those situations. In addition, the nursing student described the signs and symptoms of different STDs; practicing safe sex; and using contraceptives effectively (e.g. proper use of a condom and lubricants that will not harm condoms). This study was approved by Oakland University’s Institutional Review Board, and all students signed a consent form.

Statistical Analysis

First, we used means (±SD) and percents to describe the sample. Second, we used a t-test to examine whether there were statistically significant differences in knowledge between pre and post tests. Third, we specified a Fisher’s exact test to test the significance of the statistically significant variables from the t-test.
Results

We distributed 117 surveys. Of these, 113 were returned. Ten could not be used for our analyses because they either did not have a corresponding post-survey (n=6); had missing index card numbers and no corresponding post-survey (n=3); or did not have a pre-survey (n=1). Therefore, this analysis includes findings from 103 pairs of pre- and post surveys.

Descriptive and Behavioral Characteristics

Table 1 shows that the mean age of the sample was 20.2 (±4.3), 83.3% were female and 83.5% were white. Approximately one-half (48.5%) of students who attended the program lived in the dorms. More than one-half (61.8%) reported they were sexually active with 47.5% having had between 1 and 3 partners. Of those who were sexually active, only 37.9% said they had ever been tested for an STD, and 64.1% reported they used any form of protection. Among those who used protection, 73.8% used condoms, 14.6% used the pill only, and 48.5% used the condom or pill.

Pre- and Post-Knowledge Comparisons

Of the 16 knowledge questions we asked, only five statistically and significantly changed from pre- to post-intervention. For the question, “[t]he only sure way to avoid getting an STD is through abstinence,” 81.2% correctly answered it in the pre-survey and this increased to 94.2% in the post-survey (p = .0013). In the pre-survey, approximately 76% of students correctly answered the questions related to HPV and emergency contraceptives. This estimate increased to approximately 95% and both were statistically significant (p < .0001) (Table 2).

Sample Comparisons by Selected Knowledge Questions

Table 2 showed that 5 of the 16 knowledge questions statistically and significantly improved when comparing pre to post results. The question, “You can get crabs from a toilet seat” was discarded, because it was apparent this information was not clearly communicated to the students during the intervention. Of the 4 remaining questions, table 3 demonstrates that the questions, “[t]he only sure way to avoid getting an STD is through abstinence” and “[s]ixty-percent of female students were found to be infected with HPV in college” statistically and significantly improved for various characteristics. Compared to their counterparts, individuals 17-19 years of age, females, whites, those who did not use protection, and those who would start a conversation about condoms and sexual history with their partner showed significant changes in improved knowledge from pre to post intervention (p < .05) for the question, “[t]he only sure way to avoid getting an STD is through abstinence”. Furthermore, individuals 20 years of age or older, female, white, and who had never been tested for an STD showed significant changes in improved knowledge from pre to post intervention (p < .05).

Discussion

In this study, we found that a brief one-time intervention improved STD knowledge among college students. Specifically, post tests results suggested that student knowledge about STDs increased regarding abstinence, incidence of HPV, emergency contraceptives, and storing condoms. Furthermore, of these four statistically significant findings, knowledge questions about abstinence and incidence of HPV increased for females and whites compared to their counterparts.

The available literature on interventions to improve STD knowledge is limited; therefore, we cannot directly compare our findings. However, our findings parallel the study in Sweden which showed that peer education among university students increased knowledge about STDS.

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improved attitudes toward condom use, and encouraged students to get checked for STDs. Our study focused only on knowledge about STDs and not the latter concepts. One notable finding in our study is the importance of communication: students who said they would start a conversation about condoms and sexual history with their partners were more likely to improve their knowledge with respect to the question, “[t]he only sure way to avoid getting an STD is through abstinence.” A study by Dilorio and colleagues demonstrated that, “. . . safer sex communication self-efficacy and outcome expectancies were associated with actual safer sex communication . . .” They also found that participants who reported condom use were those who discussed safer sex with their partners.

This study has its strengths and limitations. The first strength is the validated questions used in our survey. Other strengths include the pre and post design and high response rate (103/117 = 88%). One limitation is that most of the students who attended the presentation lived in dorms (48.5%). However, over 31% lived with their parents, so we are confident we can generalize our findings to all students. Another limitation is selection bias. That is, announcements about the event may not have reached all students, and only those who were interested in learning more about STDs might have attended the event.

To address some of these limitations, future studies should implement randomized, controlled interventions and test several different interventions. For example, in addition to the interactive, Jeopardy-style intervention we evaluated, other studies can distribute educational material or deliver one-on-one educational interventions. Furthermore, future interventions can be implemented over several months. Finally, other studies can tailor their surveys to the material delivered at their intervention. In our study, it appeared that only 5 of 16 questions significantly changed from pre to post intervention.

Our study highlights that a brief one-time interactive intervention among college students is an easy, quick, and inexpensive way to begin a conversation about STDs and sex. Researchers can use this method of intervention and specifically tailor it to their student population. Findings from such preliminary studies will help inform more sophisticated and larger studies.

References


Table 1: Descriptive Characteristics of Sample, N=103

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Percent or Mean (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean (±SD) age</td>
<td>20.2 (4.3)</td>
</tr>
<tr>
<td>Female</td>
<td>83.3</td>
</tr>
<tr>
<td>White</td>
<td>83.5</td>
</tr>
<tr>
<td>Residence</td>
<td></td>
</tr>
<tr>
<td>With parents</td>
<td>31.1</td>
</tr>
<tr>
<td>Dorm</td>
<td>48.5</td>
</tr>
<tr>
<td>Other</td>
<td>20.4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sexual History and Practices</th>
<th>Percent or Mean (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently sexually active</td>
<td>61.8</td>
</tr>
<tr>
<td>Number of partners</td>
<td></td>
</tr>
<tr>
<td>0</td>
<td>24.8</td>
</tr>
<tr>
<td>1-3</td>
<td>47.5</td>
</tr>
<tr>
<td>4 or more</td>
<td>27.7</td>
</tr>
<tr>
<td>Ever been tested for STD (yes)</td>
<td>37.9</td>
</tr>
<tr>
<td>Condom, birth control or other form of protection used</td>
<td>64.1</td>
</tr>
<tr>
<td>Condom only</td>
<td>73.8</td>
</tr>
<tr>
<td>Pill only</td>
<td>14.6</td>
</tr>
<tr>
<td>Condom or pill</td>
<td>48.5</td>
</tr>
<tr>
<td>None</td>
<td>5.8</td>
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</table>

<table>
<thead>
<tr>
<th>Communication Behavior</th>
<th>Percent or Mean (±SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would start conversation about condoms with partner</td>
<td>92.2</td>
</tr>
<tr>
<td>Would/have had conversation about sexual history with partner</td>
<td>84.3</td>
</tr>
</tbody>
</table>
Table 2: Percent Correct and Comparison of Pre- and Post-Knowledge Responses

<table>
<thead>
<tr>
<th>Question</th>
<th>Pre</th>
<th>Post</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wearing condom reduces risk of getting STD (True)</td>
<td>91.3</td>
<td>86.3</td>
<td>.1982</td>
</tr>
<tr>
<td>All STDs have clear symptoms (False)</td>
<td>99.0</td>
<td>100</td>
<td>.3197</td>
</tr>
<tr>
<td>All STDs are curable (False)</td>
<td>98.1</td>
<td>99.0</td>
<td>.5663</td>
</tr>
<tr>
<td>If you wear a condom you will never get an STD (False)</td>
<td>98.1</td>
<td>98.1</td>
<td>---</td>
</tr>
<tr>
<td>If you only have one sexual partner then you are not at risk for STDs</td>
<td>96.1</td>
<td>95.1</td>
<td>.4822</td>
</tr>
<tr>
<td>The only sure way to avoid getting an STD is through abstinence (True)</td>
<td>81.2</td>
<td>94.2</td>
<td>.0013</td>
</tr>
<tr>
<td>You can get crabs from a toilet seat (True)</td>
<td>68.0</td>
<td>71.1</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>The birth control pill will protect women against STDs (False)</td>
<td>99.0</td>
<td>95.1</td>
<td>.1027</td>
</tr>
<tr>
<td>Intercourse is the only way to get an STD (False)</td>
<td>98.0</td>
<td>93.1</td>
<td>.1584</td>
</tr>
<tr>
<td>Gonorrhea is the second most commonly-reported disease in US (True)</td>
<td>81.0</td>
<td>85.3</td>
<td>.2774</td>
</tr>
<tr>
<td>Can open wounds (non-genital) be a way for STDs to be passed? (Yes)</td>
<td>84.9</td>
<td>82.5</td>
<td>.7831</td>
</tr>
<tr>
<td>Herpes is an incurable STD (True)</td>
<td>80.2</td>
<td>83.5</td>
<td>.3197</td>
</tr>
<tr>
<td>Sixty-percent of college female students have HPV</td>
<td>75.3</td>
<td>97.1</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>An emergency contraceptive can be taken up to 72 hours after unprotected sex (True)</td>
<td>78.0</td>
<td>96.1</td>
<td>&lt;.0001</td>
</tr>
<tr>
<td>Condoms should always be stored in a cool, dry place (True)</td>
<td>90.3</td>
<td>98.1</td>
<td>0.0107</td>
</tr>
<tr>
<td>Most people who have AIDS show signs of being sick right away (False)</td>
<td>96.1</td>
<td>99.0</td>
<td>.0832</td>
</tr>
</tbody>
</table>
Table 3: Sample Comparisons by Selected Knowledge Questions

<table>
<thead>
<tr>
<th>Demographics</th>
<th>Abstinence</th>
<th>HPV**</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Pre</td>
<td>Post</td>
</tr>
<tr>
<td><strong>Age</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>17-19</td>
<td>74.5</td>
<td>92.2</td>
</tr>
<tr>
<td>≥ 20</td>
<td>88.0</td>
<td>96.0</td>
</tr>
<tr>
<td><strong>Sex</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Female</td>
<td>85.5</td>
<td>95.2</td>
</tr>
<tr>
<td>Male</td>
<td>58.8</td>
<td>88.2</td>
</tr>
<tr>
<td><strong>Race/Ethnicity</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>White*</td>
<td>80.9</td>
<td>94.1</td>
</tr>
<tr>
<td>Minority</td>
<td>82.4</td>
<td>94.1</td>
</tr>
<tr>
<td><strong>Ever been tested for an STD</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>73.7</td>
<td>94.7</td>
</tr>
<tr>
<td>No</td>
<td>85.7</td>
<td>93.7</td>
</tr>
<tr>
<td><strong>Use protection</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>80.0</td>
<td>93.9</td>
</tr>
<tr>
<td>No</td>
<td>83.3</td>
<td>94.4</td>
</tr>
<tr>
<td><strong>Communication Behavior</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Would start conversation about condoms with partner</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>80.7</td>
<td>94.6</td>
</tr>
<tr>
<td>No</td>
<td>87.5</td>
<td>87.5</td>
</tr>
<tr>
<td><strong>Would/have had conversation about sexual history with partner</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes</td>
<td>79.8</td>
<td>92.9</td>
</tr>
<tr>
<td>No</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>

**Bold:** p-value < .05

*The only sure way to avoid getting an STD is through abstinence (True/False)

**Sixty-percent of female students were found to be infected with HPV in college (True/False).
Abstract

In this paper, an entire tele-manipulator is established and studied. 2 Models that respectively represent a master and a slave are made and simulated in Matlab and Simulink. A nonlinear factor and a disturbance are considered and added to the slave model. A PID controller is used in the slave model to obtain the best performance. 6 ways of Wireless communications are compared and the FM radio is finally chosen as the one that suitable for the system. Performances of the system seem great from simulation results of Matlab and Simulink. And also, the implementation of tele-manipulators is discussed and an advanced kind of tele-manipulator systems is shown for further study.

Introduction

During the last several decades, many different tele-manipulators have been developed to allow human operators to execute tasks in remote or hazardous environment. A tele-manipulator is comprised of three major parts: a master, a slave and communication.

Figure.1 shows an overall system of a tele-manipulator. Famous applications of tele-manipulators are found in car making industries. An operator who is a worker sets an assignment in the master system. Through wireless communication, the command that has been processed by the master is passed to the slave robot to be executed. In car making industries, a slave robot’s job maybe is welding between a car body and a car roof, and another slave robot’s job is to pick a car roof and place it on a car body for welding robots to work on. These jobs are dangerous for human beings to do and there are hundreds of car components in the same assembly line a day for slave robots to work on, so it is a repeatable job which needs no thinking. Such jobs are suitable for tele-manipulators. Through the feedback link from the slave robot to the master, the operator can supervise the function of the working tele-manipulator and fix errors at any time that is needed.

Questions such as the misoperation of the operator, the time delay that exists because of the long distance communication, effects from ambience and instability of the entire system which is the most important issue, exist in the development of tele-manipulators. Thus, Control systems are invented and assembled into the entire tele-manipulator to maintain the best performance and stability of the slave robot, to eliminate the time delay that is generated because of communication, and to optimally control the master so that an operator’s job is as few as possible. Models for the master and the slave are established and their performances are discussed in section 2. Nonlinear damping that affects on robot joints is studied and simulated in section 3. Various wireless communication technologies are compared and FM radio is chosen as the best choice which suits the system that I established, these are done in section 4. Finally, detailed implementations of this kind of tele-manipulators are numerated in section 5, and other kind of more advanced tele-manipulators which has force feedback that
can actually be felt by the operator who sends commands and its control system are provided.

**Models**

2.1. Model for the master

The system I established is not a complicated one. There is no Graphical User Interface or other fancy software for operators to supervise the slave. Assume that there is a camera on the slave robot and the operator can see both the position and the orientation of the slave robot’s tip. Then when the operator wants this robot to go to another position and orientation, he types old and new positions and orientations into the master. The master will automatically generate angles of each joint needed to move in order to get to the new position.

The model I established in Matlab for the master is to transform the position and the orientation to angles. It turns out to be a smooth trajectory. The slave has to receive and turn angles generated by the master nicely in order to go through this trajectory and get to the new point. Also, when the slave is moving to the desired position, it will give back its angle information for the master to check if it goes right.

Let’s try a start position a 3 by 1 matrix: \([-0.6; 0.8; 0.8]\), a start orientation a 3 by 3 matrix: \([0 0 -1;0 1 0;1 0 0]\), and a desired position a 3 by 1 matrix: \([0.6;0.7;1.0]\), a desired orientation a 3 by 3 matrix: \([0 \sqrt{2} 2; -\sqrt{2} 2 0; \sqrt{2} 2 1 0 0]\), and divide 21 samples in total. Finally, I can obtain 21 angle vectors and the trajectory of the slave robot. The 3D trajectory is shown in Figure.2.

All the angle vectors are information needing to be transmitted through a certain communication technology to the slave. The trajectory plotted in Matlab is the actual path that the slave should follow. Each angle vector has to be transmitted together as one state of the slave robot. More communication details are discussed later.

2.2. Model for the slave

The slave will receive the angle vector transmitted to it and turn its joints to fit that angle vector. Usually joints’ angles should be the same with desired angles, which means output angles should be the same with input angles in the model. In my model, the slave has 6 independent revolution joints. I simulated one of them and the others are just similar. The model for one joint that I made in Simulink is shown in Figure.3.

In the slave model, the detailed composition of the controller is in Figure.4, which is a PID controller; the motor composition is in Figure.5, which is a DC motor. The reason why I chose a ramp input instead of a step one is that if the angle is a step input, the acceleration should be an impulse. It’s impossible for a motor to supply an infinity torque. So the change of the input angle has to be a continuous function. PWM and H-bridge can be treated as a gain in my case. The random number I set is the model for the disturbance that affects on the slave. This disturbance means that even though I give the motor a certain amount of voltage, it may not necessarily really get this much voltage due to the environment or other factors.

I assume motor parameters as \( n = 4, Jef = 0.1950 \text{ kg/m}^2, Bef = 0, Km = 0.9 \text{ N-m/A, Ra} = 0.3 \Omega, La = 0.0023 \text{ H and A}=135, \) and set controller parameters as \( K_p = 10, K_i = 2 \) and \( K_d = 0. \) This is the case 1. After running the slave model I made in Simulink, the comparison between the output angle and the input angle is obtained (Figure.6 (a)). In case 2,
I set controller parameters as $K_P = 10$, $K_i = 2$ and $K_d = 0.1$, and get Figure 6 (b). In both Figure 6 (a) and Figure 6 (b), x axes are time and y axes are angles. The output angle will become unstable after about 9.5 seconds in case 1 while the output angle and the input angle is nearly the same in case 2, which means that controller parameters chosen in case 2 is the suitable one.

I also tried other $K_P$, $K_i$ and $K_d$. It turns out that if $K_d = 0$, no matter what $K_P$ and $K_i$ are, the output will oscillate and try to go to infinity. If I give $K_d$ a number, no matter what number it is, the output goes with the input even though it maybe oscillates a little bit along the ramp line or has a small steady state error. Thus, $K_d$ is crucial. I tried a lot of $K_P$, $K_i$ and $K_d$. Finally I determined to use $K_P = 10$, $K_i = 2$ and $K_d = 0.1$ for my system.

**Nonlinear damping**

The nonlinear damping of the robot joint will diminish the torque that is generated from the motor. From (Kurfess, 2004, chapter 19), a formula related to nonlinear damping is given

$$T_b(\dot{x}_0, \theta, \dot{\theta}) = J^T B (\dot{x}_0 - J(\theta) \dot{\theta})$$

where $T_b$ is the torque generated by damping, $J$ is Jacobian matrix for a certain type of robots, $\theta$ is the joint position vector, $\dot{x}_0$ is the velocity of the robot tip and $B$ is the damping coefficient matrix. It’s obvious that this damping is nonlinear.

To simplify and add the nonlinear damping factor into my slave simulation, I assume the damping coefficient to be $b = e^{-0.1*\dot{\theta}}$ (Figure 7). It makes sense. The faster the angular velocity of robot joints rotate, less friction should damping supply. The Nonlinear damping part in the slave model (Figure 3) is cut out and shown in Figure 8. Using motor and controller parameters chosen above, Figure 9 is shown in Simulink which gives the value of the counter torque generated from nonlinear damping and added to the shaft of the motor.

**Communication Channel**

I have to use communication technologies to achieve the communication between the master and the slave. Communication technologies can be separated into two major parts: wired and wireless. I chose wireless communication in between the master and the slave because of the consideration that it’s impossible or impractical for some kinds of tele-manipulators to be implemented with wires, such as the need of the long range communication. Also, the technology of wireless communication is mature and has been widely used nowadays (“Wireless Communication,” 2011).

There are many ways to accomplish wireless communication. Among all of them, radio communication, wireless sensor networks and wireless networks seem suitable to be applied into tele-manipulators.


AM (amplitude modulation) and FM (frequency modulation) are too main ways of broadcasting radio signals. Both transmit information in the form of electromagnetic waves. Advantages of AM are that it is relatively easy to detect weak signals with simple equipments; it has a narrower bandwidth and a wider coverage. Even though AM has poorer sound quality, it is cheaper and can be transmitted over long distance. FM is less prone to interference and
has better sound quality than AM. But it is more local, it cannot be transmitted that long as AM and equipments like the transmitter and the receiver are more expensive (“AM vs. FM,” n.d.).

Wireless Sensor Networks and Wireless Networks:

Bluetooth, UWB (ultra-wideband) and ZigBee are three different kinds of wireless sensor networks that I’m going to pick up as candidates to be the communication way between the master and the slave. Wi-Fi is a very famous wireless network that is used by most people to get into the Internet. The comparison of these 4 wireless communication technologies is shown in Table.1.

<table>
<thead>
<tr>
<th>Standard</th>
<th>Bluetooth</th>
<th>UWB</th>
<th>ZigBee</th>
<th>Wi-Fi</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEEE spec.</td>
<td>802.15.1</td>
<td>802.15.3a*</td>
<td>802.15.4</td>
<td>802.11a/b/g</td>
</tr>
<tr>
<td>Frequency Band</td>
<td>2.4 GHz</td>
<td>3.1-10.6 GHz</td>
<td>868/915 MHz; 2.4 GHz</td>
<td>2.4 GHz; 5 GHz</td>
</tr>
<tr>
<td>Max signal rate</td>
<td>1 Mb/s</td>
<td>110 Mb/s</td>
<td>250 Kb/s</td>
<td>54 Mb/s</td>
</tr>
<tr>
<td>Nominal range</td>
<td>10 m</td>
<td>10 m</td>
<td>10-100m</td>
<td>100m</td>
</tr>
<tr>
<td>Channel Bandwidth</td>
<td>1 MHz</td>
<td>500 MHz-7.5 GHz</td>
<td>0.3/0.6 MHz; 2 MHz</td>
<td>22 MHz</td>
</tr>
<tr>
<td>Data Protection</td>
<td>16-bit CRC</td>
<td>32-bit CRC</td>
<td>16-bit CRC</td>
<td>32-bit CRC</td>
</tr>
</tbody>
</table>

Table 1: Comparison table for Bluetooth, UWB, ZigBee and Wi-Fi (Lee, Su, & Shen, 2008, p. 48)

Here I chose FM radio communication because the tele-manipulator system that I established has only 6 pieces of information to transmit each time and I assume the distance between the master and the slave is much further than 100m. FM radio communication can provide a high quality communication and satisfy the distance at the same time.

Time delay is generated through the communication between the master and the slave and it will cause problems. For example, the slave has already finished its job by rotating a certain degree but the master didn’t notice that yet, then the master will further give commands to the slave to let it rotates more. If the total execution time of the slave for one command is 5s, then maybe the delay is 0.005s. Usually the entire system will work fine but to avoid this hidden danger I prefer to add a predictive controller to eliminate this delay (Jayachandran, Gu, & Pan, 2006).

**Implementation**

An entire tele-manipulator is established and analyzed in the above 4 sections. The use of tele-manipulators is wide and mature recently. I have introduced an example of using tele-manipulators in the car making industry for welding and picking and placing in the beginning. For welding as an example, in the reality, if the commands that need to be accomplished by slaves have been made and saved in a folder in the master, as if the master is a processor, the work for the operator is only to add one command for each slave robot and supervise their work. In this case, different tele-manipulators share a master. Communication link can also be shared. Advantages of the sharing are that the money needed to build masters and communication equipments is saved and the management of all the tele-manipulators is much easier.

The system I established only contains position control. In fact, force control is
widely integrated into the system too. You have to make sure the robot supplies a proper force to lift things up and do not destroy them as well. For example, to pick a car roof using a tele-manipulator, too much force will break the figure of the car roof. Including the force feedback, the implementation of tele-manipulators goes further into telemedicine, such as endoscopic tele-operation and eco-graphic diagnosis in obstetrics and gynecology. People who remotely control the slave robot can actually feel the force that the slave robot gets as well. This makes the manipulation of the slave robot much easier and more reliable.

A more advanced model of tele-manipulators that contains force feedback should be studied later. One of the useful block diagrams of this 2 feedbacks tele-manipulator has been found in (Gupta, Mukhopadhyay, Messom, & Demidenko, 2006) (Fig.10), this can be treated as the start of the study of 2 feedbacks tele-manipulators.
Figure 6: Comparison between output angle (in yellow) and input angle (in purple) in case 1 (a), and in case 2 (b)

Figure 7: damping coefficient vs. angular velocity

Figure 8: Nonlinear damping part

Figure 9: Counter torque vs. time

Figure 10: Control system with 2 feedbacks
References


Only four short years after the publication of Charlotte Perkins Gilman’s “The Yellow Wallpaper,” the nineteenth amendment was ratified, guaranteeing women the right to vote. Who would have thought such a powerful story would have foreshadowed the passage of a history-making amendment? Gilman’s “The Yellow Wallpaper” powerfully spoke for many women during that time, promoting the feminist cause through the guise of a mentally ill narrator.

During the latter portion of the nineteenth century, Gilman and many other women had to struggle with the iron grip of a patriarchal society. Their oppression appeared in a peculiar way, however—through medicine. Many women subscribed to the treatment of Dr. S. Weir Mitchell and his notorious Rest Cure, the prominent treatment for nervous disorders and tuberculosis during the nineteenth century (Schuster 697). Though it was a successful treatment for some, some significant detrimental effects also plagued women undergoing the Rest Cure.

S. Weir Mitchell and his Rest Cure (also known as the Weir Mitchell treatment) complicate the image of the masculine society often presented in the latter part of the nineteenth century. Mitchell was born in 1829 and earned a degree in neurology from Jefferson University; he began his medical career during the Civil War by treating wounded Union Army soldiers (Schuster 701). As Mitchell’s career took off, he developed an interest in patients who showed signs of neurasthenia, which was considered a “catch-all diagnosis” for nervous disorders (Martin 737). After finding his niche, Mitchell became the leading doctor for women who suffered from this debilitating nervous disorder.

While the Rest Cure seemed like a breakthrough treatment during its time, there are many issues with Mitchell and his cure that were overlooked. Diana Martin describes how,

The patient was instructed to lie in bed for 24 hours each day, sometimes for months at a time, with a special nurse who would sleep on a cot in the room, feed her, and keep her mind from morbid thoughts…visits from family and friends were forbidden. The day was punctuated by electrotherapy and massage, sponge baths with a ‘rough rub’ using wet sheets, and frequent feedings. The diet consisted of milk alone for the first week, or, if milk was not tolerated, 18 or more raw eggs per day (Martin 737).

Under Mitchell’s treatment, women were treated like children, kept in bed with someone to watch over them and fed substances that were often only given to newborns and growing infants. The Rest Cure did not, in fact, help many women regain their mental faculties but created more harm than ever before. The complete isolation of patients only allowed more time for brooding, masking their true psychological issues (Jones 29). Also, the diagnosis of neurasthenia itself is too vague, as Martin suggests by calling it a “catch-all diagnosis.” The recorded symptoms of neurasthenia include “insomnia, depression, fatigue, indigestion, muscle pain, headaches, inability to concentrate, and anxiety,” which could reflect a multitude of different medical problems with different triggers or points of origin (Schuster 696). The patients were not being treated for their actual problems; rather, the Rest Cure, with its vague diagnosis, often masked the true problems brewing for women living within the patriarchy.

Another problem with the Rest Cure is the domineering and sexually deviant personality of S. Weir Mitchell, which allowed him to take advantage of vulnerable female patients.
Mitchell was known to have driven one patient far from her home and forced her to walk back to get exercise post-treatment (Martin 738). In another case, Mitchell was “threatening to climb in [bed]” with one of his female patients and rape her if she did not get out of bed after she was supposedly cured (Martin 738). Mitchell was also known to comment on his female patients through his own writing, noting how some “‘had no more bosom than the average chicken of a boardinghouse table. Nature had wisely prohibited this being from increasing her breed’” (Martin 737). Not only did Mitchell dominate his patients at the end of his treatment, but he also did so through his writing, stripping the women down to the very bare and private bits of life. His language suggests that he gave these women no autonomy or sense of self-esteem whatsoever; instead, in his writing, they are formed into abominable figures, malleable substances at the hands of the masculine society. Mitchell treated them like mere objects, valuable primarily for sexual gratification and reproduction. In this context, no feeling, no remorse, no sense of equality presents itself in S. Weir Mitchell’s writings or in his Rest Cure — instead, women were merely pawns under the thumbs of men. Women were supposed to fulfill the covenants of true womanhood: to be mothers to their children and sexual toys to their husbands.

Author Charlotte Perkins Gilman, like so many other women diagnosed with neurasthenia, faced the horrid reality of this suffocating treatment of the patriarchal agenda to keep women trapped in their gender specific roles. Gilman’s “The Yellow Wallpaper” offers a serious critique of the infantilizing and sexually deviant Rest Cure. However, when the two characteristics combine throughout the story, Gilman goes a step further and illustrates how women are trapped within their roles as wife and mother, as if there is no true freedom in sight for the tormented women of a patriarchal society.

The infantilizing treatment of women under the Rest Cure reveals itself within the narrator’s interaction with her physician husband. Gilman places her narrator into a Weir Mitchell-esque situation, as her husband coos at her like a newborn. In one instance, she recalls how “he took me in his arms and called me a blessed little goose” (Gilman 44). John treats his wife like a child, giving her pet names like “blessed little goose.” It does not, however, end there: he is also known to call her “‘little girl,’” and to say to himself “‘bless her little heart’” (Gilman 49, 50). Terms like “little” and “girl” emphasize child-like qualities of the narrator, despite the fact that she is a fully grown woman. The connection between Gilman’s narrator and the Rest Cure becomes evident: just like Gilman and numerous other women, the narrator is demoralized and turned into a powerless child by the infantilizing treatment. True to Martin’s aforementioned description of the Rest Cure, the treatment takes away power from the narrator and leaves her to be carried off like an infant incapable of any independent action or choice. Moreover, as the mental health of the narrator deteriorates, we see her “creeping” around her room like a child (Gilman 53). What is interesting is that the narrator embodies every aspect of a child, not only by others but also in her own actions. The Rest Cure enabled men to treat women like helpless children because it reduced them into such. Like the patients seeking treatment from S. Weir Mitchell, the narrator is trapped by the effects of the Rest Cure and is forced into a state of lower power and lower functioning, which allows her to be manipulated by John. Gilman makes it clear that the Rest Cure had adverse effects and only served as a means of control over women, as John manipulates the narrator into the very image of the infantilized patient undergoing the treatment.

A close reading of the narrative reveals images of sexual behavior that further pollute the narrator’s existence and undermine the credibility of the Rest Cure. Near the beginning, the
narrator describes the room where she takes her treatment: “it was nursery first, and then
playroom and gymnasium, I should judge, for the windows are barred for little children, and
there are rings and things in the walls” (Gilman 43). What troubles us is that the infantilizing
elements of the story intertwine with the sexually deviant images. The fact that the windows are
barred suggests that the narrator is trapped in her room as much as she is trapped in her childlike
state. The image becomes sinister when the “rings” and other oddities are taken into
consideration, as if they were used for John’s Weir Mitchell-esque sexual exploitation. The
combination of childhood images with the sexual ones suggests deeper problems with the Rest
Cure, problems that take the subject of control over women to a more dehumanizing and
disturbing level. We see more alarming mixing of childhood and sexual perversion through the
use of dark and light. The narrator frets about the wallpaper, exclaiming “at night in any kind of
light, in twilight, candlelight, lamplight, and worst of all by moonlight, it becomes bars!”
(Gilman 51). The mixing of light and dark images refers back to the mixing of innocence and
cruelty within the narrator’s boundaries. The mixture of a supposedly innocent state of childhood
with a deviant one confuses the integrity of society and takes into question this male formulated
treatment of women. What is also interesting is that moonlight is the worst of all to the narrator,
as the moon relates to feminine qualities, such as the female cycle. The emphasis on moonlight
suggests that the wallpaper, which can be associated to the Rest Cure, is worse because it thrives
on the vulnerability of women, perhaps when they are pregnant or going through their monthly
menstrual cycle. Very pure and innocent qualities of womanhood are turned into dark and
sexually disturbing images, giving it a bad image. Consequently, the text questions the dark
nature behind women who were under the Rest Cure; they were not only exposed to infantilizing
tendencies but also to horrid sexual deviance.

The image of the bed, which cements together the childlike qualities and sexual deviance
of the Rest Cure, underscores the troubling and unresolved issues behind the lack of women’s
power in society. Multiple times the narrator comments on how the bed she rests in is a “heavy
bedstead” because it is nailed to the floor (Gilman 44). The heavy bedstead begins to take on the
role of the marital bed, as the narrator tries “to lift and push” the bed, as well as “bite off a piece
at the corner,” like she were trapped by it (Gilman 55). The bed embodies qualities of marital
rituals, where the husband can sexually use his wife because it is her duty to fulfill his urges. The
narrator tries to dismantle the bed and her role in society as the one who must provide sexual
favors for her husband. S. Weir Mitchell and many other men tried to keep women in this
position of dutiful wife by any means necessary, such as the means of the Rest Cure, and Gilman
presents us with a narrator who inherently knows this and tries to break free from this covenant
of true womanhood. The narration takes a further swing into the grotesque when Gilman’s
narrator exclaims from a paranoid state, “I am securely fastened now by my well-hidden rope—
you don’t get me out in the road there!” (Gilman 56). The mixing of childhood and sexual
deviance not only in the Rest Cure but within womanhood itself becomes concrete as the image
of the umbilical cord comes into the story. The rope, or umbilical cord, ties her to the marital bed
and also ties her to the birthing bed, making her a sexual slave and a slave to motherhood. The
Rest Cure becomes another way of keeping women tied down to their set gender roles. The
problem is that the umbilical cord not only represents the connections in the Rest Cure and “The
Yellow Wallpaper,” but it also suggests that this is the only thing that keeps the narrator
nourished and alive. Alas, Gilman’s metaphorical image leaves women in a compromising and
ambiguous state; it calls out for a change in gender roles and treatment, but it also recognizes
how the elements of the patriarchal society have damaged women and their ability to rule for
themselves. True, the narrator tries to escape her hellish state by attempting to destroy the bed, but the significance of the umbilical cord reveals damage done by the Rest Cure and the male dominated society that goes deeper than just nailed down wood and rope.

Placed in its historical and cultural context, “The Yellow Wallpaper” teems with images that both reflect and critique S. Weir Mitchell and his treatment. Not only does the damaging infantilization of the patient resonate throughout the narrative, but the corrupt and sexually deviant images also haunt the story. Gilman’s final image of the narrator tied to the heavy bedstead by the umbilical cord suggests that the deprivation of power and political agency for women in nineteenth century American society damages the very psyche of American womanhood. Truly, in a community where men ruled and women followed, women had few choices. Even though Gilman’s story does not lead to much hope for her narrator or to the larger community of women during the period, the understanding of the Rest Cure, in conjunction with Gilman’s larger body of work, has led to great changes to the gender role, allotting much more freedom to all women. This is evident in the women’s right to vote. Though Gilman’s portrayal seems bleak, such pessimism led the women of her era to take down the metaphorical wallpaper of their own patriarchal society, eliminating the restrictions that kept them tied to their metaphorical bedsteads for many centuries.

References


Detroit is in a process of reinventing itself. It will never be the once great metropolitan city it was in the 1920s or the 1950s. But it could be something new. The city has been in a declining state for several decades now; leaving much of the city uninhabited or as urban prairie. One must look at Detroit as a city with endless possibilities because of this openness. Through art and community efforts such a city can be renewed and prosper once again. A societal investment in the arts will produce an increase in the social-economic well-being of the Detroit community and of the greater metropolitan area.

There is no shortage of available space to renovate, restore, or rebuild. Because of unique conditions partly caused by the real estate crash and the overall downfall of Detroit’s industry, many people are finding spaces to create art-related projects for the city and its community. They focus on helping others develop innovative projects, provide initiatives, and create resources. Under these circumstances, the local economy can be stimulated by the development of new businesses. Artist’s studios, galleries, restaurants, shops, and collective community space play a vital role in energizing and motivating individuals to build the infrastructure of a thriving community. This is not just about stimulating Detroit’s economy. The community within the city requires cultural changes for the better. Art can help make these changes.

The main art community within Detroit is located on Woodward Avenue between West Grand Boulevard and Jefferson Boulevard; it is only four miles. Yet within these four miles one finds an abundance of schools, galleries, museums, institutions, and cultural amenities. The College for Creative Studies, the Detroit Institute of Arts, the Detroit Science Center, The Museum of Contemporary Art Detroit (MOCAD), Wayne State University’s Elaine L. Jacob Gallery, and Tech Town are a few examples of cultural amenities located within the Corridor. In a Metro Times blog, George N’Namdi of the G.R N’Namdi Gallery write, “The Creative Corridor is a major asset and driving force for the region. It has poised Detroit for a comeback, and now it is on us to get the word out.”

Still, with all current efforts within the city, it has not been enough to dramatically change Detroit overall. Remaining parts of the city have seen few, if any, changes. This dichotomy can be incredibly frustrating: to see part of the city thriving, while the rest of the city is left unaffected and often ignored.

As more art communities develop, changes within the city will be apparent. The Detroit Creative Corridor Center is a non-profit which seeks to help aid the “creative economy through business acceleration services, community outreach and events, and talent development resources.” Artist Kt Andresky moved to Detroit from San Francisco to create World Headquarters, an old cigar factory which is being renovated to include a

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wood shop, a ceramic studio, a dance floor, retail and office spaces, and top floor apartments. With strong art communities often comes an institutional acknowledgement or contributions. Once institutions recognize artists or an artist collective, patrons start to take notice. Eventually, museums buy the newly discovered works by artists they find suitable or valuable to their collections. All the while the art and culture within the community is growing, begins attracting attention in the form of tourism, and eventually new residences. The A. Alfred Taubman Center for Design Education hosted a convention this April titled Rust Belt to Artist Belt which showcased and networked the creative industry of Detroit. Additionally, the Kresge Foundation sponsored Art X Detroit April 6th – 10th. Art X Detroit featured art from the 2008-2010 Kresge Eminent Artists and Artists Fellows. The Kresge Foundation is annually awards select Detroit artists with $25,000 to support their work.

Detroit has undergone several cycles of “on and off again renewal” coinciding with the changes in the city’s government administrations. This has had great impact not only on local economics but on the community as well. Some see no hope or future for the city. Detroit should be viewed as an inviting opportunity where anything is possible. It’s an almost blank canvas on which to rebuild and expand on the great history which Detroit is known for. Plans for redevelopment of the city have seen many changes; it has been difficult to make changes due to slow legislative process, lack of funding, and complicated existing structures and substructures. Though some plans have been realized and some have not, many new ideas can be found in what local artists and entrepreneurs are doing. Many are creating art workshops and collective spaces, galleries, community gardens, small businesses, and other ventures. Soup and Drinks X Design provide artists with the chance to connect and share ideas. The Yes Farm and (eventually) The Imagination Station offer a communal space for artists and green ideas. Loveland is a “micro real estate enterprise” run by Jerry Paffendorf, which sells land he owns for only $1 per square inch. These are just a few examples of creative and entrepreneurial ventures in Detroit.

Detroit has attracted attention beyond that of local artists. International photographers have come to document the decline and decay of the city; some find beauty amid the ruin. Michigan Central Station is now an icon of Detroit’s downfall and a symbol for the other architectural gems of the city that have fallen to the way side. For many outsiders, there is a tendency to focus on the negative instead of positive features developing in the city, but much of this is due to lack of information. One artist left his mark on the city last summer. Banksy visited Detroit and left his graffitied statement about the social-economic condition of the city. Ultimately, Banksy provides statements of nostalgia, balance and struggle, hope, and imagination in Detroit.

Recently the city has been attracting a new industry. The growing cinema industry in Michigan finds Detroit as a suitable landscape. Michigan has been gaining industry popularity as a shooting location due to the 42% Michigan film tax credit. This interest

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may be shaken due to a possible change in this tax credit. Some of Detroit’s noteworthy (yet abandoned) buildings have already found their way into films.

Whether in museums and galleries or on the streets, Detroit has no shortage of art. Slowly, Detroit’s energy has been building. Many have ‘felt’ that something is about to happen in regards to the city as well as the art scene within. The city is chock full of talented artists and performers. Detroit had a chance to prove this to the art world recently at Art Basel 2010. Art Basel Miami featured art from Detroit, Mexico City, Berlin, and Glasgow. The Museum of Contemporary Art Detroit (MOCAD) sponsored Detroit in Miami. The opening night featured Detroit music, musical performances, dance performances, a screening of the Lost Landscapes of Detroit created by Rick Prelinger for MOCAD, and discussions.

Cities in decline or decay often lack strong local economic backing. Industry helps renew these cities. With industry comes local businesses, workers, and tourism; residency is soon to follow. The local economy is stimulated by these facets of industry working together thus improving the overall conditions of the area. The construction of an artistic milieu not only acts as a catalyst to the local economy and community, it also creates the opportunity for future growth and expansion.

Much of Detroit quietly stands abandoned. Looking around, it is hard to image the grandeur the city once held during the hustle and bustle in its golden years. Today Detroit is an open city. It is a breeding ground for creativity -- a would-be cultural hot spot.

Artists have been a contributing factor in exposing the current state of the city and its new progress. This has occurred mainly through photography and books showcasing the city’s people and decaying architecture; other artists have taken a less mainstream approach in expressing their ideas about the city.

Not only the blight, but also the resourcefulness of Detroit has been the subject matter for several artists, local and otherwise. Tyree Guyton’s Heidelberg Project has aimed to bring art and tourism to Detroit for decades. Other artists and activists have been showing the positive developments of the historic city. A recent documentary Detroit Lives by Palladium Boots brings to light Detroit’s history, its decay and new, positive happenings around the city. Detroit Lives, by way of internet video, aims to give an unbiased, current, and honest view of the city; whether exploring the architectural ruins and providing a sense of history or showing current art and community projects that are making a difference and changing Detroit. Other artistic avenues, such as music, have contributed to drawing attention and aiding the community. Angela Pal, co-author of the blog Detroit Grime and organizer/co-producer of Cirque du Womp, a monthly dubstep, performance, and art event, use part of the event’s proceeds to give back to local charities and organizations. Pal states that,

“The economic and social fall of the city has allowed for us to...take charge and build from the dust up, we have an opportunity right at this very moment to create the art scene that we want...All we have to do is try. Artists have a responsibility to create ideas and tangible projects that will contribute to the social and political awakening of all people... Detroit is the best place I can think of to start a name for yourself...because other bigger cities....already have that established art scene, where an artist kinda has to just “fit in” to the scene that’s already there.”

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5 Angela Pal, email interview, February 2011.
One may question, even if art can help revitalized Detroit, why does it matter? Revitalizing Detroit through art increases the culture in the area and ultimately the standard of living within the city itself. Even if one does not live in the city or surrounding area, helping a city that was once a staple of Michigan can help the state itself in terms of revenue, jobs, and tourism. Michigan Governor Snyder has been quoted saying, “Michigan will not succeed if Detroit and other major cities don’t succeed.”

There is a strong sense of art and entrepreneurship in the community. The entrepreneurial spirit, combined with a great deal of opportunity, help make the city an ideal location for artists to make their residence and work space. An artistic milieu provides industry, jobs, patrons, tourism, gallery, museums, and institutions- all of which contribute not only economically but culturally as well to provide a better sense of well-being within the community. As more population returns to the city, the community and the overall well-being of the city grows and strengthens. Locals have the power to initiate real change and make a difference. Artists have been noticing the fact that they can make their mark and have a positive effect on the city. As art and culture increases, Detroit can prosper and perhaps leave another mark in history.

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Art necessarily exists in context. It is created in context and it must be read in context. The Renaissance was born of the Crusades, which reacquainted Westerners with Classical thought and ideals (including those of beauty). The Baroque era was a product of the Catholic Counter-Reformation. Rococo developed in response to a shift in politics. The Neoclassical craze of the 18th and 19th centuries resulted from the discovery of the buried city of Pompeii. Context may be more personal, such as an artist’s perception of the world. Van Gogh’s brushstrokes clearly displayed his depression, angst and even his epilepsy. Kandinsky’s abstract geometric forms and vivid colors gain greater significance when his association with Rudolph Steiner and the Anthroposophical Society is taken into account. Culture and personal experiences were equally influential on the world’s first artists: the Upper Paleolithic Europeans who created cave art. When considering the art of early humans the absence of contemporary records makes the meaning of the artworks somewhat elusive. Through ethnographical comparisons and neuropsychological research the context of cave art may be at least partially reconstructed.

In order to understand why a person or a group of people produced art it is necessary to consider their culture and the major concerns of their lives. One of the early attempts to explain the ‘why’ of cave art proposed that early humans painted sleeping or wounded animals so that on a hunt they would find sleeping or wounded animals. However, this conjecture (called hunting or sympathetic magic) fails as a global explanation primarily because whenever the remains of the animals eaten at a site are available for comparison to the animals painted at a site, the two do not correspond.

Structuralist theory proposes that early humans painted the walls of caves with symbols representing opposing forces, such as good and evil or female and male. This binary system of opposites revealed the conflict inherent in Upper Paleolithic society. The major figure of the Structuralist theory, André Leroi-Gourhan, theorized that the primary conflict shown was one between male and female traits. Horses represented male characteristics and bulls represented female characteristics. The symbolism remained consistent, regardless of the gender of the

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3 Ibid., 20.
4 Unless otherwise noted the term Structuralists when used in this paper refers to the group of cave art scholars who focus their studies on the structure of the cave wall and where the paintings are in relation to each other.
6 Ibid.

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animal depicted\textsuperscript{8}. While social conflict doubtlessly did exist in Paleolithic European communities, the application of this modern and conflict-ridden interpretation is, in this particular circumstance, not appropriate. To read cave paintings in this way necessitates the transfer of a mindset that is modern in conception onto a group of people who were decidedly not modern. Fewer than 100 human figures can be identified in the known inventory of Upper Paleolithic European cave art\textsuperscript{9}. It is illogical that artists seeking to depict social conflict would have done so with almost exclusively animal figures rather than human ones, with very few narrative scenes, and with only a very narrow range of subjects over more than 20,000 years. Infinitely more likely is that some mythological significance was attached to the creatures depicted. Mythologies, while subject to elaboration and editing, are exceptionally long-lived. It is indeed this flexible quality that ensures a myth’s longevity.

The most recent and the most accurate explanation for the rock art phenomenon is the Shaman theory. The two creators of this theory (Jean Clottes, an expert in Upper Paleolithic European rock art and David Lewis-Williams, an expert in shamanist cultures, particularly the South African San) postulate that the Upper Paleolithic Europeans who created cave art were shamans\textsuperscript{10}. These select members of society participated in trance-inducing rituals, experienced hallucinations, and then painted the visions they experienced while in this altered state of consciousness. Painting the vision of what was, almost certainly, taken to be a communion with the supernatural was a way of capturing the memory of the vision as well as capturing some part of the supernatural power that it possessed.

From studies of the cultures/religions of other hunting-gathering societies a common thread of belief can be derived: supernatural forces exist in a realm beyond the one humans populate and exert a tremendous amount of influence over the natural world\textsuperscript{11}. Hunting-gathering communities believe the universe is composed of three layers: the Upper Realm, the Earth Plane, and the Lower Realm\textsuperscript{12}. The supernatural forces that dwelt within the Upper and Lower Realms possessed the ability to control the rain, healing, health, availability (or scarcity) of food/water and other factors necessary for the survival of humans. Thus, the ability to communicate, and hopefully intervene, with these spirit forces was essential in ensuring an individual’s and a community’s continued existence. The attempt to communicate with the supernatural via trance-inducing rituals is classified as shamanism.

Before people began actively and purposefully cultivating crops with the intention of storing and subsisting on those foodstuffs, shamanism was the most widespread religious practice on every populated continent\textsuperscript{13}. The indigenous people of Australia and New Zealand practiced shamanism and painted their visions. The Tungus people of Siberia, people populating Northeastern Asia, many Native American tribes, peoples in Norway and Greenland, the Inuit people, tribes in modern day British Columbia and Pakistan, and some groups in South America

\textsuperscript{8} Whitley, \textit{Cave Paintings and the Human Spirit}, 28.
\textsuperscript{9} Clottes, \textit{Cave Art}, 20.
\textsuperscript{11} Clottes, \textit{World Rock Art}, 43.
\textsuperscript{12} Clottes and Lewis-Williams, \textit{The Shamans of Prehistory}, 30.
\textsuperscript{13} Margaret Wright Conkey, Olga Soffer, Deborah Stratmann, and Nina G. Jablonski, eds. \textit{Beyond Art: Pleistocene Image and Symbol} (San Francisco: University of California Press, 1997), 191.
all practiced shamanism and all produced rock art\textsuperscript{14}. These two phenomena appear concurrently with such frequency that it is clear there is a strong positive correlation between them. The South African San people still do practice shamanism, though their rock art tradition has died out as their communities were driven out of areas characterized by cliffs\textsuperscript{15}. The vast number of examples of shaman-practicing groups as well as the temporal, geographical, and cultural diversity among them presents a strong evidence base to form an analogous argument that the people of Upper Paleolithic Europe also practiced some form of shamanism.

From the plateaus of Australia to the cliffs of California’s Coso Range, to the mountains of Drakensburg to the depths of Pyrenean caves groups of zigzags, dots, parallel lines, and grids dance around paintings of crocodiles, bighorn sheep, eland, and bison\textsuperscript{16}. These geometric symbols are much too organized to be test spots or drips\textsuperscript{17}. It has been proposed that the geometric signs may have constituted a proto-language\textsuperscript{18}. However, there is not a wide enough range of symbols to constitute a system of ideograms or pictograms\textsuperscript{19}. A system based on letters could be possible. One recent attempt to catalog the geometric symbols at 146 painted sites in France recognized twenty-six different kinds of symbols\textsuperscript{20}. However, the researcher concludes that the geometric shapes do not possess “the characteristics of ‘writing’.” She also states that the symbols do not appear to be repeated in any kind of discernable syntax. Clearly more research is needed in this area, but the current evidence does not substantiate the hypothesis that the geometric signs were an early form of written language.

The ‘why’ behind the production of geometric shapes in rock art may very well be biological. Doctor Dominic Ffytche of the Institute of Psychiatry in London has studied subjects with an occipital lobe (the primary visual processing center of the brain) disorder that causes them to perceive brightly colored abstract shapes moving in their plane of vision\textsuperscript{21}. As part of this study he devised an experiment in which he could produce similar symptoms in subjects with healthy occipital lobes. The subject puts on a pair of goggles and closes his/her eyes. Nodes attached to

\textsuperscript{14} Whitley, Cave Paintings and the Human Spirit, 148–49.
\textsuperscript{17} Clottes, Cave Art, 22
\textsuperscript{19} These geometric signs, as well as the recognizable animals they appear in conjunction with, must be read as signifiers with culturally connected meanings. The very act of making an image, of transferring a three-dimensional object onto a two-dimensional surface, implies the capacity for symbolic thought. Whenever culture and signs are discussed in close proximity the application of semiotics is necessary. The geometric signs and animal forms necessarily carried meaning for the people who painted them. They can, without a doubt, be classified as symbols, and in the case of handprints, indexes. However, deriving the exact meaning of each symbol is outside the scope of this paper. The shamanist theory merely explains for what reason these geometric images were produced.
the lenses of the goggles emit flashes of light in rapid succession. The subject begins to think they are seeing abstract, geometric shapes though their eyes are not\textsuperscript{22}. In essence, they are hallucinating. Dr. Ffytche further explains that this phenomenon can be produced when the optic nerves are either over-stimulated or under-stimulated\textsuperscript{23}. Caves are dark. Lack of soot on the ceilings of caves suggests painters did not carry torches, rather small lamps carved from stones and filled with animal fat and a wick\textsuperscript{24}. These tallow lamps produce approximately 1/12 the light of a candle\textsuperscript{25}. Under-stimulation of the rods, cones and optic nerves would have certainly been a factor in caves. Jean Clottes has interviewed several modern cave explorers who report ‘seeing’ similar phenomena after hours of caving\textsuperscript{26}. In the absence of knowledge of neuropsychological science, Paleolithic painters would have believed they were seeing rather than hallucinating these geometric shapes. Visions or hallucinations experienced with no apparent cause have, until very recently in human history, been attributed to the intervention of the gods\textsuperscript{27}. Paleolithic painters doubtlessly wove these biological phenomena into their myths and belief systems.

From numerous other similar studies investigating the biology of hallucinations David Lewis-Williams formulated a neuropsychological explanation for the creation of geometric forms. This neuropsychological model provides a more extensive explanation than simply how the brain generates mild hallucinations when the eyes do not receive enough sensory input. He suggests that Paleolithic painters entered into an altered state of consciousness before producing paintings\textsuperscript{28}. David Whitley, an expert on the shamanist culture of the Shoshone tribes in California, contends that trance is one of the defining characteristics of shamanism\textsuperscript{29}. While the representational forms found in rock art produced by other shamanistic cultures vary in stylistic traits, the presence of geometric, abstract shapes is surprisingly consistent. Humans may live in radically different cultures, but they all share the same nervous system. Upper Paleolithic Europeans were, anatomically speaking, the same as modern humans. Their nervous systems would have reacted to stimuli just as ours do. In an altered state of consciousness all human nervous systems produce a narrow range of reactions\textsuperscript{30}. Based on the commonality of the human nervous system, conclusions can be drawn about what Upper Paleolithic painters experienced while in trance states from studies of altered states of consciousness conducted on modern humans.

Three overlapping stages of trance can be identified. The hallucinations of vividly colored abstract forms were experienced as part of the first stage of a trance\textsuperscript{31}. In the second stage the

\textsuperscript{22} Ibid., 1079
\textsuperscript{23} Ibid.
\textsuperscript{24} Clottes, Cave Art, 26.
\textsuperscript{25} Ibid.
\textsuperscript{28} Jean Clottes and David Lewis-Williams, The Shamans of Prehistory, 14.
\textsuperscript{29} David Whitley, Cave Paintings and the Human Spirit, 39.
\textsuperscript{30} Ibid., 47.
subject tries to turn the abstract geometric shapes of stage one into objects and symbols they recognize from the real world\textsuperscript{32}. What the objects the geometric shapes turn into is largely based on the subject’s culture\textsuperscript{33}. In effect, the subject sees what he/she expects to see. The decorated vestibules of the caves likely directed the shaman’s visions in this way. Next comes a transitional phase in which the geometric forms of stage one form a tunnel at the end of which there is a bright light\textsuperscript{34}. The vortex-like sensations of the later part of stage two often include darkness, constriction, and difficulty breathing. Entry into a cave replicates this neuro-psychological experience\textsuperscript{35}. In the third stage the subject exits the perceived tunnel and enters a world populated by imaginary and composite creatures\textsuperscript{36}. Visual hallucinations are projected onto the surrounding surfaces and often become animated—figures float, undulate, pulsate, blend and flicker across floors, walls, and ceilings\textsuperscript{37}. This detached quality is displayed countless times in cave paintings. Full-blown stage three hallucinations also include a sense of participation\textsuperscript{38}. It is common for subjects to report feeling they are becoming the thing they are hallucinating. Hallucinatory experiences, then, account for not only the abstract shapes seen in rock art but also the prevalent composite creature.

There are striking similarities in both form and content between the art produced by other shamanistic cultures and the parietal art from Upper Paleolithic Europe. The South African San represents a confirmed instance of shamanist culture. The San practiced rock art into the 19\textsuperscript{th} century and contemporaries of the artists explained to anthropologists that shamans created the artworks\textsuperscript{39}. The eland, an incarnation of the San god /Kaggen, figures prominently in San rock art\textsuperscript{40}. At the Drakensburg Range there is a significant panel depicting a shaman meeting his spirit-guide. A spirit-eland and a man displaying eland attributes stand side-by-side. The eland’s back legs are crossed and his fur stands on end. The leg position indicates falling and the raised fur indicates pain. This eland is dying. The shaman echoes the eland’s stance. The description of entering a trance state as a loss of soul or a temporary death is extremely common across shamanistic cultures\textsuperscript{41}. This panel shows a shaman slipping in a trance, leaving the natural world, and encountering a spirit-guide in the supernatural world. The narrative depicted here is quite similar to one of the rare narrative scenes of cave art: the famous Wounded Man panel from Lascaux. This panel appears in a deep recess of Lascaux that has abnormally high rates of carbon dioxide\textsuperscript{42}. Lack of oxygen is one of many means of inducing trance\textsuperscript{43}. After entering this carbon dioxide-rich area an early human painted a bird-headed man falling backward and a speared and disemboweled bison opposite him. A shamanistic interpretation of this scene is almost necessary.

\textsuperscript{32} Ibid., 215.  
\textsuperscript{33} Ibid.  
\textsuperscript{34} Jean Clottes and David Lewis-Williams, \textit{The Shamans of Prehistory}, 16.  
\textsuperscript{35} Ibid, 28.  
\textsuperscript{36} Ibid, 16.  
\textsuperscript{37} Ibid, 17.  
\textsuperscript{38} Jennifer L. Dornan, “Beyond Belief”, 32.  
\textsuperscript{40} Lewis-Williams, \textit{The Mind in the Cave}, 75.  
\textsuperscript{41} Whitley, \textit{Cave Paintings and the Human Spirit}, 47.  
\textsuperscript{42} Clottes, \textit{Cave Art}, 121.  
\textsuperscript{43} Clottes and Lewis-Williams, \textit{The Shamans of Prehistory}, 14.
A shaman who has lost his soul (i.e. entered a trance) falls to the ground, enters the supernatural realm, and there meets his spirit-guide.

While the paintings found in the caves of Europe are today regarded as great masterpieces, it is unlikely that the people who created them saw them as such. Many hunting/gathering cultures have (or had) no word for art, despite their creation of it. Making art is such an integral part of their lifestyle that it is not conceived of as a separate pursuit. It seems likely that Upper Paleolithic painters viewed the creation of cave paintings similarly; not as a means of individual expression or interior decoration, but as an activity essential to their way of life. It follows then that the creation of the painting was the important aspect, not the finished product. A great portion of cave art is located in chambers near enough the entrance to the cave that some sunlight would have illuminated the space. These have been termed painted vestibules. Paintings in these spaces may be on the walls at easy to reach heights, or in less easily accessed areas near the ceiling or even on the ceiling. A small, but important, percentage of paintings are located in sunless, uninhabited places far from the entrance to the cave; a location termed deep caves. Accessing the deep caves is often difficult. A potential painter may have to squeeze through a narrow pass, crawl hands and knees through a tunnel, scale a mass of stalagmites, or, if the painter were in the Niaux cave system, cross one or more underground lakes to reach a painted piece of the cave wall. Clearly, subsequent viewing of the artwork was not the goal of cave painting. A mere appreciation for aesthetically pleasing environments could not have propelled early humans to decorate such difficult to access and difficult to see areas of caves for so many centuries.

Approximately 85% of cave paintings are found in painted vestibules rather than in deep caves. Structuralists often point to this statistic as grounds for dismissing the shaman theory. According to Structuralist claims the viewing of the paintings (communicating the message of oppression and conflict) would be equally, if not more, important than the actual creation of the painting. If this theory were an accurate global explanation for the European cave painting phenomenon, there would be no deep cave paintings at all.

The existence of deep cave paintings implies that it was the creation of the art that held importance for the cave painter. When combined with the effort a Paleolithic artist had to have expended to reach some painted panels, these two factors make it likely that the artworks possessed a sacred quality. This conclusion begs the question: were the paintings found in painted vestibules also sacred? The two different locations certainly affected the appearance of the art. Panels found in deep caves are often crowded with painted or engraved images. The figures overlap and are often incomplete. The defining characteristics of the animals are depicted, but little detail is shown. In contrast, the animals depicted in the painted vestibules

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45 Clottes, *Cave Art*, 23.
46 Clottes, *Cave Art*, 24.
51 Jean Clottes and David Lewis-Williams, *The Shamans of Prehistory*, 107
52 Ibid, 108
are detailed, naturalistic representations of their living, breathing counterparts\textsuperscript{53}. The sketchy quality of deep cave panels may have been the result of the painter’s desire to leave the site quickly. The entire cave was a system; the paintings in one piece of it cannot be analyzed in isolation from the rest. The painted vestibules served as places where trance-inducing rituals prepared the painter/shaman for the journey into the deep cave and the visions he would receive there\textsuperscript{54}.

The people who lived in Upper Paleolithic Europe, the people who created great masterpieces like Lascaux and Chauvet, were shamans. Numerous other hunting/gathering cultures that are known to practice shamanism produced art strikingly similar in both content and form to the art of Upper Paleolithic Europe. Studies of how the human nervous system reacts when in a trance state explains the abstract forms that interact with the animal figures. The fact that some cave paintings are so difficult and dangerous to access implies that a sacred quality was attached to their creation. While many other theories have been proposed to explain the function cave art served in the lives of early humans, the evidence best supports the Shaman theory. The paintings that modern humans now value for their aesthetic quality were created as a survival tactic essential to the continued existence of early humans.

\textsuperscript{53} Ibid
\textsuperscript{54} Lewis-Williams, The Mind in the Cave, 267.
References


A COMPARISON OF SPECIAL EDUCATION SERVICE AMONG TRADITIONAL PUBLIC SCHOOLS AND PUBLIC SCHOOL ACADEMIES

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Abstract
A secondary analysis was performed on publicly available data from the Michigan Department of Education. The number of school districts serving special education students from 2001 to 2009 was compared among traditional public schools and public school academies within Wayne County, Michigan. The unit of analysis was the school district and five domains were analyzed using a 2x2 chi-square analysis. The five domains were cognitive impairment, emotional impairment, learning disabled, autistic impairment, and speech/language impairment. Chi-square was performed on 41 possible comparisons of which 29 were statistically significant, $p<0.05$, df=1. Of the statistically significant comparisons, the percentage of traditional public schools that serviced special education students ranged from 88%-100%, while the percentage of public school academies ranged from 15%-86%, respectively. In conclusion, traditional public school districts were more likely to service special education students than public school academies. Further analysis will include mapping the data using geographical information systems.

Introduction
Public school academies were created with the intent of offering an alternative to traditional public schools with the goal of demonstrating higher student achievement. Michigan’s public school academies (also referred to as charter schools) accept public financing but are frequently managed by private management companies. This means that the typical public school academy teacher is not part of a union nor permitted to engage in collective bargaining. They were marketed to compete with traditional public schools while also taking advantage of government funding (Wamba & Ascher, 2003). However, using government funding means that public school academies must also follow federal regulations that prohibit discrimination against any student, including students with disabilities. In 2006, the Individuals with Disabilities Education Improvement Act was reauthorized and aligned with the No Child Left Behind Act to ensure that all traditional and public academy schools adhere to federal disability laws. Ester (2000) notes that government provisions related to equity and fairness are rarely enforced and therefore lead public school academies to violate federal law by minimizing enrollment of students with disabilities (Fierros & Blomberg, 2005). Indeed, the costs associated with servicing a child with a disability is much higher than servicing a general education student, especially if the child requires a full time paraprofessional aid as well as other support services. Public monies that are not spent on student instruction, special education support, teacher salaries and benefits, are retained by the management company. Arguably, any parent who presents with a special education child may not be refused service nor should be counseled to a traditional public school’s center-based
programs, regardless of disability. In addition, public school academies experience a disadvantage in revenue when compared to neighboring traditional public schools. For example, in 1997-1998, public school academies in the Dearborn School District received 21% less in per-pupil funding than traditional public schools in the same district (Horn & Miron, 1999).

The current study compares how special education students receive service in traditional public schools when compared to public school academies within Wayne County, Michigan from 2001 to 2009. The null hypothesis is that there should be no difference servicing special education students in public school academies when compared to traditional public schools that service special education students.

**Method**

A secondary analysis was performed on publicly available data from the Michigan Department of Education (http://www.michigan.gov/mde). The unit of analysis was the school district and five domains were analyzed using a 2x2 chi-square analysis. For each domain and year, the number of traditional public schools and public school academies that serviced special education students were compared to the number of both school types that did and did not service special education students. The five domains were cognitive impairment, emotional impairment, learning disabled, autistic impairment, and speech/language impairment. Chi-square ($\chi^2$) was performed on 41 possible comparisons using the Primer of Biostatistics software, version 6, McGraw-Hill/Stanton A. Glantz, 2005, New York, N.Y. The chi-square test for independence is a nonparametric statistic that determines if there is or is not a relationship between two variables and employs nominal or ordinal scales of measurement. In addition, the phi-coefficient was calculated. The phi-coefficient is a correlational statistic that measures the strength of association between two dichotomous variables. It is calculated by taking the square root of $\chi^2 / n$ (Gravetter & Wallnau, 2005). Four comparisons within the learning disabled domain violated chi-square assumptions and were not analyzed. The percentage of service for both school types was then calculated for each domain and year.

**Results**

According to the data, 29 (71%) of the 41 possible comparisons showed a significant difference in the number of traditional public schools and public school academies that serviced special education students, $p <0.05$, $df=1$. Of the statistically significant comparisons, the percentage of traditional public schools that serviced special education students ranged from 88%-100%, while the percentage of public school academies ranged from 15%-86%, respectively. For two domains, autistic impairment and emotional impairment, significance values were less than one percent across all nine years, $p <0.001$, $df=1$. To illustrate this trend, Table 1 shows the $\chi^2$ values for the domain autistic impairment with the corresponding $p$-values for all nine years. Table 2 shows the $\chi^2$ values for the domain cognitive impairment but $p$-values show significance only from 2001 to 2006. However, no significant values were found within the learning disabled domain.
Table 1

<table>
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*p < .05, **p < .01

Table 2

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*p < .05, **p < .01

Discussion

The results demonstrate that traditional public schools are more likely to service special education students than public school academies and the null hypothesis was rejected. These results were consistent with previous research that has shown that the percentage of students with special education needs has been smaller in public school academies than in traditional public schools (Rhim & McLaughlin, 1999).

Approximately 70% of all public school academies within the state of Michigan are run by for-profit educational management companies (Wamba & Ascher, 2003) that try to avoid servicing high-cost students (Miron, 2000). Discrimination against students with disabilities is unlawful and unethical. This research should raise awareness to the potential unfair treatment of special education students and to the process by which management companies admit their students and allocate their resources. Future analysis will include mapping special education data using geographical information systems and socio-economic variables.
Limitations

This study was based upon secondary analysis that is publicly available and contained no student identifiers. There was no experimental control. The state of Michigan does not provide outcome tracking data when a parent first approaches a public school academy or traditional public school with a special education child. The analysis was based upon data that was reported to the Michigan Department of Education by all public schools.

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Acknowledgments: We would like to acknowledge Dr. Patricia Drake and Andy Henry of Wayne RESA, Wayne, MI for their technical assistance.
Following the haunting events that occurred on September 11th, 2001, the U.S. was faced with the imminent task of defending the nation from an invisible enemy. As a result of panic and the pervasive sense of fear, the Patriotic Act was signed into law. The act introduces advanced technology that allows law enforcement to more efficiently obstruct terrorism. However, “terrorism,” as of yet, has not been clearly defined, complicating the means in which it is approached by law enforcement. This factor alone has created a rift in the American public, dividing public discourse in opposing viewpoints, civil rights vs. security. Albeit, in a third text, opposing viewpoints are not entirely present. The third text is that of crime dramas, particularly 24. Law and policy related to the Patriot Act and the concept of terrorism are at the core of the crime shows millions of Americans devoutly watch each week. Therefore, crime television has proven to have a far-reaching effect that is not comparable with that of law and policy alone, thereby having power to influence political convictions. Regardless of the medium, when faced with the issue of terrorism and its antidote, the Patriot Act, the question we must ask ourselves is, “At what cost?” Is it the freedom of those targeted by the Act, or will the cost be the foundation of our nation and, therefore, the liberty of its denizen?

CONCEPTUALIZING TERRORISM
The Patriot Act promises to counter the war on terrorism; however, with more than 109 definitions, the meaning of the ten-dollar word has not yet been established. Law professors Golder and Williams claim that there are two ways to proceed when dealing with the seemingly impossible task of defining “terrorism.” The first way is inductive, meaning that specific acts are labeled as terrorist acts; hijacking and the taking of hostages are the examples given by the authors. The other approach is a deductive one, in which the concept of terrorism is what is to be clarified. According to the article, this is done by “reference to certain overarching criteria” (Golder et al. 273). The authors argue that a well-balanced and efficient definition is both specific and general. If it were to be only inductive, the proscriptions may be evaded as inventive terrorists and the onslaught of advanced technology prepare the course for novel ways to pursue “terrorist” ends. On the other hand, if the definition is only deductive, there will be “too much room for political bias to affect the decision” (287). Hence, both elements must be present.

A factor that further complicates matters is addressed in Chomsky’s polemic, which shakes a finger at the U.S. government. If the definition were to be firmer, the U.S. would be guilty of “terrorist” acts:

If we keep to official definitions, it is a serious error to describe terrorism as the weapon of the weak. Like most weapons, it is wielded to far greater effect by the strong. But then it is not terror; rather, "counterterror," or "low intensity warfare," or "self-defense"; and if successful, "rational" and "pragmatic," and an occasion to be "united in joy."

If we are to impose rules on others, then we should, by all means, abide by our own stipulations. We cannot be taken seriously when we differentiate between good and evil if we fail to rise even to this minimal level of integrity (Chomsky).
IS BIG BROTHER BACK IN THE PATRIOT ACT

How can a law that has not yet been pinned down be properly enforced? This question has created dissension in our country. In a 2003 address made by former U.S. Attorney General John Ashcroft, the Patriot Act is praised for its numerous accomplishments and its ability to rectify the pre-existing flaws in the Department of Defense, flaws that were reportedly exploited by Al-Qaeda (36). The act has succeeded in tearing down walls between those who gather intelligence and those who enforce the laws, thus allowing for the integration of the capabilities of the CIA and the FBI (Ashcroft 36). Furthermore, it has given the Department of Defense the tools needed to fight the ever-present threat of terrorism, such as a “single wiretap that applies to the suspect and various phones he uses,” as well as Carnivore, the Key Logger System and Magic Lantern, electronic surveillance programs (Ashcroft 37; Etzioni 45). According to the Justice Department, an area in which the tools provided by the act have been effective has been that of terrorist financing (55). By intercepting money funneled to terrorist organizations, many terrorist plots have been disabled. It must be noted: Ashcroft admits to using the tools made available by the act as a means of battling regular ol’ crime, as opposed to stopping at the level of terrorism.

Ashcroft addresses “those who scare peace-loving people with phantoms of lost liberty, [and his] message is this: your tactics only aid terrorists, for they erode our national unity and diminish our resolve.” However, “those who scare peace-lovers” have raised some viable points. Civil Rights advocates, such as David Cole, an attorney for aliens unlawfully accused of having connections to terrorism, claim, “What we have done is to sacrifice the liberties of some...for the purported security of the rest of us” (48). There is no doubt that a distinct ethnic group is targeted. This fact is apparent in crime television, interrogation rooms, and among those who are held indefinitely without charges and access to due process. Furthermore, he goes on to say that there is a broad view of a suspected terrorist, for lack of clear definition, often including those involved in barroom brawls, domestic disputes, and even personnel who offer humanitarian aid to organizations disfavored by the government (53). From a different perspective, yet still in opposition to the act, law professor Peter Erlinder claims that law enforcement possessed the necessary tools needed to prevent terrorism before the Patriot Act (41). Prior to the September 11 attacks, it was reported that the Bush administration received warnings of an impending hijacking that were dismissed on account of a lack of specificity. This failure was used to justify the passing of the Patriot Act, which according to Erlinder, sacrifices liberties for an increase in executive power (Erlinder 42).

24 AS THIRD TEXT

In its first six seasons, the fast-paced 24 series was nominated for a total of fifty-seven Emmy awards, winning for Outstanding Drama Series in 2006. 24 lures viewers into a whirlwind of explosive action, following the fearless Jack Bauer as he deactivates bombs, tortures suspects, and tracks terrorists responsible for the threat overhanging the nation. The problems are not entirely resolved before the end of the hour, creating enigma; as a result, millions of viewers keep coming back for more. Its addictive nature explains its high ratings and the blogs and forums written by those who have embraced the fictional plot, integrating it into their lives and conversations.

It is because of the show’s popularity that “the creators of 24 received a visit from the Dean of the United States Military Academy at West Point and other experts in military interrogation, who told them that West Point cadets and soldiers in Iraq were being influenced by the uninhibited—and unrepentant—use of torture on the series” (Wyatt 1).
The two episodes I will analyze are episodes two and three from season six. The atmosphere in the framework of these two hours, from 7:00 a.m. to 9:00 a.m., is tense as the country is under the threat of impending terrorist attacks. Previous attacks leave President Wayne willing to comply with Fayed, a terrorist who attempts to convince CTU, the Counter Terrorist Unit, that Assad, a former militant, was behind the attacks. Counter to CTU intelligence, Assad is working side by side with Jack, 24’s protagonist, after Jack rescues him from an incoming air strike set in motion by CTU. Bauer had told the Unit and President Wayne Palmer that Fayed, not Assad, was behind the attacks. However, the President’s advisor, Karen Hayes, claims that Jack cannot be trusted as he has recently been released from a Chinese prison and is potentially being played. Working alongside the former enemy, Jack is able to prevent a suicide bomber from killing innocent civilians in a Los Angeles subway. The heroic duo then follow one of Fayed’s men in hopes of reaching the head of the terrorist cell: Fayed himself. The trail ends with an explosion as the culprit realizes he is under surveillance and detonates a grenade, killing himself and destroying crates of ammunition along with the laptop he had been using. Meanwhile, the President is forced to give into Fayed’s demands so as to prolong the time needed to locate the terrorist cell and preserve American lives. Fayed’s demand involves releasing 110 “freedom fighters” from the Palmdale Military Facility.

Side conflicts include Sandra’s refusal to turn over databases of the organization’s members for an investigation run by the FBI until a proper warrant is obtained. The attorney for the offices of the Islamic American Alliance, and sister to the President, alleges, “Once you start ethnic profiling, it’s a slippery slope” (24 8:00 a.m. to 9:00 a.m.). Her actions ultimately lead to the detainment of Walid Al-Rezan, her boyfriend and head of IAA, under the Revised Enemy Combatant Statute. A second conflict takes places in a Los Angeles suburb. Ahmed, Fayed’s nephew, forces his neighbor to deliver a package under the threat that if he does not, his wife and son will be killed.

Codes within this text, coined by French cultural critic and semiological theorist Roland Barthes, are subtle and convey a set of convictions regarding issues such as torture, terrorism, and the struggle between security and civil rights. Semic codes identify character and class, amongst other factors, through the mannerisms, dress, and speech assigned to characters. These ciphers often lead to cultural codes, which are the most difficult as they are considered mainstream by our culture, and therefore, appear to be natural. The cultural codes shape symbolic codes that resort to polarities. Either one is patriotic or unpatriotic; good or evil. There are no gray areas. Proairetic codes, then, appeal to a linear timeline that establishes what is conventional while a final code, the hermeneutic code, relies on the creation of suspense as the cliffhanger that serves as a hook. The codes in the text strengthen our perception of what evil looks like and how the heroes behave, revealing how political convictions are passed on to the public in a similar way the Patriot Act had been endorsed; through the use of binaries.

Evil, in this case embodied as terrorists, are of Middle-Eastern descent, speak with an accent, are typically unshaved, sporting a beard or stubble, and are dressed in casual clothes of darker shades. The apparel worn by militants is differentiated from that of those working at CTU unless the terrorist is a suicide bomber, for example, and wants to blend in. In that case, the man of Middle-Eastern descent would wear a suit or dress clothes. Additional identifying characteristics of terrorists include yelling in Arabic while opening fire or when angry and making comments such as, “We are not here to kill one American, but thousands,” and, “Once again the streets are flowing with blood” (24 8:00 a.m. to 9:00 a.m.). These comments are devoid of motivation, painting terrorists as natural-born-killers.

Heroes, on the other hand, come in no better size and shape than Jack Bauer. As a result of his heroic image, cultural codes permit that he rise above the law due to the
crisis facing the nation. In a scene from the second episode of season 6, Jack tortures a militant in an abandoned house, in front of an American flag draped over the window. The message implicitly conveyed is that torture is justified because it is in the name of national security. Jack Bauer’s actions, as abysmal as they may be, are considered right, and even heroic.

Another code that permeates the series is the proairetic code. Sandra’s fight for the protection of rights ensured by civil liberties is portrayed to be untimely as terrorist attacks riddle the country. In the fourth episode, from 9:00 a.m. to 10:00 a.m., Walid discovers that several men of Eastern descent illegally detained at the Anacostia Detention Facility possess knowledge of the number of nuclear weapons in existence. On the other hand, Ahmed, a student originally thought to be as innocent as anyone else, turns out to be a terrorist who holds his neighbor’s family hostage. The show demonstrates that, in spite of wishful thinking, those who are targeted are done so for good reasons. These sequence of events only help to justify the extremity of the actions taken. If only life were like television and those who are unjustly targeted by law enforcement are in fact guilty and “evil”.

Our country is divided, one extreme pinned against another, civil libertarians tearing the Patriot Act apart or proscribing the entire act be thrown overboard, and law enforcement, on the other hand, rising above the law because the country’s state of emergency calls for extreme measures needed to ensure national security. This friction is a key ingredient in crime shows such as 24, the protagonist of which serves as the poster child for the Patriot Act, torturing one-dimensional terrorists driven by an insatiable thirst for blood. We are not informed as to why they may be so vengeful and willing to resort to desperate measures. Not only is there a lack of balance in crime dramas, but the lack of balance also exists in our system of government. Guilt by association has become sufficient probable cause for the search and seizure of innocent individuals. Furthermore, imbedded within the pages of the Patriot Act are laws that undermine the underpinning of our constitution: that of checks and balances. Self-regulation ensures that political power is not concentrated in the hands of individuals or groups, and allows for a salubrious balance. How is a judge supposed to pay tribute to justice if he knows not what the defendant is accused of? Excessive power in the hands of the Department of Defense will lead to a government that is omnipresent, and it will not be a presence of mercy, but rather one that is quick to administer with fire and brimstone. We are far from the best solution. As a result of ethnic profiling, innocent men and women are tortured in an effort to fight the war on terrorism. Are they then the price to be paid for our sense of security? As Charlie Chaplin said in his famous speech, “We want to live by each other’s happiness, not by each other’s misery.”
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“7:00 a.m. – 8:00 a.m.” 24. Fox.

“8:00 a.m. – 9:00 a.m.” 24. Fox.
In recent years there has been a startling increase in the dangers that Mexican journalists face. According to Mexico’s National Human Rights Commission, 59 journalists have been killed since 2000 and at least three are seeking asylum in the United States. The problem can be attributed to government regulation, drug cartel violence, and the war that is raging between these two factions (Godoy).

Although the dangers toward Mexican journalists have escalated within the past decade, history tells a long and tortured tale of Mexico’s struggle for a free press. In Pre-Columbian times, Aztec leaders would use the press to broadcast their greatness and defame their enemies (Bustamante). When the Spanish entered the scene, they resumed this same practice. However, Mexico felt the power of its free press when men like Francisco Madero challenged the powers at large through the written word and helped to wrestle control from a corrupt government (Fuentes). In the 1990’s Mexico’s civic-oriented newspapers became watchdogs and reader advocates, helping to overthrow the Partido Revolucionario Institucional (Institutional Revolutionary Party or PRI) and install Vincente Fox. In 2006, Fox created a special prosecutor’s office for crimes against journalists (Goff). However, Fox’s efforts have created little difference - handling 100 cases so far, of which only four were referred to the courts (Godoy).

One leading cause of violence against journalists today is the aggressive conflict between the government and prevalent drug cartels. Currently, Calderon occupies the office of president and has initiated a stringent program combating drug cartels. The cartels, which used to be most prevalent in Columbia and Venezuela, have recently flooded to Mexico to be closer to their primary consumer – the United States. While Calderon’s efforts are commendable, they have the adverse effect of furthering the dangers plaguing journalists (Cambell). Journalists are having a difficult time covering the drug war since both sides are making threats against unfavorable coverage. If the news media covers a drug cartel victory, they suffer immediate regulation and threats by government officials; if they cover a government victory, journalists suffer threats, torture, and death from the drug cartels (Campbell).

Sensing their desperate situation, many news sources are discontinuing coverage of drug action at all or just reporting the bare minimum with no names, places, times, or follow ups(Campbell). In early January 2010, Valentin Valdes Espinosa, a 29 year-old reporter was kidnapped, tortured, and shot to death in Coahuila. He was found with a note that said, “This is going to happen to those who don’t understand. The message is for everyone” (Navarette). When the body was found, Valdes’ newspaper in the state of Coahuila, Zocalo de Saltillo, announced it would no longer cover drug violence because of the risk for journalists (Navarette). “As of today we will publish zero information related to drug trafficking to avoid situations like the one we went through today,” an editor of the Zocalo told the Associated Press. Tellingly, he asked that the AP omit his name in the press release (Rodriguez). Zocola’s cohort, Norte de Ciudad Juarez
also limited their coverage. “We can’t be seen taking sides in this war,” said the paper’s editor, Alfredo Quijano. “Neither side wants to be seen as losing” (Campbell).

Arturo Chacon and Raymundo Ruiz, two harried Mexican journalists working for Channel 44 in Norte de Ciudad Juarez, are an example of how the media is suffering because of being entwined in the drug war (Campbell). Chacon, a twenty-seven year old reporter, keeps his reports very vague and ambiguous in order to avoid the deadly threats of drug cartels and government alike. One of his recent front-page stories reflected this trend of anonymity: “Six people, among them a woman, were assassinated yesterday in different parts of the city bringing the total homicide count in the last 24 hours to 17, according to a local attorney general’s office.” There are no names, analysis, or follow up for fear of targeted gang violence (Campbell). Additionally, since Calderon began fortifying his military and police presence, there have been complaints by citizens of abuse, including torture, unlawful detentions and looting. Chacon’s coworker, Ruiz, experienced similar threatening behavior when he was tipped off to a drug laden safe house that had been supposedly discovered by two policemen. Ruiz entered the house and immediately felt a pistol in his side. The police man told him to leave. “I suddenly realized what I’d walked into,” said Ruiz (Campbell). The police were guarding the stash.

Ruiz and Chacon also speak about the narcocorridos, polka-like ballads that celebrate the drug traffickers and tell of their criminal sagas. The cult songs are sometimes broadcast over the police scanners after a drug gangster is apprehended, in order to taunt and frighten police and journalists. “It’s pretty chilling when you hear that music come through,” said Ruiz. “It’s like the bad guys are saying ‘We know exactly what you’re up to. We’re watching you’” (Campbell). In an industry where some of the major responsibilities are whistle-blowing or acting as the watch dog, Mexican journalists are forfeiting their right to free speech to the sound of haunting tunes on the police scanner. Chacon and Ruiz’s testimonies give voice to the 59 journalists that have been killed on the job since 2000, according to Mexico’s National Human Rights Commission (“Spj Calls for an End to Violence Against Journalists in M.”).

Violence against journalists is aggravated by the low respect that many citizens have for the profession, as reflected in most Mexican journalists’ low social status and wages. At Norte de Ciudad Juarez, a photojournalist can make $150 a week while, in poorer parts of Mexico like Oaxaca, some freelance journalists get $10 for a story (Campbell). Reporters without Borders (RSF) has stated that the public does not feel strongly about attacks against journalists and thus the issue does not move up the political agenda.

Many American journalists have traveled to Mexico to take up the cause of their threatened Mexican comrades, as Lisa Ling did on behalf of National Geographic in 2009 (Ingraham). In her interview with Laura Ingraham on FOX News, Ling claimed that the drug situation in Mexico is far worse than we could imagine. Ling explained that her photojournalist in Mexico is a homicide photographer and goes out five to ten times a day as soon as he gets calls. Ling concluded that the United States needs to curtail the rampant consumption of drugs that is coming from the United States and, in this way, debilitate the drug cartels (Ingraham). Contrary to Ling’s view, Mexico’s Ambassador to the United States, Arturo Sarukhan said that the US has already begun to slow the flow of drug weapons and money into Mexico over the US borders (Rodriguez).
Kevin Z. Smith, president of the Society of Professional Journalists wrote a letter to US and Mexican officials on January 29th in which he asked them to take the violence against Mexican journalists more seriously. In his letter, Smith writes “Against armed criminals and violent drug cartels, there is little that U.S.-based journalism organizations can do to physically protect Mexican journalists. But we are aware of instances where intense attention from U.S. media has actually helped diminish threats against target journalists in Mexico” (“Spj Calls for an End to Violence Against Journalists in M.”). If Smith is correct about the power of the United States’ influence on international affairs, then the US’s recently acquired voracious appetite for news on the Mexican drug war will bode well for Mexican journalists.

While US involvement is important, it is perhaps best that Mexico wins this war on its own, because peace will only be lasting if it comes from the efforts of those who desire it. In her article titled “Re-Imagining the Nation: Revolutionary Media and Historiography in Mesoamerica”, Juanita Darling makes this same point saying that throughout the history of violent activity in Latin America, “each country has been forced to contend with the threat of the United States intervention in moments of national crisis” (Darling). Darling claims that rescue efforts from the US would provide temporary relief, but not lasting peace.

While Mexico is steeped in danger for journalists, there are those who are fighting to challenge this deadly trend. In a competition sponsored by Transparency International and financed by the Open Society Institution, awards were given to those media outlets with the best examples of investigative journalism. Last year, second prize went to El Imparcial in Hermosillo for exposing corruption in Sonora’s legislature (Rosenberg). El Imparcial challenged the powers at large in the pursuit of truth and in the face of oppression and forced censorship. In 2008, Mexican journalist, Lydia Cacho Ribeiro, received the Guillermo Cano World Press Freedom Award from UNESCO for her exposition of child abuse and corruption in Mexico. In her acceptance speech, Cano says, “This award may not protect me from death threats or from death itself but…enable a broader audience to know and understand the Mexican reality” (Swaffield). Considering Mexico’s dire situation, future efforts could include a communitarian approach toward the problem, where all of the media stations band together, much like their cohorts in Colombia or China. In 2005, Colombia’s 19 leading magazines and newspapers shared their information and published on the same day without a single name attached in order to deprive the paramilitaries of targets for retaliation. The story they published, which exposed the takeover of the country’s lucrative numbers game by paramilitary groups, was a great success because of its anonymity (Rosenberg).

In our examination of the dangers facing Mexican journalists we have studied the histories of Pre-Columbian Mexico, Revolutionary Mexico, and the recent advances under Vincente Fox, acknowledged the precarious triangle involving the drug cartels, the government, and the press and how this affects people daily, have seen how the Mexican people, aware of their trampled rights, are planning and enacting ways to stop this deadly trend. Aware of the situation it is facing, Mexico attempts to take back the reigns of their ever struggling democracy and continue to fight bravely. In a commencement address at the Columbia School of Journalism in May, 2009, Alejandro Junco de la Vega, a Mexican newspaper publisher, claimed that the neophyte democracy in Mexico is being helped along by the practice of journalism and the pursuit of truth. “The journalists who put this work together each day do so at great personal
“They are bearing the burden of fractured family lives and the ever-present threat of violence. And yet they still come to work each day to see that the truth is told” (Navarette).

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With the invention of the gelatin-dry plates of the late 19th century came the ease of photographing multiple images in succession. Before the dry-plate process, photographers had to coat a plate of glass with light sensitive chemistry, load it into a camera and finally expose the glass plate. A photographer would then have to quickly enter a darkroom and develop the same negative with separate chemistry before the coated emulsion hardens, and the image captured is lost.

All of this had to be done within a thirty-minute window. This tedious and oftentimes dirty process of developing was replaced by a new and much easier one. Unlike the wet-plate collodion, the dry plate had no thirty-minute window within which the photographer had to develop the negative. There was no need to haul an entire darkroom for processing any more.
The darkroom was instead replaced by a convenient handheld box that would hold only
the gelatin-dry plates. Now the photographer could expose a picture, set it aside, and develop at
his or her convenience. The developing could even be skipped altogether by the photographer,
and he or she could simply have someone else do the developing for a fee. This made the entire
process much less intimidating and afforded people the convenience of taking large quantities of
images.

Eugene Atget (1857–1927) was one of the best-known French photographers who took
advantage of the dry-plate process. Starting in the mid 1890s Atget took an enormous amount of
pictures that exceeded 10,000 in number. Although he only referred to his work as pure
documentation, he has captured many beautiful images that are regarded as works of art. One
such image lies in Atget’s un-commissioned series of the Parisian church of Saint-Séverin.

Among the vast number of windows within the church, perhaps none have created a more
interesting photographic effect as the windows of the central nave.

In 1903 Atget captured a beautiful image of the nave from eye level, using only the light
from the stained glass windows to expose the negative. Because Atget overexposed the image,
presumably to capture more of the interior detail within the nave, an abstract figure resembling
an angel was also captured as if entering the main window.

Viewed with the naked eye nothing equivalent to such a figure could be seen making an
entrance. This is because the human eye automatically adjusts to the light better than any camera
ever could. Accordingly, only the lengthened exposure process of the photographic medium
reveals the abstract figure that appears on the gelatin-dry plate, and later in print.

In this image, light entered the camera and exposed the plate once as it passed through it,
and then another time from the rear as it bounced against the back of the camera, thereby
creating soft edges of light. This was a process known as halation, which in this case created an
extraordinary effect.

In comparing Atget’s view of the interior of Saint Séverin with a more recent image with
brighter illumination we can see a fundamental difference. Modern digital cameras are designed
to compensate for the halation effect and show as little overexposure as possible. Sadly, this
leaves out the beauty that can easily hide in otherwise undesired accidents, such as that seen in
Atget’s highly evocative photograph of the central nave of Saint-Séverin.

We now know that Atget was a seasonal photographer, active between March and
October. This may explain why he chose an overcast day to photograph the central nave. The
soft, flat light also helped to photograph the window without harsh light overexposing the dry-
plate, and removing too much detail from the interior of the nave. Atget also “avoided the
standard axial views, [preferring instead to make] overlapping views from opposite ends of the
central nave” from the “pedestrian” level (Harris, 2003, p. 106).

In 1930 Waldemar George wrote an essay in which he elaborated on Atget’s framing. He
described Atget as a photographer who:

“Eliminated what a more conventional sensibility would
have considered essential. He included what in categorical terms
might seem foreign, in order to present with greater clarity and boldness those patterns of experience that defined his meaning” (Szarkowski, 1985, v. 4, p. 15).

George was not the first to see Atget’s peculiar way of capturing images as a complement. Many others such as Bernice Abbott and Man Ray, who were among the first to discover his work, shared this interest.

Atget spent a short amount of time exploring painting before taking up photography, but he received no formal training in either fields. This may be the reason why Atget photographed the window of the central nave with the light entering almost directly towards the camera. This is generally not what a photographer would want to do intentionally because the detail around the light source would not be visible. The same light that enters the windows partly illuminates the rest of the huge nave as well. A gray, almost silver light is reflected on the chairs where worshipers would sit, but at this moment the nave is completely devoid of any living soul.

Yet the light may signify hope, or passion that is always there for anyone willing to follow it. A closer look will also reveal how the light from an overcast day would not be bright enough to illuminate the entire nave without some overexposure, but this same overexposure that is undesired in most photographs is what in fact generated an angel, with or without the artist’s intent.

The history of the church of Saint-Séverin dates back to the 6th century with a great deal of expansion and gothic additions taking place in the 13th and 15th centuries as well. We can see a very tall arcing ceiling in this image that is beautifully illuminated from multiple sources. Normally in an image where the main source of light is directed towards the camera the darker details near the light source are burned out into blackness. However, with glass plate negatives, we can appreciate the ability of the transparent medium to allow more light to pass, and show a much greater level of detail. This is one of the main reasons why dry-plate negatives dominated the market for about seventy years spanning from the late nineteenth to the mid twentieth century.

The framing of the Central Nave image is something quite unique to the style of Atget. He was not concerned about using the rule of thirds to exhibit a more picturesque image. In fact like so many of his images, the Central Nave composition seems oblivious to it. Atget positioned his camera at the very back of the nave, capturing some of the detail in the ceiling and on the floor. The windows on the right side are also evident, and show some of the gothic architecture. Also noticeable are the lanterns on the right and left sides of the wall. Had the artist been inclined to ignite the fuel inside, he would undoubtedly add detail and drama to the image, but he chose to use longer exposure time to achieve the same effect.

Atget captured the image of the Central Nave about seven years after initially picking up the camera for the very first time. It is evident that he became very skilled at using the camera as a tool to capture beautiful images that he simply referred to as nothing more than documentation.

He was always extremely modest in labeling his work as such, even though many later observers agree that his pictures carry a sense of artistic beauty. One of such individual was the artist Man Ray, who noticed surrealist traits in some of Atget’s prints. Man Ray was among the
first to discover his work. He purchased prints from Atget, one of which ended up on the cover of the magazine *La Révolution surréaliste*. When Atget agreed to have his image reproduced on the cover, he requested from Man Ray not to put his name on it.

From what little information there is about Atget’s past, we can surmise that he did not have many close friends save for the love in his life named Valentine. He chose to keep to himself unless it was otherwise necessary to interact with others such as his clients to whom he would sell his work.

A famous curator named John Szarkowski, who published at least four books on Atget's career, labeled him a "skeptical observer at a philosophical remove from the world's material concerns" (Szarkowski, 1985, v. 2, p. 19). In this way perhaps we can see the empty nave as Atget’s “fierce independence and removal of those material concerns.”

Atget never sought fame or fortune through his photographic career, and judging by his work, success did not lie in recognition or prestige. Sometimes it hid in the guise of emptiness that Atget's patience revealed to the rest of us.

References


SHAPING THE INDIVIDUAL: HOW SKILLS INFLUENCE WAGES
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Abstract
A key issue on agendas all over the nation has been employment opportunity and job quality. The issue has traditionally concerned methods in which we can reach full employment, while recently it has focused on reducing high rates of unemployment. As a result, a new light has been shed on education, and further down the tunnel- job retraining programs, for which the success is not well known. This study uses newer data gathered by the Occupational Information Network (O*Net), which has replaced an older data set, the Dictionary of Occupational Titles (DOT). Econometrics tests are performed on wages and skill composition of various jobs and finds that most of the skill sets have a positive association with wages, yet two skill sets do not.

Introduction
As cities all over the United States plunged into unemployment the need to restructure the labor pool became a persistent goal on policy makers’ agendas. Policies have been geared towards education and re-training, yet there are other issues that have lurked in the background for years- stories told, but rarely settled. Ranging from the long work weeks for the “unskilled” waitresses, house-keepers, cooks and others to the cushy premium wage jobs afforded after a large investment into education for white collar workers. Then there occurs situations when you question how the woman waiting on your table making less than $5 an hour or the fast food employee can barely afford the standard of living America promises despite pouring all the effort they have into their job. Whereas, on the flip side, we have members of society that have put years into education who may earn a different wage than their less-educated co-worker who has the same responsibilities, or the fact may be that there exists a paradox in the higher educational attainment picture that does not make our educated members of society our most skillful member (Arum & Roksa, 2011).

Before the execution of labor policies, it is important to understand how skill sets do influence wages. This paper is to serve as a launching pad to further research to expand on how unemployment, low wage individuals and families, as well as educated individuals can improve their chances of attaining a higher wage through the development of specific skills.

Literature Review
The Human capital theory provides us with a stepping stone to pose questions and to continuously find new forms in which we can increase the investment in ourselves via education, training and experience to improve productivity, as well as increase the returns for those who become more skilled in the form of wages, benefits, and other compensation.. Gary Becker, however, did not distinguish investment in education and training apart from the knowledge or skills one gains, but instead claimed that they cannot be separated, which is evidenced by the positive correlation in the time invested in education and wages. If wages are used as an assessment of labor productivity, we can then argue that skills act as an input as it is an attribute of the laborer, so that once again we notice that higher education can help an employee to gain
the appropriate skills to fulfill a job. However, Arum and Roksa (2011) find evidence inconsistent with the human capital theory, and instead claim a college education is not indicative of higher skill levels. This study uses a learning assessment to determine levels of learning and “gauge for critical thinking, analytical reasoning and other higher skill levels,” which are skills the labor market values highly (Goldin & Katz, 2008). The findings show that “45 percent of students ‘did not demonstrate any significant improvement in learning’ during the first two years, and 36% for over the four years” (R.A, 2011). If such is the case, then it must be the skills employed in an occupation which leads to higher productivity and thus wages, yet which skills will be our next question.

The introduction of new technology has stimulated a change in the organization of work and created a demand for new skills, not just technical skills. Overall, “employers recognize that it is another category of skills that are crucial to a worker’s ability to work “smarter, not harder.” Imel (1999) further finds that in the economic literature the skills that are found as “‘basic or essential skills’ that were once reserved for those in management, are now considered necessary for individuals at all levels of employment (Clagett 1997).” However, it is also important to note that the implementation of new technologies and thus the ability to transform the workplace and its demands is up to managerial discretion (Autor, Levy, Murnane, 2001).

The U.S. Department of Labor also conducted research to identify what skills are in demand. In the mid 1980s, the study showed there was a lack of skilled workers adept to conform to the new economy due largely to the introduction of new technologies, yet the extent employees became technologically skill-biased is unknown. Despite the new technology employees did not need to be technologically-competent, but resourceful in applying basic skills, such as the ability to learn, communicate, problem-solve, negotiate, and work with others (Clagett, 1997). The study was continued and in 2006 the report focused on whether the young labor force was ready to work. Sadly, the skills that employers were interested in the most were the ones lacking in the young work force (professionalism/work ethic, communication, teamwork, and critical-thinking/problem-solving). The employers in this study were asked to rank the skills for entry level jobs across educational levels, and as educational levels rose their rankings for the skill level did as well. The acquisition of skills across educational levels however was not promising. The report card for high school graduates showed a deficiency in all ten skills required to seven skills on the deficiency list for two-year college-educated employees, to four year graduates receiving a score of “adequate” for most skills (Casner & Barrington, 2006).

Even though the discrepancies for wages exist among labor markets there is a consensus that there exists a wage inequality between skilled and unskilled labor, and even amongst “skill groups when education is used an as indicator of the skill level of the worker” (Ingram & Neumann, 2006), once again an indication that education may not be solely responsible for the differences in wages. However, previous studies have accounted for many skills that may be obsolete today or may have become a norm. For example, Ingram and Neumann (2006) use the Dictionary of Occupational Titles to account for a more accurate fit of skills for the jobs during previous time decades. One such skill accounted for was finger dexterity. In today’s work climate the skill is required in many occupations that employers have gone beyond this formality to expect higher performance in the form of understanding professional computer programs, and already expecting their labor pool knows how to type. To account for these changes and keeping in mind previous literature, I’ve moved towards another model and used more recent data to understand how skill sets impact wages.
Theory

Human capital theory claims that an increase in our stock of capital (skills, knowledge, experience) through an investment in education or training can lead to higher returns, which is reflected as wages in our model. We can compare the skills of a fast food cook to a political scientist. The fast food cook has a skill rating of 308 for basic skills compared to a political scientist whose basic skill rating is 662, and the trend for higher skill ratings for the political scientist is consistent with other skill sets as well. The higher skill set ratings can be reflected in the wage for the two occupations: $17,720 - fast food cook, and $104,090 - political scientist. In the chart below the supply of highly skilled labor has a steeper slope than the supply of low skilled labor, and thus a less elastic labor demand versus the lower-skilled job a more elastic demand. This may be due to the time in investment to build a highly skilled labor force, which is reflected by an inelastic demand, since more years of education and training are required to fulfill the higher demand. As a result, the equilibrium between the supply and demand of the labor is reflective of the inequality in wages between the two groups.

![Graph 1](http://www.economicsonline.co.uk/Competitive_markets/The_labour_market.html)

If the theory holds true, then wages can be reflected as the following:

\[
\text{Median Annual Wages} = \beta_1 + \beta_2 \text{Basic} + \beta_3 \text{Complex Problem Solving} + \\
\beta_4 \text{Resource Mgmt} + \beta_5 \text{Social} + \beta_6 \text{System} + \beta_7 \text{Technical} + \mu_i
\]

Econometric Model

The theory is tested using skill set data from the Occupational Information Network (O*Net), developed by the U.S. Department of Labor to replace the Dictionary of Occupational Titles. O*Net has trained occupational analysts to construct skill ratings for 35 skills for 854 occupations, which are grouped into the following categories: basic, complex problem solving, resource management, social, system and technical. The use of occupational analysts is an

1Graph obtained from http://www.economicsonline.co.uk/Competitive_markets/The_labour_market.html
attempt to attain more accuracy, versus before ratings were influenced by job incumbents, who are “more likely than analysts to deliberately inflate their ratings to influence policy decisions such as those associated with compensation and training.” Occupational Analysts use the information provided by incumbents as well as the following to determine ratings: (1) title, definition, and job zone of the occupation; (2) task statements and data; (3) knowledge statements and data; (4) generalized work activity (GWA) statements and data; (5) work context items and data (Tsacoumis & Wilson, 2010). The 35 skills were rated on a scale of 100, however, due to the ambiguity of the regression coefficients for each skill, skill sets was used to provide a clearer picture. Table 1 provides the categorization of skills and the total possible score in each set. The results were then compared to 2009 median annual wages that were found for 841 occupations that O*Net had rated, the data provided by the Bureau of Labor Statistics.

Table 1: Skill Set Composition and Scoring

<table>
<thead>
<tr>
<th>Skill Set</th>
<th>Skills Accounted For</th>
<th>Total Possible Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic Skills</td>
<td>Active Learning, Active Listening, Critical Thinking, Learning Strategies, Mathematics, Monitoring, Reading Comprehension, Science, Speaking, Writing</td>
<td>1000=11 skills * score of a 100 possible per skill= 1100 points</td>
</tr>
<tr>
<td>Complex Problem Solving</td>
<td>Complex Problem Solving</td>
<td>100</td>
</tr>
<tr>
<td>Social</td>
<td>Coordination, Instructing, Negotiation, Persuasion, Service Orientation, Social Perceptiveness</td>
<td>600</td>
</tr>
<tr>
<td>System</td>
<td>Judgment and Decision Making, System Analysis, Systems Evaluation</td>
<td>300</td>
</tr>
<tr>
<td>Technical</td>
<td>Equipment Maintenance, Equipment Selection, Installation, Operation and Control, Operating Monitoring, Operations Analysis, Programming, Quality Control Analysis, Repairing, Technology Design, Troubleshooting</td>
<td>1100</td>
</tr>
</tbody>
</table>

Table 2 reflects the average skill ratings of 841 occupations. The average skill ratings per skill set is around half of the total skill set rating. For example, the total possible skill rating in basic skills is 1000, yet the average rating is 508. In this case it is not clearly understood as to how we can interpret these results since each skill set, except complex problem solving, represents six or more skills. Furthermore, these descriptive statistics represent 841 occupations that vary in tasks, education and training requirements, and other factors that have an influence on the skills needed for each job. These results can also be impacted by the type of jobs that are represented, and despite the fact we have a large sample it is difficult to grasp what portion of the jobs are highly skilled or low skilled and how that may shift the overall mean. Despite the ambiguity, there are some findings that may reflect the skills employers demand. The changes in technology should reflect a need for higher technical skills, yet the technical skill set, which measures eleven skills, has a low mean score rating, and even further a low mode. This may be indicative that technology is not skill-biased, or as seen reflected in previous studies the impact of technology has not been clearly understood as to what impact it has made (Autor, Levy,
Murnane, 2001). It can also represent, as claimed earlier, that there may be fewer jobs in the economy that require technological use, as seen in the range between the occupations with the highest skill rating and lowest skill rating—a rating of 643 points.

Table 2: Descriptive Statistics

<table>
<thead>
<tr>
<th></th>
<th>Mean</th>
<th>Median</th>
<th>Mode</th>
<th>Standard Deviation</th>
<th>Maximum</th>
<th>Minimum</th>
<th>Sample Size (n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>508.1</td>
<td>508</td>
<td>552</td>
<td>109.4</td>
<td>768</td>
<td>229</td>
<td>841</td>
</tr>
<tr>
<td>Complex Problem</td>
<td>54.5</td>
<td>53</td>
<td>63</td>
<td>11.4</td>
<td>81</td>
<td>19</td>
<td>841</td>
</tr>
<tr>
<td>Solving</td>
<td>137.4</td>
<td>135</td>
<td>129</td>
<td>40.8</td>
<td>273</td>
<td>25</td>
<td>841</td>
</tr>
<tr>
<td>Resource</td>
<td>284.8</td>
<td>282</td>
<td>267</td>
<td>62</td>
<td>495</td>
<td>75</td>
<td>841</td>
</tr>
<tr>
<td>Management</td>
<td>132.9</td>
<td>132</td>
<td>106</td>
<td>37.8</td>
<td>238</td>
<td>37</td>
<td>841</td>
</tr>
<tr>
<td>Social</td>
<td>347.8</td>
<td>220</td>
<td>117</td>
<td>142.7</td>
<td>649</td>
<td>6</td>
<td>841</td>
</tr>
<tr>
<td>System</td>
<td>132.9</td>
<td>132</td>
<td>106</td>
<td>37.8</td>
<td>238</td>
<td>37</td>
<td>841</td>
</tr>
<tr>
<td>Technical</td>
<td>284.8</td>
<td>282</td>
<td>267</td>
<td>62</td>
<td>495</td>
<td>75</td>
<td>841</td>
</tr>
<tr>
<td>Median Annual Wage</td>
<td>$47,287</td>
<td>$41,725</td>
<td>$49,750</td>
<td>$22,067</td>
<td>$160,530</td>
<td>$17,030</td>
<td>841</td>
</tr>
</tbody>
</table>

Basic skill sets represent ten of the 35 skills, and the average score is a rating of 508, with the highest skill rating at 768 and a minimum rating of 229, again showing that basic skills may be more important in some occupations versus others. However, this is inconsistent with the fact that employers demand more basic skills out of employees since basic skills are reflective of a workforce that can adapt to the changing work climate.

Thus, to grasp a clearer understanding of how skills influence wage, I used an Ordinary Least Squares Regression to estimate Median Annual Wages as a function of the following skill sets: basic, complex problem solving, resource management, social, system and technical. Table 3 shows the results of this regression.

\[
\text{Median Annual Wages} = -\beta_1 + \beta_2 \text{Basic} + \beta_3 \text{Complex_Problem_Solving} \\
+ \beta_4 \text{Resource_Mgmt} - \beta_5 \text{Social} + \beta_6 \text{System} - \beta_7 \text{Technical} + \epsilon_i
\]

According to the theory of labor demand, higher skills should lead to higher returns in the form of higher wages. Therefore, we may anticipate a positive association amongst each independent variable, the skill sets, and the dependent variable, median annual wage.

**Results**

The OLS regressions show statistically significant evidence that basic, complex problem solving, resource management and system skills have a positive association with wages. However, the findings are inconsistent with social and technical skills, which exhibit negative associations with wages, yet the findings are also statistically significant at the one percent level. Furthermore, the regressors used explain 57.2% of the variation in median annual wages, which is statistically significant.
Complex problem solving has the largest influence on average wages; $611.65 change in median annual wages as the skill rating for an occupation improves by 1 rating, holding all other variables constant. This again reflects the employer’s importance placed on complex problem solving skills in previous studies. Basic skills also reflected a positive association with wages- a $75.50 average increase in wage for 1 skill rating improvement in basic skills, holding all else constant. This smaller impact on wages may be due to the fact that it accounts for ten skills versus just one. Resource Management has around the same impact holding all other variables constant- a $77.46 average increase in wages for a 1 point improvement in the rating. System skills, or understanding the bigger picture, does have a larger impact than the before mentioned- $97.67 average increase in wage for a 1 skill rating increase in system skills. However, the shocker seems to be social skills for which an increase in skill ratings by 1 point is associated with a decline in wages by $86.59 average, ceterius paribus, and a 1 point increase in rating of technical skills reduces wages by $11.88 average, ceterius paribus. In this case it might be difficult to grasp how important social skills are since we have 841 occupations that require different tasks. Occupations that were in the highest rated social skills were managers, counselors, specialists, psychiatrists and psychologists. The wages amongst this group varied tremendously. For example, coaches and scouts received the second highest rating- 479 and had a median annual wage of $28,380, versus sales managers who earned $96,790 and had a rating of 429. The inconsistency is found on the lower end of wages as well, and the story is also reflected in technical skills.

### Conclusion

By explaining 57.2% of the variation in the regression, I realize there is room for improvement. The current model helps to enforce employer’s demands for basic and complex problem solving skills, yet still questions how technology impacts skills, as well as brings up a possibly new finding about social skills. In order to advance the model, it would be appropriate to account for other factors that previous models have such as education, or training. To make this applicable to our unemployment dilemma it would be appropriate if we included funding provided for labor force participants in improving skills and also included competition on scales (local, national, global) to see how the labor pool’s wages are impacted.
References


Photography has not always been the expressive medium that modern day enthusiasts embrace. As we learned in reading Mary Warner Marien’s critique of Charles Nègre’s “Chimney Sweeps Walking” (1852 or before), when the medium came to the forefront in 1839, the greatest criticism of photography as art was that it could provide only literal depictions of the world – such a display was not open to creativity. Several artists of the middle 1800s expanded the appreciation of photography as more than just a reflection of the mundane. Among those artists was Gustave Le Gray (1820–1884), who is credited with multiple technical advances, some of which identified through written evidence and others through theoretical extrapolation.

While many aspects of Le Gray’s work are noteworthy, I assert that the most dramatic of Le Gray’s contributions is his self-proclaimed original use of wet collodion negatives. The use of the same enabled his viewers to enjoy detailed and expansive landscapes that were nearer to true life than ever before. A grand example of this is “Brig Upon the Water” (c. 1856), whose tranquil waters and cloudy evening sky draw the viewer into its calm and peaceful setting that was the antithesis of Le Gray’s life during the time of the photograph’s inception.

Le Gray combined the imagination and skill of both an artist and a scientist. While still a student in the studio of the academic salon painter Paul Delaroche, he became aware of photography but did not involve himself in it until the end of the 1840s (Aubenas, in Baldwin, 18-22). He was unable to make a living as a painter in a time period when the art field was overcrowded with competitive painters, and began to focus on working with paper negatives, the
chemistry of paint, and later, the perfection of the dry waxed-paper process in 1848. While Le Gray was working in Daguerreotype, he discovered that the exposure time associated with that method was far too long (Jacobson 6). This discovery caused him to embrace the use of waxed paper negatives in order to capture the finer details of an image. Additionally, Le Gray was the first to successfully achieve the printing of one picture from two negatives. Coupled with the process of using wet collodion glass plate negatives to achieve a richness of tone and a “moonlight effect” on the image, Le Gray’s photography, particularly his seascapes, were extremely popular and a commercial hit. “Brig Upon the Water” is one of his greatest achievements, and was considered a major milestone in having photographs considered “fine art” (Jacobson 12-13). It is the optical anomaly existing in the photograph’s sky that created the greatest interest in the work. By shooting in daylight with a wet collodion plate, Le Gray created a moonlight effect of the light from the evening sky transferring onto the water below (Jacobson 6-7).

One print of “Brig Upon the Water” is currently in the possession of the Royal Photographic Society in London – the same location where the photograph was first exhibited in 1856. On the mount of the photograph is inscribed the phrase, "The great sensation of 1856" (Leggat). This was indeed true, for Le Gray had created a sensation when he revealed his masterpiece, which ultimately advanced the photographic world. Prior to “Brig Upon the Water,” land/sky pictures often had over-exposed skies due to the lack of sensitivity of photographic materials and the over sensitivity to blue light. Le Gray's photo provided an aesthetically pleasing representation of sky and sea on one print, which caused a whirlwind of controversy amongst historians regarding whether he accomplished the same through the use of a single negative, or whether this was the first example of combination printing. The resulting dialogue prompted current and future photographers to address the limitations of their chosen medium with regard to achieving the fluid luminosity of sky and land, so that they would be able to ensure that landscape images were more realistically represented.

One can almost feel the tranquility and peace that is being felt by the small Brig’s traveler as it quietly sails through the crystalline waters hugged by a cumbersome, partly-cloudy twilight sky. The water feels touchable, and the damp ocean air potentially breathable. The texture and consistency of the clouds are similar to the consistency and texture of the lulling waves of the ocean, such that in some way, it feels as if you cannot determine where one begins and the other ends. The coherency of the water and sky is a sharp contrast to the stony terrain in the foreground of the photo and the mussel beds along the edges of the photo. While the “moonlight effect” is not necessarily a suggestion that the photograph is a night image, the light that appears from the heavenly body passes as a small bright gleam highlighting a concentrated area of the water. The clouds in the sky are concentrated, and it is a momentary break in what appears to be increasingly darkening storm clouds that causes observers of the photograph to be particularly drawn to the image.

How Le Gray accomplished these effects is not revealed in any nineteenth-century publication, but it is known given modern day technology that Le Gray often used two negatives, spliced together, to create a seamless final print. The seascapes are, in general, large in scale, contained rich tones of russet and gold, and showcase what are considered to be the most impressive lighting effects of the 1850s. However, it is now recognized that “Brig Upon the Water” is unique and stand alone from its seascape counterparts, for there is no joining seam along the horizon where water meets sky (Janis 73), whereas in other prints comprising the “seascapes,” a joining seam can be easily seen. Hence, “Brig Upon the Water” is one of the only
photos to originate from one sole negative. Le Gray’s glass negatives were the same size as his photographic prints—about 32 x 42 cm (12 ½ x 16 ½ in.). He placed the negative directly on top of the photographic paper and printed in sunlight. The prints were then toned in a solution of gold chloride in hydrochloric acid. This resulted in a rich, violet-purple color, with the added benefit of stabilizing the images to help them withstand fading over time (Aubenas 262).

“Brig Upon the Water” was made with a single negative and succeeded by taking advantage of the reflective qualities of sea, as opposed to land, and by suggesting the effects of twilight or moonlight rather than bright daylight. Its uniqueness caused the print to exist as one of the most famous and widely distributed photographs of the nineteenth century, enjoying enormous success in England and substantial interest in France. A London print seller’s advertisement in The Times in November 1856 reported that 800 copies of the photograph were ordered within a two-month period. The photo was first exhibited on December 17th, 1856, at a soirée held at King’s college by the Photographic Society, and its massive following was not typical of photographs of its time. Indeed, many copies of the photo still exist and are marketed at least one or twice a year (Jacobson 12).

Yet, despite all of the interest in Le Gray’s masterpiece, little is known about the details surrounding the creation of “Brig Upon the Water” or how the other seascapes were created (Jacobsen 7). Le Gray was notorious for keeping information away from his contemporaries and failing to publish his accomplishments (Aubenas 262). Le Gray’s techniques were not universally known, and this was by design, for he preferred to keep the outside world guessing as to how he achieved his photographs. What little bit of information Le Gray caused to published was regarded as suspects by his contemporaries, who accused him of purposely publishing incorrect formulas so that any person who tried to duplicate his methods would fail miserably (Jacobson 7).

Despite this lack of recorded information regarding the details of the creation of “Brig Upon the Water” and his other seascapes, this collective group of photos were, and still are, Le Gray’s greatest public, commercial and aesthetic success. The seascapes were taken in France, from locations in Normandy in the summer of 1856 and along the Mediterranean in 1857. Shortly thereafter they were exhibited in London and Paris, where one reviewer for the Journal of the Photographic Society (21 February 1857) wrote, “We stop with astonishment before M. Le Gray’s "Sea and Sky," the most successful seizure of water and cloud yet attempted. The effect is the simplest conceivable. There is a plain, unbroken prairie of open sea, lined and rippled with myriad smiling trails of minute undulations, dark and sombrous and profoundly calm, over the dead below – smooth as a tombstone” (Daniel).

Le Gray’s “Brig Upon the Water,” along with his other seascapes, has great artistic power. In 1856 he wrote: “Since its first discovery, photography has made rapid progress, especially as regards the instruments employed in its practice. It now remains for the artist to raise it to its proper position among the fine arts.” Le Gray surpassed his own challenge in meeting land and sky in the photograph. To unite the seascapes compositionally, Le Gray created a framework of horizontal zones with unlimited borders. Within that framework, he explored skies, waters, clouds, and waves in detail to determine the full potential of the elements. He would then inundate the scenery in front of him with images of boat, rocky shores, and expansive horizons. Together, Le Gray created complete lifelike scenes that captured his viewer’s senses because of their simplicity and realism (Daniel).

The high quality of “Brig Upon the Water” and other seascapes is attributed to Le Gray’s use of wet collodion negatives to bring a photograph to “life.” Because Le Gray failed to
document first hand his achievements and to narrate his practices with the method, enthusiasts are therefore constrained to call Le Gray the “theoretical” father of the first use of wet collodion negatives (Aubenas 256). In the early 1850s other artists produced photographs embodying images that resulted from wet collodion negatives. In response to these offerings, Le Gray was quick to announce that he had been performing this same method of photography well before these artists. This gave rise to a debate that continues to this day.

Whatever the case may be, Le Gray’s use of the wet collodion process can be seen in “Brig Upon the Water.” The most important aspect of this photograph is that Le Gray was able to photograph both water and sky at the same time. Prior to this achievement, when a photographer took a picture of the sky using wet collodion negatives, the sky would overexpose due to hypersensitivity to the blue light that was characteristic of this type of negatives. One possible answer to this overexposure was to blank out the sky on the negative with paper or some opaque substance, cloaking the sky in white. Notably, in 1856, photographer Francis Frith, well known for only printing pictures that contained completely blanked out, or “whited out” skies, made his first trip to Egypt to photograph antiquities. At the same time that Frith was engaging in his chosen method, Le Gray was advancing his trade, producing work at a much more sophisticated level, and ultimately, was able to avoid resorting to Frith’s method, by perfecting a way to photograph the skies by photographing the entire scene as he did in “Brig Upon the Water,” which would result in the creation of an image with a moonlight effect.

Alternately, Le Gray would engage in combination printing, using the portion of one negative from the horizon line down, and then taking a photograph from the horizon line up and sandwiching the two photographs together. This process would create one uniform, almost seamless picture. This was a method that Le Gray used often, as demonstrated by the existence of a multiple number of photographs that seemed to share the same sky or cloud due to Le Gray’s use of similar scenes. This realization caused his audience to question whether Le Gray engaged in combination printing for all of his negatives. The conventional wisdom for many years was that this was his preferred and only process. However, as recent scholars have shown, “Brig Upon the Water” is not a combination print. It was instead produced from a single negative with not even the slightest hint of two images having been spliced together. (Baillargeon lecture 11/18/10)

As for the visual content of this photo, it can be interpreted as mirroring the state of Le Gray’s personal life during the time of his creation. Objectively speaking, the photograph was an achievement for its time, gained much interest, and made money. Certainly Le Gray created this piece to be sold. It is important to note that just prior to creating “Brig Upon the Water,” Le Gray designed and built a beautiful art studio that he needed to finish paying for (Jacobson 5). The need for money to pay off debts was a common theme in Le Gray’s life. He is thought to have been constantly broke, a horrible businessman, and to have fled to Egypt when creditors started pursuing him for unpaid debts. In doing so he abandoned his wife and children, and lived out the rest of his life as a professor of design (Janis 125). His gradual withdrawal from photography was common among other photographers in the 19th century. Le Gray was unable to independently support himself financially, and was only able to pursue his trade and the advancement of higher standards within, by depending on the generosity of a benefactor named Comte de Briges (jrank). Over time, the world of photography became more competitive and commercial, and Le Gray’s benefactor withdrew his financial support. Having lost his financial backing, Le Gray was unable to make himself create pictures that would be salable and relevant to the demands of the public and instead continued to focus on the problems of light and pictorial
organization. Hence, I think it is quite possible that what originally looked like poor business management and failure to manage money was really reluctance on the part of Le Gray to accept what the marketplace was demanding at the time.

Given the ability of an art piece to yield itself to interpretation, it does not seem to be a far stretch that his art was his only escape from the turmoil that he faced in his day to day life – whether the escape was from financial concerns or the pressure of a marketplace that would not yield him the freedom to explore his trade while confirming with the qualities of a photograph that would yield a sale. “Brig Upon the Water” and his other seascapes are peaceful respites that any viewer can perceive, with a little imagination, with all of their senses. I would take this argument to a different level by suggesting that Le Gray is the sole operator of the Brig in his photograph. He sits alone in his small vessel in the vast openness of the ocean, which affords an expansive roadway into unknown worlds out toward the horizon. However, the Brig does not point out to the horizon – instead it floats parallel to the horizon, and not far from what can be seen as the beginning pieces of his departure shore. The Brig operator dances the line between escape and bondage. Slightly behind the Brig on the right hand side of the photo toward the horizon is the highlighted circular portion of water that captures the final moments of light cast from the moon, before the clouds embrace the moon and cast away its rays. The Brig flows toward darker skies and non-illuminated waters, where it is much more difficult to see. Perhaps Le Gray’s picture represents the status of his life, as one that seeks a brighter future that he can approach with positivism and hope, but he cannot, because he finds himself always anchored to his burdens and living the majority of his life without hope and faith. Yet, given his desire to push the advancement of photography, Le Gray might have been communicating a completely different message in creating this photograph, namely, that he is operating at a level far beyond what his contemporaries were at the same time. “Brig Upon the Water” may just be his declaration that he can achieve breathtaking effects with camera, light, and landscape in a way that his counterparts could not.

Whatever the interpretation or the purpose of the photograph, it seems clear that Le Gray sought to perfect his craft, and wanted to create something that weeded out the weaknesses of photography and embraced a more technical approach to creating a seamless, visually stunning and almost surreal work of art. “Brig Upon the Water” takes photography to the next level by creating an image of land-sky in one step, and as one scene, just as it would exist in real life.
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The female characters in Hoffmann’s works, “The Golden Pot” and “The Sandman” play a defined role relative to men; the woman functions either as an artistic muse or hindrance for his main (male) characters. The role of the woman in Hoffmann’s works will be discussed in this analysis, as it relates to the artist-heroes, Anselmus and Nathanael, of the romantic works, “The Golden Pot” and “The Sandman.”

Hoffmann seeks to portray a dilemma prominent for artists in his era: as an artist, how can one create his art and still be able to feed oneself – that is, earn sufficient wages to support oneself? If the artist only creates true art, (s)he cannot eat; however, if (s)he only fulfills her/his role in bourgeois society, her/his art will be neglected, therefore preventing the artist from reaching her/his destiny. The main characters in “The Golden Pot” and “The Sandman” are artists who display this conflict. Both Anselmus and Nathaniel have the choice, which route to take, to bourgeois society or to his art. The alternatives are presented by two women in each of Hoffmann’s stories. The woman who exists in the realistic realm hinders the artist’s work and, in the end, his freedom, a component of his artistic existence. The one who exists in the realm of fantasy functions as a muse for his art. The reason for such influence of the woman’s realm of existence on her respective artist’s work is a result of the female’s discourse. The discourse of reality is not nourishing to art, as it concerns itself with the necessity to nourish one’s corporeal existence; this realistic discourse is that of the bourgeois. Conversely, the discourse of the fantastic realm is one which is very nourishing to the hero’s artwork. These discourses will be discussed further, as they relate to the women who personalize them; this translates to each woman’s influence on Hoffmann’s heroes. This paper ventures to present in what way the artist’s choice of woman from distinct realms influences his artwork, as well as his destiny.

The attitude toward women, which Hoffmann portrays, is reflective of their functionality; her “worth” is achieved through her utility to the hero. The women in “The Golden Pot” and “The Sandman” play ancillary and instrumental roles, which are evaluated relative to the artist. Further, the women of these works embody the two realms of Hoffmann’s stories, and for a definite reason: to have an influence on the art of the masculine hero. The two realms determine the woman’s role in the hero’s realization of his art, whether she will inspire or hinder it. Therefore, one can conclude that each woman in these two works by Hoffmann is only as valuable and important as her utility.

Parallels between the works are easily discerned, contrasts between the two help to form a clear portrayal of the woman’s role. The male characters, Anselmus in “The Golden Pot” and Nathanael in “The Sandman” are artists in their own right. This common factor becomes crucial for the analysis of literary works produced during the Romantic era, since it establishes a particular tension in relationships wherein both art and love come into play. Art and love are linked inextricably, and the connection forces the artist to make a choice: whether the more suitable companion would come from the realistic or fantastic realm. Destiny plays an important
role as well, because at times random events can lead to bliss or to disaster. The main male character’s potential exerts an important influence on the selection process as well, it becomes the single most important qualification for the male artist’s primacy and the basis of his attractiveness to the corresponding female characters.

Hoffmann provides his tale “The Golden Pot,” with the subtitle of “A Modern Fairy Tale.” This fitting appellation describes a work which holds fantasy and reality in conflict with one another, as indeed is the case in this work. There are numerous fantastic elements in the text, such as a heroic salamander archivist with a marvelous parrot companion, a witch with a villainous cat familiar, magic spells and rituals, etc.; and one can easily identify the story as a fairy tale, however, this is not the work’s singular realm. Reality is also an important component in the story, therefore making “The Golden Pot” unlike a normal fairy tale: it is something new. The realistic and fantastic realms encompassed by this work also inform “The Sandman” and provide comparable backgrounds against which the events in each tale are played out.

In “The Golden Pot,” Hoffmann uses the characters Veronica and Serpentina as personifications of each of these realms of existence. Veronica Paulmann is the daughter of Assistant Headmaster Paulmann and thus a bourgeois woman, who dreams of her forthcoming wedding and of a luxurious life as a court councilor’s wife. Veronica’s plans, however, are not fitting to the artistic goals of her potential suitor, Anselmus; her discourse is that of the typical bourgeois, relating primarily to reality and concerning itself with daily life. It is certainly true that Veronica does not solely exist in the realm of reality; she possesses eyes of quintessentially Romantic blue, participates in a ritual of witchcraft and plays a role in casting a spell on Anselmus. However, despite such fantastic interactions of her character, her primary realm of activity in “The Golden Pot” is within reality. Veronica’s hindering of Anselmus’ calligraphic art is apparent in the ninth vigil; after a social visit to the Paulmann residence lasts too long, Anselmus realized that it was now much too late to begin working at the Archivarius’s and he eagerly complied with the wishes expressed by the dean, especially because he could now be hopeful of having an opportunity to look at Veronica all day long and to obtain from her many fleeting and meaningful glances and gentle pressures of the hand—even perhaps to succeed in stealing a kiss.”(TGP 58) Serpentina, the daughter of Archivarius Lindhorst, comes conversely from the realm of fantasy; her destiny is her future, marvelous life awaiting her in the realm of poetry, Atlantis. Serpentina functions as a muse for the art, as motivation for Anselmus to complete his calligraphy. With her help, Anselmus copies a difficult Arabic manuscript so well and easily that he, himself, cannot believe it; “’How those scratches got on this fine English script, the Lord and Archivarius Lindhorst know best,’…”’but I will swear to the death that they were not done by my hand!’”(TGP 38)

In Hoffmann’s stories, the woman is powerless in influencing the hero without him possessing some degree of subjectivity. Although not as subjective as Nathanael, the male artist in “The Sandman,” Anselmus, is nevertheless a character whose thoughts and behaviors exhibit a great deal of naivete. From this perspective, Anselmus is able to create his art, calligraphy, with more aptitude. For Anselmus subjectivity is not something only perceived through his eyes, but also through his ears: “Oh, gleam and glow one more time, you dear golden snakes. Let me once more hear your little bell voices…” (TGP 7) Therefore, he also hears what he perceives subjectively, this is shown by the onomatopoeia in the first vigil. “’Betwixt, between, betwixt the branches, between the blossoms, shooting, twisting, twirling we come!’” (TGP 5) With this
characteristic, Serpentina is able to develop an influence on Anselmus, that is, through Anselmus himself.

The subjectivity in “The Golden Pot” is not limited to the subjectivity of the male character; as a transitional character between the two realms, who primarily exists in reality, Veronica is also subjective; the witch Liesl makes reference to this, when she chides Veronica: “‘...’This is all terribly stupid and ordinary business, and false to boot, for Anselmus will never ever be a court counselor and your husband. He does not love you even a little, despite your blue eyes ...’” (TGP 27) There are many elements in this situation which portray Veronica’s subjectivity, primarily her role as a romantic dreamer. Subjectivity is a prominent theme in the period of Romanticism; therefore, one can view Veronica’s blue eyes, both organs of perception and mirrors of the soul, as a representation of the era. Veronica’s subjective ideas of love and unrealistic dreams of life display her subjectivity and define her place as a bourgeois woman, who occasionally thinks outside of the realistic realm. As a bourgeois woman, Veronica is more reasonable in discourse, relative to Serpentina, however, as this is a relative concept, in relation to Clara, the realistic woman in “The Sandman,” she is hardly so.

„The Sandman“ distinguishes itself in various ways from the fairytale „The Golden Pot.“ from the beginning of the work onward, it is clear that it is not a fairytale, rather a novella. This classification foreshadows the end result of the hero’s art. As a novella, this story has far more realistic elements and fewer fantastic elements than, for example, “The Golden Pot.” The story takes place in the realm of reality, with an important element out of the fantastic realm- Olimpia. Olimpia is unmistakably a character of the fantastic realm, however, this is only a result of the hero’s subjectivity. This pattern of Nathanael’s subjectivity is prominent in the work and encompasses that which is “fantastic” in „The Sandman.” As in „The Golden Pot,” Hoffmann presents the two realms through polar female characters. This element reflects the role of women in these works- to represent the realms of existence to the hero, and finally, to assist or hinder his realization of art.

In „The Sandman,“ as in „The Golden Pot,“ Hoffmann uses two female characters nurture either bourgeois life or art. As one could infer from her name, Clara is the representative of reason. In a letter to Nathanael, she urges him to take personal responsibility for his fears, realize they are in his mind, and, essentially, to grow out of his childish fantasies. Her reason and responsibility, however, are not characteristics nurturing art, Clara hinders Nathanael’s work as a poet; when he presents her with a poem that gives a lyric voice to his dark and ominous sentiments, she exhorts him, “...Nathanael, my darling Nathanael, throw that mad, insane, stupid tale into the fire.” The subjective Nathanael responds “...’You damned, lifeless automation,...’”(TS 294) On the other hand, unlike Clara, Olimpia has no understanding at all; nonetheless, she represents fantasy. As a product of the main character’s subjectivity, Olimpia is part of the fantastic realm, insofar as she, as a truly lifeless puppet, embodies humanity. Olimpia advances Nathanael’s art, as she never has an opposition to his work, and never can. This subjective characteristic of Nathanael is one which makes him vulnerable, and because Olimpia is a machine, she is essentially just the “partner” whom he would like to have. She has no will and no thoughts; as a result, Nathanael is able to use her somewhat as a mirror of his own will and thoughts. Essentially, because Olimpia serves as Nathanael’s muse, he is his own muse. At a party Nathanael’s subjectivity and Olimpia’s subsequent influence on him is put on display; Nathanael asks Olimpia: “’Do you love me?...’” The only thing Olimpia is able to say is “’Ah,
ah, ah!” As a reflection of his subjectivity, Nathanael replies “‘Yes, you, my lovely wonderful evening star,…’”(TS 301)

Olimpia’s indifference is of importance for her role in relation to Nathanael and his art. Through this indifference, Olimpia becomes the object of Nathanael’s subjectivity. Accordingly, she becomes a positive influence on Anselmus’s art, his poetry. However, Nathanael eventually chooses the realistic Clara for his intended life-companion; however, his fatal subjectivity stirs once again, leading his own suicide and very nearly to the murder of Clara as well. Thus, the interaction of his subjectivity and his participation in bourgeois reality leads ultimately to the destruction of his art and himself. Clearly, however, this demise is the product of the male character’s extreme subjectivity and his infantile, instrumental view of women.

„The Golden Pot“ presents a triumph of the fantastic realm, and as a result, a triumph for the hero’s art. Veronica’s bourgeois dreams of life with Anselmus as court councilor depresses his artistic sensibility and eventually influences his choice of Serpentina as a wife. Serpentina, a woman from the fantastic realm, functions as a muse for Anselmus’ art, she enables him to write his calligraphy better than he ever before had. Calligraphy is Anselmus’ art form and through his choice of companion from the fantastic realm, he is able to realize his artistic destiny, embodied by his eventual home, Atlantis.

The role of women in Hoffmann’s works is thus realized relative to their role in the artist’s work. As it is apparent in “The Golden Pot” and “The Sandman,” Hoffmann’s female characters are exploited as instruments: they inspire the art of his “heroes,” and through the representation of the woman’s realm each artist works out the competition between the necessities of life and the demands of art.

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“THE PRICE MAKES ALMOST NO SENSE”: THE EFFECTS OF WAL-MART ON LABOR CONDITIONS AND THE ENVIRONMENT IN CHILE

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In America, most serious issues of labor regulations were dealt with in the early twentieth century, allowing Americans to enjoy a high level of working standards. Also, many environmental reforms have taken place, regulating companies in America with respect to their environmental impact. However, this is not the case in every country, such as in the example of Chile. Although it is a modern country, with a 95% literacy rate, low infant mortality rates, and long average life expectancy of 75 years (Bianchi), the industrial workers as well as the environment have recently been put into a dire situation caused by the entrance and proliferation of foreign corporations into the country’s export sector. These effects are seen most readily in the new Atlantic salmon export of Chile. The salmon farming industry has recently risen from nonexistence to being Chile’s second largest export within twelve years. This dramatic emergence of the industry is caused largely and mainly by large international corporations, such as Wal-Mart, purchasing large quantities of salmon. These companies gain enormous power over the Chilean companies and demand continual price cuts. These reductions in prices most often come from the Chilean workers through reductions in labor standards as well as from a relaxation of environmental standards and practices.

In order to understand the plight of the Chilean salmon farmers, we must first observe the history of the emergence of salmon farming in Chile.

Salmon farming was introduced to Chile by their government in the 1960’s by forming a research project into the effectiveness and viability of salmon farming. By the mid-1970’s, the government research program found that a region 1000 kilometers south of Santiago, called the Tenth Region, was suitable for salmon farming because of its many inlet and fjords, as well as the ideal climate. Before the importing of salmon, which occurred after the results of this research, there were no salmon in Chile, and the salmon can be classified as a foreign and invasive species (Perez-Aleman 664).

After the research project deemed the Tenth Region as a viable location for salmon farming, the Chilean government then turned over the industry to private firms, with the research available to help start up these firms. The government retained an agency called Fundacion Chile that helped to facilitate the emergence of the new industry and introduced the floating net pen as a technological means to farm salmon. Fundacion Chile served as a means of support for the new salmon firms that were emerging by providing information of the new technologies and systems for the newly emerging industry.
The salmon companies banded together to form the Association of Salmon and Trout Producers, in order to collaborate on how to become an effective player in the global market. The association agreed upon quality standards and initiated accountability within their system in order to appeal to foreign buyers. The Chilean firms realized that they needed to get foreign buyers to feel safe and confident purchasing Chilean salmon. They did this by imposing sanitation and quality standards, certified with a quality seal with different classifications for different grades of salmon. The government supported these actions by providing funding to the companies in order to meet these self-imposed quality regulations.

As competition grew, the salmon companies were forced to cut costs at the expense of the workers. Large firms succeeded and grew while smaller ones died off, which left the top twenty firms controlling 85% of the salmon exports (Perez-Aleman 669). To save on worker’s wages, the salmon firms use subcontracted and temporary workers to avoid dealing with the issues that permanent, contracted workers could raise (Reinecke 21). As a result of companies like Wal-Mart pushing the salmon firms for lower prices and the firms being forced to cut the money from somewhere, these cuts come from the easiest place to cut: the workers, as Reinecke says, "bear a disproportionate share of the burden of economic fluctuations and suffer from job instability and precarious contracts" (Reinecke 30-1).

Now that we have reviewed the history of Chilean salmon farming, we will look into the problems caused by the situation forced upon Chile by Wal-Mart. Wal-Mart purchases all of its salmon exclusively from Chile, buying one third of the total salmon exported by Chile, and is in the top two sellers of salmon in the United States (Fishman 171). This means that Wal-Mart has a large influence on the Chilean salmon market because it provides a large consumer base to purchase the export (Petrovic 131). If the Chilean companies lost Wal-Mart as a purchaser, they would lose one-third of their salmon export market, which would devastate the industry as well as the entire Chilean economy. Therefore, Chile is at the mercy of Wal-Mart and must vigorously fight to keep its position as a Wal-Mart supplier.

Wal-Mart forces its suppliers to conform to its business model, which entails buying in enormous bulk and saving by squeezing out any fraction of costs from suppliers (Petrovic 130). While this model may be profitable for Wal-Mart because of its size, the Chilean salmon companies, which are small compared to Wal-Mart, are forced to cut costs in order to meet Wal-Mart’s demands of lower prices. These cuts are made by degrading labor standards and sacrificing environmental preservation. Wal-Mart manages to avoid confrontation with its consumers, in large part the American public, because it doesn’t take any responsibility for the labor conditions of its suppliers, As Fishman says, "They don’t necessarily want to assume the responsibility, and the cost, for monitoring everything that goes on in workplaces…they also don’t want to have to explain dramatic, unsettling revelations about how the familiar products they sell manage to have such low prices" (Fishman 173). In other words, they simply demand a lower price from the salmon suppliers, and consequently get a lower price without worrying about where those cut costs came from. When Wal-Mart representatives visited the salmon farms, they were "impressed with the sanitation conditions of the processing plants…but they were surprised by the claims of labor issues" (Fishman 193). This same meeting was ended when
a rally by labor unions began at the salmon plant and resulted in a full-on protest (Fishman 193). This is a dramatic change from the pre-Wal-Mart industry, where the salmon firms came together to set up a unified front towards the foreign markets and instituted quality controls onto themselves. Now, with the pressure from Wal-Mart, the companies are pitted against each other and while the quality of the finished product has not changed, the quality of the labor standards and environmental impact has drastically worsened.

As Ricardo Pizzaro, an local activist for labor regulations in Chile, says, “I am convinced that if the labor conditions are the way they are, it wouldn’t be surprising to me if an American consumer found a nail or a knife in their fillets” (Fishman 194). The salmon companies have been put under the pressure of being a Wal-Mart supplier and consequently are forced to make continual price cuts, which come at the expense of the workers and the environment.

Even though Wal-Mart is a large influence on the salmon firms, it does not heavily monitor or regulate the conditions by which the salmon is produced, except for sanitation and other factors that would keep it from being sellable in the United States. The labor and environmental regulation are more lax in Chile, especially because the salmon farms are in rural country, far away from being directly in the sight of politics, as Pizzaro says, "These plants are very far away from Santiago" (Fishman 179). Despite this, Wal-Mart focuses on getting the most amounts of salmon at the lowest price with no regard for the effect those cut costs have on the suppliers and their workers. With loose labor regulations in a rural setting, these cuts are most easily made by diminishing the labor standards and squeezing the savings from the workers.

One of the ways in which the salmon companies cut costs is by not contracting their workers. The Chilean workers are given work do as the farm needs it, without any written contract guaranteeing anything. The firms do not have to pay for benefits or sick leave, and do not have to adhere to any minimum wage standard. As well, the workers can be fired at any time without any severance package, which presents a major problem in a rural country because there are not many other ways of making money, especially in a country where one out of every ten jobs is in the salmon industry (Fishman 170). Despite the issues that Fishman outlines, including sweatshop conditions, sexual harassment, long hours standing up at low wages, and workers not being allowed to use the bathroom, few of the issues are reported and even less are acknowledged by the companies. Wal-Mart refuses to acknowledge these issues, but still asserts that they "are a global leader in monitoring supplier factory conditions" (Fishman 187).

Cost cuts also come at the expense of the environment, most notably the coastal fjords of Chile where the salmon are kept in netted pens. In each net, there are tens of thousands of salmon, with more than one million salmon per farm, and as Gerry Leape states, "One million salmon produce the same sewage as sixty-five thousand people" (Fishman 178). The waste from these millions of fish is released into the ocean. It is not processed for environmental stability, nor is it even just dumped into the ocean—the waste just falls from the fish through the net at the bottom of the pen, and comes to collect on the ocean floor. Animal waste is normal, but in these concentrations and with additional chemicals in the waste, such as antibiotic residue, the salmon
farms are devastating to the environment around them. The penned fish are the only form of life besides bacteria in the areas around these pens (Fishman 178).

Another environmental issue is centered on the fact that salmon are not a native species to Chile. The main kind of salmon raised in Chile is Atlantic salmon, which is native to northern Europe, at the other end of the earth. This impacts the environment when the salmon escape the farms and enter into the wildlife as an invasive species. According to a report on the invasion of salmon into Chile, "Current population of salmon in South America are likely derived from the ocean ranching operations in Chile…The ranching operation was the only possible source of colonists" (Correa 629). The entrance of the invasive species into the Chilean environment has had, as any invasive species does, a negative impact on the environment. However, preventing and fixing this problem costs money, and like the labor issues it does not impact Wal-Mart’s purchasing of salmon, so the salmon firms save money by not fixing these problems—savings which are passed on to Wal-Mart and then to the consumers.

In conclusion, Wal-Mart has put the Chilean salmon firms into an uncomfortable position. The firms are forced to cut costs, and in a rural setting like the Tenth Region of Chile the easiest way to do so and stay competitive as an exclusive Wal-Mart supplier is to lower the labor and environmental standards. Thus, while American consumers can buy fresh salmon for less than five dollars per pound a Chilean worker is paid well below any acceptable standard while enduring conditions that we associate more with third world sweatshops. Although Wal-Mart can produce products at low prices, such low prices are not always good. As Charles Fishman simply states, "The price makes almost no sense" (Fishman 181).
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QUALITY OF LIFE CHANGES ASSOCIATED WITH TREATMENT OF EATING DISORDERS

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Abstract

Individuals struggling with eating disorders report low levels of quality of life including increased health-related issues (i.e., amenorrhea, bone loss) and overall decrease in life satisfaction (i.e., work, emotional satisfaction) (Jenkins et al., 2011). The present retrospective chart review study describes pre-post treatment differences in individuals enrolled in a seven-week yoga based eating disorder program across physical, emotional, and behavioral dimensions of quality of life, from pre to post treatment using the modified Medical Outcome Study ([MOS], Ware & Sherbourne, 1992).

Eating disorders revolve around poor body image perceptions and dysfunctional eating behaviors in individuals. The three most recognized eating disorders include anorexia nervosa, bulimia nervosa, and eating disorder not otherwise specified (APA, 2000). Eating disorders place individuals at severe risk for the onset, and maintenance of body perceptions problems, life-long battles with eating behaviors, and potential risk for death. Prevalence rates hover around five percent, with relapse rates higher than 30% in both anorexia nervosa and bulimia nervosa (Keel & Klump, 2003).

The importance of finding adequate treatment is crucial. According to evidence-based practices guidelines defined by the National Institute for Health and Clinical Excellence (NICE, 2010), current treatment approaches emphasize mostly cognitive behavioral treatment (CBT) approaches (Murphy, Straebler, Cooper, & Fairburn, 2010). CBT is based on the premise that psychological symptoms are related thoughts, behaviors, and emotions, however; relapse rates following treatment are high. For instance, empirical data suggest that among patients who suffer from anorexia, only 46% fully recovered and among those who recovered fully, 40% later relapse. While among those suffering from bulimia, data indicate that 50% recover and maintain full recovery.

To help combat high relapse rates researchers have developed new treatment approaches focusing on mindfulness, which includes an attention to the present moment and the emotions and thoughts experienced. Many approaches also integrate yoga. Several studies have been conducted and highlight the effectiveness of these approaches of combing yoga and mindfulness in treating eating disorders.

Randomized control studies (RCTs) however, are typically conducted under very rigorous standards and do not always reflect the reality of treatment conducted in the field (Norcross, Beutler, & Ronald, 2006). This is because they use strict inclusion (i.e., limited age range, limited severity range, no comorbidity) and exclusion criteria whereas treatment conducted in the field tends to encompass a variety of patients presenting with different degrees of symptom severity. Moreover, RCTs outcomes typically focus on symptom decrease. Although it is important to demonstrate that treatment is associated with decrease in symptoms, it is also valuable to assess how treatment impacts other variables such as quality of life (i.e., impact of a medical condition on one’s emotional and physical well-being).

Eating disorders are associated with a wide range of impairment in both physical and psychological domains; however, there is less research on patients’ perspectives and of how the

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disorder affects their quality of life (Engel et al., 2009). Quality of life is a construct difficult to define because of the multiple dimensions it encompasses. Objective dimensions of quality of life include health-related issues while more, subjective quality of life refers to an individual’s overall satisfaction with his or her life. Typically, quality of life measures assess the impact of the disorder on a number of areas (e.g., work, emotional satisfaction). The presence of an eating disorder seems to greatly impact quality of life, predominantly the psychological health of patients (Jenkins et al., 2011). Thus, the assessment of quality of life is increasingly becoming a key component in examining the health outcome of eating disorders patients. Among eating disorders patients, the Medical Outcomes Studies questionnaire (MOS) is one of the most used instruments (Ware & Sherbourne, 1992).

The present retrospective chart review study describes pre-post treatment differences across physical, emotional, and behavioral dimensions of quality of life, from pre to post treatment. Changes in quality of life among participants were also examined as a function of treatment length and payment type (e.g., private insurance vs. out of pocket).

Methods

Participants

Twenty-three females (91% Caucasians) enrolled in a clinic offering yoga-based partial hospitalization program (PHP) and intensive outpatient program (IOP) completed the Modified Medical Outcomes Study 36-Item Short Form Health Survey (MOS-36) at intake and upon treatment completion. Participants were between the ages of 16-55 (M=29); 74% were enrolled in the PHP program and 26% in the IOP program. Over half (61%) of participants enrolled in treatment completed the seven-week program. Seventy-four percent of participants filled out both pre and post questionnaires. Payment for the treatment program occurred either through private insurance (52%) or out-of-pocket (48%). A greater proportion of individuals who used private insurance completed the full seven weeks, compared to those who paid out-of-pocket.

Procedures

During intake, all participants fill out the MOS-36. A medical examination is performed by an internist, a thorough psychiatric assessment is conducted by a psychiatrist, and a nutrition assessment is given by a registered dietitian. Based on the intake evaluation, participants are directed to either the PHP or IOP program. Although the IOP and PHP programs offer the same therapeutic services, the two programs differ in their structure. The PHP program is a seven-week program running from 9-2:30 p.m. Monday through Friday. IOP is a three-day per week program where participants meet for three and a half hours. Participants then fill out another modified MOS-36 at the completion of their program.

Protected Health Information (PHI) used in the present retrospective chart review study was de-identified following the “Privacy Rule” guidelines under the Health Insurance Portability and Accountability Act (HIPPA). Participants’ health information was de-identified and abstracted from the chart using a standardized form, which was developed to obtain the variables needed for the study. Such de-identification method removes all 18 identifiers that could be used to identify the individual or the individual's relatives, employers, or household members.

Measures

The MOS-36 is designed to assess participants’ quality of life. It includes seven questions and has been adjusted to reflect the quality of life among eating disorders patients including physical (e.g., reproductive functions, balanced electrolytes, and normal EKG).
emotional (e.g., distorted body image, distorted thoughts, inability to cope, mind-body connection), and behavioral dimensions (e.g., mindful eating and eating at regular intervals).

**Data Analysis**

Changes from pre to post treatment were examined using paired t-tests. The paired t-test compares the means of two variables, computes the differences between variables for each case, and then tests if the average is significantly different than zero. Assumptions of normality and variance were met. Although paired t-tests examine the significance of mean differences it does not evaluate the magnitude of these differences, thus we also conducted effect size using Cohen's *d*.

**Results**

As shown in table 1, there were significant changes in a number of areas from pre- to post treatment. Over half (61%) of participants answered the question related to emotional dimensions of quality of life (i.e., coping and management of eating disorders). There was a significant difference between pre-test (*M*=1.64, *SD*=.63), and post treatment scores (*M*=4.29, *SD*=-.91);(*t*=-9.14, *p*=0.000). These results suggest that participants may have improved in their ability to cope and manage their eating disorders in their daily lives after completing treatment.

Assessing another emotional dimension of quality of life (i.e., interference of physical or emotional issues with social activities), significant differences were also observed in pre (*M*=2.06, *SD*=.19), and post treatment scores (*M*=3.75, *SD*=.29) conditions;(*t*=-5.18.14, *p*=0.000)

In addition, significant changes were observed in the practice of yoga and meditation from pre to post treatment. Pre treatment engagement in yoga and post treatment report of engagement in yoga and meditation increased to a daily occurrence (*p*=.003).

<table>
<thead>
<tr>
<th>Modified MOS-36 Pre-Post</th>
<th>N</th>
<th><em>M</em> Pre</th>
<th><em>SD</em> Pre</th>
<th><em>M</em> Post</th>
<th><em>SD</em> Post</th>
<th><em>t</em></th>
<th><em>p</em></th>
<th>ES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yoga/Mind-Body practices</td>
<td>16</td>
<td>1.06</td>
<td>1.73</td>
<td>3.06</td>
<td>1.53</td>
<td>-3.46</td>
<td>0.003</td>
<td>.52</td>
</tr>
<tr>
<td>Healthy eating practices</td>
<td>14</td>
<td>2.21</td>
<td>1.41</td>
<td>4.01</td>
<td>0.77</td>
<td>-4.54</td>
<td>0.001</td>
<td>.62</td>
</tr>
<tr>
<td>Coping and Management of ED</td>
<td>14</td>
<td>1.64</td>
<td>0.17</td>
<td>4.29</td>
<td>0.24</td>
<td>-9.14</td>
<td>0.000</td>
<td>.98</td>
</tr>
<tr>
<td>ED interference with social life</td>
<td>16</td>
<td>2.06</td>
<td>0.19</td>
<td>3.75</td>
<td>0.21</td>
<td>-5.18</td>
<td>0.000</td>
<td>.97</td>
</tr>
<tr>
<td>Healthy mindful mindset</td>
<td>11</td>
<td>1.22</td>
<td>0.29</td>
<td>1.75</td>
<td>0.29</td>
<td>-5.41</td>
<td>0.000</td>
<td>.67</td>
</tr>
<tr>
<td>Meditation practices</td>
<td>15</td>
<td>0.67</td>
<td>1.76</td>
<td>3.07</td>
<td>1.87</td>
<td>-4.75</td>
<td>0.000</td>
<td>.55</td>
</tr>
</tbody>
</table>

*Note. MOS-36 = Medical Outcomes Study-36-Item Short Form Health Survey; ED = Eating Disorders.*


**Discussion**

Overall, participants showed an increase in scores from pre to post treatment on the modified MOS-36, a measure of quality of life adapted for eating disorders patients. After completing the seven-week yoga-based program individuals report higher scores suggesting an increase in coping and management of their eating disorder, less interference of disordered thoughts and behaviors in their social lives, and healthier eating practices and mindset. Further, participants appear to have incorporated more yoga and meditation into their everyday lives.

Despite the observed changes from pre to post treatment, the present study suffers from a number of limitations. First, observing changes from pre- to post treatment on variables of coping, social interaction, eating practices, and mindset does not mean that the treatment was actually effective. Without the inclusion of a control group it is impossible to determine the effectiveness of the program. To determine if coping, social interaction, eating practices, and mindset changes actually occurred a true experiment must be conducted in which participants are randomly assigned to either a treatment or control group. Second, the study design is subject to several threats of internal validity. History related factors may have impacted the dependent variable and introduced change between pre- and post testing. Events that occur between pre- and post testing (e.g., family member dying, becoming pregnant) may have affected outcomes. Third, without a longer follow-up period, it is unclear if gains at the end of the treatment actually maintained over longer periods of time. Fourth, it is difficult to generalize the results to other eating disorder patients since patients enrolled in the current program may not represent other eating disorder patients.

**References**


EMPIRICAL INVESTIGATION OF THE COLLECTIVE UNCONSCIOUS WITH HIGH SCHOOL STUDENTS

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Abstract
Carl Jung believed that the collective unconscious and its contents, the archetypes, were an inherited, innate, and universal phenomenon that represents a shared memory. In order to test the universality of the collective unconscious across development, one hundred and seventy-nine high school students participated in a task that used correctly matched and mismatched symbol-word pairs from the Archetypal Symbol Inventory (ASI). Participants were asked to recall the word that was previously paired with a symbol when shown only the symbol. A statistically significant difference was found between correctly recalled matched vs. mismatched symbol-word pairs, which supports Jung’s theory of the collective unconscious. Integration with existing theory and the current literature is discussed.

“As the plant produces its flower, so the psyche creates its symbols” (Jung, 1968, p. 53).

Analytic psychology and similar psychological schools-of-thought have long been criticized for lacking an empirical foundation. For instance, it is difficult to imagine research designs aimed at measuring such psychological notions as the unconscious and the contents of the human psyche. However, psychology’s founding members who first conceived of these constructs, and wrote extensively on them, were certain of their existence. The beliefs of Carl G. Jung, Sigmund Freud, and like others were based on much more than their intuitions; they had countless hours of clinical work where their ideologies were used and, reportedly, effective in treating neurosis and other mental illnesses. However, it is often the very nature of these theories that makes them so elusive to scientific evaluation. Take Jung’s notion of the collective unconscious and archetypes, for example.

The collective unconscious, as opposed to the personal unconscious which owes its existence to personal experiences, is a substratum of the mind that lacks subjectivity and is inherited, innate, and universal (Jung, 1959; Storr, 1973). Jung (1968) theorized that the collective unconscious, also referred to in Storr as the objective psyche, originates from a time prior to the evolution of self-awareness, when primitive man lived by symbols before he was capable of identifying or reflecting on them. This original mind was passed on from generation to generation in the human unconscious and, hence, is still apparent and active in modern man. Specifically, this primitive unconscious can most vividly be seen in children, primitive peoples, and in significant portions of the life of modern civilized man (Philp, 1959). The personal unconscious consists of contents, primarily complexes, which have once been conscious but have slipped below consciousness because they have been forgotten or repressed (Jung, 1959). The contents of the collective unconscious, conversely, have never breached into awareness and are essentially made up of common, repeated experiences of mankind since the beginning of
the species (Huston, Rosen, & Smith, 1999; Jung, 1959). These experiences are the archetypes, or, as Freud termed them, archaic remnants. Jung (1959, p. 5) defined archetypes as “primordial types” and “universal images,” which, according to Storr, may reference a situation, figure or image, or an idea of symbolic significance. However, the archetypes should not be viewed as inherited ideas but, rather, as inherited thought-patterns (Jung, 1935). More specifically, archetypes are not specific ideas but more of a predisposition to having a particular pattern, theme, or motif to one’s thoughts. These themes occur with great regularity and can be found in all times and locations; examples of such themes include the notion of a magic power or substance, of spirits and their doings, and of heroes, gods, and their legends (Jung, 1919).

Instincts and the archetypes together create the contents of the collective unconscious (Jung, 1919). Instincts are likened to archetypes insofar as the latter is “an instinctive trend, as marked [by] the impulse of birds to build nests, or ants to form organized colonies” (Jung, 1968, p. 58). In other words, instincts correspond to physical urges which root themselves in symbolic images, the archetypes—the psychological equivalent of instincts (Jung, 1968; Philp, 1959). It is not assumed that each newborn animal develops its instincts anew in the same way that humans do not create their specific human ways with each birth (Jung, 1968). Similarly with instincts, the archetypes of the human psyche are inherited and innate and function in basically the same way with all members of this species (Jung, 1968). Instincts may be thought of as compelling man towards a human mode of existence while the archetypes direct man’s ways of perception and apprehension in specifically human patterns (Jung, 1919). In the same way that instincts are strengthened over time and continuously passed on through genetics, the archetypes are constantly being reinforced and passed from parent to child.

An abstruse concept such as the collective unconscious may be best conceptualized through an example. Jung often cited an event that occurred with a paranoid schizophrenic to illustrate his theory. The patient was seen staring into the sun shaking his head from one side to the other and when Jung asked the man what he saw he described seeing the sun’s phallus, which, as he reported, was the source of the wind (Jung, 1959). A few years later, during Jung’s research on mythology, he came across an account that helped to explain this odd occurrence. The account was of an ancient ritual that lucidly described a tube-like structure coming out of the sun and this structure was described as being the origin of the wind (Jung). Jung also discovered medieval paintings that depict the conception of Christ through a dove traveling down a tube- or hose-like structure from the sky and passing into Mary’s body. Jung explains that it is quite unlikely that this man, who had been committed for some years and worked previously as a clerk, had knowledge of the archaic ritual and dismisses the possibility that the man could have seen this rare medieval representation of the Conception (Storr, 1973). He, therefore, attributed the event to an influence from the collective unconscious.

Since Jung’s death in 1961, there have been few empirical attempts aimed at examining the accuracy of the collective unconscious and archetypes. Jung (1959, p.44) clearly demonstrates his position on this matter when he writes, “the collective unconscious is neither a speculative nor a philosophical but an empirical matter.”

Maloney (1999) examined the affective responses of archetypal themes in adult participants using images of the hero and mother archetypes. Three versions of each
image was selected, a positive, negative, and non-anthropomorphic, and participants were asked three questions that corresponded to each image (Maloney). Maloney hypothesized that a particular structure (e.g., actor type, connotation, etc.) would produce a question-response pattern and found that one of the three questions demonstrated highly significant results across all images ($p < .0001$). This question required the greatest active participation by the subjects and was the most mythopoetic (i.e. pertaining to “myth-making”) and, Maloney concluded, it showed that archetypal structure influences adult emotional responses. Further implications of the study suggest the presence of archetypal themes in adult cognition, demonstrate that the effects of archetypes are sufficiently distinct to be measured as isolated processes, and that archetypes affect adult perception (Maloney). Archetypal symbols have, theoretically, both an emotional and cognitive component attached to them that is static across time and location and, also, thought to possess great emotional significance (Huston et al., 1999; Storr, 1973). The Maloney study gives credibility to this position; that is, archetypal symbols contain inherent affective and cognitive elements.

Rosen, Smith, Huston, and Gonzalez (1991) developed the Archetypal Symbol Inventory (ASI; see Appendix) consisting of forty symbol-word pairs in which the associated words identify the archetypal meaning of each symbol. The first two experiments of Rosen et al. set out to determine if people had conscious knowledge of these pairings via a free association test (Experiment I) and forced association test (Experiment II). Rosen et al. found that the participants in Experiment I were rarely able to come up with the symbols’ meaning or a similar meaning and, similarly, in Experiment II, the participants’ ability to correctly match the symbols with their meanings was not significantly more reliable than chance. The first two experiments demonstrated that participants did not have conscious knowledge of the symbols or their one-word associations (Rosen et al.). Experiment III’s participants, which were college students, were shown the forty symbols of the ASI, half of them being matched correctly with their one-word association while the other half was mismatched with another word in the inventory (Rosen et al.). Rosen et al. hypothesized that participants would recall the correctly matched symbol-word pairs at a higher rate than the mismatched pairs and, because Experiments I and II suggest that people do not have conscious knowledge of the pairings, one explanation for this finding would be an influence from the collective unconscious. This was indeed what Rosen et al. found and, furthermore, their results were highly significant ($p < .0001$). This study demonstrated that the ASI is a useful inventory in researching collective or archetypal memory and the results offer evidence in support of a collective unconscious existing.

An unpublished study outlined in Huston et al. (1999) by Huston used a revised version of the ASI (i.e. ASI-R) in which participants were given either a cued-recall test (Experiment I) or a word-fragment completion test (Experiment II). In the latter, Huston found that participants had only a sixteen percent success rate when naming the symbols while given fragments of the words (e.g., H_A_T_ for ‘health’), which, like Rosen et al. (1991), shows that the participants had little or no conscious knowledge of the pairings. In the Experiment I, participants again recalled the correctly matched symbol-word pairs at a higher rate than the mismatched pairs and, in addition, this finding was also highly significant ($p < .0001$; Huston et al.). The aggregate findings and implications of the studies described above show Jung’s position regarding the empirical nature of the
collective unconscious and archetypes to be probable. These studies demonstrate methodologies that aim at detecting the existence of the collective unconscious and its contents, the archetypes, and offer support for Carl Jung’s beliefs regarding these constructs, especially when the above studies’ level of statistical significance is considered.

The present study used the ASI as developed by Rosen and colleagues (1991) and is a systematic replication of their main study, Experiment III. High schools students were shown one of two presentations in which, of the forty symbol-word pairs in the ASI, half of the archetypal meanings were correctly matched with their symbols while the other half were mismatched with the remaining symbols. After being shown the symbol-word pairs, participants were asked to recall the word that was last associated with the symbol when shown only the symbol as a cue. The main hypothesis of the study was that participants would have greater recall for correctly matched symbol-word pairs than mismatched pairs as would be predicted by Jung’s theory. Secondly, there would be no statistically significant difference in correctly recalled matched symbol-word pairs as a function of gender or age; such that, the collective unconscious should influence participants equally across dimensions such as gender and age (i.e. be universal).

Method

Participants

A total of 179 high school students participated in the present study from three public high schools in mid-Michigan. Eighty-five of the participants were male and 94 were female, and ranged from 15 to 18 years of age (\(M = 16.72, SD = .65\)). Of the three high schools, 117 students were from School A, 33 students attended School B, and 29 were from School C and all students were enrolled in a high school introductory psychology course. Participants viewed one of two presentations, Presentation I or Presentation II, in which 95 were shown the former (57 from School A, 9 from School B, and 29 from School C) and 84 were presented with the latter (60 from School A, 24 from School B, and no students from School C). The class’ instructors decided whether credit was awarded to the students for participating in the study. Specifically, participants from Schools A and C received credit for participating and if they did not wish to participate an alternative assignment was offered, and students from School B did not receive credit for the study. All participants were treated in accordance with the American Psychological Association’s ethical codes.

Materials

Participants viewed the stimuli via one of two Microsoft PowerPoint presentations. Each presentation consisted of a practice section of five symbol-word pairs and an experimental section of forty symbol-word pairs from Rosen et al.’s (1991) ASI. Both presentations ran on a timer in which each symbol-word pair was displayed for five seconds and following the two sections, practice and experimental, a blank screen was shown for ten and thirty seconds respectively; this time allowed for participants to collect their thoughts and pickup their pencils. Following the blank screens, only the symbols were shown for eight seconds each in the same order as they were first presented, one symbol at a time, and one after another.

Both presentations had twenty correctly matched symbol-word pairs and twenty mismatched symbol-word pairs from the ASI. In assigning the mismatched words to
symbols a list randomizer was used. The twenty words that were to be mismatched to symbols for each presentation were entered into a list randomizer and assigned to the mismatched symbols one for one (i.e. the first word from the list was [incorrectly] matched to the first symbol in the presentation that was to be mismatched, the second word to the second mismatched symbol, and so on). These procedures resulted in twenty correctly matched symbol-word pairs and twenty mismatched for each presentation and, also, the matched pairs in Presentation I were mismatched in Presentation II and vice versa as a counterbalance. Lastly, the order of presentation was randomized by symbol and in Presentation II the symbols were shown in reverse order to control for any effects from order of presentation.

Procedure

Once the consent forms were collected, the students were told that the purpose of the study was to investigate memory recall of picture-word pairs in high school students. The researcher illustrated on the board what was meant by picture-word pairs and explained that the students would be shown a picture paired with a word and then asked to recall the word that was previously paired with the picture when shown only the picture. The participants were told that they would first be shown a practice section of five picture-word pairs, one at a time and one after another. The purpose of the practice section was to familiarize the participants with the timing and organization of the presentation. Next the researcher explained that the experimental section would follow the practice and would consist of forty picture-word pairs presented in the same manner as the practice. The presentation timings were discussed (e.g., the picture-word pairs would be shown for five seconds each, etc.) and participants were told that the pictures would be shown in the same order as they were first presented.

The worksheets were then passed out and the students were instructed to indicate their age and gender on the worksheets. The students were also told which group they were in and asked to identify that on their worksheets, this number corresponded to which presentation the students were shown, either I or II. The researcher explained to the participants that if they could not remember the word that was paired with the picture to leave that line blank on their worksheets and move onto the next. However, participants were encouraged to try their best to recall the words. Lastly, the researcher instructed the participants to leave their pencils down on their desk while the picture-word pairs were being shown and instructed them to pick them up for the recall portion of the presentations. This prevented the participants from filling in the responses while the picture-word pairs were being presented. The presentation was then started and, once concluded, the worksheets were collected and the students were thanked for their participation.

Out of the seven classes that participated in the study (four from School A, two from School B, and one from School C) debriefing occurred for the only or last class of the day immediately preceding the study and at the next possible opportunity for the other four classes (i.e. the next time that class met). The purpose for debriefing the classes in this manner was to prevent contamination between classes. In other words, a student that participated in the study during an earlier class may have revealed the true purpose of the study to a student scheduled to participate in a later class, which may have affected the latter’s responses. During debriefing the researcher explained to the participants that the actual purpose of the study was an investigation of the collective unconscious. The
The researcher described the nature and purpose of deception as used in psychological research and, specifically, how deception was used in this study. Next, the participants were given a brief lecture on the collective unconscious and archetypes. The researcher also outlined the ASI, the methodology and purpose of Rosen et al.’s (1991) Experiments I and II, and described, in detail, the study that they participated in. Lastly, the researcher explained the methodological techniques of debriefing and contamination and their importance. The debriefing procedure was especially thorough so that the students would not only benefit from participating in psychological research but also learn components of such inquiry as well as aspects of the collective unconscious and archetypes; such that, it was important to the researcher that the study was an enriching learning experience for the students.

**Results**

In order to test the main hypothesis, that there would be greater recall of matched symbol-word pairs than mismatched pairs, percentages of correctly recalled matched and mismatched words were calculated. Across both presentations the percentage means were in the hypothesized direction for correctly recalled matched ($M = 47.37, SD = 20.25$) versus mismatched ($M = 41.03, SD = 19.42$) symbol-word pairs. A paired samples $t$-test was used to compare correctly recalled matched versus mismatched symbol-word pairs, and the groups were statistically significantly different, $t(178) = 6.30, p < .001$. Thus, matched symbol-word pairs were recalled at a higher rate than mismatched pairs, as predicted.

The second hypothesis was that there would be no significant difference in correctly recalled matched symbol-word pairs as a function of gender, age, and presentation shown. For gender, females’ mean for correctly recalled symbol-word pairs ($M = 9.66, SD = 3.49$) was slightly higher than the male mean ($M = 9.27, SD = 4.62$); however, this difference was not significant as determined by an independent samples $t$-test, $t(177) = .64, p > .52$. To examine if there was a difference in correctly recalled matched symbol-word pairs as a function of age a Pearson’s correlation was run. The analysis showed that there was a slightly negative correlation, although this relationship was not significant, $r = -.13, N = 179, p > .10$. Therefore, the hypothesis that there would be no difference in correctly recalled symbol-word pairs as a function of gender or age was supported.

**Discussion**

The present study examined the existence of the collective unconscious using a novel population for this body of research—high school students. The main hypothesis was that participants would recall correctly matched symbol-word pairs from the ASI at a higher rate than mismatched pairs and, it was also hypothesized, that there would be no difference in correctly recalled pairs as a function of age, gender, and presentation shown. The statistical analyses supported these hypotheses, which were designed to investigate the collective unconscious.

The results from the first hypothesis is consistent with the findings of both Rosen et al. (1991) and the study done by Huston (as outlined in Huston et al., 1999) but the findings of the present study provides new evidence on the generalizability of these studies. Specifically, Rosen et al., Huston, as well as the Maloney (1999) studies used college students or adults as participants, whereas the present study demonstrates evidence that the collective unconscious may not only exist but also be present and active.
in younger populations, which is in agreement with Jung’s theory. Jung (1959) believed that the collective unconscious and archetypes were an inherited, innate, and universal phenomenon that is apparent in all members of the human species. This would, of course, include individuals of all ages, genders, nationalities, etc. Therefore, the present study provides empirical evidence in favor of Jung’s belief in the universality of the collective unconscious as well as further support that empirical investigation of the collective unconscious is possible.

The second hypothesis, which predicted no difference in correctly recalled symbol-word pairs as a function of age or gender, provides subsequent evidence of not only the universality of the collective unconscious but also that some collective characteristic is being detected. For example, if females had scored significantly higher at recalling the correctly matched ASI items then, it could be argued, that some other, non-universal trait was being detected; for instance, in a review of the gender and influenceability literature Eagly (1983) argues that females tend to be more influenceable and compliant than males. However, the results did not support such a trend and, therefore, the implications of the second hypothesis should be viewed as evidence that a collective phenomenon was detected as well as offering further support for the universality of the collective unconscious. In other words, the support for the second hypothesis enhances the validity of the first, main hypothesis. Together, the results of the present study provide empirical evidence for a collective unconscious and the archetypes, shows additional support for the usefulness of the ASI in detecting a collective or archetypal memory, and this is the first study to demonstrate that the collective unconscious may be apparent and detectable in minors.

Areas of future research should focus on using the ASI in cross-cultural studies as well as with the elderly and young children. The results of such studies could help to broaden the universality of the collective unconscious to these populations, although, it would likely be necessary to shorten or modify the format of the ASI to be presented successfully to these older and younger populations. For example, presenting the symbol-word pairs in multiple sets, such as two sets of twenty symbol-word pairs each followed by the recall task, may be necessary in order for the materials to be more age-appropriate. The results from a study using young children as participants may be particularly compelling because, as Jung (1968, p. 61) writes, “the production of archetypes by children is especially significant…because one can sometimes be quite certain that a child has had no direct access to the tradition concerned.” This reasoning may also be used in the context of the present study, providing additional evidence to the assumption that the participants did not have conscious knowledge of the pairings.

The collective unconscious and archetypes remain an elusive and mysterious concept, although, with a number of empirical studies in support of Jung’s theory, researchers are beginning to shed light on these constructs. As more is discovered through science, more of what Jung and the other founding members of psychology believed and published on is being supported. Through creative and advanced research designs, these obscure concepts are becoming clearer and more tangible. It is possible that as further studies are conducted on aspects of analytical psychology, a shift may be generated in both research and clinical domains towards a greater acceptance of this perspective.
Appendix

1. Ascent (I)
   Protection (II)

2. Beauty (II)
   Rationality (I)

3. Birth (II)
   Perfection (I)

4. Center (II)
   Beauty (I)

5. Charity (I)
   Unconscious (II)

6. Completion (II)
   Feminine (I)

7. Earth (II)
   Eternity (I)

8. Eternity (II)
   Generatively (I)

9. Evil (I)
   Health (II)

10. Feminine (II)
    Origin (I)

11. Fertility (I)
    Unity (II)

12. Generativity (II)
    Transformation (I)

13. Harmony (I)
    Purify (II)

14. Health (I)
    Quest (II)

15. Knowledge (I)
    Paradox (II)

16. Life (II)
    Earth (I)
Appendix Caption:
The Archetypal Symbol Inventory (ASI). The first word with each item (in bold) is that item’s correctly matched word whereas the second is the word that was randomly assigned to be mismatched to that item. The number in parentheses represents the presentation number; for example, item 7 (the square) was correctly matched in Presentation II with ‘Earth’ and mismatched with ‘Eternity’ in Presentation I.
Abstract

A low speed, open circuit, sub-sonic wind tunnel has been designed and developed. The wind turbine was designed for experimental investigation, observation, and demonstration of compressible fluid flow phenomenon. Experiential learning through hands-on, laboratory experiments will help deep understanding of basic fluid mechanics principles. The wind tunnel was designed to have capability of 90 mph velocity in 200mm x 200 mm test section. Several experiments with aerofoil drag and lift as well as flow visualization performed in the wind tunnel.

The actual cost of $2500 was significantly less than similar commercially available units. This wind tunnel is suitable for use in an undergraduate fluid mechanics laboratory in performing aerodynamic and compressible flow experiments such as lift, drag, pressure distribution around objects, etc. This paper described manufactured working design for this low-speed, sub-sonic Wind Tunnel, a classical scientific instrument.

Introduction

A modern subsonic, Open-circuit wind tunnel is designed to generate a flow of air through an assembly of duct sections. Wind tunnel is an essential tool for engineering design and research of fluid flows. Originally intended as a means to improve aircraft performance, wind tunnels are now used to design everything from road vehicles to parachutes. Although there have been significant advances in computing resources in recent years, wind tunnels are still necessary to verify the accuracy of CFD simulations and evaluate flows that are too complicated or time-consuming for accurate numerical studies.

The duct sections of the assembly are the intake or settling section, contraction section, test chamber section, diffuser section, and the drive section. The test section is made of clear material for viewing the test object and is designed to accommodate appropriate instrumentation and fixtures for setup and data acquisition for a wide range of experiments.

Derek reported, Measurement from the pressure transducers allowed the calculation of an experimental proportionality constant between contraction section pressure drop and test section dynamic pressure, which confirmed the predicted analytical value. Pressure transducer measurements also verified the test section velocity previously measured using a small slant tube manometer [1].

J.E. Sargison reported, a low speed, open circuit, laboratory wind tunnel has been redesigned for use in turbine blade cooling experiments. The two dimensional contraction was designed using a sixth order polynomial. The parameters that were varied were the location of the point of inflection and the curvature at the contraction inlet. The optimization was based on flow uniformity at the working section mid plane, prevention of separation in the contraction and minimizing the boundary layer thickness at entrance to the working section. Calibration of the wind tunnel after construction has demonstrated the value of the design process [2].

Traditionally, the design of wind tunnel contractions has been optimize the design for a fixed length and contraction ratio, has been the location of the joining point [3,4].
The closed-circuit, low-turbulence wind tunnel offers a maximum speed of 120 m/s with turbulence intensities less than 0.1%, and their vertical, open circuit wind tunnel offers a maximum speed of 35 m/s with turbulence intensities less than 0.1% [5].

Wind tunnels described above are all incompressible flow wind tunnels that offer high spatial flow uniformity with low turbulence intensities. Older wind tunnel facilities offer turbulence intensities less than 1%, whereas more modern designs have the ability to reduce turbulence intensity in the test section to less than 0.1% through more refined shaping of wind tunnel flow path and the use of multiple flow-conditioning devices, including screens and honeycombs. Based on the current state-of-the-art, it is reasonable to expect that a new wind tunnel facility should have spatial flow non uniformity of less than ±0.5% and free-stream turbulence intensity of less than 0.1% in the test section [6].

**The Design of the Wind Tunnel**

To extend the analogy a well functioning, engineered device is like a masterpiece in that they both demonstrate efficiency in technique, pure in form, and both require exceptional skill to create as well as be awe inspiring, profound, or even beautiful. Thus, the design process began with understanding the intended functional requirements and operational constraints. Next, engineering knowledge, skill, and experience were applied and possible solutions were derived. Finally, engineering evaluation techniques for structural analysis, flow analysis, performance estimations, and component specification were used to determine viable solutions from the set of potential solutions. The following discussion is a brief summary of the development of viable design solutions into a manufactured working design for this low-speed, sub-sonic Wind Tunnel, a classical scientific instrument.

**General Requirements and Constraints**

The required performance criterion for acceptable flow velocity was given to be a minimum of 80 mph through the test chamber. Test Chamber cross section was limited to a height and width to be not greater than 8 inches. The physical constraints for the completed assembly in terms of maximum height, width, and length were given to be 58, 30, and 110 inches respectively. The electrical constraints were specified to be a maximum of 120 volts at 15 Amps. The expected operating environment was stated as an ambient air temperature of 68°F (20 °C), moderate humidity, and a room air volume of 5400 ft³.

**Test Chamber**

The test chamber is the focus of the tunnel design as this is where test specimens are mounted and orientated for analysis, data collection, and observation. In the tunnel assembly the test chamber is located between the static pressure housing and the conical diffuser section housing. The test chamber is secured in the assembly by flange bolting to the adjacent sections.

The structural requirements for the test chamber were determined and a full perimeter aluminum angle frame with integrated assembly and mounting flanges. This frame design provides structural integrity, minimum interior test chamber surface disruption, maximum viewing area, and facilitates setup of various experimental arrangements.

For the visual observation of flow phenomenon the walls were specified to be constructed of clear MR5 GE Lexan, the original polycarbonate resin with excellent optical and structural properties. The capacity to collect test data was enhanced by the inclusion of removable access ports in the walls of the test chamber.
Fig 1: Assembler Drawing for Wind tunnel

Table 1: Subsonic wind tunnel system component

<table>
<thead>
<tr>
<th>Dwg Ref.#</th>
<th>Component description</th>
<th>Dwg Ref.#</th>
<th>Component description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Honey comb Air straightener</td>
<td>10</td>
<td>Test specimen chamber</td>
</tr>
<tr>
<td>2</td>
<td>Setting section housing ‘A’</td>
<td>11</td>
<td>Static pressure ring ‘A’</td>
</tr>
<tr>
<td>3</td>
<td>Removal turbulence screen ‘A’</td>
<td>12</td>
<td>Diffuser section housing</td>
</tr>
<tr>
<td>4</td>
<td>Setting section housing ‘B’</td>
<td>13</td>
<td>Fan assembly</td>
</tr>
<tr>
<td>5</td>
<td>Removal turbulence screen ‘B’</td>
<td>14</td>
<td>Fan mounted ring</td>
</tr>
<tr>
<td>6</td>
<td>Contraction section housing</td>
<td>15</td>
<td>Removal turbulence screen ‘C’</td>
</tr>
<tr>
<td>7</td>
<td>Static pressure housing</td>
<td>16</td>
<td>Wind tunnel support frame</td>
</tr>
<tr>
<td>8</td>
<td>Static pressure ring ‘A’</td>
<td>17</td>
<td>Tunnel base unit</td>
</tr>
<tr>
<td>9</td>
<td>Transvers Static Pitot tube</td>
<td>18</td>
<td>Electric distribution &amp; control system</td>
</tr>
</tbody>
</table>

Figure 2: Left and right view of Wind tunnel

This arrangement allows for a wide range of test model and instrumentation configurations. The final culmination of the design shown in Figure 1.0 below resulted in interior dimensions of 8 inches high, 8 inches wide, and 18 inches in length.
The remaining tunnel sections and internal component specifications were determined using the test chamber design as the basis guided by the general tunnel requirements and constraints.

**Other Tunnel Duct Sections**

Except for the test chamber all section housings of the tunnel duct were constructed from composite sandwich sheet material comprised of aluminum sheets covering a polypropylene core. Each sections housing has comprised of four individually fabricated panels. The outside surface of the box bottom is the interior surface of the tunnel duct section housing. The panel blank cut from the composite sheet is the unfolded box flat layout. Folding the composite sheet required that a bend line be routed into the back side of the panel blank. Shown below in Figure 2.0 is an example of the flat composite panel part design pattern for the contraction section housing.

A typical housing is assembled by binding two opposite sides of horizontally orientated top and bottom panels to the faces of vertically orientated front and back panels. The assembly resulted in a duct section with square flanged openings at each end spanned through the interior by the smooth panel faces having the binding seem at the exterior corners along the section length.

**The Air Strainer Section Housing (Settling Section)**

This section serves as the tunnel intake and contains the internal flow conditioning elements required for the tunnel. The design of this section includes three sub-sections and several features that allow for flexible operation, configuration, and easy maintenance to preserve optimum performance throughout the service life of the tunnel. The essential sub assemblies are the honeycomb assembly, removable screen frame assembly, and composite panel section housing. When these three sub assemblies are bolted together they comprise the primary section housing and this is the basic configuration of the settling chamber.

An alternate configuration adds a perforated plate (screen) upstream of the honeycomb air strainer element. This was the purpose of providing the pre-screen section assembly and the design intent is to remove unwanted turbulence from the laboratory air at the tunnel inlet.

The inlet and outlet opening sizes are the same because the functional concept of this section housing demands that it be straight. The opening sizes were determined from the test chamber design and the continuity equation. These dimensions dictate the dimensions of conditioning elements. The housing construction was typical for composite panel tunnel duct sections.
Honeycomb Assembly

A honeycomb panel element was placed perpendicular to the flow at the inlet of the settling section housing were the intended function was to reduce the no uniform components of the flow.

The design requirement for the honeycomb air strainer element was determined to be high open area and true hexagon cell structure for a lower loss coefficient. Also, for optimum benefit, honeycomb should be 6-8 cell diameters thick and cell size should be on the order of about 150 cells per settling chamber diameter.

The final design of the honeycomb element was an assembly of three honeycomb core panels aligned and clamped together in a perimeter frame. The honeycomb core has true hexagon cell geometry with a ¼ inch cell hydraulic diameter, an open area percentage of 90%, and 10 gage aluminum sheet contraction. The honeycomb assembly is flange bolted to the inlet of the settling section housing. The honeycomb material constraints encountered during the design process were a significant influence on the approach to satisfying the functional design requirements and thus the final design form.

Perforated Plates (Screens)

For the design of these elements there was a heavy use of the readily available information pertaining to the implementation of wire mesh screens in flow conditioning. Screens are typically located just downstream of the honeycomb and at the inlet of the test section. Screens create a static pressure drop and serve to reduce boundary layer size and increase flow uniformity.

At least one screen in the settling chamber (ideally the last) should have an open-area ratio of \( \alpha >0.57 \), as screens with lower ratios are known to produced non uniformities in the flow. This is presumable due to the formation of small vortices created by the random coalescence of tiny jets emitted from the screen. The first screen element downstream of the honeycomb was specified to have an open area of approximately 0.63% and the second screen element was specified with an open area of approximately 58%. The single upstream screen element was then specified to have an approximately 68% open area percentage. The final design specifications of the screen elements were guided by the honeycomb cell hydraulic diameter and the following two fundamental concepts.

Conical Contraction Section

The design function of the conical contraction section is to uniformly accelerate the fluid flow by contracting the duct opening from the larger inlet area down to the smaller outlet area.

The inlet opening size of the conical contraction section is identical to the outlet size of the air settling section housing. The outlet size of the conical contraction section is identical to the inlet size of the test chamber. Typical composite panel section housing construction was used to fabricate this housing.

In general, the contraction coefficient is the ratio of the inlet area to the outlet area. A contraction coefficient of between 6 and 10 are adequate for low-speed wind tunnels with test section velocities less than 40 m/s [3]. The contraction coefficient for this design was found to be 10.56.

In an attempt to reduce the venture contra effect that occurs at the outlet due to the sharp flange corner, this design has a proposed a removable ‘trip strip’ located near the inlet of the conical contraction section. The flow at the outlet corner could affect the flow into the test
chamber the trip strip feature would adjust the upstream flow in the conical contraction to account for the venture contra effect.

**Static Pressure Housing**

This housing was designed to minimize impact on test chamber flow from the venture contra effect at its inlet due to the conical contraction outlet. A short straight duct section immediately upstream from the test chamber allows more uniform flow into the test chamber. The design of this section includes a removable flush plugged to provide smoke generator probe access and to mount the static pressure ring that measures the static pressure at the entrance of the test chamber. The section is six inches long, with only major head loss as a straight duct section, and typical composite panel section housing construction was used.

**Conical Diffusion Section**

The conical diffusion section housing was designed for the inlet to flange bolt to the test chamber outlet. The design function of this section was to slowly decelerate the fluid flow to facilitate smooth pressure recovery.

The optimum apex angle for a diffuser cone is 9°. From the following graph an acceptable loss coefficient was found to be 0.54 for an apex angle of 18°. This compromise is angle was necessary to complied with the overall length requirement.

The final design of the conical diffuser section housing was made to be an assembly of two conical diffuser section housings. This was done to increase overall section rigidity by using shorter sections and adding a flange bolting plane at mid-span. The typical composite panel section housing construction was used.

**Tunnel Drive Section**

This section housing was designed to contain the fan unit comprised of the fan motor, fan blades, fan guard, and fan mounting plate where the fan mounting ring provides attachment and support structure for the fan unit and the section housing.

**Tunnel Suspension and Support Frames**

The tunnel duct assembly was design to be supported by four vibration reduction frames that then rest on the deck of the tunnel base unit. This was achieved by through bolting aluminum angle brackets to the inside of the underside seams of the composite panel section housing assemblies. Several custom bent steel spring clips were used to attach the tunnel brackets to their respective tunnel support frames. The tunnel support frames incorporate adjustable self-leveling, vibration reducing machine feet.

**Tunnel Base Unit**

The design function of the base unit was intended to provide a top deck for supporting the tunnel assembly and mounting the electrical system. Additional design features included for increased utility are a full solid deck with a laminated aluminum top to support instrumentation or equipment, storage space for safekeeping of tunnel accessories, and both adjustable self-leveling vibration reducing machine feet and swivel casters. The adjustable feet and the casters are coordinated such that the casters can be used to move the entire tunnel assembly, but the feet can be adjusted so that they provide the sole support for the assembly and still have enough adjustment for leveling the assembly.
Electrical System

The design function of the electrical system is to provide safe and efficient power delivery, distribution, and control. Power was design to be delivered from a standard wall receptacle and to system components through a modified 40-ft 3-wire 16-gage outdoor extension cord rated to carry a 13 Amp load. The electrical system distribution frame consists of ¾ inch galvanized steel conduit and standard electrical utility boxes that contain the wiring junctions, accessory receptacles, power switches, and a voltage regulator. This electrical system was also design to be surface applied to the tunnel base unit.

Summary and Conclusion

The value of a subsonic wind tunnel is derived from the wide variety of laboratory experiments that can be performed and the data that can be extracted. Equipped with a data acquisition system, multi tube manometer, multi component force sensors, differential pressure transducer, traversing static pitot tube and a smoke generator a diversity of laboratory exercises can be performed. This wind tunnel is suitable for use in an undergraduate fluid mechanics laboratory in performing aerodynamic and compressible flow experiments such as lift, drag, pressure distribution around objects, etc. Thus, the added value of a subsonic wind tunnel to the learning experience is not limited to the mechanical engineering department but could be extended to atmospheric science, physics, and biology.

The actual cost of $2500 was significantly less than similar commercially available units. Given the low cost of construction compared to the wide range of use the return on the investment is expected to be very large.

Acknowledgements

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References


COMPARISON OF QUALITY OF LIFE BETWEEN AFRICAN
AMERICANS AND CAUCASIANS AT SENIOR CENTERS IN
FLINT

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Department of Public Health and Health Sciences, University of Michigan Flint

Abstract
Older adults evaluate themselves as having a low quality of life, which can be attributed to the
increased risk of chronic disease. The experience of chronic disease can be reduced by physical
activity. The adoption and maintenance of physical activity is closely related to self-efficacy.
The purpose of this study is to identify possible contributors to quality of life in the older
population between African Americans and Caucasians. Survey were given at senior centers in
Flint and responses were analyzed using descriptive statistics. The 66 participants ranged from
56-93 with a mean age of 72.52. The majority was retired (91%) African American (53%)
female (68%) graduated from high school or less (31%), lived alone (55%) and used SSDI (29%)
Mean differences indicated that African Americans had lower quality of life, higher chronic
diseases, were less physically active, and had lower physical activity self-efficacy.

Introduction
Older adults evaluate themselves as having a low quality of life. They are more likely to
rate themselves to have fair to poor quality of life, those age 65-74 rate themselves to have for
poor self-rated health and this is even lower for those who are 75 and older for self-rated health
which is the lowest for any age group in 2004-2008 (CDC, 2008). In addition, the prevalence of
these chronic diseases, especially heart disease, diabetes, and osteoarthritis is highest among
older people (National diabetes fact sheet, 2007; Prevalence of Doctor-diagnosed Arthritis, 2010;
Heron MP, 2009). Older people who suffer from these chronic diseases have severely impaired
QOL due to mobility, pain or emotional wellbeing (Sawatzky R et al., 2007). Therefore, one
objective of Healthy People 2020 is to increase the quality of life in older adults with chronic
diseases. However, there are additional factors that relate to decreased quality of life when it
comes to race between African Americans and Caucasians.

The experience of chronic disease can be reduced by physical activity. (Elsawy, B., & Higgins, K., 2010). The recommendation by the CDC for the amount of physical activity older adults should be engaging in is 30 minutes of moderate activity at least 5 times a week, only about 16% of older adults actually meet recommendations (Health-related quality of life, 2011). Those who are inactive are at an increased risk for disability along with suffering more serious damages after a fall. The healthcare cost of this physical inactivity in 2000 was around 117 billion dollars. There is a lack of previous research that indicates whether or not physical activity has an impact on the experience of chronic disease between African Americans and Caucasians living in the community.

Self-efficacy is defined as people’s belief in themselves to produce an outcome (Bandura, 1997). Older people who continued to be active for a long period of time had higher self-efficacy and better quality of life and then those who did not (Elavsky S et al., 2000). Self-efficacy can also predict the adoption and the long-term maintenance of physical activity (Elavsky S et al., 2000; Rhodes et al., 1999). One study found that self-efficacy is affected by different race. African Americans have lower self-efficacy across all age groups (Lachman, 1989).
The relationship between self-efficacy and quality of life between races and gender is linked to a difference in socioeconomic status. In one study the men and women had similar educational status yet, women report having significantly lower income then men. Men are more likely to be married or living with a partner (Ford et al., 2008). African Americans have significantly lower quality of life scores due to race-related stress, and ethic identity in comparison to other minorities. Cultural racism can be used in predicting quality of life scores (Utsey et al., 2002).

**Purpose**

The purpose of this study was to identify differences between African Americans and Caucasians. This research was performed in Flint Michigan. This city has experienced a high prevalence chronic disease among the low-income minority population (Genesee County Health Department, 2008). The effects on quality of life in relation to physical activity are known, but many of these people lead sedentary lifestyle and this affects their overall health (Genesee County Health Department, 2008).

**Method**

This cross sectional study began in October 2010 and was approved by the University of Michigan-Flint Institutional Review. We recruited participants from three senior centers located in Flint, including Brennan Community Center, Hasselbring Community Center, and Pierce Community Center. Potential participants were asked if they were 65 or older and if so they began the process of filling out the informed consent document and began the survey, which was administered in the presence of the researcher. After the completion of the survey the participant was given $10 for their participation.

**Measures**

- **Mental Health- Quality of Life** consisted of 6 questions, participants were ask to fill in how many days in the past 30 days that they felt sad, worried, poor health, lack of rest, and days full of energy (BRFFS, 2010).

- **Physical Activity-** Consisted of 3 questions Participants were asked about how many days per week they are physically active and about how vigorous the activity was that the participants were performing (BRFFS, 2009).

- **Self-efficacy-** Consisted of 13 questions indicating that if active 3 times a week for the next 3 months the participant be active if there was bad weather, bored with the program, on vacation, not interested in the activity, felt pain or discomfort, had to exercise alone, was not having fun, had difficulty getting to location, scheduling conflict, no Encouragement from instructor. The participant would respond on a 5 point Likert scale. (Resnick and Jenkins, 2000).

**Analysis**

The results were analyzed using the SPSS version 18, the difference between African Americans and Caucasians was found. This was determined by calculating the mean and standard deviation for continuous variables and frequency and percentages for categorical variables.

**Results**

The 66 participants ranged from 56-93 with a mean age of 72.52. The majority was retired (91%) African American (53%) female (68%) graduated from high school or less (31%), lived alone (55%) and used SSDI (29 %). Of the participants many (34%) use some sort of assistance device. Participants were also obese with a mean BMI of 30.36.

African Americans have lower quality of life than their Caucasian counterparts they spend more days being depressed [Mean (3.37 vs. 1.74)], anxious [Mean (3.86 vs. 2.90)], unhealthy
[Mean (3.94 vs. 3.16)], and with a lack of sleep [Mean (6.77 vs. 2.58)]. They also suffer from more chronic diseases. African Americans also spend less days being physically active along with less time per day being active. They also report lower physical activity self-efficacy in 13 out of 13 questions. African Americans expressed more limitations in activities of daily living (ADL) functioning (6 out of 7 questions) and the same pattern was seen in instrumental activities of daily living (IADL) (3 out of 4 questions). They also spent fewer days per week [Mean (3.80 vs. 4.55)] but engaged in more vigorous types of activity.

Table 1. Health Disparity Between Older African American and Caucasian

<table>
<thead>
<tr>
<th>Health Item</th>
<th>African American</th>
<th>Caucasian</th>
</tr>
</thead>
<tbody>
<tr>
<td>Days-Sad, Blue, Depressed (Mean, SD)</td>
<td>3.37 (7.92)</td>
<td>1.74 (3.20)</td>
</tr>
<tr>
<td>Days-Worried, Tense, Anxious (Mean, SD)</td>
<td>3.86 (7.41)</td>
<td>2.90 (4.80)</td>
</tr>
<tr>
<td>Days-Health Not Good (Mean, SD)</td>
<td>3.94 (7.91)</td>
<td>3.16 (5.39)</td>
</tr>
<tr>
<td>Days-Not Enough Rest (Mean, SD)</td>
<td>6.77 (10.40)</td>
<td>2.58 (5.45)</td>
</tr>
<tr>
<td>Days-Full of Energy/Health (Mean, SD)</td>
<td>19.77 (12.06)</td>
<td>14.87 (12.02)</td>
</tr>
<tr>
<td>Self Rated Health (Mean, SD)</td>
<td>2.83 (.92)</td>
<td>2.55 (.88)</td>
</tr>
<tr>
<td>Physical Activity Days (Mean, SD)</td>
<td>3.80 (2.2)</td>
<td>4.55 (5.3)</td>
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<td>PA Intensity %</td>
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<td>Mild</td>
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<td>16</td>
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<tr>
<td>Moderate</td>
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<td>68</td>
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<tr>
<td>Vigorous</td>
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<tr>
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<tr>
<td>Hypertension %</td>
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<td>56</td>
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<tr>
<td>Mild problem</td>
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<td>36</td>
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<tr>
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<td>7</td>
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<tr>
<td>Significant problem</td>
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<td>7</td>
</tr>
<tr>
<td>Poor circulation %</td>
<td></td>
<td></td>
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<tr>
<td>Not experienced in past year</td>
<td>54</td>
<td>48</td>
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<tr>
<td>Mild problem</td>
<td>26</td>
<td>32</td>
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<tr>
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<td>7</td>
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<td>Significant problem</td>
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<tr>
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<tr>
<td>Osteoporosis %</td>
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<td>7</td>
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<tr>
<td>Self-Efficacy</td>
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<tr>
<td>Bad Weather (Mean, SD)</td>
<td>3.40 (1.03)</td>
<td>3.55 (1.12)</td>
</tr>
<tr>
<td>Bored w/Program (Mean, SD)</td>
<td>2.71 (1.15)</td>
<td>3.39 (1.25)</td>
</tr>
<tr>
<td>On Vacation (Mean, SD)</td>
<td>2.86 (1.06)</td>
<td>3.58 (.99)</td>
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</table>
Discussion

This study examined the ethnic differences in quality of life of the older population in Flint. Similar to previous research African Americans evaluated as having lower quality of life, increased chronic disease, performed less physical activity and had lower self-efficacy measures. Unlike previous research there were two unexpected findings in this research. African Americans reported performing more vigorous physical activity. This could be due to participants interpreting their work related or occupational activities physical activity (Folsom et al., 1991). Another finding was that African Americans experienced more days full of energy. This could be attributed to African Americans having more optimism than Caucasians in their life. Optimism can work as a stress buffer for older African Americans to come with hardships; this increases mental health (Baldwin et al, 2011). However other mental health items are lower hence further investigation is needed.

There are several strengths in this study. This study is the first in Flint, Michigan to examine the quality of life and physical activity of seniors that live in the surrounding areas. The unique racial differences that are noted in the study are unique to the population of Flint. Also multiple locations were used in the study, which included three senior centers located in different areas of Flint. There were several limitations to this study due to study size and population. The sample used in the study was convenient but it is un-generalizable to the entire population of those 65 and older. The participants were not random and the small number of participants was problematic. There were also a small number of participants from each group that was used. With the relatively small group of participants this makes it difficult to investigate each group independently.

This information is useful in creating a physical activity program for seniors including things that are important to them such as an interesting program, that includes an instructor, at an easily accessible location, and that was a group activity. Finally this gives rise to further research such as replicating this survey across the state of Michigan or across the nation so that a better representation of the population can be found.

<table>
<thead>
<tr>
<th></th>
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<th>Mean (SD)</th>
</tr>
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<tbody>
<tr>
<td>Not Interested in Activity</td>
<td>2.89 (1.02)</td>
<td>3.10 (1.16)</td>
</tr>
<tr>
<td>Felt Pain or Discomfort</td>
<td>2.94 (1.23)</td>
<td>2.94 (1.15)</td>
</tr>
<tr>
<td>Exercise Alone</td>
<td>3.09 (1.04)</td>
<td>3.29 (1.18)</td>
</tr>
<tr>
<td>Not Having Fun</td>
<td>3.03 (1.04)</td>
<td>3.23 (1.11)</td>
</tr>
<tr>
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<td>2.54 (1.22)</td>
<td>2.81 (1.16)</td>
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<tr>
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<td>2.57 (1.11)</td>
<td>2.87 (.88)</td>
</tr>
<tr>
<td>No Encouragement from Instructor</td>
<td>2.54 (.88)</td>
<td>3.26 (.99)</td>
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</tbody>
</table>
References


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SPAIN AND TOBACCO: A CULTURAL ANALYSIS  
Kaylyn Stanton  
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Abstract

The history of tobacco use in Spain began in the middle of the sixteenth Century. It was first introduced as an herbal medicine to cure many illnesses and eventually it became a socially integrated drug, originally understood as pleasure and pain, in Spanish culture. This integration resulted in health problems within the population and has since contributed to the difficulty of stopping the growth of tobacco use. In addition to the cultural component, it has a social presence; tobacco use is related to smoking advertisements, is widely accepted and it represents a potential threat to the individual. Therefore, an important part of decreasing tobacco use in Spain involves a better understanding of the cultural beliefs about smoking, social tobacco acceptance patterns and the risk factors for those living in Spain. A thorough understanding of these combined influences within Spain will allow for the creation of effective cessation programs to reduce the negative health effects of smoking in the population.

Tobacco is “…The leading global cause of preventable death…” according to the World Health Organization. Smoking affects both individual’s health and lives as more than 600,000 individuals die each year due to environmental tobacco smoke (World Health Organization, 2009). Spain, in particular, has a population with a high percentage of smokers and an increasing percentage of female smokers. In addition, smoking has been a large issue within the health profession.

The history of tobacco use in Spain began in the middle of the 15th century. In the beginning, tobacco was introduced to Europe by explorers and doctors as a cure or “panacea” (Goodman, 48) in medicine and eventually became part of the Spanish culture. While once originally used for medicinal purposes, tobacco is now the exact opposite, causing health problems around the world and specifically in Spain. These health problems include an aspect of addiction and behaviors which prevent an individual from quitting smoking. Culture also plays a role in the use of tobacco as is seen in the country’s history and varying uses among gender and social class. The role of education and the influence of health professionals also contribute to the smoking habit. Lastly, the perceived health risks from smoking and the influence of family or friends affects the use of tobacco within the Spanish population.

First is to gain an understanding of the introduction and influence of tobacco in the history of Spain. In the XVI century, there was a large desire to discover an herb or cure for many ailments of that time. Spanish explorers were ordered to the new world and returned to Spain with tobacco and other herbs. Eventually, tobacco was accepted among most all social classes due to both the psychological effects and “cures” from tobacco (Goodman, 40-45). Additionally, the fact that tobacco was seen to have medicinal properties in the Amerindian culture also provided reasoning for acceptance among the Spanish. Ultimately one culture between two populations mixed to create the adaption of a new form of medicine and the practices of another culture.

In addition, during the XVII century, Spain developed and produced snuff. There were many types and boxes for snuff which contributed to the social and behavioral aspect of tobacco. Throughout Europe, individuals used snuff as an indicator of wealth and the behavior of sniffing included social rules for different social classes. However, the poor used plain tobacco in
comparison to these individuals (Goodman, 69). While the history and the introduction of tobacco by the explorers in Spain are clear, this does not explain the ease of addiction to tobacco. The history and the use of tobacco among the Spanish is only one part of addiction in Spain.

Secondly, an understanding of health behaviors should have a role in the development of cessation programs in Spain because of the relationship between these behaviors and tobacco addiction. The focus on health behaviors demonstrates the importance of biology, psychology and sociology in the understanding behind individual reasons for smoking and why an addiction has developed. Thus, the psychology involved in behaviors can help in the creation of effective programs.

Important theories which demonstrate the connection between health behaviors and dependence include both the biomedical and social belief model. In the two models, individual behaviors in relation to addiction are affected by genetic, social and cultural influences. The biomedical model discusses how genetics and chemicals in the brain have a significant role in the possibility of an individual developing an addiction to tobacco (Straub, 233-235). A possible component to tobacco among a proportion of the Spanish population may lie in genetic components which affect likelihood of drug addiction resulting from the interaction between brain chemicals and the drug’s effects.

On the other hand, the social belief model shows the importance of social and cultural influences on the chances of an individual using tobacco and developing a smoking habit. Social situations such as parties or restaurant dining with friends tend to be perceived as enjoyable activities. When such situations are accompanied by the commonplace usage of cigarettes, the chances for addiction grow (Straub, 235-236). Thus culture is an additional component in addiction and health behavior choices if there is a sense of normalcy, within the Spain, to smoke in restaurants or parties accompanied by friends, family and food; each significantly positive rewards. Preventing the use of tobacco or smoking becomes more difficult to prevent. The attitudes of friends, family and social institutions provides further pressure on the individual to participate in poor health behaviors and raises the risk of addiction.

Finally, there are four steps involved in the behavior of smokers. These steps include “…initiation, maintenance, cessation and relapse.” (Straub, 252-258). The advertising by tobacco companies, the influence of friends during school as well as personality affects the probability that a person will begin smoking. The initiation of a habit, in particular smoking, is the most important step in the consideration of cessation programs because the initiation starts the dependency on tobacco and other drugs. After this first step, the smoker maintains their habit in order to prevent negative feelings such as anxiety and stress or to create positive feelings such as relaxation (Straub, 255).

Eventually cessation will follow when the smoker decides to quit. The cessation step uses medicines to reduce the body’s dependency on nicotine with the combination of behavior and attitude therapy. Unfortunately, more than eighty percent of smokers will relapse during the first year without cigarettes or smoking (Straub, 263). For this reason, the objective of laws and prevention programs in Spain should focus on the first step, initiation, among citizens and adolescents.

Using the four steps for smoking behavior and an analysis of the different needs of individuals, cessation programs should be created. An example of a program which used this information was a culturally sensitive smoking cessation program for Hispanic American smokers in 1996. The title of the program was “SI, PUEDO” and provided information about how to avoid smoking in social situations and the influence of their habit on their children; an
influence of cultural importance to these smokers. “In addition, deep-seated cultural values such as machismo […] familiarismo […] and respeto […] were used to convey antismoking messages.” (Straub, 261). While participant abstention from smoking was not seen in the long term, this program was initially effective because of the use of cultural values specific to the target population in an effort to promote new health behaviors (Nevid, J.S, 198-207). Therefore, an incorporation of culturally sensitive programs such as “SI PUEDO” along with follow-up, legislation or long term support could enhance abstinence rates among Hispanic smokers.

Of all the risk factors that contribute to the smoking habit in Spain, gender and education are significant. Both affect the initiation and continuation of smoking and help to guide the future percentage of smokers in Spain. For this reason it is important that cessation programs research trends regarding both factors to prevent an increase in this habit.

First is the importance of gender in the initiation of smoking. During the 20th century, cigarettes were very popular with men and women yet women did not begin the major step towards initiation until 1960 (Schiaffino, 59). One reason for this behavior is evident in the article “Gender and educational differences in smoking initiation rates in Spain from 1948 to 1992,” by Schiaffino, as the authors analyze social aspects in relation to women. During the era between 1960 and 1992 more women began to work and hold jobs outside the home while they were caring for children. Many women began to receive an education in universities. Thus the gender roles changed to include the ability for women to work, earn money and obtain a good job because of continued education.

In addition, during the end of the 20th century as more women received an education, the percentage of women smokers grew and for the first time there was a reduction in the percentage of male smokers (Schiaffino, 56). This relationship reveals how changed in roles and social attitudes can change health behaviors among genders. Therefore both are signals within the country showing a change in smoking attitudes and how to prevent them.

Secondly is the more general relationship between education and smoking. In the beginning, smoking was primarily a behavior associated with males in part because they had access to an education. As Schiaffino and other authors describe, “The pattern of smoking initiation in males presents some variation according to education. In males […] 1948-1952 […] the initiation rates were higher among more educated males but from the 1968-1972 calendar period onwards the initiation rates became higher for males with low education.” (57). Then, in 1968 smoking eventually became a part of the behavior among males without an education. During this era, 1960, women began to obtain increased education. As a result of this, women gained new roles but their smoking rates also grew. “Smoking was rare among females before the 1958-1962 calendar period […] women with a higher level of education, however, started smoking before (1958-1962 calendar period) women with a low level of education. This pattern is apparent in the 1968-1972 period and reversed in the 1078-1982 calendar period, with higher initiation rates among less educated women.” (Schiaffino, 57). The risk of initiation was related with gender primarily and education secondly but eventually moved to individuals without an education.

There are many risk factors in the initiation of smoking and these factors include gender and education despite the fact that both genders are smokers. Changes in culture or social attitudes contributed to the formation of smoking habits. The gender roles in a society can change the way in which an individual thinks about a habit or behavior. Also, education is a risk factor in smoking, thus society must consider the tendency of habits to form with more education and changes in gender roles in the effort to better the health of the population.
In addition, this relationship between education and gender is clear in research about smoking behaviors among women that are health professionals; such as nurses. According to an investigation in 2003 in Madrid, the percentage of smokers that were nurses was almost equivalent to the percentage of smokers within the entire population. In 1998, the percentage of smokers among nurses was 47.6% and 47% in 2001 (Fernandez Ruiz, 1-2) With the percentage of young nurses who were smokers in 2001 decreasing only by .6% than in 1998, an issue among health professionals and tobacco addition still exists.

However, this large percentage of smokers among nurses reflects social factors regarding gender and education. One explanation for this high percentage of smokers within a working population could stem from the higher proportion of female to male ratios within the nursing profession. Thus, if tobacco companies were creating advertisements for women, the percentage of smokers among nurses is much larger than the percentage male dominated health professions. Finally, the nursing profession is notably stressful and it is possible that cigarettes are used as a relaxation technique to alleviate unwanted feelings.

Overall, cultural and social factors in this research reveal the need for Spain to develop programs for health professionals as they are models for citizens and are relied upon to give health information to patients. These programs should include health techniques to reduce stress and regulations to prevent health professionals from smoking on work grounds. However, most importantly is the development of public programs for women in Spain. These programs should be expected to use research and investigations into gender, education and tobacco advertisements in order to save the lives of citizens, women and children.

In summation, this analysis of the presence of tobacco in Spain has shown that cessation programs need to incorporate aspects of history, culture, gender and education in order to be successful. Smoking is an old problem, which began in the 15th century with the introduction of tobacco in the culture and lives of the Spanish. The reasons for the ease of incorporation of tobacco within Spanish and Amerindian culture are still present today. The use of snuff as a symbol of wealth in past centuries is seen in the rhythm of tobacco addiction, moving from the rich in the past to the less educated in the present.

Also, health behavior factors are important issues to incorporate in smoking regulation and programs as many individuals who have an addiction to tobacco find it very difficult to quit. This problem is complicated when culture or social activities support the use of tobacco. Cessation programs should work with individuals to identify reasons for their habits, whether they stem from cultural or social aspects, in order to effectively reduce the percentage of smokers and prevent initiation among vulnerable populations.

Finally, gender and education increase the possibility that an individual may develop a smoking habit. Research on the history of smoking among men and women with a focus on gender and education reveals future susceptible populations and allows programs to develop effective culturally relevant tools to prevent initiation and assist smokers in transition to the cessation step.

While cessation programs are significant in the fight against smoking in Spain, this interpretation and analysis regarding smoking addiction in Spain reveals the importance of continued research about the effects of culture, attitudes and biological and sociological factors in order to effectively reduce tobacco addiction in Spain.
References


USABILITY PROFILES AT THE URBAN HEALTH AND WELLNESS CENTER

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Abstract
In general, cancer burden lies heavily on women with disabilities. Regular primary health care screenings have an impact on the stages of cancer. Women who schedule routine mammograms and papanicolaou (pap) tests will most likely detect cancer at an early stage. Women with disabilities are much less likely to receive preventive care. This disparity of use of cancer screening is directly linked to the inaccessibility of health care clinics, which often arises from obstacles in the physical environment. Women with mobility disabilities face some of the greatest disparities among those not utilizing preventive screening. Since preventive screening can reduce morbidity and mortality, it is important for disabled citizens to have easy access to health care. Doorways, clinic rooms, bathrooms, passageways, tables, drinking fountains, and telephones of an outpatient healthcare facility were assessed in June of 2010. Measurements for this study were collected using the Outpatient Health Care Usability Profile, version three (OHCUP), and also with the Kentucky Cabinet Survey. Overall, the Urban Health and Wellness Center was mostly accessible for women with disabilities; however, in comparing the checklists there were some differences in the results.

Background
In general, cancer burden lies heavily on women with disabilities. In 2006 more than 660,000 women in the United States were informed that they had cancer, and nearly 270,000 died from it, (Centers for Disease Controls and Prevention, 2010). Although many women die annually from cancer women with disabilities are thirty percent more likely to die than women without disabilities, (McCarthy, Long, Chirikos, Li, Drews & Iezzoni, 2006). Prevalence of breast cancer is also higher, in the United States, among women with disabilities than woman without disabilities. In the United States in 2007, 202,964 women were diagnosed with breast cancer, and 40,598 women died from the disease, (Centers for Disease Controls and Prevention, 2010).

Regular primary health care screenings have an impact on the stages of cancer. Women who schedule routine mammograms and papanicolaou (pap) tests will most likely detect cancer at an early stage. Women with disabilities are much less likely to receive preventive care. According to a study done by Armour, women with a disability have a lower reported mammography rate than women without a disability, 72.2 percent versus 77.8 percent, (Armour, 2009). “Compared with women with no disabilities, those with mobility limitations had reduced odds of having received a Pap smear (0.5-0.7),” (Drew, 2005). As a result women with disabilities have a greater chance of letting early stage cancers reach dangerous tertiary levels.

This disparity of use of cancer screening is directly linked to the inaccessibility of health care clinics, which often arises from obstacles in the physical environment. The Healthy People 2020 initiative, (the disease prevention and health promotion program of the United States department of Health and Human Services) highlights a major area of concern: improving opportunities for people with disabilities by creating barrier-free environments. In order to meet
accessibility needs facilities must meet American Disability Association guidelines. Clinics must offer an appropriate number of handicapped parking spaces, generous widths of entrances, hallway, and elevators, and appropriate height of tables. For example, passageways in health care clinics need to be large enough to comfortably fit a wheel chair (minimum of 36 inches). Patient controls need to be operable with a closed fist, and signs need to be readable to accommodate sensory, physically, and cognitively impaired patients, (Drum, Davis, Berardinelli, Cline, Laing, Horner-Johnson & Krahn, 2008). If these accommodations are not met in outpatient clinics, they are not usable for people with disabilities. Although there is vast knowledge on clinic recommendations for people with disabilities, the barriers that are encountered in the clinic are less understood.

Women with mobility disabilities face some of the greatest disparities among those not utilizing preventive screening. Patients with disabilities who have difficulty entering and using a health care facility encounter additional obstacles in the environment, for instance the inability to receive a mammogram due to physical barriers. There is ample evidence from a variety of well-conducted randomized controlled trials that annual or biennial mammography is effective in reducing breast cancer mortality in women 50-69 years, (Ferrini, Mannino, Ramsdell, & Hill, 2009). In order to receive a mammogram, a woman must stand for the duration of the prolonged exam. Women with mobility disabilities are often unable to stand for extended periods of time for this type of testing and have difficulty undergoing mobility transfers to the exam table for pap tests, so they frequently go without cancer screening.

Since preventive screening can reduce morbidity and mortality, it is important for disabled citizens to have easy access to health care. The rationale for the first study is to gain information regarding physical accessibility of the Urban Health and Wellness Center.

Methods

Doorways, clinic rooms, bathrooms, passageways, tables, drinking fountains, and telephones of an outpatient healthcare facility were assessed in June of 2010. The assessment took the research assistant four and a half hours to complete. After the research assistant rated the accessibility on site, the results were calculated on Microsoft Excel, 2007. Results for accessibility were summarized on tables in order to give accessibility recommendations to the outpatient clinic.

Participants

The Urban Health and Wellness Center is an affiliate of the University of Michigan Health System, which is located on the University of Michigan-Flint’s campus. This clinic provides care for patients, ages 19 to 64, covered by the Genesee Health Plan which is a community sponsored healthcare program for citizens in Genesee County.

Measurements

Measurements for this study were collected using the Outpatient Health Care Usability Profile, version three (OHCUP), and also with the Kentucky Cabinet Survey. OHCUP was designed to assess the usability of primary care clinics for people with disabilities, (Berardinelli, Cline, Davis, Drum, Horner-Johnson, Laing, Krahn, 2008). Kentucky Cabinet Usability Checklist offered measurement criteria of the same caliber only differing in the areas of parking and signage.
Outpatient Health Care Usability Profile V3 was used objectively to gain insight on the usability of the Urban Health and Wellness Center on behalf of people with disabilities. The implementation of OHCUP is to check that a clinic meets enough Accessibility Guidelines to be usable for people with disabilities including physical, sensory, and cognitive impairments. The criteria to meet accessibility, defined by OHCUP, for patient arrival required specific measurements for three sections: parking, exterior building, and ramps, signage and controls. Section one, parking, required one in eight parking spaces be van accessible, 98 inches of vertical van clearance, and five by twenty foot loading zones. Section two, walks curbs and ramps, required that the travel route is stable, firm, slip-resistant and requires no stairs, the route leading to the building is 36 unobstructed inches wide, the entrance door has 32 inches clear opening, and that there is eighteen inches of unobstructed wall space. Section three, ramps signage and controls, required that the slope of ramps should be no greater than 1:12 and slip resistant, the width is 36 inches, the top of the handrail is at least 34 inches above the surface, if signs mounted above 80 inches they must provide directions with letters at least three inches high with non-glare finish, raised characters, Braille text and high contrast, and controls be operable with a closed fist.

The criteria to meet accessibility, defined by OHCUP, for the interior portion of the clinic required specific measurements for two sections; public facilities and exam rooms. The public facilities section measures telephones, seating, counters, passageways, water fountains, lifts, elevators, stairs, rest rooms, and emergency egress. This section concentrated on widths of passageways, elevators, and restrooms to comfortably maneuver a wheelchair, and accessibility of telephones and seating in waiting rooms. To meet OHCUP requirements the exams rooms must have 36-inch passageways, height adjustable exam tables, and room to comfortably turn a wheelchair.

Kentucky Cabinet Usability Checklist was provided by the Department of Vocational Rehabilitation to identify physical and communicational barriers encountered by people with disabilities in health care facilities. (Kentucky Department of Vocational Rehabilitation, 2000, 2). The Kentucky Cabinet checklist was used to assess the same areas of the exterior Urban Health and Wellness Center, but it included five additional measures. The Kentucky Cabinet checklist included several more categories to measure the interior Urban Health and Wellness Center (Contact author for more detail)

Results

In order to calculate percentages of each section a YES or N/A response counted as useable and received one point, and a NO response counted as not usable and received no points. The points were added after each subsection and divided by the total number of questions. This number was multiplied by one hundred to calculate the usability percentage. Since it is important to distinguish between inapplicable questions, and questions meeting criteria percentages are also given for non-applicable questions, questions that received a YES, and questions that received a NO.

\[
\text{Percent(\%)} = \left( \frac{\text{Number of NO answers}}{0} \right) \times \left( \frac{\text{Total number of questions}}{0} \right) = \frac{\text{One hundred (to give percentage)}}{\text{Usability}}
\]
Outpatient Health Care Usability Profile V3, overall the Urban Health and Wellness Center was assessed 92% usable. One hundred and one questions out of one hundred and ten questions received a YES or N/A. Multiplying by 100 gives the accessibility percentage. The external Urban Health and Wellness Center was assessed 89% usable. The internal Urban Health and Wellness Center was assessed 93% usable. See Table 1 for Outpatient Health Care Usability Profile V3 subsection scores in greater detail.

Kentucky Cabinet Accessibility Checklist, overall the usability of the Urban Health and Wellness Center was 91% usable. The overall usability for the exterior portion of the Urban Health and Wellness Center was 93% usable. The overall usability of the interior portion of the Urban Health and Wellness Center was 94% usable. See table 2 for Kentucky Cabinet Accessibility Checklist subsection scores in greater detail.

Outpatient Health Care Usability Profile V3 showed for the exterior portion that parking received the lowest usability percentage, followed by signage and controls, and the highest usability percentage was the walks curbs and ramps. The internal portion had the lowest usability in counters and highest usability in seating, passageways, water fountains, lifts, stairs, and emergency egress. The overall usability for this profile was 92%. Kentucky Cabinet Accessibility Checklist showed that parking received the lowest usability percentage, followed by walks curbs and ramps, and the section with the highest usability percentage was signage for the exterior portion. For the internal portion the lowest usability was found to be meeting rooms, and the highest usability was emergency procedure. The overall external usability based on this checklist was 91%. The Urban Health and Wellness Center was found to have high accessibility for people with disabilities.

Discussion

Overall, the Urban Health and Wellness Center was mostly accessible for women with disabilities; however, in comparing the checklists there were some differences in the results. Upon assessing the exterior of the center it was found that parking scored the lowest usability in both checklists. The two checklists differed on the highest external usability results due to limitations in the checklist and the center. Upon assessing the interior of the center it was found that the area of telephones scored very low; telephones were the lowest scoring section on the OHCUP, however it was the second lowest scoring internal section on the Kentucky Cabinet Survey. The lowest scoring internal section on the Kentucky Cabinet Survey was meeting rooms. Both checklists gave a high usability score for the center, but the Kentucky Cabinet Accessibility Checklist gave a higher overall external usability percentage, whereas the OHCUP gave a higher overall internal usability percentage, (see tables 1 and 2). Overall the OHCUP gave a higher usability percentage for the entire clinic.

These findings were supported by the previously researched article which indicated that outpatient clinics were inaccessible in the exterior portion of the building. Both physical and physician barriers, for example inaccessible offices, examining rooms, and equipment, have been revealed as reasons that persons with disabilities do not receive sufficient primary care services. A large number of people with disabilities are unable to access health care clinics due to the physical structures in the outpatient clinics. Women with physical disabilities have barriers in
many internal facilities. For example, they were unable to get positioned for a Pap smear test. If these women are not receiving routine preventive exams, the likelihood of cancer will greatly increase.

**Limitations**

Several limitations were found while conducting the study including limits in the checklists, in the Urban Health and Wellness Center, and in people with disabilities.

Reasons for discrepancies in percentage between checklists are due to differences in questions, depth of questions, and different amounts of questions per sections. The Outpatient Health Care Usability Profile has less overall questions, but more questions for the signage section which produced different scores for that section. The OHCUP combined drinking fountains and telephones into the same section which ultimately increased the score; giving the perception of higher usability for telephones. This checklist included only questions concerning ramps in the walks, curbs, and ramps section; therefore it had a perfect score whereas The Kentucky Cabinet Checklist asked specific questions about curbs and walks that didn’t relate to ramps. The Kentucky Cabinet Accessibility Checklist has more questions regarding the exterior of the center, and goes less in depth with each question, which is why the scores are much higher for this checklist. The OHCUP had more questions concerning the interior portion of the clinic which could have produced a higher internal accessibility percentage. Therefore, the [Outpatient Health Care Usability Profile](#) captured characteristics of the Urban Health and Wellness Center more than the [Kentucky Cabinet Accessibility Checklist](#) because it had more specific questions that helped define the accessibility of the exterior health care clinic.

Although the center had high overall usability, it did not exhibit ramps, lifts, or usable elevators, so there were limitations to the walks curbs and ramps section for external, and lifts and elevators in the internal section of the [Outpatient Health Care Usability Profile](#). Since there were no ramps, elevators, or lifts all questions received an answer, NA. NA answers were grouped with YES answers, therefore giving a one hundred percent usability score. The [Kentucky Cabinet Accessibility Checklist](#) had only one question for signage which had received a YES; therefore the one hundred percent usability was based on only one item.

The Urban Health and Wellness center also exhibited limitations for people with disabilities. The barriers that were found at the external outpatient care building can contribute to physical barriers impeding women with disabilities from receiving preventive care. The center did not provide enough van accessible parking spaces which can limit accessibility for wheelchair bound patients. Patients in wheelchairs needs extra clearance in parking spaces to be able to transfer safely and enter the building successfully. The internal barriers are also propose difficulties maneuvering a wheelchair inside of a clinic. The telephones were inaccessible, and there were no lifts available to patients. These types of limitations could severely limit the care people with disabilities are able to receive.

Women with disabilities also set their own limitations. Since many people, including medical professionals, are not informed on the inaccessibility of healthcare facilities for women with disabilities, women with disabilities need to speak out about the usability problems that they are faced with in the health care settings.
Implications

In the future, a research assistant could use both checklists to ensure all aspects are covered to assess usability of outpatient healthcare facilities. Since each checklist provides differences in detail and in questions, it would be more accurate to assess usability by comparing both checklists used together.

The Urban Health and Wellness Center could make telephones and counters more accessible, and widen entrance ways to the building. Due to barriers in the internal environment, women have a greater struggle to enter and use a facility to receive treatment.

Women with disabilities should be informed on preventive care services to increase longevity of health. Also, these women need to inform health care providers of the physical obstacles that limit the care they receive. If these women don’t make their voice heard, the chance of sufficient accessibility is limited.

The next step to this research study will be to survey patients with disabilities at the Urban Health and Wellness Center to seek a better understanding of personal experiences with inaccessibility. If personal insight is gained it will give the researcher and Urban Health and Wellness Center better ideas on how to make the clinic more usable for people with disabilities.

<table>
<thead>
<tr>
<th>Items</th>
<th>Number of YES</th>
<th>Number of NA</th>
<th>Number of Total Items</th>
<th>Percent Usability</th>
</tr>
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<tbody>
<tr>
<td>Walks, curbs, and ramps</td>
<td>6</td>
<td>10</td>
<td>16</td>
<td>100%</td>
</tr>
<tr>
<td>Signage and Controls</td>
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<tr>
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<td>6</td>
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<td>Total Overall</td>
<td>42</td>
<td>59</td>
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Table 2: Kentucky Cabinet Survey Scores

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<tr>
<th>Items</th>
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<th>Number of Total Items</th>
<th>Percent Usability</th>
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<tr>
<td>Signage</td>
<td>1</td>
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<td>4</td>
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*Meeting of the Minds 2011*
"NEVER TO BE PERFORMED IN PUBLIC": BEETHOVEN’S PROMISSORY NOTE IN THE “QUARTETTO SERIOSO,” OP. 95 IN F MINOR, I

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Introduction

Written for Beethoven’s long-time friend Nikolaus Zmeskall, the String Quartet in F minor, op. 95, was completed in 1811. This places the composition in the middle period, between the sixth and seventh symphonies. When it was published in 1816, Beethoven warned his friend George Smart in a letter: “The Quartet is written for a small circle of connoisseurs and is never to be performed in public.”¹ I propose that Beethoven’s reluctance to share the “Quartetto Serioso,” a title given by the composer, in a public sphere may be due to the unusual and perhaps even experimental presentation and resolution of the Neapolitan and related chromatic relationships throughout the Quartet’s first movement. This paper will use motivic and voice-leading analysis to demonstrate how the Neapolitan and similar chromatic key areas are treated throughout the movement, taking Edward T. Cone’s concept of the “promissory note” as a point of departure in structuring the analytical narrative.² Cone’s “promissory note” refers to a kind of musical “unfinished business” that is typically implied and then realized as a piece of music unfolds. Exactly to what extent, and through what means, Beethoven’s promissory note finds resolution in the “Quartetto Serioso” forms a central part of the analysis.

The Neapolitan and the F, G-flat/G, A-flat motive

The first movement of the “Quartetto Serioso” begins with an abrupt outburst in F minor. Example 1a shows this opening. The gesture is short, tonally closed, and isolated through silence. The first motive of this gesture presents an ascending minor third, F, G, A-flat; this important motive, which I will heretofore refer to as “x,” will prove to have far-reaching consequences for the rest of the movement. A three-bar prolongation of the dominant follows, creating an asymmetrical phrase length of five bars.

Following the bold flourish in mm. 1-5, the music suddenly moves to the Neapolitan in m. 6 (Example 1a). This unanticipated shift sounds as if the piece is starting over in the wrong key. The appearance of the Neapolitan is striking; it occurs not only in root position, but also as a key area, and appears as such extremely early in the movement. The move to such a chromatic key area might more typically be reserved for later in a movement—a coda, perhaps, as in Beethoven’s Waldstein piano sonata. The music quickly reverts back to the tonic key area as if nothing out of the ordinary has happened.

The sudden appearance of such a highly chromatic key area—especially so early in a movement—appears to be a textbook example of Cone’s “promissory note.” Typically, one might expect Beethoven to fulfill a “promissory note” with a large section devoted to that key area in the development, coda, or recapitulation. However, as my paper will demonstrate, Beethoven’s treatment of the Neapolitan in the first movement of the “Quartetto Serioso” does not resemble this more typical trajectory.

The abrupt appearance of the Neapolitan in m. 6 is not as removed from the opening statement as it might initially appear. The bass line of Example 1a presents a three-note figure: prolonged F
from mm.1-2 connects motivically to G-flat in mm. 6-7, and A-flat in m. 8. This motive resembles the opening motive, “x.” As if the move to C-flat in m. 8 were a misstep, violin I retakes the phrase and moves from D-flat to C-natural in mm. 9-10. The A-flat in m.10 is rejected as the bass note in m. 9, G-natural, leads to the dominant, C, instead.

Example 1a: Exposition, primary thematic area

The Neapolitan reappears in the transition at m. 19 more succinctly this time, as it is clearly treated as a passing tone (Example 1b). Again, “x,” with the addition of G-flat, accompanies the occurrence of this Neapolitan as it did in Example 1a. However, this time the G-natural does reach A-flat in m. 21, but it is superimposed in the upper register of violin I. The achievement of A-flat fulfills the initial “x” motive from Example 1a, but displacement of A-flat in a higher register as well as the destabilizing effect of the 5-6 motion above the bass in m. 21 make this fulfillment of the minor third less satisfying.

Traditionally an area in which Beethoven might explore the implications of the “promissory note,” the development begins with a hopeful ascent in the upper voice (Example 1d). The development, beginning at m. 60, presents F in violin I and motive “x” in the cello, harmonized by F major. Starting at m. 62, F moves through G-flat to G-natural at m. 64. The G-natural, however, does not reach what we have come to expect as its goal (A-flat). Instead the G-natural in m. 64 falls back to F in m. 67. Another attempt to ascend to A-flat is initiated in the cello immediately following this fall to F (Example 1e). F begins the familiar trajectory, moving once again to G-flat and then to G-natural, and finally, at m. 69, to A-flat. However, the energetic impulse of the cello supersedes its goal and continues to B-flat, B-natural, and then, finally C.

The recapitulation exhibits many occurrences of “x” similar to those found in the exposition; however, the entire Neapolitan section of the primary thematic area, originally heard in m. 6, does not reappear. Only the opening gesture remains, moving directly to the transition.

Example 1b: Exposition, transition; Example 1c: Exposition, secondary thematic area
Example 1d and Example 1e: Development

Implications of the “Promissory Note” for the Secondary Thematic Area
My paper thus far has traced the “x” motive through the entire piece; however, one may question what implications “x” has for the secondary thematic area. The secondary thematic material includes several instances of half-step chromatic relationships that strongly resemble the opening Neapolitan appearance. Prior to the secondary thematic area, at m. 23 the cello part presents a motion from A-flat to B-double-flat and then back to A-flat (Example 2a). This seemingly insignificant half-step neighbor motion foreshadows what will soon occur in the secondary thematic area. The very same half-step motion, A-flat to A-natural, reappears in the cello in m. 32 as part of a deceptive motion that initiates a twenty-four measure phrase expansion (Example 2b). Within this expansion, the ascending half-step tendency is explored a second time by a disruptive scalar passage initiated by A-natural in mm. 37-40 (Example 2c). A-flat and A-natural are then reversed to create a closing gesture in m. 41 (Example 2d). A recomposition of the secondary thematic area, shown in Example 3, demonstrates what this area would look like without the large phrase expansion.

In the recapitulation, the secondary thematic section begins with a “false start” in the original key of D-flat. The music corrects itself and moves to F major. Similar half-step situations occur in this new key. At m. 101 the cello moves from C-natural to C-sharp initiating the phrase expansion (Example 4a). At mm. 106-109 the disruptive scalar passage occurs (Example 4b). This time the initiation of the scale begins with two half-steps instead of one: C-natural to C-sharp to D-natural. Example 4c shows the second occurrence of the scalar passage at mm. 117-120. This scalar passage is also initiated with two half-steps: F-natural to G-flat (respelled as F-sharp) to G-natural, the same three pitches of the “x” motive.
Example 2a: Exposition, secondary thematic area; Example 2b: Exposition, secondary thematic area

Example 2c: Exposition, secondary thematic area; Example 2d: Exposition, secondary thematic area

Example 4a and Example 4b: Recapitulation, secondary thematic area
Example 4c: Recapitulation, secondary thematic area; Example 4d: Exposition-primary, Exposition-secondary, and Development areas reduced
Example 3: Recomposition of Exposition, secondary thematic area
On a larger scale, observations made thus far enable a more refined understanding of the context of the secondary thematic material. The secondary thematic area is in the key of D-flat major, VI of F minor. VI is an unusual choice for the secondary thematic section in a minor-key sonata form; typically, III would be expected. Example 1d shows the secondary theme, which features “x.” I propose that the F, G-flat, A-flat in the thematic material of the secondary thematic area, which is held invariant from the primary thematic area, may have influenced Beethoven’s choice of D-flat as a key area for the secondary thematic section. Example 4d shows a reduction of the primary and secondary thematic areas. The background structure reveals another motion from C-natural, in the primary thematic section, to D-flat, in the secondary section, yet another a half-step relationship. The D-flat is also significant because it was associated with the “problematic” pitch in the primary thematic area (Example 1a).

Furthermore, the relationship between the secondary thematic section (D-flat major) and the development (F major) poses further chromatic relationships and exhibits musical “unfinished business” (Example 4d). The very same half-step motion that initiated the large phrase expansion in the secondary thematic area occurs on a larger level between the secondary thematic area and the development, A-flat to A-natural. The motive of A-flat to A-natural and similar half-step motives are labeled “y” in the examples. The motive “y” occurs at many pivotal moments in the movement and energizes the course of the music nearly as much as the original “promissory note” (G-flat). One might almost think of the “y” motive as a sort of “promissory motive,” which assumes nearly equal importance to the more immediately obvious “x” motive.

4. Unfinished Business Dealt with in the Coda
Deceptive motion occurs between the end of the recapitulation and the coda at mm. 128-129: V to VI (C to D-flat) or motive “y” (Example 5a). This motion is reminiscent of several earlier moments: the deceptive motion in the secondary thematic section that initiates a phrase expansion (Example 2b); the structural upper voice between the primary and secondary thematic sections (Example 4d); and, of course, the initial introduction of the “promissory note” where I, F, moves to bII (G-flat) and V (C) moves to VI (D-flat) (Example 1a). Furthermore, the deceptive motion prevents the piece from closing in the key of F major, an outcome that seemed unavoidable just a few measures before the coda. Concomitantly, C moves to D-flat, resulting in the wrenching down of A-natural to A-flat (the A-natural, of course, having occurred in many pivotal moments, especially in the secondary thematic area). The first four bars of the coda, mm. 129-132, remain on D-flat and then move to the dominant, C, before the onset of a chromatic sequence initiated by A-natural, as shown in Example 5b. A-natural’s final attempt to replace A-flat is short-lived, as A-flat is reiterated again and again in the final measures.

Other appearances of “y” also recur in the coda. See Example 5c, which shows G-flat’s movement to G-natural in the viola at mm. 135-136. This ascent reaches A-flat in m.137, but in the wrong register; following this ascent is an embedded descent in mm. 138-139 (Example 5d). The A-flat/G-flat/F descent is the first descending occurrence of “x” outside of the primary thematic material, and the first occurrence of A-flat (as part of “x’) in the proper register that is supported by tonic. After this descent, the minor third motive never again includes G-flat; G-flat seems finally to have been sufficiently tested and subjected to experimentation. Curiously, a satisfying “working out” of the G-flat key area, initially presented so strikingly in mm. 6-7, never materializes; in fact, after its initial abrupt presentation in mm. 6-7, the actual harmony of G-flat major never reappears at all. Perhaps this apparent experimentation with what it means to resolve a musical issue may have prompted Beethoven’s odd comment about the work’s being intended
for a small circle of connoisseurs. Instead of expanding the G-flat major key area later in the movement, Beethoven avoids it completely, focusing instead on the ascending half-step impulse that distracts and energizes the course of the whole movement. The piece ends with a repetition of the opening motive reiterated as the initial version of “x,” a subtle fulfillment of the minor third motive. The movement’s final utterances re-present the opening pitches and rhythm, but the character of the motive is now quiet and at peace, having eliminated the disruptive G-flat.

Example 5a, Example 5b, and Example 5c: Coda

Example 5d and Example 5e: Coda

References


POSTTRAUMATIC GROWTH AND PERCEIVED CHANGES IN PHYSICAL HEALTH: EXPLORING EVENTS TRIGGERING LIFESTYLE CHANGE

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Abstract

Individuals experiencing trauma may exhibit both positive psychological and long-term physical effects. This positive psychological outcome one experiences after struggling with a traumatic event, also known as posttraumatic growth (PTG), may mediate long-term management of health issues. The present study will be examining the relationship between PTG and perceived changes in physical health. The PTG Inventory is a 21-item scale consisting of five subscales that assess PTG and was given to 443 university students. Items examining physical health were added to assess possible changes in health concerns. Results indicated that no differences in scores existed between any of the Physical Health items and PTGI subscales, except on Item 22 $F(1, 330) = 6.05, p < .05$, and New Possibilities $F(1,343) = 14.64, p < .01$. Furthermore, individuals reporting the greatest amounts of change in physical health perceptions experienced similar events. Experiencing events directly related to the body produced higher scores on multiple PTGI subscales. Between body-related events, significant differences in scores existed on Item 24 $F(4, 138) = 3.75, p < .01$, Item 25 $F(4, 141) = 3.43, p < .01$, and on the Appreciation of Life $F(4, 158) = 2.82, p < .05$, Relating to Others $F(4, 141) = 2.91, p < .05$, and Physical Health $F(4, 118) = 2.48, p < .05$ subscale of the PTGI. Possible explanations for varying scores and clinical implications of changes in health perceptions will be discussed.

Several life events may be perceived as being traumatic or stressful, including experiencing a natural disaster, physical or verbal abuse, serious illnesses, academic problems, death of a close friend or family member, or even tumultuous family issues. It has been documented that event type, such as death of a loved one or romantic relationship problems, produce significant differences in reported amounts of posttraumatic growth (PTG; Yanos et al., 2010), or the positive psychological benefits which may occur after experiencing a traumatic or stressful life event. Five domains in one’s life where growth may occur include spirituality or philosophical beliefs, appreciation for life, a changed sense of relationships with others, and positive changes in perceptions of the self. These changes are usually assessed by the Posttraumatic Growth Inventory (PTGI), categorizing these positive changes as Appreciation of Life, New Possibilities, Spiritual Change, Relating to Others, and Personal Strength (Tedeschi & Calhoun, 1996).

Much debate in the literature exists regarding the sustainability of PTG after experiencing a traumatic event related specifically to the body, such as illness, sexual assault, or accident or injury. Even as early as two weeks after a sexual assault, survivors have reported positive changes: especially in the areas of increased empathy, better relationships, and an increased appreciation for life (Frazier, Conlon, & Glaser, 2001). PTG in adults has also been documented following a variety of medical conditions related to the body, including cancer (Stanton, Bower,
& Low, 2006), HIV/AIDS (Milam, 2004), multiple sclerosis (Mohr et al., 1999), spinal cord injury (McMillen & Cook, 2003), and arthritis (Danoff-Burg & Revenson, 2005). Dunn (1996) and Oaksford et al. (2005) reported that 77% and 83% of their samples, respectively, described perceiving benefits even after limb loss. None of the existing five PTGI domains, however, examine positive physical changes (i.e., increased exercise behavior) or changes in physical health perceptions, which may possibly occur after a traumatic or stressful experience. Whetten et al. (2008) suggests that trauma related to the body is associated with mental health disturbances that correlate with lower health functioning in adults. Thus, previous research implies that traumatic experiences may produce some physical benefits and thus is an important area to examine.

Though popularly believed to be a time of optimal health, only 37.5% of the college-aged population participates in regular physical exercise (Schoenborn & Adams, 2010). Some undergraduate students may change their perceptions of physical health after experiencing a traumatic or stressful life event because they are concerned for future health complications. The literature involving the college-aged population is rather limited regarding changes in any physical health perceptions and positive physical aspects of posttraumatic growth. Undergraduate female victims of physical and sexual assault tend to have more negative thoughts about their health, including greater dissatisfaction with their health and more negative perceptions of health (Straight, Harper, & Arias, 2003).

There is evidence of positive physical effects in adults, however. These physical effects have been associated with decreased pain in cancer and lupus patients (Katz et al., 2001) and improved immune system functioning (McGregor et al., 2004). Additionally, in a sample of mostly male heart attack patients, participants exhibited a key positive physical effect from their experience: engaging in healthier lifestyle changes (Petrie et al., 1999). Despite these findings, there is still neglect for the role of body and health behaviors in the PTG literature. As emerging adulthood is being recognized as an important period of health promotion for the development of proper adult health behavior (Nelson, Story, Larson, Neumark-Sztainer, & Lytle, 2008), the purpose of this study is to examine the relationship between PTG and perceived changes in physical health perceptions in the college aged population.

Method

Participants

Out of a total of 443 undergraduate students from a Mid-western university ranging from 18 to 60 years of age (\(M\) age = 19.57, \(SD\) = 3.81), 170 students indicated experiencing a traumatic event related to the body: accident/injury (\(n = 35\)), serious illness (\(n = 14\)), death (\(n = 96\)), assault (\(n = 16\)), or bullying/abuse (\(n = 9\)). The sample consisted of 52 males (31%) and 116 females (69%) ranging from 18 to 54 years of age (\(M\) age = 19.60, \(SD\) = 3.56). A large majority of those who were victims of assault were female (94%). A greater part of participants were Caucasian (81%) or African American (8.9%) and reported the traumatic experience as happening directly (57.7%) to them. Participants were recruited through the university’s Psychology Department, where students taking introductory courses must fulfill requirements for research experience.

Measurements

Posttraumatic Growth Inventory (PTGI). The PTGI was used to assess the positive outcomes one may experience after struggling with a traumatic or stressful life event. The PTGI is a 21-item scale consisting of five subscales that assess PTG: Appreciation of Life (three
items), Spiritual Change (two items), Personal Strength (four items), New Possibilities (five items), and Relating to Others (seven items). Participants were asked to respond to the inventory questions on a scale from 0-5 (0: I did not experience a change, 5: I experienced a change to a great degree). Internal reliability for the subscales with the current sample was satisfactory via the following coefficients: Relating to Others (α = .82), New Possibilities (α = .81), Personal Strength (α = .72), Spiritual Change (α = .82), and Appreciation of Life (α = .70). Total internal consistency for the PTGI with the current sample was α = .90, consistent with the Cronbach’s alpha of the original study by Tedeschi and Calhoun (1996).

Most Traumatic Event. Participants were asked to check all of the traumatic events that they experienced within last five years from a list of possible traumatic events including natural disaster, accident or injury, family issues, financial related issues, death, serious academic problems, etc. They were then instructed to indicate the one event from the list which was the most traumatic or stressful. Due to the nature of the study, those who reported experiencing traumatic events specifically related to the body were chosen for analysis. These body-related events included accident or injury (20.6%), serious illness (8.2%), death (56.5%), assault (9.4%), and bullying or abuse (5.3%).

Perceived Changes in Physical Health. Six items were added to the PTGI to assess possible changes in physical health concerns. These were 1) I have a stronger will to take good care of my physical health 2) I feel more connected to my body 3) I feel more aware of my physiological functions 4) I am more willing to make changes in my lifestyle to improve my physical health 5) I more clearly understand the importance of my physical health, and 6) I feel physically stronger than I once was. Participants rated these items in the same manner as the original PTGI. Reliability for the additional PTGI subscale Physical Health was satisfactory at α = .89. Total internal consistency for the PTGI with this additional subscale in the current sample was α = .93.

Hypotheses

Three main hypotheses exist- Hypothesis 1: Since concerns about physical health are directly related to the body, individuals who experience major positive changes in physical health perceptions are likely to report experiencing similar body-related traumatic/stressful life events. Hypothesis 2: As traumatic event type varies in reported amounts of PTG (Yanos et al., 2010), it is further predicted that individuals experiencing body-related traumatic/stressful life events will significantly differ in their reported changes in health concerns and PTG than individuals experiencing trauma not related to the body. Hypothesis 3: Certain body-related events are more invasive in the lifestyle than others and can hinder normal functioning. Therefore, experiencing a serious illness or accident/injury is hypothesized to have the most positive lifestyle changes between traumatic/stressful events related to the body.

Results

In exploration of Hypothesis 1, results show that individuals who reported the greatest amounts of change in physical health perceptions, according to the Physical Health subscale, experienced a serious illness (M = 3.54, SD = 1.11) and accident or injury (M = 3.40, SD = 1.28), followed by academic problems (M = 3.17, SD = 1.00) and changing residences (M = 2.90, SD = 1.37). Overall, participants reported more non-body related events as their most stressful experiences. A One-Way ANOVA was initially executed to assess the second hypothesis: whether or not score differences on the Physical Health items and PTGI subscales existed between body-related events and events not related to the body. Results indicated that no
differences in scores existed between any of the physical health items and PTGI subscales, except on Item 22 $F(1, 330) = 6.05, p < .05$, and New Possibilities $F(1,343) = 14.64, p < .01$. Furthermore, participants experiencing body-related events reported higher scores on the Physical Health subscale ($M = 2.90, SD = 1.38$) than those who reported other events not related to the body ($M = 2.65, SD = 1.33$). Experiencing body-related events also yielded higher scores on every item measuring physical health concerns and on the Appreciation of Life, Spiritual Change, and Relating to Others subscales.

In exploration of Hypothesis 3, another One-Way ANOVA between body-related events yielded significant differences in scores on Item 24 $F(4, 138) = 3.75, p < .01$, Item 25 $F(4, 141) = 3.43, p < .01$, and the Appreciation of Life $F(4, 158) = 2.82, p < .05$, Relating to Others $F(4, 141) = 2.91, p < .05$, and Physical Health $F(4, 118) = 2.48, p < .05$ subscale of the PTGI. Marginal differences did exist though on Item 28 $F(4, 155) = 2.10, p = .084$, and the subscale Personal Strength $F(4, 154) = 2.36, p = .056$.

A bonferroni post-hoc showed that those experiencing accident or injury reported the highest score on Item 24 more than any other body-related event (followed by experiencing serious illness), while experiencing a serious illness showed to yield the highest score on Item 25 (followed by experiencing an accident or injury); both item scores significantly ($p < .01$) greater than those experiencing death on Items 24 and 25, respectively. Additionally, individuals experiencing a serious illness or an accident or injury showed to report the highest and second highest scores on three other items assessing changes in physical health perceptions, thereby also having the highest scores on the Physical Health subscale. Item 31 is the exception, however; experiencing accident/injury reported the highest score, while being bullied or abused produced the second highest. Interestingly, having an accident/injury or illness did not produce the highest score on any of the original PTGI subscales. Experiencing the death of someone close to you resulted in the highest scores on Appreciation of Life and Spiritual Change, while being bullied or abused produced the highest score on Personal Strength, Relating to Others, and New Possibilities.

Discussion

Results fully support the first hypothesis that individuals who report high scores on the physical health items would share similar experienced traumatic or stressful life events. With the exception of Item 31, experiencing an accident or injury or a serious illness seemed to have the greatest influence on responses on all the physical health items. Therefore, it can be inferred that many individuals who experience an accident/injury or serious illness may change their perceptions of bodily health more so than individuals who experience other types of events. Both serious illness and accident/injury can directly interfere with normal physical functioning of the individual, thereby making the afflicted more appreciative of not being ill or injured after recovery. Disappointedly to the present research, however, results also suggest that differences between events related to the body and events not related to the body do not exist, thereby negating Hypothesis 2. Even though those experiencing body-related traumatic events did report more growth, the non-significant level indicates that similar changes occur in physical health perceptions regardless of event type. The present study was hoping to show that body-related events would be directly related to higher PTGI scores which could be useful in the development of treatment therapies specifically for physically traumatized individuals.

Results fully support Hypothesis 3: experiencing an event directly related to the body, particularly serious illness or an accident/injury, showed to produce higher scores on the Physical Health subscale and significantly higher scores on Items 24 (I feel more connected to my body)
and 25 (I feel more aware of my physiological functions) of the same subscale. This indicates that the presence of physical debilitation may result in greater changes in the lifestyle to prevent another occurrence of illness or injury. These changes could manifest in healthier, or more balanced, dieting behavior or more active exercise behaviors.

**Limitations and Future Direction**

The limited questions regarding perceived changes in physical health concerns were a major drawback of the present study. Future research should explore health behaviors before and after experiencing a traumatic or stressful life event, instead of changes in physical health perceptions, as well as validating a Physical Health subscale of the PTGI. The present study was unable to explore actual changes in physical health behaviors during initial data collection and used invalidated items to measure changes in physical health perceptions. Results should therefore be considered as purely exploratory in nature. Stricter guidelines regarding the severity of trauma related to the body should be considered as well. Furthermore, a more evenly distributed sample of body-related events is suggested: the present study had a relatively small sample size with regards to each individual trauma related to the body. Future research should also focus on gender differences since men tend to have higher levels of physical activity than females (Russell, 2002), which may result in differing perceptions of physical health changes after trauma. Lastly, participant living arrangements should also be considered. College students living directly on campus usually have use of recreational/workout centers where physical activity can be performed more frequently than students not living on campus. Students who are close in proximity to these recreational/workout centers could have different perceptions of physical health than other students due to the close availability of the center. Overall results suggest that PTG is associated with adaptive consequences regarding physical health perceptions, and is therefore an important construct to be studied in clinical and health research settings.

**References**


