### Boise State University McNair Scholars

#### Class of 2004
- **Chris Mathias**
  - **Major**: Criminal Justice Administration
  - **Graduate Institution**: Vermont Law/Northeastern University

#### Class of 2005
- **Sandina Begic**
  - **Major**: Psychology/German
  - **Graduate Institution**: Clark University
- **Juan Berrocal**
  - **Major**: Electrical Engineering
  - **Graduate Institution**: --
- **Sam Garcia**
  - **Major**: Communication
  - **Graduate Institution**: --
- **Katey Irwin**
  - **Major**: Biology
  - **Graduate Institution**: Boise State University
- **Jennifer Jenkins**
  - **Major**: Social Science
  - **Graduate Institution**: University of Cincinnati
- **Megan Jensen**
  - **Major**: Art - Printmaking
  - **Graduate Institution**: Art Institute of Chicago
- **Josh Redden**
  - **Major**: Exercise Science
  - **Graduate Institution**: Louisiana State University
- **Irene Ruiz**
  - **Major**: Spanish
  - **Graduate Institution**: University of Illinois, Chicago

#### Class of 2006
- **Isabel Aguilar**
  - **Major**: Bilingual Education
  - **Graduate Institution**: Erikson Institute
- **Deborah Allen**
  - **Major**: Social Science
  - **Graduate Institution**: Boise State University
- **Lorena Alvarez**
  - **Major**: Psychology
  - **Graduate Institution**: --
- **Brandi Bailey**
  - **Major**: Elementary Ed/Soc Science
  - **Graduate Institution**: Columbia University
- **Adriana Solis-Black**
  - **Major**: Spanish/Multi Ethnic Studies
  - **Graduate Institution**: Washington State University
- **Lou Bonfrisco**
  - **Major**: Chemistry
  - **Graduate Institution**: Boise State University
- **Jenna Elgin**
  - **Major**: Psychology
  - **Graduate Institution**: --
- **Maria Lara**
  - **Major**: Spanish/Criminal Justice
  - **Graduate Institution**: Boise State University
- **Margarita Melchor**
  - **Major**: Spanish
  - **Graduate Institution**: --
- **Christine Pearson**
  - **Major**: Psychology
  - **Graduate Institution**: Eastern Tennessee State University
- **Luis Rosado**
  - **Major**: Exercise Science
  - **Graduate Institution**: University of Massachusetts, Amherst

#### Class of 2007
- **Christian Busnardo**
  - **Major**: Communication
- **Sancheen Collins**
  - **Major**: Psychology
- **Jennifer Edwards**
  - **Major**: Interdisc./Human Rights Studies
- **David Estrada**
  - **Major**: Electrical Engineering
- **Rafael Garcilazo**
  - **Major**: Mechanical Engineering
- **Antonio Oblea**
  - **Major**: Math/Electrical Engineering
- **Miki Skinner**
  - **Major**: Psychology
- **Adam Torres**
  - **Major**: Psychology
- **Erika Velasco**
  - **Major**: Bilingual Education
- **Rosario Venegas**
  - **Major**: Anthropology

#### Class of 2008
- **Jason Arnold**
  - **Major**: Math/Philosophy
- **J.J. Durrant**
  - **Major**: Physics/Math
- **Janie Gates**
  - **Major**: Psychology
- **Karina Grajeda**
  - **Major**: English
- **Gary Grogan**
  - **Major**: Psychology
- **Carol McNann**
  - **Major**: Social Science (CJA/Gender)
- **Vivianne Sanchez**
  - **Major**: History of Art & Visual Culture
- **Nikki Svenkerud**
  - **Major**: Psychology
- **Simon Tu**
  - **Major**: Political Science
- **Fred Waweru**
  - **Major**: Social Science

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**McNair Program Staff**
- **Gregory Martinez** - Director, TRiO College Programs
- **David Hall** - McNair Program Coordinator
- **Helen Barnes** - Academic Specialist

**Boise State University Administration**
- **Dr. Robert Kustra** - President
- **Dr. Sona Andrews** - Provost and Vice President for Academic Affairs
- **Dr. Diane Boothe** - Dean, College of Education
- **Dr. Scott Willison** - Director, Center for Multi-Cultural & Educational Opportunities
MESSAGE FROM PRESIDENT BOB KUSTRA

Congratulations to all of the 2007 McNair Scholars for your achievements over the past year. In particular, I want to acknowledge the hard work and accomplishments of the senior Scholars whose research is represented in the papers in this publication. This year’s journal showcases numerous promising academic talents from Boise State and marks the culmination of an extensive research experience. I also want to recognize and thank all of the faculty mentors who have worked with our McNair Scholars. It is your patience, guidance and encouragement that facilitates the transformation of these students into scholars.

The Ronald E. McNair Post-Baccalaureate Achievement Program is designed to identify and cultivate aspiring scholars from underrepresented backgrounds, and facilitate their pursuit of doctoral degrees and academic careers in teaching and research. The research presented here signals the arrival of a new group of rising scholars who will carry their talents, enthusiasm and hard work ahead into graduate programs here and across the country. The research and other experiences you have had as undergraduates and McNair Scholars at Boise State University are your first critical steps on this path. As you graduate and move on, I hope that you will continue to aspire, achieve and pursue your dreams.

Again, congratulations and best wishes.

Sincerely,

Bob Kustra
President
This is our third issue of the Boise State McNair Scholars Research Journal and we believe it is our best effort so far. Though still a young program, having begun operation in early 2004, we have learned more each year about how to help enrich the scholarly lives of students on our campus as well as how to better produce a journal. Two years ago we published our first McNair Research Journal because we knew it was an important thing to do, to show the scholarly community the work that is representative of undergraduates who participate in the McNair Scholars Program.

We are very happy and proud to see the research displayed in this our third Boise State McNair Scholars Research Journal. It presents research conducted in the summer of 2006. It is a great accomplishment for these Scholars. They have worked long hours, sweated over IRBs, met consistently with McNair staff – in most cases for the better part of two full academic years, spent a considerable time in the offices of faculty mentors consulting over numerous research issues, and have had opportunities to present their work at various conferences around the country. All this culminates in deserved recognition of their work through this McNair Journal. We are especially proud to see how these students have grown as researchers and scholars.

We want to thank the fine group of Boise State faculty for their guidance, caring and expertise in their work with this group of Scholars. We have also been fortunate to have the support of various caring staff members who have worked in various capacities to improve the capabilities of our students. You have given of your time and provided tremendous support, for this we are quite thankful.

Gregory Martinez
Director

David Hall
Program Coordinator
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The Boise State McNair Scholars Program is supported by a $220,000 annual grant from the US Department of Education TRiO Programs.
Local Revenue: Making a Difference in College Readiness

Christian A. Busnardo: McNair Scholar

Dr. Philip P. Kelly: Mentor

College of Education

This research project collects demographic, fiscal, and assessment data from Idaho school districts that have a high school and that report senior ACT scores. Analysis of the data indicates statewide correlations between local economic revenue indicators (local revenue per student, household median income, and percentage of local funding per student) and Idaho high school graduating seniors’ composite ACT scores. This research project indicates: (1) A strong relationship between Idaho school districts’ local revenues and their seniors composite ACT scores; (2) A strong relationship between Idaho high schools amount of local revenue per student and minimal ACT benchmarks not met by graduating seniors; and (3) A strong relationship between local revenues, ACT scores, and the percentage of college prep/advanced placement courses taught in Idaho high schools.

Introduction

The Secretary of Education’s Commission on the Future of Higher Education reported a nationwide increase in “expectations gaps”: inadequate high school preparation compounded by poor alignment between high schools and colleges, resulting in high levels of remediation in higher education (2006). Expectation gaps have created a new reality for the 21st century in higher education and in our nation’s workforce. Thomas J. Tierney, an influential businessman forewarns, “If our nation and our states cannot assure employers a large growing labor pool of people with competencies beyond those taught in high school, other nations will” (Hunt & Tierney, 2006).

Insuring America’s high school graduates are adequately prepared for college-level curriculum has been an uphill battle. Just over a third (34%) of students who entered the ninth grade in public schools graduated high school with both a regular diploma and the abilities required to apply to a four-year college (Greene & Winters 2005). Many public officials and parents are surprised when high school graduates, their sons and daughters, do not succeed in college. Research indicates college admission requirements are no longer the challenge faced by high school graduates; the challenge is academic readiness (Callen, Finney, Kirst, Usdam, Venezia, 2006).

When comparing graduation rates, Idaho ranks 13th with a 77% success rate; this is 9% higher than the national average of 68%. However, Idaho is below the national average when looking at high school graduates’ success in attaining a postsecondary degree. Only 34% of Idaho high school graduates immediately enter college; the national average is 40%. 22% of Idaho graduates return for their sophomore year; the national average is 27%. Finally, a mere 14% of Idaho high school students graduate from college on time (Achieve, 2006).

High school graduates not only need the opportunity to attend college, but more importantly they need the basic academic knowledge required for success in obtaining a higher level of education. Nationwide, universities and colleges have increased the amount of remedial courses costing taxpayers over a billion dollars a year (Saxton and Boylan, 2001). In the fall of 2004, Idaho’s State Board of Education reported more than half of all remedial courses—proven to be costly and ineffective—offered at Idaho public universities and colleges were filled with traditional freshmen just out of high school, and that 41% of Idaho’s college freshmen took remedial courses, accumulating 12,118 credit hours. The price tag of this remediation totaled $1,873,365 paid for by student fees and the State of Idaho (State Board of Education, 2004).

Measuring high school graduates’ potential for success in college is no simple task, nor is there a single absolute predictor. The majority of colleges in the United States rely on high school grade point
averages (HSGPA) and curriculum college-based entrance exams like the ACT and SAT. Both HSGPA and college entrance exam results are effective predictors of achieving a 2.0 or higher GPA in a student’s first year of college (Noble & Sawyer, 2004). Factors other than academic preparedness: socioeconomic status, first generation student, motivation, for example, cannot be measured by conventional means and are not accounted for in this study.

This research project focuses on ACT assessment scores’ relationship to local funding in Idaho school districts. Due to the overwhelming amount of rural school districts in Idaho, SAT results and HSGPA are not reliable markers for measuring college readiness in Idaho school districts. A low percentage of Idaho high school graduates complete the SAT college entrance examination, while a large percentage of rural Idaho high schools do not report graduating seniors’ HSGPA. Research shows an advantage to using composite ACT scores as a predictor for college readiness. The ACT college entrance exam is a standardized measure that sustains meaning across schools, and is designed to measure academic skills taught in college-preparatory curriculum and basic knowledge needed for success in the first year of college (Allen & Sconing, 2005).

**Method**

RQ: Do local revenue sources influence an Idaho high school’s ability to adequately prepare its graduates for success in college?

This research project studies the influence local tax revenue has on an Idaho high school’s ability to prepare its graduating seniors for success in college. This study provides a cross-correlation comparison of 85 Idaho school districts, analyzing the probability of correlation with graduating senior ACT scores (dependent variable), and local revenue indicators (independent variables). This study also provides an in-depth breakdown of six Idaho school districts by composite ACT scores, local fiscal data, percentage/local funding per student, median household income, fall 2004 enrollment, average daily attendance (ADA), and property market value per student. Finally, this study, local fiscal data, percentage/local funding per student, and median household income are provided in comparison with ACT assessment results for six Idaho high schools, compiled with an in-depth breakdown of classes offered for the 2003 spring semester, calculating the percentage of college prep/advanced courses, core courses, and elective courses offered.

The selected sample size consists of 85 Idaho school districts. In particular, this study examines six separate school districts and six Idaho high schools. Two criteria were set for choosing Idaho school districts: (1) The school district needed to have a high school; and (2) The high school needed to have reported ACT scores for their graduating senior class of 2003-2004. A total of 85 Idaho school districts met both criteria. A cross-correlation of two random variables: districts’ composite ACT scores and local revenue per student, along with a cross-correlation of district composite ACT scores and percentage of local revenue. The cross-correlation indicates the strength and direction of a linear relationship between local revenue and Idaho school district composite ACT scores for all 85 school districts.

The Idaho State Department of Education geographically divides Idaho into six separate regions. One school district from each region was chosen for this study based on two criteria: (1) The district that best represents the population density (people per square mile); and (2) The average student body size per ADA. This study also looks at one high school from each district. For four out of the six chosen school districts, one high school from each school district was chosen based on their ADA ranking (ranked by Idaho Department of Education); the final two school districts only have one high school. The data regarding the six districts and high schools were collected and organized from preexisting secondhand data for the purpose of comparing local revenue indicators with college readiness predictors to indicate a relationship between the two variables, not to imply causation.

The Idaho school districts’ data (composite ACT scores, percentage of local funding, local funding per student, median household income, and percentage of economically disadvantaged students) were collected from Standard & Poor’s SchoolMatters online research database (www.schoolmatters.com). Data regarding the six districts’ and individual schools’ (composite ACT scores, attendance per ADA, and property market value per ADA) were collected from the Idaho State Department of Education website (www.sde.state.id.us/dept). The data for the six high schools (composite and subject area ACT assessment results, the high schools’ master schedules, the high schools’ percentage of electives, and college prep/advance placement courses) was collected from appropriate high school personnel.
Results

The calculated data for the 85 school districts indicates a significant probability of occurrence with composite ACT scores (dependent variable) and local revenue indicators (independent variable). Figure 1.1 illustrates a correlation coefficient of .257 (p<.05) for the cross-correlation of the 85 school districts’ composite ACT scores and the amount of local tax revenue per student.

Figure 1.1. Scatter Plot of Composite ACT Scores and Local Revenue Per Student

![Scatter Plot of Composite ACT Scores and Local Revenue Per Student](image)

Note: Correlation Coefficient .257 (p<.05).
Source: Standard & Poor’s

Figure 1.2 shows a correlation coefficient of .376 (p<.01) for the 85 school districts’ composite ACT scores and percentage of revenue derived from local sources. These data indicate that percentage of local revenue compared to the revenue collected from state and federal sources is a strong indicator for college readiness rates in the state of Idaho.

Figure 1.2. Scatter Plot of Composite ACT Scores and % of Local Revenue.

![Scatter Plot of Composite ACT Scores and % of Local Revenue](image)

Note: Correlation Coefficient .376 (p<.01)
Source: Standard & Poor’s
The data on the six school districts indicate a strong relationship between the districts’ composite ACT scores and local revenue indicators. Figure 2.1 provides four local fiscal indicators for the six school districts: (1) The median household income (MHI) for the county the district is located in; (2) The average property market value (PMV) for the county the district is located in; (3) The district’s average daily attendance (ADA); and (4) The county’s property market value divided by the district’s average daily attendance (PMV/ADA). This figure indicates clear differences in the amount of local revenue available for each Idaho school district.

Figure 2.1. All Six School Districts

<table>
<thead>
<tr>
<th>School Districts</th>
<th>MHI</th>
<th>PMV</th>
<th>ADA</th>
<th>PMV/ADA</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moscow</td>
<td>$32,306</td>
<td>$777,809,655</td>
<td>2,392</td>
<td>$325,171</td>
</tr>
<tr>
<td>Boise</td>
<td>$45,159</td>
<td>$12,860,409,048</td>
<td>24,556</td>
<td>$523,718</td>
</tr>
<tr>
<td>Kellogg</td>
<td>$30,706</td>
<td>$291,933,943</td>
<td>1,337</td>
<td>$218,350</td>
</tr>
<tr>
<td>Valley</td>
<td>$32,898</td>
<td>$132,151,733</td>
<td>590</td>
<td>$223,986</td>
</tr>
<tr>
<td>Valley</td>
<td>$32,898</td>
<td>$132,151,733</td>
<td>590</td>
<td>$223,986</td>
</tr>
<tr>
<td>Blackfoot</td>
<td>$37,266</td>
<td>$478,616,150</td>
<td>3,938</td>
<td>$121,538</td>
</tr>
<tr>
<td>Rockland</td>
<td>$37,539</td>
<td>$26,668,730</td>
<td>144</td>
<td>$185,200</td>
</tr>
</tbody>
</table>

Source: State Department of Education and Standard & Poor’s

Figure 2.2 compares district composite ACT scores with three fiscal indicators: (1) The amount of local revenue per student (LRS) each school district receives; (2) The percentage of local revenue (% LR) each school district receives compared to state and federal sources; and (3) The percentage of economically disadvantaged students (% EDS) in each school district.

Figure 2.2. All Six School Districts

<table>
<thead>
<tr>
<th>School Districts</th>
<th>Composite</th>
<th>Local Revenue Data</th>
</tr>
</thead>
<tbody>
<tr>
<td>MOSCOW</td>
<td>23.2</td>
<td>$3,953 48.3% 19.0%</td>
</tr>
<tr>
<td>BOISE</td>
<td>22.3</td>
<td>$4,508 55.3% 31.5%</td>
</tr>
<tr>
<td>KELLOGG</td>
<td>20.9</td>
<td>$2,098 26.3% 45.6%</td>
</tr>
<tr>
<td>VALLEY</td>
<td>20.8</td>
<td>$1,828 21.3% 54.3%</td>
</tr>
<tr>
<td>BLACKFOOT</td>
<td>19.9</td>
<td>$1,087 16.3% 47.2%</td>
</tr>
<tr>
<td>ROCKLAND</td>
<td>19.5</td>
<td>$2,846 23.1% 62.2%</td>
</tr>
</tbody>
</table>

Note: (EDS) eligible to receive free or reduced-priced lunches under the National School Lunch Program. Source: Standard & Poor’s
Figure 2.3. A illustrates an in-depth breakdown of six Idaho high schools’ composite and subject areas ACT assessment results.

Figure 2.3. College Readiness Rates Per High School

A. ACT Composite and Subject Area Scores By School

<table>
<thead>
<tr>
<th>Schools</th>
<th>Composite ACT</th>
<th>ACT Subject Area Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>English</td>
</tr>
<tr>
<td>Boise H.S.</td>
<td>23.3</td>
<td>22.3</td>
</tr>
<tr>
<td>Moscow H.S.</td>
<td>23.2</td>
<td>21.9</td>
</tr>
<tr>
<td>Valley H.S.</td>
<td>20.8</td>
<td>n.a.</td>
</tr>
<tr>
<td>Kellogg H.S.</td>
<td>20.6</td>
<td>19.2</td>
</tr>
<tr>
<td>Blackfoot H.S.</td>
<td>19.9</td>
<td>17.9</td>
</tr>
<tr>
<td>Rockland H.S.</td>
<td>19.5</td>
<td>18.3</td>
</tr>
</tbody>
</table>

Note: Valley High School did not provide accurate data for subject area ACT section.

B. State and National ACT Composite and Subject Area Scores

<table>
<thead>
<tr>
<th>Composite</th>
<th>ACT Subject Area Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>English</td>
</tr>
<tr>
<td>Idaho</td>
<td>21.3</td>
</tr>
<tr>
<td>Nation</td>
<td>20.9</td>
</tr>
</tbody>
</table>

Note: ACT scores for 2004.

C. Minimal Benchmarks for College Readiness

<table>
<thead>
<tr>
<th>English</th>
<th>Math</th>
<th>Reading</th>
<th>Science</th>
</tr>
</thead>
<tbody>
<tr>
<td>18</td>
<td>22</td>
<td>21</td>
<td>24</td>
</tr>
</tbody>
</table>


Figure 2.3.C illustrates minimal benchmark ACT assessment results by subject area needed to indicate a .50 likelihood of college readiness (Allen & Sconing, 2005). Idaho high schools with higher local revenue, Boise and Moscow, met 4 out of 5 minimal benchmarks. The high schools with lower local revenue, Blackfoot and Rockland, only met 1 or 2 minimal benchmarks. Figure 2.3.B provides state and national average ACT assessment results, indicating low scores and minimal benchmarks not met in math and science.
Figure 2.4 illustrates the percentage of core courses versus the percentage of elective courses (C/E) offered in the six Idaho high schools.

<table>
<thead>
<tr>
<th>Schools</th>
<th>Composite Scores</th>
<th>Spring 2004 Classes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ACT</td>
<td>% of CPAP</td>
</tr>
<tr>
<td>Boise H.S.</td>
<td>23.3</td>
<td>15.1%</td>
</tr>
<tr>
<td>Moscow H.S.</td>
<td>23.2</td>
<td>27.4%</td>
</tr>
<tr>
<td>Valley H.S.</td>
<td>20.8</td>
<td>7.9%</td>
</tr>
<tr>
<td>Kellogg H.S.</td>
<td>20.6</td>
<td>10.8%</td>
</tr>
<tr>
<td>Blackfoot H.S.</td>
<td>19.9</td>
<td>12.3%</td>
</tr>
<tr>
<td>Rockland H.S.</td>
<td>19.5</td>
<td>5.1%</td>
</tr>
</tbody>
</table>


Figure 2.2 and 2.4 indicate a relationship exists between the amounts of local revenue generated by an Idaho school district, college entrance exam results, and the percentage of college prep/advanced placement. High schools such as Boise and Moscow with higher levels of local revenue have the funds to support the extra expenditures related to effectively implementing college prep/advanced placement courses (CPAP). High schools like Valley and Rockland have lower levels of local revenue and do not offer a sufficient amount CPAP courses.

**Discussion**

The amount of local revenue allocated to an Idaho high school can influence its ability to prepare its graduates for success in college. Idaho high schools with higher levels of local revenue offer substantially more college preparation and core courses, which help build the foundation of knowledge needed for success with college level curriculum. In particular, this research report found a strong relationship exists between Idaho communities which invest more in their high schools, and their high school’s ability to prepare its graduates for success in college.

The cross-correlation of the 85 school districts indicated a correlation between Idaho school districts’ college readiness rates and local revenue indicators. The strength of these correlation coefficients indicates a strong relationship between local communities which invest more in their school districts and the local community’s graduating seniors scoring higher on college entrance exams. For rural school districts in Idaho the ability to generate local revenue can be challenging. Plagued by low property values, rural districts are dependent on alternative revenue sources like the agriculture equipment replacement tax, lottery revenues, and technology grants. This study found lower levels of local revenue can inhibit Idaho communities in their ability to adequately support their local high schools and to invest in education capital—college graduates.

A broader significance of this study is that the collected data reinforce existing studies (Hall & Kennedy, 2006) that indicate a shortage of qualified graduates in the fields of Math and Science, and Idaho’s shortage of qualified math and science teachers. As a result, Idaho’s universities and colleges are finding acute achievement gaps in traditional freshmen college students, predominately in the fields of Math and Science, and investing more in remedial related expenditures.
References


Alcohol Trends Among Native American Youth: A Look At a Reservation in Nevada

Sancheen Collins: McNair Scholar
Dr. Mary Pritchard: Mentor

Psychology

American Indian Youth living on Reservations are at greater risk to be involved with alcohol and drugs at an early age and are more likely to dropout of school as a result than White, Hispanic and African American Youth.1 The purpose of the study is to identify and compare the current trends in alcohol use among American Indian adolescents in order to understand which services will better serve this population. The review of the literature examines the alcohol trends among the general population of adolescents in living in the United States, as well as the contributing factors and distinct characteristics of abuse that researchers have associated with American Indians youth. The survey results from a 2005 Needs Assessment on a reservation in Nevada and the Nevada Youth Risk Behavior Survey (YRBS) for the county surrounding the reservation are used to analyze trends in adolescent substance abuse, primarily alcohol. This study facilitates a greater understanding of what is necessary to create effective treatment and prevention programs for the youth population on reservations.

Introduction

The purpose of the present literature review is to identify and compare national alcohol statistics for adolescents to the current trends among adolescents living on a reservation in Nevada. National statistics through several prominent studies concerning age of onset, amount of use and risk-behaviors associated with adolescent drinking for both American Indian and non-Indian adolescents is presented first. The national statistics serve as a baseline to compare the current trends among American Indian youth living on a reservation in Nevada. It is hoped that the results will facilitate a better understanding of the services needed to confront the issues surrounding American Indian youth and alcohol.

Alcohol trends within US youth

Alcohol affects all people of varying ages, but the adolescents are the age group most vulnerable to the negative consequences of alcohol. The consequences of alcohol impact their physical and emotional well-being, social relationships, as well as school attendance and academic performance. It is also important to note that alcohol is the leading cause of death for young people (e.g., ages 12-17) and the most prominent substance for US youth to abuse.2 A 2005 survey by Monitoring the Future (MTF) found that 17 percent of eighth graders, 33 percent of tenth graders and 47 percent of twelfth graders (i.e. general population) stated they drank alcoholic beverages within the 30-day period previous to the survey. Another survey indicated that adolescents in general reported their first use of alcohol is around 15.7 years.3

Why is alcohol so influential in adolescence? Two reasons seem apparent: acceptability and access. First, the social acceptability of alcohol through the media, peers and family members may support the idea that alcohol is a rite of passage for many youth and that drinking alcohol causes many positive and rewarding experiences.4 Second, despite legal drinking ages and restriction on alcohol sales, the availability of alcohol is easily accessible. In 2005, 93 percent of twelfth graders reported that access to alcohol as either fairly or very easy to obtain.5 As a result, by the end of high school, 75 percent of students will have consumed alcohol in quantities greater than a few sips.6

The most common practice for many youth is the heavy consumption of alcohol known as “binge-drinking.” This is defined as consuming five or more consecutive drinks at least once in the two weeks prior to the survey.7 Binge drinking among teens reached an all time high in the late 1970s and then began a rapid decline in the 1990s.8 In 1983, 41 percent of twelfth grade students reported binge drinking; this pattern remained constant for a few years until it dropped considerably to 28 percent in 1992.9 However, in 1996-98 there was a rise in usage between eighth, tenth, and twelfth graders to 16, 26 and 32 percent respectively, which has held relatively constant
to date.\textsuperscript{10} Although it is uncertain as to why the numbers of students engaging in binge drinking dropped in the 1990s, some researchers have suggest that increased public awareness and the publicity of anti-drinking and driving campaigns may have contributed to the decline.\textsuperscript{11}

Alcohol trends within American Indian youth

American Indians are not an intact group; therefore, current national statistics concerning the onset of drinking is limited and may not be applicable to every tribal population. One reason is that the small number of American Indians represented in surveys cause them to be grouped with other underrepresented groups. For example, the National Household Survey on Drug Abuse (NHSDA) indicates the four race/ethnic categories for adolescents as the following: 1) White; 2) Black; 3) Hispanic, and 4) Others. The category “Other” includes two populations that represent the opposite extremes in alcohol and substance use/abuse, where traditionally Asian American adolescents have the lowest prevalence of use/abuse, and American Indians have the highest.\textsuperscript{12} When these two categories are combined together it becomes difficult to determine exactly how American Indian youth are behaving in comparison to other US youth.

However, some research does provide insight into the behaviors of American Indian youth, both in general and in specific regions, including the MTF survey, the National Institute on Drug Abuse (NIDA), and a number of studies on specific tribal populations. Research findings, focused on adolescents (i.e., ages 12 to 17) indicates that American Indian youth are two or more times more likely to use alcohol than Hispanic, non-Hispanic Whites and Blacks.\textsuperscript{13} Furthermore, American Indian youth begin using cigarettes and alcohol at earlier ages than White youth.\textsuperscript{14} One survey administered by Barnes, Welte, and Hoffman to seventh through twelfth grade students in New York State indicated the average age for first time use of alcohol was 14.2 years of age. When onset was separated by race/ethnicity, American Indians students’ onset of first time use was the youngest at 13.2 years of age.\textsuperscript{15}

When comparing American Indian youth to other ethnic groups, American Indian youth living on reservations are at greater risk for involvement with alcohol and drugs at an early age and are more likely to drop out of school as result.\textsuperscript{16} In 1998, the estimated prevalence of American Indian youth using alcohol was 65 percent for eighth graders, 84 percent for tenth graders and 83 percent for twelfth graders.\textsuperscript{17} American Indian students in the eighth and tenth grade had a higher propensity to drink alcohol as well as become intoxicated when compared to other US students.\textsuperscript{18} However, American Indian and non-Indian twelfth graders had extremely similar prevalence rates.

Although research indicates the high risk for American Indian youth to use alcohol, it is also evident that American Indian youth follow alcohol and drugs trends similar to other adolescent groups in the US, but at slower rates. For example, the percent of American Indian seventh through twelfth grade students living on the reservation who reported the lifetime use of alcohol declined from 76 percent in 1975 to 68 percent in 1998.\textsuperscript{19} Also, American Indian fourth and sixth grade students who had tried alcohol had declined from 33 percent in 1981 to 17 percent in 1994.\textsuperscript{20} Although percentages of use are higher for American Indian youth the trends decline in alcohol usage are similar to the trends in decline for US youth in general.\textsuperscript{21}

The Goals of the Present Study

The purpose of the present study was to compare the adult perceptions of alcohol trends for youth living on a reservation in Nevada with the actual alcohol use patterns of youth from the county surrounding that reservation. We expected that tribal adults would report higher alcohol use for Native American youth living on the reservation than the actual alcohol consumption patterns of the non-Native youth living off the reservation.

Method

The research reported here utilizes the results of a Community Health Needs Assessment administered to adults living on a reservation in northeastern Nevada and the Nevada Youth Risk Behavior Survey (YRBS) for the local County surrounding the reservation. Although the studies contain a myriad of health issues (e.g., pregnancy, diet, self esteem), researchers focused on alcohol abuse.

A Community Needs Assessment intended to identify a number of health concerns of Native Americans living on a reservation in Nevada was administered (at the request of the tribe, the specific location of the reservation and tribe will not be named). The authors worked with tribal health officials to develop the survey to fit the reservations needs. Approval from the Institutional Review Board as well as tribal council was obtained prior to data collection. Survey questions addressed patterns and perceptions concerning residents’ health care access,
physical and mental health problems and concerns, as well as substance use and abuse issues.\textsuperscript{22} For the purpose of the present study, only the alcohol findings will be discussed. The surveys were distributed to adult heads of household on the reservation via mail, with additional surveys available at various locations on the reservation. The respondents that received survey packets through the mail were provided with a self-addressed, self-stamped envelope or they could drop the surveys in any number of secure drop boxes located throughout the reservation. The surveys were anonymous and voluntary and out of the 398 households contacted, a total of 138 completed surveys were returned.

The Nevada YRBS for the local County School District surrounding the reservation was administered to middle school students, ages eleven to sixteen and high school students, ages thirteen to eighteen in 2001, 2003, and 2005.\textsuperscript{23} The YRBS assessed the risk-behaviors associated with a student’s health such as diet and exercise; alcohol use, tobacco use and other drug use; violence and suicidal behaviors; and sexual behaviors that can contribute to accidental pregnancies and sexually transmitted diseases. For the purpose of the present study, only the alcohol findings will be discussed.

**Results**

**YRBS Data**

Table 1 displays the alcohol consumption trends for youth in the county surrounding the reservation. In general, the trends seem quite positive. For example, the number of juveniles who have engaged in recent binge drinking has declined over the past 6 years. In addition, the percentage of high school students who have used alcohol in their lifetime is declining, although middle school students have shown a slight increase. On another positive note, the age at which high school students have their first drink is getting older. Unfortunately, the same cannot be said of middle school students, who have shown a gradual increase in the number of students having their first drink at age 13 or younger.

Table 1

| YRBS Data for Students in Middle and High School for the Years 2001, 2003, and 2005 |
|-----------------------------------------|----------------|----------------|----------------|
| Binge Drinking in the Past Month       | 2001 | 2003 | 2005 |
| High School                            | 43.1% | 38.7% | 35.3% |
| Middle School                          | 19.5% | 21.0% | 19.0% |
| Lifetime Use of Alcohol                |      |      |      |
| High School                            | 85.9% | 80.8% | 76.3% |
| Middle School                          | 57.5% | 57.7% | 59.3% |
| First Drink 13 or younger              |      |      |      |
| High School                            | 43.4% | 34.6% | 34.6% |
| Middle School                          | 38.1% | 42.5% | 44.9% |

Although the number of high school students who have not had alcohol in the past 30 days has increased (from 43.6% in 2001 to 50.2% in 2005), so has the number who have had alcohol every day (from 1.7% in 2001 to 3.4% in 2005; see Table 2). In addition, in 2005 10.5% of high school and 4.7% of middle school students had used alcohol on school property in the past month, and 12.2% of all disciplinary actions involved possession or use of alcohol.

Table 2

| During the past 30 days, on how many days did you have at least one drink of alcohol? (High School data only) |
|---------------------------------------------------------------|----------------|----------------|----------------|
| 0 days                                                        | 43.6% | 50.8% | 50.2% |
| 1 or 2 days                                                  | 19.8% | 20.1% | 19.2% |
| 3 to 5 days                                                  | 15.8% | 12.5% | 10.7% |
| 6 to 9 days                                                  | 10.6% | 6.8%  | 8.0%  |
| 10 to 19 days                                                | 6.3%  | 7.2%  | 7.7%  |
| 20 to 29 days                                                | 2.3%  | 0.8%  | 0.8%  |
| All 30 days                                                  | 1.7%  | 1.9%  | 3.4%  |
Alcohol consumption patterns are important to examine as adolescent alcohol use increases the tendency to engage in other substances and suffer from behavioral disorders. For example, according to the 2003 Nevada YRBS, sixth, seventh, and eighth graders living in the local County who engage in heavy drinking also have high co-occurrences with regular smoking (76 percent), frequent marijuana use (69 percent), and drop out plans (62 percent). In addition, the 2003 YRBS reports that heavy drinking between ninth through twelfth grade students has a high co-occurrence with frequent marijuana use (73 percent) and regular smoking (60 percent). This age group also engages in other risk behaviors such as driving under the influence (73 percent), riding with someone under the influence (55 percent), belonging to a gang (50 percent) and plans to drop out of high school (44.5 percent).

The need for education about the harmful consequences of alcohol use is apparent. For example, the number of high school students reporting “no” risk with binge drinking has nearly doubled since 2001 (5.9% in 2001, 10.2% in 2005; see Table 3).

<table>
<thead>
<tr>
<th>How much do people harm themselves by binge drinking? (High School only)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>No risk</td>
</tr>
<tr>
<td>Slight risk</td>
</tr>
<tr>
<td>Moderate risk</td>
</tr>
<tr>
<td>Great risk</td>
</tr>
<tr>
<td>Not sure</td>
</tr>
</tbody>
</table>

To alleviate this problem, education needs to focus on the children and their families, as the most common place that middle school students get alcohol is at home (with their parents consent), and that number is rising (from 16.2% in 2003 to 19.4% in 2005; see Table 4). Thus, clearly prevention efforts need to target the home.

<table>
<thead>
<tr>
<th>How do you usually get the alcohol you drink (Middle School only)?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
</tr>
<tr>
<td>&quot;I don't drink alcohol&quot;</td>
</tr>
<tr>
<td>From home w/ parental knowledge</td>
</tr>
<tr>
<td>From home w/out parental knowledge</td>
</tr>
<tr>
<td>From Friends</td>
</tr>
<tr>
<td>Ask Adults to Purchase</td>
</tr>
<tr>
<td>Buy them myself</td>
</tr>
</tbody>
</table>

Reservation Data

The Community Needs assessment asked adult respondents to report on personal health information as well as their perceptions of health concerns for their family and community. The average age of initial drinking seemed a bit older on the reservation than in the surrounding county (although adults were being asked to reflect back upon their youth in the reservation survey). Adult residents of the reservation reported a mean age at first experimentation with alcohol was 16.43 years, with a median of 16 years and a range of ages from five to 77 years. 21.9% of adults on the reservation reported have their first drink at age 13 or younger. Reservation respondents reported significant rates of family members suffering from alcohol-related problems. For instance, 39.2 percent had an immediate family or household member that had a problem caused by alcohol and 70.5 percent reported alcohol-related problems for family members not living with them. In addition, as seen below in Table 5, the group most commonly identified as being most influenced by alcohol use was teenagers 14-18 years of age.
Table 5
Age Group Most Influenced by the Use of Alcohol

<table>
<thead>
<tr>
<th>Age Group</th>
<th>Percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>8 years and under</td>
<td>4.0%</td>
</tr>
<tr>
<td>9-13 years</td>
<td>17.5%</td>
</tr>
<tr>
<td>14-18 years</td>
<td>39.7%</td>
</tr>
<tr>
<td>19 to 54 years</td>
<td>38.1%</td>
</tr>
<tr>
<td>55 years and older</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

The respondents were asked to rank the five most serious substance abuse issues for themselves, their family, and their community from a list of psychoactive substances (e.g., alcohol, marijuana, cocaine, methamphetamines). Not surprisingly, alcohol was the psychoactive substance perceived as the greatest issue for the respondents themselves, their families, and the community. Given the widespread concern about alcohol use and abuse, especially in the teenage population, the respondents were asked to report what factors prevent someone in their household or family from getting help for an alcohol and/or drug problem if they need it. 31.9% reported distrusting the system/tribal leaders/behavioral health staff, 27.5% reported lack of availability of services, and 25.3% reported that their household or family member did not want help for their substance abuse problem. The respondents who reported being recovering drug addicts or alcoholics were asked to report up to three experiences that were most helpful to them in their recovery. 45.7% reported changing relationships/moving/growing up, 43.5% reported family and friends, and 32.6% reported prayer/church. The respondents were asked to report up to three locations that they would suggest if a person they cared about needed assistance for an alcohol and/or drug problem. 73.6% reported going to the community health facility, 18.9% reported help lines/treatment off the reservation, and 17.0% reported going to church. Finally, the respondents were asked to report up to three services or activities they believed would prevent drug and alcohol abuse among youth and teens. 70.2% reported recreational/after school programs, 31.7% reported education about substance abuse, and 21.2% reported cultural activities.

Discussion

The findings of the Youth Risk Behavior Survey and the Community Needs Assessment suggest that alcohol abuse is a concern for adolescents, their families, and health officials on the reservation in Nevada and in the surrounding county. However, our hypothesis that alcohol abuse would be worse on the reservation than in the surrounding county did not appear to be supported. Nevertheless, adults living on the reservation were clearly concerned about adolescent alcohol use and had several suggestions on how to improve tribal resources to address this issue.

To get an understanding of life on this particular reservation, it is important to examine the economic and geographic make-up of the surrounding area. Nevada is a rural state known primarily for its many casinos and resorts located throughout the state. The large quantity of low-wage service jobs, a 24-hour lifestyle (i.e. casino hours, alcohol availability) and a highly mobile population (i.e. moving to follow employment) are believed to contribute to a number of problems among adults and adolescents living in Nevada. For instance, Nevada’s high percentage of adults and youth that engage in binge drinking has been traditionally higher than the national average, where approximately 11 percent of youth ages twelve to seventeen reported past-month binge drinking. Although there have been improvements in treatment programs, there are still many reservations that struggle with inadequate funding, lack of certified staff retention and client access to available facilities that govern the treatment programs. The American Indian population has also expressed concerns about whether they can trust government agencies. For example, the leading reason why reservation respondents reported why family members do not seek treatment is a distrust of the system/tribal leaders/behavioral health staff, followed by a lack of available services. These limitations create frustration among individuals seeking help for themselves and others, which may aid in the continuation of alcohol and drug abuse.

Access to substance abuse treatment is limited for many living on the reservation. The small hospital on the reservation has a limited staff that is only able to provide Level I outpatient treatment. This level of treatment is non-residential treatment, where an adult suffering from substance abuse problems can meet with a certified addiction counselor approximately once or twice a week until nine hours of service are fulfilled. Currently, there are three available counselors certified to treat the adults living on the reservation. In addition, there is not a facility or certified staff available to treat adolescents suffering from substance abuse on the reservation; therefore, adolescents needing treatment must be sent to off-reservation treatment facilities in Arizona, Oregon and other states. The
process is difficult for families and hospital staff, as most individuals are placed on a waiting list until an opening is available. Many adolescents and their families become frustrated, give up, and simply do not seek treatment. To address this dilemma the hospital staff on the reservation has mentioned that until they can adequately provide treatment, they would like to emphasize youth prevention, directed at earlier age groups.

Both hospital staff and members of the reservation have expressed the need for alcohol and drug prevention. As presented above, in the recent needs assessment, respondents indicated that recreational activities, education about substance abuse and cultural activities were the top three services that would prevent youth substance abuse. According to national studies, prevention programs work best when they not only teach about the dangers of alcohol and drugs, but also instruct and provide youth with the necessary confidence and life skills to deal with real social and peer pressure situations. The prevention specialists would facilitate the after-school and summer programs and activities would center on developing and strengthening social skills, promoting health and continuing cultural traditions.

Research also indicates that community-based substance abuse prevention programs effectively reduce alcohol and drug-related problems, but they also reduce the stigma of youth being negatively stereotyped as “problem” or “at-risk” kids. One idea that the reservation would like to try if appropriate funding can be secured is to create a Youth Council to help direct and create tribal-centric summer and after school programs. Furthermore, the proposed Youth Council is designed to serve as a liaison between Tribal Council and the Youth population on the reservation. The Youth Council has several purposes. The first is to provide a voice for the youth and give valuable insight concerning the attitudes, achievements and problems that teenagers are encountering to Tribal Council and other tribal elders. The second purpose is to create and reinforce an invested interest among the younger members of the reservation concerning current and future tribal issues. In addition to serving on the council, members would pledge to be alcohol and drug-free and work with the school and tribal Substance Abuse Prevention Specialists to coordinate substance abuse prevention programs and cultural activities. Another idea would be to have tribal elders actively engaged with the Youth Council to help instruct tribal youth in tribal lore, crafts, and language. Tribal elders seem to support this idea as it would get them more involved with tribal youth and allow them to pass on their heritage.

The results of this study suggest that alcohol use and abuse is clearly not more prevalent in Native Americans than in non-Native adolescents. Additional studies are needed to clarify which prevention programs are best suited to meet the needs of adolescents, both on and off reservations. It is strongly recommended that future research concerning alcohol and other substances issues focus on prevention rather than treatment.

Acknowledgements

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Visibility as Power: A Historical Analysis of the Boise Gay Pride Celebration

Jennifer Edwards: McNair Scholar
Dr. Jill Gill: Mentor
Human Rights Studies

This paper situates its analysis in a case study of the three watershed moments arising from the sixteen-year history of the Boise Pride Celebration. These moments reveal the impact that the tension between assimilation and liberation strategies have had in the birthing, changing, and shaping of both the Boise Lesbian, Gay, Bisexual and Transgender (LGBT) community's struggles and its successes in becoming increasingly visible. Interviews and archival research demonstrate that the Pride Celebration originated in, grew and essentially thrived from this tension proving it necessary to transform the Boise LGBT community from a fearful, invisible minority functioning despite a conservative climate, into an increasingly visible, viable community and constituency. The balance between assimilation and liberation strategy, as evidenced by this case study, was and remains crucial to liberate and protect LGBT people from the threat and reality of legal discrimination and the de-humanizing stereotypes used to deny them their civil and human rights.

Introduction

A week before Boise’s first Lesbian, Gay, Bisexual and Transgender (LGBT) Pride Celebration, the assistant city attorney informed Parade organizers that their permit might be invalid unless certain conditions were met. To some, this might not seem like an issue. In June of 1990, however, Boise’s Pride organizers not only faced these untimely and unusual new permit regulations, they were also concerned with convincing the LGBT community to participate, despite fears of being shot and losing their jobs or family and friends, if recognized. The city’s new revelation, to chief organizers Ann Dunkin and Brian Bergquist, was one more obstacle Boise’s primarily invisible, scattered and silent LGBT community would have to overcome. Knowing this, organizers called an emergency meeting to discuss the constitutionality of the city’s injunction.

The LGBT community would rest future hopes and dreams on constitutionality throughout the Pride Celebration history. For Dunkin, Bergquist and the members of the organization they created, Your Family, Friends and Neighbors (YFFN), Boise’s first “Gay and Lesbian Freedom Week” was not just about celebrating the fact that gays and lesbians existed in Boise, Idaho. It was to be, as Dunkin explained, “…an affirming experience for everyone who marches, both gay and non-gay, and provides much needed visibility for Boise’s gay community.” After the emergency meeting, the decision was made to monitor the City Council’s attempt to prevent “undesirable groups” such as gays and lesbians and war protestors from demonstrating. YFFN members followed this decision with a letter formally objecting to the “legality and constitutionality of the process it is being subjected to,” while refusing to waive the right to later litigation.

Sixteen years later, the LGBT struggle for civil and human rights remains contingent upon and conflicted over the relationship between visibility and power, specifically over the strategic differences used to secure humanizing visibility and power. Here, power refers not only to the political power and legal rights one might assume in a representative democracy, but the very basic power of self-definition and self-determination that those existing comfortably within the roles which are deemed socially and behaviorally normal and desirable (in this case, heterosexual) are granted. Visibility was echoed by each of the participants interviewed, as the single most crucial aspect of humanizing the LGBT community. The relationship between visibility and power, when examined in its historical context, offers excellent insight locally and even nationally, into the tensions, strengths, weaknesses and successes within the LGBT movement toward realizing these rights. This is because the strengths, weaknesses and successes of the local LGBT movement mirrored the very tensions that characterize progressive social
movements, namely the pressure on and willingness of an ostracized group to conform to mainstream demands for acceptance and inclusion epitomized in assimilation strategies and the desire to and insistence of an ostracized group to be accepted on their own terms or not at all, epitomized by liberation strategies.

This paper situates its analysis in a case study of the Boise Pride Celebration, focusing upon two key watershed moments arising during the sixteen-year history. These moments reveal the impact that the tension between assimilation and liberation strategies for securing visibility and power have had. Interviews and archival research demonstrate that the Pride Celebration originated and thrived in this tension and this in turn, was necessary to transform the Boise Lesbian, Gay, Bisexual and Transgender (LGBT) community from a fearful, invisible minority functioning despite a conservative climate, into an increasingly visible, viable community and constituency. The balance between assimilation and liberation strategy, as this paper will show, was and remains crucial to liberate and protect LGBT people from the threat and reality of legal discrimination and the de-humanizing stereotypes used to deny them their civil and human rights. This paper is divided into three sections. Section one chronicles applicable correlations between the national and local LGBT movements. Section two expands upon these correlating themes, drawing upon interview and archival research for greater analysis. Section three is the conclusion.

I.

The struggle of Boise’s LGBT community for visibility and power is part of a larger national struggle waged by gays and lesbians in United States in the 20th Century. The first gay rights group in the United States, “Society for Human Rights” was established in Chicago in 1924 and lasted just a few months before police shut it down. The Mattachine Society formed in 1950 in New York and Daughters of Bilitis began in San Francisco in 1955. Each of these organizations struggled to make LGBT people visible, while trying to create a sense of community among them. The socio-political climate of America during this time included rampant arrests of homosexuals or anyone suspected as such, on charges ranging from disorderly conduct to loitering. This was also the time in which Senator Joseph McCarthy and President Truman included homosexuals as foreign and domestic threats to the United States. Such a climate minimized assimilation and liberation strategies, as lesbian and gay activist groups were struggling for self-preservation. These strategies, while not as pronounced, both existed within and perpetuated tension. As sociologist Mary Bernstein explains, “During this repressive time, lesbian and gay activism was marked by assimilation and quiescence…the Mattachine Society and the Daughters of Bilitis focused primarily on self-help issues and did not launch political challenges.”

Despite this seeming lack of confrontational activism, June 1969 marked the most visible beginning of the LGBT movement in the United States with the Stonewall riots or Stonewall rebellion. The riots occurred at the Stonewall Inn in Greenwich Village, New York and were actually a series of clashes between police and LGBT people resisting ongoing police brutality and police raids, marking the first time where such a significant number of LGBT people resisted being arrested. The first Pride Parade occurred in 1970, to commemorate the first anniversary of the riots, when a group called the Gay Liberation Front marched from Greenwich Village to Central Park in New York City. Journalist and Pride advocate, Paul Varnell argues that this parade was more significant than what it commemorated. He writes, “The parade is what is important, not the ‘riot.’ Stonewall was an excuse for the march, but the decision to have a march was the key element in producing the rapid proliferation of gay visibility and activism that followed.” Every parade since, whether festive, celebratory, or explicitly political or both has evolved over time (and not without resistance) to include the immense and ongoing diversity of persons within and supportive of the LGBT community. This evolution was both aided and hindered by the ability of some within the community to pass as heterosexual.

Passing as heterosexual allowed LGBT people as much privilege as perpetual secrecy affords. However, that privilege would always be at risk for those who could pass and denied those who could not. Recognizing the privilege and peril of passing was critical to the formation of both the local and national LGBT community and social movement. Historian John D’Emilio elaborates, “Before a movement could take shape, that process had to be far enough along so that at least some gay women and men could perceive themselves as members of an oppressed minority that subjected them to systematic injustice.” This shift in perception was unquestionably highlighted in the unprecedented response of the Stonewall Riots.
The Stonewall Riots and the 1970 march officially marked the beginning of a new phase of a more activist, confrontational and public LGBT movement in the United States. These are the first of several key watershed moments that transformed both the national representation of LGBT people and the LGBT community that D’Emilio writes about. The 1979 March on Washington came after important, yet tenuous gains made by gay and lesbian activists and organizations to repeal state sodomy statutes, as well as enact anti-discrimination legislation protecting LGBT rights in numerous states. 1977 also witnessed the election of the first openly gay elected official of a large city, Harvey Milk. These gains however were met with endless media assaults on the basic humanity of gays and lesbians by the Anita Bryant-led organization, “Save Our Children.” Bryant’s focus was the very anti-discrimination legislation that had passed in 40 other states before Florida. Despite making legal and political gains, the LGBT community had neither political force nor accurate, humanizing representation. As historian Neil Miller suggests, Bryant succeeded in part by perpetuating the myth of the militant pervert homosexual’s increasing political and social power and that despite this myth, “…supporters of the ordinance never had a chance. On June 7, 1977, Dade county voters repealed the gay rights law…” This mythic power and the success the fear of it perpetuated spawned virulent backlash over the mere threat of gay and lesbian visibility and power.

Such backlash swept the nation and picked up steam throughout the 1980’s, particularly during the presidencies of Ronald Reagan and George H. W. Bush. The increasing momentum of popularity of religious “right” organizations contributed not only to the elections of Reagan and Bush, but to an already contentious environment for LGBT people, especially those in conservative religious states, such as Idaho. The national media and political discourse grew deafening and deadly during the 1980’s, amplified by debates over public health and private responsibility, lifestyle choices, human rights and homosexuality. Peaking during 1980-1989, the height of the Reagan era and the AIDS crisis found a society transformed by both a new lexicon of acronyms and disease metaphors and gay “lifestyle” made public on an unprecedented scale.

II.

All of these factors exacerbated and reflected tensions within the LGBT communities between those that pushed for personal liberation and celebration through assimilation and those that sought political advances in public spaces as a means of cultural and sometimes physical survival. This was evident throughout the history of the Boise Pride celebration. However, nothing shaped and transformed the community into what it is today, more than what Hummel called the two key watershed moments of the Pride celebration’s history: the Pride celebration’s beginning and the No on One campaign of 1993-1994.

Begun as a distinct departure from the private, celebratory annual picnics run by the oldest Boise LGBT organization, The Community Center (TCC), the first Pride celebration, held in June of 1990, was designed to serve as much of a political function as a celebratory one. This is because the event not only increased LGBT visibility in Idaho, it also brought greater political focus and to LGBT people, laying an organizational foundation that would prove crucial just three years later.

Boise’s first Pride celebration changed the landscape of its LGBT community. This is not to suggest that there was a lack of community or political concern prior to the first celebration in 1990. TCC in fact, was formed and held its first meeting September 15th, 1983 breaking ground as the first gay organization in Idaho. TCC published the first LGBT community newsletter in 1984, despite the fact that it did not have an official building to call home until 1985. According to Pride organizer and participant Javier Smith, “The only social outlet was the bars (in 1993) until the Community Center reopened in 1996. The Community Center was defunct at the time and had shut down to lack of funds in the 1980’s. There were different activities you could get involved in but there was no central place or focus.”

Despite various socializing opportunities occurring predominately in people’s homes, there was still no public meeting place or activities to bring the Boise gay and lesbian community in force.

The change came decidedly in 1989 with the creation of YFFN. Ann Dunkin, Brian Bergquist and John Hummel formed YFFN to be the political arm that TCC was not. Sprung from the division created by some community member’s need to maintain the relative safety of living as a mostly closeted community and other’s desire to see it become more public and political, YFFN’s primary function initially, was to put on the Boise Pride celebration. Born from the very tensions surrounding visibility and power and the competing strategies of assimilation and liberation, the first Pride reflected both the frightened and fragmented LGBT community and the determination of its leaders.

Pride participant and organizer, Sharon Matthies attested to the fear and fragmentation surrounding this first celebration. She recalled how, “Leading up to the Parade, there were people who were saying that we shouldn’t have a parade, that they were afraid for their own safety or the safety of their
friends. They were also afraid for what it would do to them a week after the parade.”

She explained further, that those participating in the first Pride celebration felt the organizers considered these concerns and options carefully and weighed the benefits and risks accordingly, despite divisions over strategy. The organization’s first letters to the LGBT community announced the birth of YFFN and addressed this by urging people to capitalize upon shifting national attitudes regarding human rights through their public participation in Boise’s first Pride. These letters admonished the fact that, “Basic human rights are being denied to Americans whose only wish is to live as others live, free from ridicule, persecutions and outdated laws.”

Their charge, echoing D’Emilio’s reference to the LGBT community seeing themselves as an oppressed minority, failed to bring every gay and lesbian Idahoan out into the streets in 1990. It did, however, situate the rhetorical and strategic changes that had occurred nationally, within and for the Boise LGBT community. As YFFN founder and Pride organizer Ann Dunkin explained, “This parade and festival started at last year’s only pride event—the TCC picnic—as a vision shared by a small number of us.”

The first Pride celebration mirrored both the tension between assimilation and liberation not only in the founding of YFFN, but in its insistence upon the need for visibility and power, all the way to the steps of the Idaho capital. It succeeded in safely bringing together some members of the Boise gay and lesbian community, out onto the capital steps and into the downtown streets, despite the fact that several wore masks and hats to conceal their identities. That this occurred in the face of the initial, last minute changes to permit requirements and the immense and foundered fear of its participants, was a testament to incredible resolve and vision of the Pride organizers. That people participated in greater numbers in the Pride celebration the following year was further proof that the Boise LGBT community was slowly evolving to shed its predominately closeted and invisible existence.

The second Pride celebration was again subjected to the City’s changing regulations, though this time, through arbitrary and untimely changes in reservation dates. Archived notes from the YFFN board of directors meeting, detailed how the City had no formal routine for reserving the park and thus argued that the City was within rights to reserve the band shell for another gathering, irrespective of the request made far in advance by YFFN. This change of reservation requirements, in fact, came on the heels of parade organizers requesting in writing from the City District Attorney, all of the city’s requirements to avoid a second unnecessary threat to the Pride celebration. YFFN responded by formulating alternative parade routes for the 1991 celebration and discussing the possibility of legal action against the City. The 1991 celebration went on without legal action and the rally was held at the Julia Davis Park band shell. The theme that year was “Unity Equals Freedom” and the fact that the parade and rally occurred for a second year with even greater participation marked a quiet, but vital victory for its organizers and supporters. The 1992 Pride brought even greater participation and visibility as celebration focus shifted from lesbian and gay freedom and unity, to social issues of homelessness and poverty. The celebration’s theme, “A Simple Matter of Justice” however, foreshadowed what John Hummel called, “the greatest watershed moment” for the Boise LGBT community: the 1993-1994 “No on One” campaign. The No on One campaign was the community’s response to the Idaho Citizen’s Alliance (ICA) ballot initiative, Proposition One.

The ICA and Proposition One both arose from the momentum of anti-gay political movements in Oregon and Colorado. As participant and organizer, Javier Smith explains, “Before (1993-1994) the gay and lesbian community, even YFFN, was very timid. They wanted to win the hearts and minds of legislators and the public, one person at a time. Then we had the anti-gay initiative, which was a direct import from Oregon. Kelly Walton came directly from the Oregon Citizen’s Alliance and formed the Idaho Citizen’s Alliance.” Indeed, in March 1993, when the Idaho Citizen’s Alliance (ICA) headed by Kelly Walton, announced their campaign to “Stop Special Rights” at the State House, it was proof that the local community could no longer afford timidity nor such an individualist approach.

The ICA initiative for the November 1994 ballot included the following provisions: The prevention of homosexuals receiving “special rights through minority status,” the prohibition of schools to “teach homosexuality as an acceptable lifestyle” and the prevention of Idaho tax dollars from “promoting homosexuality through state agencies.” This initiative titled, the “Idaho Civil Rights Act” that would later become Proposition One, co-opted the language of civil rights to legally oppose any legislation or funding that might protect gays and lesbians from employment and/or other forms of discrimination awarded those granted “minority status.” It also sought to prohibit libraries from allowing minors access to any pro-homosexual materials. Such legislation threatened the legal and social erasure of each meager step toward visibility and power that the Boise LGBT community had made, linking through language and law, homosexuality as something children and civil rights needed protection from by, as participant and organizer, Nikki Leonard explained, “legislating rights.”
The LGBT community responded to this threat by organizing in an unprecedented fashion. Whether they liked it or not, Idahoans saw more LGBT people in newspapers and magazines than ever. This was because the No on One campaign was as much an attempt to defeat discrimination by winning the hearts and minds of the voting public, as it was an attempt to defeat dehumanizing legislation. Tensions arose again over how best to win the hearts and minds of the voting public, through convincing them of LGBT normalcy by the attempted assimilation into the heterosexual mainstream or by framing this debate as a matter of personal freedom, of LGBT freedom and of individual choice. Ultimately, both sides converged to frame the No on One campaign as a matter of protecting individual freedom and human rights.

Adopting such a rhetorical frame, however, meant that the public discussion would not focus upon the very people Proposition One discriminated against: the LGBT community. According to Pride participant Alan Virta re-focusing the campaign’s attention in this way forged uniquely supportive coalitions over the most unlikely similarity: shared discrimination and religious denunciation suffered by both the Homosexual community and the Mormon church. Hummel detailed further that the changed tactic was not a failure of vision amongst the LGBT leaders but rather the direct result of the 1993-94 research and public opinion polls. These polls revealed the damage that the relative safety of having remained closeted for so long had done to the LGBT community in Idaho. This was because the results of these polls demonstrated an irrefutable correlation between LGBT invisibility and the dehumanizing stereotypes and ignorance the community continually struggled against. As Hummel explained, “Most people (in Idaho) didn’t think they knew anyone who was gay or lesbian so they didn’t even have it within their sphere of reality that it was wrong to discriminate against them. Those that supported the ICA initiative, to the extent that they knew an LGBT person, disliked them, so discrimination was okay.”

Both the ICA initiative and the research polls reinforced the community’s need to escape a closeted existence and face the threats that arose from it and kept many locked tight inside. They reveal however, that Pride organizers were right in their assertion that increased visibility was the key to political power and political power was the only thing that could truly protect the LGBT community’s civil and human rights. The Pride celebration had an even greater impact on the LGBT community. By cultivating leadership amongst a purely volunteer core, it encouraged them to see themselves as a viable political constituency who must act accordingly. This encouragement culminated in the successful combined strategizing and coalition building that ultimately defeated Proposition One in the 1994 election. Proposition One however, was not felt or dealt with as simply as legislative battle. It was fought and defeated amidst an incessant barrage of letters to the editor, YFFN SpeakOut sessions and during Pride as well. This flurry of media attention brought out the best coverage and the greatest visibility for the LGBT community had experienced. Media attention was lacking however, in a most conspicuous arena surrounding Proposition One. This is because Proposition One successfully brought out some of the worst protesters that Pride celebration participants would ever witness.

Participant and activist Dallas Chase recalled the variety and voracity of protesters that mainstream media coverage would either fail to capture, minimize or edit out. This pivotal lack of coverage from Boise Pride celebration history frustrated of motivated Chase to capture these protesters through pictures, immortalizing forever, what she kept in her memory: Patrick M. Connor with his camcorder, gigantic constructed, chained closet and his dog that he would threaten Pride participants with, to the protester dressed as the Grim Reaper and the protester screaming through a bull horn how a woman’s son deserved to die of AIDS. Chase also captured and donated to this paper, the documented images the news media failed to cover: the hateful words such as “The Nazi’s killed 6 million Jews, How many queers can AIDS kill?” and dehumanizing caricatures strewn across huge banners during the No on One Campaign and after it. Her frustration with the inconsistent media coverage illuminates an obstacle the LGBT community struggled with well after the No on One Campaign ended: the gap between increased visibility, humanized representation and actualized political power. As Chase noted, “The parades are a great social event…but the people that aren’t there, don’t see it. I think if many Idahoan’s could’ve seen this 20 by 5 foot poster or the fellow dressed up like death, their thinking might’ve come around much faster.”

The No on One campaign had yet another impact on the LGBT community beyond increased visibility and political presence. For the Pride celebration announcements during the years after the campaign focused more on community and less on political strategy. YFFN newsletters and Diversity
articles depicting less volatility over expedient issues, suggesting that the decade from 1994-2004 was a
more reflective time for the Boise LGBT community. Themes emerged such as “Peace through Pride” and
the inclusion of Bisexual and Transgender people within the community and the community’s celebration. Even the ICA’s 1996 attempt at securing discriminatory legislation failed to rouse the LGBT community to
the same degree that the 1994 attempt had. The newspapers were not flooded with letters to the editor or
images of and interviews with quintessential homosexual power couples they way had been in 1994. This
does not indicate a reticent LGBT community. Rather, the shift in energy suggested a slight sense of
community peace amongst Pride participants and allies, aided by the slow and yet significant decrease in
Pride protesters as well as a decrease in the threat of discriminatory legislation. Participant and organizer,
Nicole LeFavour, articulated this sense when she said, “I just remember one year standing on top of the
planters as people streamed down ninth street, I took a picture or two from up there…and thought, I love
this community. As someone used to say, how can anyone find us scary? We’re just so harmless.”

The decade from 1994-2004 brought many successes and struggles for LGBT rights nationally as well, from Clinton’s “Don’t Ask, Don’t Tell” Policy of relative LGBT inclusion into the Armed Services, to the public outrage over the murder of Matthew Shepard and the Defense of Marriage Act. Television and film had greater diversity of stories surrounding and featuring LGBT characters as real, living people and not always dramatic and dehumanizing stereotypes. This change was further reflected by the work that the Boise LGBT community was doing in Idaho. From Dallas Chase’s hosting of the Queer television program, (Q-TV) to the 2004 election of Nicole LeFavour to the Idaho legislature, to YFFN’s Nikki Leonard and Javier Smith work as volunteer/co-chairs toward creating safe spaces for LGBT youth and success in making it illegal for the City Council to discriminate against employees on the basis of sexual orientation and gender identity and expression. The Pride celebration had changed as well, from being a contentious event in 1990 where participants feared for their safety, to being seen as a given in 2006, by many who participate in it or observe it in passing. This fact alone, is indicative of the power and relevance of previous Pride celebrations. The fact however that many Idahoans participating in Pride today remain unaware of the effort and struggles made on their behalf demonstrates that while the LGBT community may recognize itself and be recognized as such, it must still fight just to realize the goal of constituency. The Boise LGBT community remains one both fueled and hindered by the fact that it is still predominately volunteer-based. It is a community perpetually limited by lack of funding and the threat from divisions over strategy and subject to attack from external forces such as religious conservatism and rhetorical and legislative attacks in the mainstream media. Those interviewed who remembered what Boise felt like in 1990 all the way up to 1995 do not understand the seeming complacency of community members who lack these same experiences and memories. Subsequent interviews with members of this younger generation suggested a discomfort with label and community identification. In one such interview, a young, transgender bisexual man who wished to remain anonymous, explained, “I don’t feel comfortable going in to that community. It doesn’t seem to work for me as an individual though I support people that are in it.” His discomfort with approaching the LGBT community or feeling welcome is a sentiment echoed frequently by those who can still pass as or prefer to be seen as heterosexual. However, for other younger members of the community such as Adjunct Professor Abigail Wolford, “Pride visibility is as relevant today as it was in 1990. She explains, “Pride visibility is vital, as well as just a general visibility because…I want people to know I am a real person and that I am also gay and that that’s not a bad or scary thing.” These differing and seemingly contradictory perspectives span the spectrum of views surrounding what it means to consider oneself LGBT and participating in the LGBT community. They also, however, suggest a personal and social freedom that has come as a direct result from the transformations within this community. Though people’s lives are still marked by questions of sexual orientation and gender identity, the fact that a young man can describe himself as having a gender and sexual fluidity and not feel the need to belong to an LGBT community only affirms the powerful changes brought about through the struggle for LGBT civil and human rights.

In conclusion, the relationship between visibility and power was complicated by and realized through the balancing of competing assimilation and liberation strategies. These strategies in turn, transformed and were transformed within the context of the sixteen-year history of the Boise Pride celebration. Nothing demonstrates this transformation as powerfully as witnessing the community’s evolution during two key watershed moments. The first of which occurred with the formation of YFFN as a split from and new activist arm of TCC. The second took place during the two-year struggle against Proposition One, with the No on One campaign of 1993-94. These two moments frame the evolution of the
Boise LGBT community in their struggle for civil and human rights. This is because these moments mirror the progression of the national struggle during which LGBT people had to first see themselves as an invisible minority in order to eventually realize their stake in political power, the power of their community, and the greater safety offered by visibility rather than secrecy.

Achieving political power and positive, empowering visibility proved easier said than done, particularly when faced with inconsistent and/or harmful media coverage. The No on One campaign after all, thrived upon unprecedented media attention surrounding Boise’s LGBT community. However, this attention still managed to divide and silence the community over questions of having to appear as normal as possible to win the hearts and minds of the voting public and center discourse around freedom from government interference while refraining from discussing Proposition One as discriminatory to LGBT people.

Navigating this tension successfully required the balance of both assimilation and liberation strategies precisely the way they culminated in the No on One campaign. This balance remains the key to securing LGBT visibility and power as a social movement. For without this balance, these competing strategies will only continue to divide and conquer the LGBT community in Boise and across the nation. The growth shown within the Boise LGBT community bears witness to the fact that as long as LGBT people continue to face legal discrimination and de-humanizing stereotypes that deny them the same civil and human rights that others take for granted, realizing visibility and power will remain an LGBT issue. However, as this history proves, as long as LGBT civil and human rights continue to be portrayed as only an LGBT issue complacency and passing are no safer options than remaining closeted and invisible were once thought to be.

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Notes


Javier Smith interview, 8/2006 at 1415 Grove Street, Boise.

Sharon Matthies Interview, Albertson’s Library, June, 2006.


Nikki Leonard Interview, 8/2006 at 1415 Grove Street, Boise.

Alan Virta Interview, 6/2006, Albertson’s Library, Boise.

John Hummel Interview, 10/2006.


Dallas Chase Interview, Albertson’s Library, Boise State University. 7/2006.

Chase Interview. 7/2006.


Nicole LeFavour Interview, 8/2006 at1415 Grove Street, Boise.

Leonard and Smith interviews, 8/2006.

This was a sentiment echoed and paraphrased here from interviews with Leonard, Smith, Virta and Chase.


Abigail Wolford E-Mail Interview, 12/2006.

I refer here to Dallas Chase’s interview during which she explains the way the first few years of media coverage surrounding the parade focused on the perpetuation of gay and lesbian stereotypes, using those as representations of the entire parade, rather than showing the diversity of the actual parade participants.

I refer here to again to paraphrasing from the interviews of Javier Smith, Nicole LeFavour and Sharon Matthies specifically.
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Investigation of Single pMOSFET Gate Oxide Degradation on NOR Logic Circuit Operability

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The impact of gate oxide degradation of a single pMOSFET on the performance of the CMOS NOR logic circuit has been examined using a switch matrix technique. A constant voltage stress of -4.0V was used to induce a low level of degradation to the 2.0nm gate oxide of the pMOSFET. Characteristics of the CMOS NOR logic circuit following gate oxide degradation are analyzed in both the DC and V-t domains. The NOR gate rise time increases by approximately 30%, which may lead to timing or logic errors in high frequency digital circuits. Additionally, the voltage switching point of the NOR logic circuit shifts by 9% which could affect operation of analog or mixed signal designs. This shift in NOR logic circuit performance is correlated to an increased channel resistance of the stressed pMOSFET.

Introduction

As gate oxide thicknesses ($t_{ox}$) are scaled below 2.0nm, the effects of gate oxide (GOX) degradation become progressively more important, due in large part to an increased gate leakage current. Recent studies have focused on the effects of GOX degradation on CMOS inverter performance [1-8], yet reports on physical GOX degradation effects on other CMOS logic circuits, such as the NOR logic circuit, cannot be found. Additionally, much of the focus of studies on inverter performance has been on the voltage transfer characteristics (DC measurement) exclusive of time-domain circuit response [1, 2, 7, 8]. In these studies, a circuit level stress is applied to a monolithic structure thereby limiting the amount and the type of degradation induced to one or both of the MOSFETs. Because access to the individual MOSFETs is not possible in a monolithic structure, direct characterization of the individual MOSFETs is also not possible.

Only a few studies of simple integrated circuit building blocks (SICBBs), such as the inverter and NAND logic circuits, have used a technique in which direct characterization of individual MOSFETs before and after stress is possible [3, 6, 9]. A switch matrix technique is employed in these studies to correlate degraded MOSFET parameters such as drive current ($I_D$) and threshold voltage ($V_{TH}$) to circuit performance in the DC and voltage-time domain (V-t). Additionally, only a preliminary study has been performed on the NOR logic circuit in which the capacitive loading related to this technique has not been fully investigated [10].

This study investigates the NOR logic circuit performance in the DC and V-t domains following degradation of a single pMOSFET with $t_{ox}$ of 2.0 nm using the switch matrix technique. Specifically, the reliability assessment of low-level GOX degradation (e.g., negative bias temperature instability [11-13], stress induced leakage current [14], progressive breakdown [15, 16], etc.), termed wearout in this paper, is investigated to help assess the impact of pMOSFET wearout on NOR logic circuit operability. The capacitive loading associated with the switch matrix technique is also investigated.
Theory of Proposed Characterization Technique

When dealing with small scale devices, the size of the capacitive load placed on the device is of great concern as the ability of the device to drive the load comes into question. Furthermore, the speed of small scale devices can easily be inhibited by the capacitive load due to charging effects. This could affect the ability to achieve high speed digital circuits using small scale devices. In a typical IC, several circuits (e.g. output buffers, charge pumps, and loop filters) can heavily load the output of a NOR logic circuit in both digital and mixed signal applications. The capacitive load ($C_L$) for these circuits can be 1 pF or larger. Therefore, it is a definite concern that the large $C_L$ associated with the switch matrix technique could affect trends in fractional percent change ($\%\Delta$) of V-t data, e.g. $%\Delta$ rise time ($t_r$), when assessing the reliability of a SCIBB configured using this technique. Hence, simulations were performed using a 50 nm CMOS SPICE model on a NAND logic circuit, which demonstrates for changes in $C_L$ ranging from 10 fF up to 1 nF (but holding $C_L$ constant during each simulation), $%\Delta t_r$ remains the same (Figure 1). Wearout in the single pMOSFET was simulated by shifting the $V_{TH}$ SPICE model parameter to match empirical data obtained by Ogas et al. [9].

Furthermore, using transition times associated with the digital model of a MOSFET as described by Baker [17], it is shown mathematically that $%\Delta t_r$ is independent of $C_L$. The digital model output $t_r$ of a MOSFET can be expressed as (1):

$$t_r \propto R_{CH} C_L$$  \hspace{1cm} (1)

A change in $R_{CH}$ can be directly related to a change in $t_r$ if a capacitive load on a NOR logic gate remains constant. Hence, equation 1 can then be written in terms of a change in $R_{CH}$ ($\Delta R_{CH}$) given by:

$$\Delta t_r \propto \left( R_{CH,\text{Fresh}} - R_{CH,\text{wearout}} \right) C_L$$  \hspace{1cm} (2)

or,

$$\Delta t_r \propto \left( \Delta R_{CH} \right) C_L$$  \hspace{1cm} (3)

To obtain a fractional percentage, equation (2) is expanded and divided by the fresh value or $t_r$ (where fresh is defined as prior to wearout) resulting in:

$$\%\Delta t_r \propto \frac{R_{CH,\text{Fresh}} C_L - R_{CH,\text{wearout}} C_L}{R_{CH,\text{Fresh}} C_L} \propto \frac{R_{CH,\text{Fresh}} - R_{CH,\text{wearout}}}{R_{CH,\text{Fresh}}} \propto %\Delta R_{CH}$$  \hspace{1cm} (4)

Therefore, simulations and mathematical derivations indicate the switch matrix technique is well suited to examine the reliability of SCIBBs in the V-t domain since $C_L$ for this technique is about 900 pF and remains constant throughout testing.

![Figure 1. $%\Delta t_r$ simulated as a function of $C_L$](image-url)
Experimental

The metal oxide semiconductor (MOS) devices used in this study were fabricated by SEMATECH using 0.1 µm CMOS technology and have a $t_{ox}$ of 2.0 nm. The MOSFETs configured in the NOR logic circuit have a width and length of 10 µm and 0.1 µm, respectively and an oxide area ($A_{ox}$) of $1 \times 10^{-8}$ cm$^2$. The Agilent semiconductor characterization system used to make measurements is described in previous studies [6]. By applying a constant voltage stress (CVS) of -4 V to the gate of the device, $GOX$ degradation is induced in a single pMOSFET. CVS is applied in cycles of 600 seconds for five consecutive cycles, with interruptions for device and circuit characterization at room temperature, approximately 298 K. The remaining MOSFETs of the NOR logic circuit are not stressed.

Six NOR logic circuits, with a single degraded pMOSFET configured in 1 of 2 positions (Figure 2), were analyzed prior to and after $GOX$ degradation is induced in the pMOSFET. The four input/output (I/O) NOR logic circuit states investigated are summarized in Table 1. States are labeled with the pMOSFET position followed by the I/O state. The configurations shaded in Table I correspond to transitions in the NOR logic with the degraded pMOSFET in either the upper or lower position. The results are presented for these two configurations in which pMOSFET wearout affects the circuit performance in the voltage-time domain ($V$-$t$). Data collected and analyzed for the NOR logic circuit includes $V$-$t$ data and voltage transfer characteristics (VTCs). $V$-$t$ results allow for the evaluation of $t_r$ by measuring the time required for the output voltage to transition from 10% to 90% of the final output value [17].

![Figure 2. NOR logic circuit with stressed pMOSFET positions circled](image)

O) NOR logic circuit states investigated are summarized in Table 1. States are labeled with the pMOSFET position followed by the I/O state. The configurations shaded in Table I correspond to transitions in the NOR logic with the degraded pMOSFET in either the upper or lower position. The results are presented for these two configurations in which pMOSFET wearout affects the circuit performance in the voltage-time domain ($V$-$t$). Data collected and analyzed for the NOR logic circuit includes $V$-$t$ data and voltage transfer characteristics (VTCs). $V$-$t$ results allow for the evaluation of $t_r$ by measuring the time required for the output voltage to transition from 10% to 90% of the final output value [17].

| TABLE I | NOR GATE INPUT CONFIGURATIONS INDICATING I/O STATE |
|---|---|---|---|---|
| Position | Configuration | Input/Output |
| | | 1 | 2 | 3 | 4 |
| 1,2 | Input A VDD | **GND** | **Pulse** | **Pulse** |
| | Input B Pulse | **Pulse** | **VDD** | **GND** |
| | Output 0 | 0.1 | 0 | 0.1 |

Grey = positions affected by degradation. 0.1 = output transition

Data collected for the degraded pMOSFET includes maximum drain current ($I_{D,MAX}$), threshold voltage ($V_{TH}$), and small-signal source-to-drain conductance ($g_{sdmin}$). The linear extrapolation technique is used to determine the pMOSFET $V_{TH}$ [17]. Additionally, gate leakage current ($I_{G, V_G}$) is measured following each stress cycle to verify operation in the wearout regime. Previous studies on inverter circuits comprised
of MOSFET devices with a \( t_{OX} \) of 2.0 nm and an \( A_{OX} \) of \( 1 \times 10^6 \) cm\(^2\) provide a reference for expected wearout and breakdown regimes [4]. Ogas et al. provide further description of the measurement and choice of applied voltages in previous work [4]. The \( g_{sdm} \) is measured using a small-signal conductance measurement similar to that described by Kong et al. [18]. The small-signal conductance measurement used in this study differs from Kong et al.’s method in that a 14mV RMS test signal at 1MHz is applied to the drain of the device under test, while the voltage sources of the Agilent 4156C parameter analyzer provide the gate and substrate biases through connections configured using the Agilent E5250A switch matrix.

Results

The NOR logic circuit and pMOSFET results reported include the \( \%\Delta \) from fresh to wearout in terms of mean and standard deviation (i.e. associated error), as presented in Table 2. Sources of error associated with the NOR V-t measurements include differences in MOSFET characteristics between the devices used to configure the NOR logic circuit. Sources of error associated with the devices are due to the statistical nature of degradation in the channel.

<table>
<thead>
<tr>
<th>I-V Parameter</th>
<th>Mean</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOR V-t (1-2)</td>
<td>23.8%</td>
<td>5.73%</td>
</tr>
<tr>
<td>NOR V-t (1-4)</td>
<td>27.2%</td>
<td>7.25%</td>
</tr>
<tr>
<td>NOR V-t (2-2)</td>
<td>30.5%</td>
<td>6.24%</td>
</tr>
<tr>
<td>NOR V-t (2-4)</td>
<td>27.1%</td>
<td>6.20%</td>
</tr>
<tr>
<td>NOR VTC (1-4)</td>
<td>9.28%</td>
<td>1.56%</td>
</tr>
<tr>
<td>NOR VTC (2-2)</td>
<td>8.49%</td>
<td>1.28%</td>
</tr>
<tr>
<td>( I_{D,MAX} )</td>
<td>43.4%</td>
<td>7.57%</td>
</tr>
<tr>
<td>( V_{TH} )</td>
<td>23.0%</td>
<td>4.52%</td>
</tr>
<tr>
<td>( g_{sdm} )</td>
<td>29.5%</td>
<td>8.07%</td>
</tr>
<tr>
<td>( R_{CH} )</td>
<td>43.6%</td>
<td>18.2%</td>
</tr>
</tbody>
</table>

A. NOR Circuit

V-t characteristics are examined for configurations 1-2, 1-4, 22, and 2-4 (Table-1) following each pMOSFET stress cycle. As expected, these V-t configurations are the only configurations affected by pMOSFET wearout. Figure 3 shows the typical NOR V-t response for these configurations. The NOR V-t response for configuration 1-2 (Figure 3), shows an increase in \( \%\Delta \) of approximately 24 %, relative to the Fresh response. The results for the remaining configurations are presented in Table-2.
Figure 4 shows the typical NOR VTC response for configuration 22. A shift to the left in the VSP is observed which is indicative of pMOSFET wearout. Configuration 1-4 results in a shift of the VSP to the left by 9.28% while configuration 2-2 (Fig.4) exhibits a shift of about 8.49% relative to the fresh condition. As expected, configurations 1-2 and 2-4 are not affected by pMOSFET wearout as the degraded device is held at ground effectively preventing the degraded pMOSFET from significantly affecting the VTC in the DC domain.

Figure 3. Voltage-time domain (V-t) results for the NOR logic circuit following wearout in a single pMOSFET. Significant changes in rise time ($t_r$) from fresh to wearout are apparent as shown for configuration 1-2. Similar results were observed for configurations 1-4, 2-2, and 2-4. The time axis is displayed in arbitrary units (a.u.).

Figure 4. Voltage transfer characteristics (VTC) results for the NOR circuit in configuration 2-2. A shift to the left in the voltage switching point ($V_{sp}$) is observed from fresh to wearout. Similar results are observed for configuration 1-4.
B. pMOSFET

Following induced wearout, the pMOSFET DC characteristics exhibit an increase in $V_{TH}$ by 23.0% (Fig. 5), a decrease in $I_{D,MAX}$ (Fig. 5 inset) by 43.4%, and a decrease in $g_{sdm}$ (Fig. 6) by 29.5% relative to the fresh condition.

Figure 5. Typical pMOSFET linear drain current versus gate voltage (linear $I_D$-$V_G$) results for fresh through wearout. A shift to the right from fresh to wearout is indicative of increased $V_{TH}$. (The inset illustrates that typical pMOSFET drain current versus drain voltage ($I_D$-$V_D$) results for fresh through wearout showing a decrease in $I_{D,MAX}$ with increasing wearout, in which $I_{D,MAX}$ data is measured at $V_D=V_G=V_{DD}$. The gate voltage is held constant at -1 V throughout the test.)
Discussion

A. NOR Logic Circuit

The degree of degradation observed in the time domain by the NOR logic circuit appears to be more significant than the degradation exhibited in the VTCs under equivalent test conditions (Figs. 3 and 4) as the VTCs display a full logic transition with a smaller shift in circuit performance relative to the fresh condition. Cheek et al. reported similar results following inverter circuit analysis [6]. Taur and Ning describe the pMOSFET as the “pull-up” device and the nMOSFET as the “pull-down” device [18]. Therefore, a degraded pMOSFET is expected to affect only the rise time ($t_r$) and a degraded nMOSFET affects the fall time ($t_f$). Hence, a change in $t_f$ is not expected nor is it observed. A similar correlation can be made for the NOR VTCs from Fig. 4, in which the leftward shift of the VSP is directly related to a decrease in pMOSFET performance. This can be explained intuitively by comparing the strength of the pMOSFETs to the nMOSFETs. As the pMOSFET is degraded it becomes weaker and the nMOSFETs of the circuit begin to dominate the VTC allowing for an earlier “pull down” effect or an earlier VSP. Similar results were observed for inverters in which a degraded pMOSFET and a fresh nMOSFET shifted the VSP to the left [4, 6].

B. pMOSFET

By using the switch matrix technique, it is seen that the NOR logic circuit response is significantly impacted by single pMOSFET wearout. The degraded pMOSFET characteristics suggest degradation in the channel as the cause for the large change in $t_r$ as both $V_{TH}$ and $I_{D, MAX}$ are related to channel resistance. To ensure traditional breakdown events have not occurred and influenced results, the $I_{C}-V_{G}$ data of the degraded pMOSFET is compared to that of a device progressively degraded to a traditional breakdown event (Fig. 7). The wearout region investigated (Fig. 7) corresponds to the region of operation for the stressed pMOSFETs used in this study. It should be noted that a progressive increase in current is observed in the CVS test which may be an indication of progressive breakdown [12, 20].

Figure 6. Results of small-signal conductance measurement showing a decrease in source-drain conductance as a function of $V_{SG}$ from fresh to wearout. Results are measured at $V_{G}=V_{DD}=-1V$. 

![Figure 6](image-url)
C. Channel Resistance

\[ R_{CH} \] was investigated experimentally to confirm the direct relation between \( \% \Delta \tau \) and \( \% \Delta R_{CH} \). \( \% \Delta R_{CH} \) values were obtained by measuring \( g_{sdm} \) using a small-signal conductance measurement as described by Kong et al. [18]. To verify this technique is applicable to the pMOSFET, a similar derivation for \( g_{sdm} \) is calculated from the DC drain current equation of an pMOSFET based upon the gradual channel approximation [21]. These calculations result in:

\[
g_{sdm} = \frac{1}{R_{SD} + \frac{1}{\beta (V_{SG} + V_{TH})}} \tag{4}
\]

where,

\[
R_{CH} = \frac{1}{\beta (V_{SG} + V_{TH})} \tag{5}
\]

and,

\[
\beta = \frac{\mu_{ef} C_{OX} W_{eff}}{L_{eff}} \tag{6}
\]

\( R_{SD} \) is the total parasitic source and drain resistance measured in series with \( R_{CH} \). \( R_{SD} \) can be assumed to be small compared to \( R_{CH} \) [21, 22] and to remain fairly constant after CVS, as the majority of the pMOSFET degradation occurs in the channel [23]. Therefore, equation 4 can be approximated by:

\[
g_{sdm} \approx \frac{1}{R_{CH}}. \tag{7}
\]

Figure 7. Log plot of the gate current versus gate voltage response a degraded pMOSFET progressively stressed to hard breakdown. The encircled wearout region illustrates the Fresh to wearout Ig-Vg response for the degraded pMOSFETs used in this study. The full range of oxide degradation is shown to highlight the low-leakage regime which suggests that a traditional oxide breakdown is not being induced in the pMOSFETs [24]. The arrow indicates the progression of increased degradation.
or equivalently,
\[ R_{CH} = \frac{1}{g_{sdm}} \]

A correlation between \%\(\Delta R_{CH}\) and \(g_{sdm}\) can be derived using equation 8. \(\Delta R_{CH}\) can be written as:
\[ \Delta R_{CH} = \frac{1}{g_{sdm,Fresh}} - \frac{1}{g_{sdm,Wearout}} \] (9).

Using a common dominator (9) can be written as:
\[ \Delta R_{CH} = \frac{-\Delta g_{sdm}}{g_{sdm,Wearout} g_{sdm,Fresh}} \] (10).

Dividing by \(R_{CH,Fresh}\) to convert (10) to percent change results in:
\[ \%\Delta R_{CH} = \frac{\Delta R_{CH}}{R_{CH,Fresh}} = \frac{-\Delta g_{sdm}}{g_{sdm,Wearout}} \] (11).

which was shown to be proportional to \%\(\Delta t_r\) in both equation (3) and experimentally in Fig. 8.

![Figure 8. \%\(\Delta R_{CH}\) of a single degraded pMOSFET and corresponding \%\(\Delta t_r\) of the associated NOR logic circuit. Linear fit shows the direct proportionality between \%\(\Delta R_{CH}\) and \%\(\Delta t_r\).](image)

**Conclusions**

The results reported show that wearout in one pMOSFET of a NOR logic circuit leads to a significant increase in \(t_r\) attributed to a decrease in \(g_{sdm}\) or equivalently, an increase in \(R_{CH}\). The changes in NOR logic circuit performance in the V-t domain may affect the ability of the circuit to operate properly, particularly in applications requiring high speed switching. Furthermore, this study suggests that the NOR circuit configuration is less sensitive to single pMOSFET wearout than the NAND circuit. This study further validates the use of the switch matrix technique for circuit reliability analysis in the Voltage-time domain. It has also been proposed and shown that the small-signal conductance measurement can be employed using a switch matrix technique to characterize the reliability of SICBBs and MOSFETs. Additionally, it is shown that the relatively heavy capacitive load associated with the switch matrix technique does not affect the viability of the technique when characterizing devices and SICBBs.
Acknowledgments

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Lower Extremity Mechanics During Cutting Tasks in Different Shoe-Turf Combinations

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The demands placed on the lower extremity when performing jumping and cutting maneuvers are depending, in part, on the interaction between the playing surface and the athlete's footwear. Higher demands are likely to result in increased incidence of injury, so for safety reasons it is important to quantify how the shoe-turf interface affects joint loads. The purpose of this study is to compare the forces on the lower extremity while landing and side cutting (rapid direction change at approximately 45 degrees) on artificial football turf with different styles of football cleats.

Introduction

Footwear and floor surfaces are factors that can lead to an injury related to athletic activities. In the past 20 years there are an estimated 80,000 ACL tears each year in the United States alone, and approximately 50,000 ACL reconstructions are performed annually, leading to a total cost of these injuries of almost $1 billion per year. ACL injuries are caused either by a contact or a non-contact situation. A contact situation would be a collision between players. A non-contact situation would include falls, sudden stops while running, or side cutting which is rapid change of direction. Approximately 70% of the ACL injuries occur in non-contact situations. As Glen A. Livesay mentioned in his research, from an injury prevention perspective, there are numerous possible causes for these non-contact ACL injuries, but a primary factor implicated in many of them is the interaction between the player’s shoe and the playing surface. There for, it important to consider the footwear and floor surface for the performance and safety of an athlete.

The objective of this study is to compare the forces on the lower extremity while landing and side cutting (rapid direction change at approximately 45 degrees) on artificial football turf with different footwear. This study will also help gather information to identify kinematics or kinetic changes that may occur during athletic competition with different footwear on artificial turf.

To have a clear understanding of the factors involved with different combinations of footwear and surfaces, the following goes over research that has been done in the past. First, the friction and traction on different shoe-surfaces combination will be looked at. Second, the different surfaces on football fields that have been and are being used today. Last, but not least will be the ground reaction forces involved with natural grass and football turf.

Friction and traction

Research has been done looking at the friction and traction with different shoe-surface. One study was done by combining the shoe-surface that determined the frictional forces that are connected with the injury frequency, i.e. the higher the frictional resistance the higher the injury frequency. Tennis surfaces for example have been shown to influence the occurrence and frequency of tennis injuries dramatically. Which fallows with Segesser research. It was speculated that the difference in injury frequency are directly related to the difference in the frictional properties of the surfaces. Surfaces with low frictional resistance are assumed to cause fewer injuries than surfaces with high frictional resistance. With these two perspectives in mind, the combination with shoe-surface conditions fall between a rang of not enough friction, which slipping occurs, and too much friction, which foot fixation occurs.

There are two kinds of friction, static friction and dynamic friction. The coefficients of friction are material dependant constants. In athletic activity movements like running, quick stops and starts, and rapid
change of direction result in the development of high horizontal forces between the shoe and the playing surface. In football, athletes perform many cutting and shuffling movements that could result in these high horizontal forces. For example, some forces could have a magnitude of sideway forces that may reach or exceed the athlete’s bodyweight, which slippage could occur. To help prevent slippage, a higher traction coefficient between the shoe and the surface is required.

In a landmark study, Lambson et al examined shoes with 4 different cleat designs and tracked the relative incidence of ACL tears with each design in a group of 3119 high school football players between 1989 and 1991. The authors concluded that the cleat design most likely to be associated with a major knee injury on natural grass used long, irregular cleats placed at the peripheral margin of the sole, with a number of smaller, and pointed cleats positioned interiorly.

Another research study done by Martyn Shorten, was about the first generation synthetic turf athletic fields. Athletes found cleats designed for natural turf fields did not provide enough slip resistance on synthetic turf. The resulting slips and falls lead to only minor injuries, but also started a trend towards the use of shoes with more and loner cleats. Although these new outsole designs solved the slip problem, they increased the risk of the “foot fixation”, which occurs when excessive resistance to rotation or “rotational traction” prevents the shoe from moving freely during twists, pivots and cuts. Foot fixation leads to the development of high forces in the knee during rotational movements and is believed to be a factor in the aetiology of knee injury.

Surfaces

A new generation of synthetic surface is call Field-Turf, which is composed of a polyethylene and polypropylene fiber blend stabilized with a graded silica sand and ground rubber infill. It was developed to duplicate the playing characteristics of natural grass. Some examples on different turfs see Figure 1

![Figure 1: Four different types of turfs (Dr. Livesay, American J. of Sports Medicine, 2006 (34))](image-url)
In Dr. Meyer’s research, a total of 240 high school games were evaluated for game-related football injuries sustained while playing on Field-Turf or natural grass during the 5-year period. The final facts overall, 150 (62.5%) team games were played on Field-Turf versus 90 (37.5%) team games played on natural grass. A total of 353 injuries were documented, with 228 (64.6%) occurring during play on Field Turf as compared to 125 (35.4%) on natural grass. It was discussed that there was a greater incidence of muscle-tendon overload injuries on Field Turf.

The authors mentioned that more consistent artificial composition enhances the speed of the game but may also allow for greater opportunity for injury because of overextension and greater fatigue potential of muscle as players perform at a greater rate of acceleration, speed, and torque. Although numerous other mechanisms may be at play, risk factors including pivoting, change of direction, direct contact with an opposing player, deceleration, unfortunate mishaps (eg, piling on, moving pileup), and being jolted during an uncontrolled or compromised movement. Others have identified equipment (eg, shoe/cleat design), the abrasive nature of artificial surfaces, and various anatomical and biomechanical influences as other causes of injury. Figure 2 shows an example of two different cleat designs.

Figure 2: On the left, is a cleat pattern on the forefoot of the traditional soccer-style grass shoe. On the right, cleat pattern on the forefoot of the turf shoe.
(Dr. Livesay, American J. of Sports Medicine, 2006 (34))

Shoe-surface combinations that develop high peak torques may put athletes at increased risk of injury. At the same time, this does not necessarily mean that every athlete or trainer will necessarily want to switch to a shoe-surface combination with lower peak torques; there is a trade-off involved. Lower peak torques may be safer, but they may also compromise performance.

Because the shoe-surface interface involves both the cleat pattern on the shoe and the playing surface, it can be dangerous to make generalization as to what constitutes an “unsafe” cleat, as the performance of a given cleat may change on different playing surfaces. At the present times, the majority of field sports are played on either natural grass or a synthetic surface such as Astroturf, Astroplay, or FieldTurf.

Ground Reaction Forces

Research has been done and has shown that ground reaction forces vary with different terrains. A 5-year prospective study was done by Michael C. Meyers, PhD and Bill S. Barnhill, MD on the “Incidence, Causes, and Severity of High School Football Injuries on Field-Turf Versus Natural Grass” this study was done in 2004. It was seen that over the past decades, numerous studies have attributed a greater risk and incidence of articular and concussive trauma to playing on artificial turf when compared to natural grass. Another research, on the review of the effects of artificial turf and natural grass on surface-related traumatic injuries in soccer suggests that surfaces with artificial turf produce more abrasion injuries then surfaces with natural grass.

A difference in injury pattern and injury mechanism when playing on different types of surfaces has been suggested, as well as an increased injury risk for frequent alternating between different playing surfaces. High school football teams that alternate playing on nature grass to artificial turf increase the player’s chances of an injury.
A research on footwear can address biomechanical measurements, comparing different types of shoe materials on applied forces and foot motion during running and jumping. Studies show that the ground reaction forces were not changed by shoe materials or even between shod and barefoot conditions\textsuperscript{6,7,8} while another revealed increased impact force with a harder shoe.\textsuperscript{9}

**Materials and Methods**

**Subject**

In this study there were eight subjects, collegiate athletes from Boise State University football team only running backs and receivers ages around 18-25. The subjects wore comfortable clothes in shorts, and different styles of football cleats.

**Material**

A marker configuration was put on the subjects to collect data. A total of 18 surface markers (small lightweight plastic balls approximately $\frac{1}{2}$” diameter) were attached to specific anatomical locations starting from the waist down to the toe and heel using double sided skin tape. These markers are tracked by the VICON motion analysis system to track the subject’s motion while performing the protocol.

The ground reaction forces on each leg were recorded on the two force platforms mounted side-by-side at ground level, see figure 3. The ground reaction forces were recorded at 1250 Hz. The force platform number 1 recorded the peak force for the right leg and force platform number 2 recorded the peak force for the left leg. The impact forces were obtained from the data provided, using the vertical forces.

![Figure 3: The two force platforms (yellow), #1 is located on the right side of the subject and #2 is located on the left.](image)

**Procedure**

Before testing, the subjects were provided with well instructions on the jumping and landing protocol. The subjects were also well oriented to the lab equipment and familiarized with the protocol. The subjects performed a total of 9 jumps landing and side cutting maneuvers. Athletes performed two-footed jumps upward and forward, landing with their feet in the center of two ground-level force platforms. The jumps were taken at a horizontal distance of five feet. In addition, they jumped over a small hurdle 15 inches off the ground. The subjects jumped as described above landed on both feet and then sprinted off the force platforms for several steps either straight ahead, or at approximately a 45 degree angle to the right or left. All eight football athletes performed a series of side cutting maneuver unanticipated. For unanticipated trials, subjects were required to rapidly respond and adjust movement response while in the
air immediately prior to landing, based on a series of randomly activated light stimuli. Figure 4, is an example of one of the subjects during the jump-cut paradigm.

Figure 4: The jump-cut paradigm

The force platforms recorded the ground reaction forces during impact. Lower extremity movement during the landing was recorded using six infrared cameras to track reflective markers attached to the body segments. These cameras are part of the VICON motion analysis system. The motion data gathered was used to quantify variables such as knee and hip flexion angles during landing. With this data gathered a summary of the jump landing mechanics were collected.

All of these jumps were conducted in the Intermountain Orthopaedic Sports Medicine and Biomechanics Research Laboratory located in the Micron Engineering Center on campus, Boise State University.

Results

The mean peak vertical ground reaction forces (GRF) for the cleat and turf shoes were compared to assess the difference in impact force at landing. In the research eight subjects performing nine trials each with football cleats and turfs shoes results a total of 144 trials. Looking at the vast range of dynamical movements that athletes perform out in the field. It is difficult to obtain consistent data of the forces involved while an athlete is performing movements like landing, pivoting, twisting, cutting, and accelerating from a force plate. The following Figures 5-8 show an example of the vertical GRF acting on the left leg while performing a right cut with football cleats or turf shoes. The figures show a good visual example of the variability of the ground reaction forces between different footwear of football cleats and turf shoes. Figures 5 and 6 show the GRF of three trials from subject DL with football cleats and turf shoes. Figures 7 and 8 show the same but with subject GT.

Referring to Figures 5 and 7 were the subjects are using football cleats for the footwear. The figures show that both subjects using cleats were able to execute a force of 4000 N.
Figure 5: Vertical ground-reaction forces on the left leg with football cleats performing a right cut.

Figures 6 and 8 the subjects are using turf shoes for the footwear. Figure 6 show peaks forces below as 2000 N, half of the peak force with the cleats on Figure 5, and an inconsistency with the forces.

Figure 6: Vertical ground-reaction forces on the left leg with turf shoes performing a right cut.
Figure 7: Vertical ground-reaction forces on the left leg with football cleats performing a right cut.

Figure 8 using turf shoes, is more consistent with the forces compared to Figure 6. Although, it still ranges at low magnitudes of force and it also takes longer push of time from the force plates ranging around 425 to 475 ms.

Figure 9, shows the mean peak vertical ground reaction forces for the cleats and turf shoes at landing. The left leg forces in cuts to the right were significantly greater in the cleats than in turf shoes (cleats 3238.7±557.7 N vs. Turf shoes 2332.7±685.8 N, p=0.066, Table 1). In all other cases, footwear did not significantly affect peak vertical ground reaction force. For both shoe conditions, cuts to the left resulted in large forces on the right leg and vice versa. For the straight run, the forces on the right leg tended to be higher than those for the left leg.
Figure 9: Cleat and turf peak vertical ground reaction forces (RC= Right Cut, LC= Left Cut, RL=Right Leg, LL=Left Leg, C=Center). Peak force indicates the impact GRF.

Table 1 is a summary of the statistical comparisons between cleats and turf shoes. The highlighted numbers in the table are the peak forces between cleat and turf shoes. Rows Cleat and Turf on Table 1 are the mean peak forces from all eight subjects.

<table>
<thead>
<tr>
<th></th>
<th>Right Cut</th>
<th>Left Cut</th>
<th>Center</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Right</td>
<td>Left Leg</td>
<td>Right</td>
</tr>
<tr>
<td>Cleat (N)</td>
<td>167</td>
<td>3238.7</td>
<td>3371.7</td>
</tr>
<tr>
<td>Stdev (N)</td>
<td>663</td>
<td>557.</td>
<td>710</td>
</tr>
<tr>
<td>Turf (N)</td>
<td>1636.4</td>
<td>2332.7</td>
<td>3093.2</td>
</tr>
<tr>
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<td>929.</td>
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<tr>
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<td>2.4</td>
<td>38.8</td>
<td>9</td>
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<tr>
<td>T-</td>
<td>0.87</td>
<td>0.06</td>
<td>0.42</td>
</tr>
</tbody>
</table>

Table 1: Statistical comparison of the footwear conditions.
Discussion

This study with eight subjects did not demonstrate many statistically differences in peak vertical ground reaction force due to choice of footwear. This is likely due to several factors including: (1) the relatively small number of subjects, (2) large variability in GRF between trials, and (3) differences in landing styles among the subjects. However, we did notice some interesting trends from our data. Subjects obviously planned their movements before landing, as evidenced by the higher GRFs on the push off leg when signaled to perform a cut (left leg for a right cut). Subjects also demonstrated evidence of limb dominance. In trials in which they were signaled to run straight after landing, peak force tended to be greater on the right leg, regardless of shoe condition. Looking at the right and left cuts and the limb dominance on Figure 9, this data shows that using cleat shoes the subject has a greater potential to provide higher magnitudes of force. Further analysis of the shear (traction) forces during cutting is currently underway, and may provide more insight as to the effect of footwear on cutting performance.

For this research other methods were attempted to find a relationship between the two different footwears. For example, looking at each axial force (x, y, and z) and finding the differences in the impact on the joints. Do to the variability on GREs this attempt was difficult to complete. Another attempt, was analyzing the two peak forces during the protocol; first peak force was the landing force and the second peak force was the push off force, or cutting force, from the force plates.

This research is to be continued and improved. By increasing the number of subject and finding better methods to help reduce the variability in the ground reaction forces will help to obtain better data. Being able to collect enough data to find out how the aspects of performance are related to the available traction. For example, to distinguish the traction between the shoe and the field to the extent to which a football player can lean into the surface or make cutting movements without slipping. Being able to prove that using footwear with better traction helps improve acceleration and agility; one can plant a foot and change direction or speed at higher rates. Also, finding the desirable traction between a shoe and a playing surface, that will lie in an optimum range that provides adequate slip resistance for dynamic movements without producing excessive resistance to rotation or foot fixation. The desirable traction will allow athletes to provide fast dynamic movements and safe competitive performance. The optimum range of the resilience of the turf field is also to be found.

On the next approach it would be important to measure how much energy is loss in collision with the surface. By doing so using an object like a basketball and dropping it at a certain height to see how much energy is lost. If it bounces back to its certain height then there is no losses but if the height of the bounce is smaller then its certain height then a loss of energy has occurred. With this data the resilience of certain turfs will be found, which then could be compared to the athletes running speed. The athletes running speed can be seen as the stride length, which could be found by taking the distance between footfalls and dividing it by the time it takes the foot to hit the ground. Being able to find the resilience of each turf is also important to see the impact on a head collision.

References

As an independent double-gate, silicon-on-insulator transistor, the Flexfet™ is suited for a wide range of applications in analog and digital circuitry. This study investigates the ability of the JFET bottom-gate to adjust and control several parameters in the Flexfet™ as well as shield against performance degradation due to substrate biasing. The device parameters under investigation include drive current, leakage current, and threshold voltage. The newly assigned F-factor describes the ability of Flexfet™’s bottom-gate to adjust the threshold voltage. Flexfet™ exhibits nearly a 10x and 3.5x increase in drive current for the nMOS and pMOS devices, respectively, with a 1 V bottom-gate voltage swing. Comparing the nominal devices with the low-power devices, both the nMOS and pMOS unexpectedly demonstrated higher leakage current for the low-power biasing. F-factors of 0.53 V/V and 0.38 V/V were calculated for the nMOS and pMOS devices, respectively. With a 40 V swing on the substrate potential, the nMOS device showed less than 12 pA increase in leakage current and no more than 20 mV of unwanted Vt shift. The pMOS measured less than 2 pA increase in leakage current and 10 mV of Vt shift for the same substrate biases.

Introduction

In the 2006 update, ITRS predicts that the implementation of fully-depleted SOI and multiple-gate MOSFETs will be necessary to manufacture devices at the 32 nm technology node. The Flexfet™ developed by American Semiconductor, Inc. incorporates both processes into a single device with a 1450 Å buried-oxide (BOX) and its self-aligned, implanted JFET bottom-gate (BG). The BG provides dynamic adjustment of several device parameters, including threshold voltage (Vt), drive current (Ion), and leakage current (Ioff). This allows for low-power consumption in the stand-by mode and fast device operation when active.

Furthermore, there is a parasitic field-device created by the BOX and substrate in standard SOI devices which affects transistor performance by inadvertently adjusting Vt and increasing Ioff. The Flexfet™ BG negates this parasitic by shielding against substrate potential and radiation-induced trapped-charge in the BOX, making Flexfet™ ideal for circuits where substrate biasing is necessary or in high-radiation environments.

This study investigates the ability of the bottom-gate in adjusting Ioff, Ion, and Vt as well as its ability to protect the transistor performance against substrate potential.

Experimental

The devices under investigation were fabricated at the 0.18 µm node, with gate-oxide and buried-oxide thicknesses of 35 Å and 1450 Å, respectively. The devices were tested with a supply voltage (VDD) of 1.8 V. To perform measurements, an HP 4156A Semiconductor Parameter Analyzer (SPA) was used in conjunction with a Cascade Microtech probe-station and four micromanipulators.

Standard log(ID)-VG tests were conducted, in which the nMOS source voltage (VS) = 0 V, drain voltage (VD) = 1.8 V and top-gate voltage (VTG) was swept from 0.0 V to 1.8 V. The pMOS test was similar with VS = 1.8 V, VD = 0 V and VTG swept from 1.8 V to 0.0 V. To investigate the device behavior with respect to the new BG, the bottom-gate voltages (VBG) were as follows: VBG = -0.5 V, 0 V, 0 V and VBG = 2.3 V, 1.8 V, 1.3 V for the nMOS and pMOS devices, respectively.
Ioff, Ion, and Vt were determined for each VBG. The low-power, nominal, and high-power device characteristics are then compared. A new parameter, F-factor (F) – defined as the change in threshold voltage with respect to the applied bottom-gate voltage – demonstrates the ability of the bottom-gate to control the threshold voltage of the device and is also reported. For each set of tests, the substrate voltage (VSUB) was stepped from -20 V to +20 V, in 5 V steps, to demonstrate the ability of the BG to shield against substrate biases.

Figure 1. Flexfet™ cross-sectional views illustrating the implanted JFET bottom-gate (BG) and buried-oxide (BOX) layer.

Results

Dynamic parameter adjustment

Figure 2. nMOS ID-VG comparison of low-power (VBG = -0.5V), nominal (VBG=0V) and high-power (VBG=0.5V) devices.

Figure 2 shows the ID-VG characteristics for an nMOS device with varying bottom-gate potentials. The drive current ranges from a low of 98.3 μA, low-power device, to a high of 839 μA for the high-power bias. The nominal value for the nMOS Flexfet™ drive current measured 315 μA. Ioff for the
low-power, nominal, and high-power biases measured 167 pA, 159 pA, and 175 pA, respectively. Notice the nominal device unexpectedly has less leakage current than the low-power device. For this nMOS transistor, the F-factor was calculated to be 530 mV/V. That is, a 530 mV Vt shift with a VBG stepped 1 V.

Figure 3 demonstrates the same odd behavior in leakage current for the pMOS device. Again the lowest leakage current, 53.1 pA, is measured when VBG = VS, the nominal biasing condition. The low-power device measured Ioff at 96.5 pA and the high-power device leaked 357 pA of current. For Ion, the currents read 119 µA, 225 µA, and 390 µA for the low- to high-power biases. The F-factor was calculated to be 380 mV/V. Table 1 summarizes the results for the nMOS and pMOS devices.

Figure 3. pMOS ID-VG comparison of low-power (VBG = 2.3 V), nominal (VBG=1.8V) and high-power (VBG=1.3 V) devices.

Substrate shielding

Figures 4 and 5 show the ID-VG behavior with VSUB ranging from -20 V to +20 V for the nMOS and pMOS devices, respectively. As seen in the figures, there is little variation in the ID-VG curves across the full 40 V substrate swing; this suggests very little inadvertent shift in Vt and minimal increase in leakage current. The nMOS device exhibited only 20 mV change in Vt and an increase in leakage current

Figure 4. ID-VG with varying substrates biases for the nMOS Flexfet™.
less than 12 pA. The pMOS device behaved better, with only a 10 mV Vt shift and less than 2 pA increase in Ioff.

![Substrate Bias Overlay for pMOS Device](image)

Figure 5 1D-VG with varying substrates biases for the pMOS Flexfet™.

**Discussion**

Dynamic parameter adjustment

Table 1 summarizes the dynamic adjustment of Ioff, Ion, and Vt with the bottom-gate voltage stepped by 1 V. For the nMOS transistor, there is nearly a 10x increase in drive current from the low-power to the high-power device, 98.3 μA versus 893 μA. With an increase in drive current from 119 μA to 390 μA, the pMOS transistor showed slightly better than a 3-fold increase from the low-power to the high-power device. In analog and digital circuit design, higher drive currents are desirable to quickly drive capacitive loads. The nMOS device exhibited a significant adjustment in Ion, however, the pMOS device still has room for improvement.

Both the nMOS and pMOS devices show surprising results when the low-power device measured more leakage current than the nominal device. Given the operation of a standard JFET device, reverse biasing the pn-junction created by the channel region and highly-doped BG should result in less leakage current because of the increase in depletion layer width. Furthermore, this phenomenon was not present for the tests performed at supply voltage of 2.5 V. This behavior is still being investigated.

The Flexfet™ bottom-gate was able to adjust Vt 530 mV for the nMOS device and 380 mV for the pMOS device, corresponding to F-factors of 0.53 V/V and 0.38 V/V. While these are not as high as previously measured values, relatively small changes in the processing traveler could improve them. And even though the Vt shifts are not yet perfected, the effect they have on device parameters such as drive current is quite apparent.
Table 1. Summary of device parameter adjustment

<table>
<thead>
<tr>
<th></th>
<th>Low-Power</th>
<th>Nominal</th>
<th>High-Power</th>
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<tr>
<td><strong>nMOS device</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ioff (pA)</td>
<td>167</td>
<td>159</td>
<td>175</td>
</tr>
<tr>
<td>Ion (µA)</td>
<td>98.3</td>
<td>315</td>
<td>839</td>
</tr>
<tr>
<td>F-factor (V/V)</td>
<td></td>
<td>0.53</td>
<td></td>
</tr>
<tr>
<td><strong>pMOS device</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ioff (pA)</td>
<td>96.5</td>
<td>53.1</td>
<td>357</td>
</tr>
<tr>
<td>Ion (µA)</td>
<td>119</td>
<td>225</td>
<td>390</td>
</tr>
<tr>
<td>F-factor (V/V)</td>
<td></td>
<td>0.38</td>
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</tr>
</tbody>
</table>

Substrate shielding

The Flexfet™ bottom-gate proves to be an effective shield against substrate biasing of ± 20 V. The nMOS device showed less than 12 pA of leakage current increase and only 20 mV of unwanted $V_t$ shift. The pMOS outperformed the nMOS with only 1.2 pA of Ioff increase and 10 mV of unintentional $V_t$ shift. Figure 6 illustrates the shielding effect of the bottom-gate with respect to substrate biasing or trapped charge in the BOX. In standard SOI devices, the substrate is coupled to the channel (white region) through the substrate/BOX/channel parasitic MOSFET. So any potential placed on the substrate will attract carriers to the channel-BOX interface, changing the local carrier concentration and effectively adjusting the $V_t$ and possibly creating a leakage path from source to drain. Similar behavior occurs due to radiation-induced trapped charge in the BOX. With the Flexfet™ BG, these effects are negated because there is no longer direct coupling from the substrate to the channel-region and the highly-doped p+ BG does not allow for channel inversion at the BOX-channel interface.

![Side-by-side comparison of standard silicon-on-insulator transistor and Flexfet™ device illustrating shielding effect of the bottom-gate.](image)

Figure 6. Side-by-side comparison of standard silicon-on-insulator transistor and Flexfet™ device illustrating shielding effect of the bottom-gate.

Similar tests investigating the effects of substrate biasing on standard SOI devices were conducted. Their results exhibit $V_t$ changes of approximately 0.55 V and 0.75 V for their nominal nMOS and pMOS devices, respectively. Figure 7 compares the $V_t$ shift of the Flexfet™ with this recently reported data. It should be noted that the BOX thickness of the standard SOI devices tested was 38% thicker than that of the Flexfet™, 2000 Å vs. 1450 Å. A thinner BOX would imply a stronger coupling effect and would result in larger $V_t$ changes. However, this was not observed in the double-gated device. Demonstrating the effectiveness of the bottom-gate in shielding the transistor from unwanted $V_t$ shifts caused by potential on the substrate.
Figure 7. Threshold voltage shift as a function of substrate potential comparing standard silicon-on-insulator transistor and FlexFet™.

Acknowledgments

The author would like to thank the Boise State University McNair Scholar’s Program – David Hall, Helen Barnes, and Greg Martinez – as well as everyone at American Semiconductor – Dale Wilson, Rick Hayhurst, Doug Hackler, Dr. Parke and everyone else – for their invaluable guidance and support for a young engineer/scholar and infinite patience with a chronic procrastinator.

References


The following study examined perceptions of positive traits in homosexual relationships. Students (n = 216) and professional counselors (n = 96) read one of three variations of a transcript of a couple's counseling session that were identical in all aspects except for the names of the couple members and associated pronouns, implying sexual orientation (either John and Amy, Amy and Jennifer, or John and David). Participants then rated the couple's level of commitment, satisfaction, investment, and closeness. Surprisingly, the student group perceived no differences between the couples, but the counselor group perceived the gay and lesbian couples as having higher levels of the positive relationship traits. Implications regarding counselor bias are discussed.

Introduction

In an ideal world, an individual or group of individuals would always be assessed based on their own personal attributes and actions. Unfortunately, however, this is not always the case, especially for those individuals belonging to an outgroup. This tendency affects all areas of life, but psychological research has tended to focus on ingroup versus outgroup distinctions based on race, skin color, gender, religious affiliation, age, disability, and sexual orientation.

The research regarding sexual orientation has grown steadily over the last century. Kinsey and associates were certainly a catalyst in this field when they began to examine human sexuality in general in the middle of the last century. Their findings that homosexual acts and thoughts were far more common than previously believed rocked American society. Their research took the notion of sexual orientation from a dichotomous field with a minute minority falling in the homosexual category, and expanded it to a prism where total heterosexuality and homosexuality were the minorities and everyone else fell somewhere in between. Although much of the current culture may still tend to believe in the dichotomous model, the work done by Kinsey opened up a new venue in which researchers could begin to explore not just homosexuality, but society's view of homosexuality.

Prejudice based on sexual orientation is a growing area of study. It is not surprising to find that patterns of prejudice towards gays, lesbians, and bisexuals follow the general pattern of prejudice over all. Jellison and colleagues found that in heterosexual male participants, there was a negative correlation between attitudes toward heterosexuality and attitudes toward homosexuality, showing the common practice of ingroup versus outgroup bias. Prejudice relevant to sexual orientation is a function of both negative preconception and simple ignorance. For example, in 1997, Eliason found that a large percentage of participants were generally ignorant when it came to stereotypes and social concerns that both involved and affected bisexuals.

The majority of this research has focused on prejudices and attitudes towards non-heterosexual orientations in general. In order to better understand these overlying biases it is important to take a closer look at more specific areas of perception affected by prejudice. The current political climate regarding gay and lesbian relationships makes such research even more valuable. As social scientists, it is important to understand not only the true nature of non-heterosexual relationships, but also the way in which the general populace perceives those relationships.

The current study examines individuals' perception of commitment, satisfaction, investment, and closeness in a non-heterosexual relationship as compared with a heterosexual relationship. Previous research has shown that, in general, gay and lesbian relationships are no less satisfying, close, or well-adjusted than are heterosexual relationships. In 1978, gay, lesbian, and heterosexual couples were compared on a measure of “marital” adjustment, and no distinguishable differences were found between the groups. Other research has found similar results, with gay and lesbian relationships having no significant differences in relationship satisfaction, compared to heterosexuals. When it comes to relationship commitment, there is less extant research, but that which has been
done does not suggest either more or less commitment in homosexual couples, and it is likely that emotional qualities related to relationship commitment are similar in both heterosexual and homosexual couples. However, this may not be the commonly held view among the general populace, and may also differ in regards to perceptions of gay males as opposed to lesbians. In 2002, Hewitt and Moore found that there were different constructs of homosexuality regarding lesbians and gay males, stating that, “It would seem prudent, then, that researchers avoid conducting research in which homosexuality is used generically to refer to both lesbians and gay men, as beliefs about lesbians and gay men may well differ” (p. 70).

In the current study it was expected that gay, lesbian, and heterosexual couples would be perceived to have different levels of commitment, satisfaction, investments, and closeness, based only on the sexual orientation of the couple. Because previous research has noted that gay males are perceived as being less emotionally involved in their relationships, it was expected that the gay male couple would be perceived as having the least amount of commitment, satisfaction, investments, and closeness. The lesbian couple was expected to be perceived slightly more favorably, with the heterosexual couple being perceived as having the greatest amount of the aforementioned qualities.

Commitment is the subjective state of dependence that individuals experience daily regarding their relationship. Commitment is hypothesized to be a function of three interrelated factors: (1) the level of satisfaction with the relationship (or the degree to which a relationship is experienced as gratifying); (2) the quality of a relationship’s alternatives (or the perceived desirability of the best available alternative to the current relationship), and (3) the size of investments in the relationship. Investment size is defined as “the magnitude and importance of the resources that are attached to a relationship—resources that would decline in value or be lost if the relationship were to end” (p. 597). Closeness is defined as “people’s sense of interpersonal interconnectedness” (p. 597).

As with many psychological studies, the initial participant group in this research was made up of students attending a metropolitan university. It was expected that some amount of bias against non-heterosexual couples would be found in this population. However, certain subgroups within the American culture are expected to be less biased in their views towards others. Because of specific ethics and sensitivity training, professional counselors and therapists are expected to fall into this category. It is important that this expectation hold true because the nature of the helping professions, such as counseling, demands a significant level of trust and understanding between the client and the therapist. Unfortunately, past studies have found that this is not always the case. Although the primary hypothesis of this study was that perception of commitment, satisfaction, investments, and closeness in non-heterosexual couples would be lower than the levels perceived in heterosexual relationships, it was also expected that professional counselors would perceive less of a difference between the control and experimental groups as compared to the difference perceived by the student group.

One must also recognize that there are numerous other factors that may affect an individual’s response to the relationships of others, especially different others. One such area is that person’s desire to be socially acceptable. Current social norms teach us that there are certain behaviors and beliefs that are beneficial for us to conform to if we wish to participate and be accepted in society. At times an individual’s personal beliefs may contradict these socially accepted beliefs, but that individual will attest to holding those beliefs in order to appear acceptable to others. Sexual orientation tends to be a volatile and somewhat taboo subject in the American culture, while at the same time gaining support in political circles to combat prejudice. Because of this duality, participants’ desire to appear socially acceptable should be assessed.

Hypotheses

To summarize, three major hypotheses were made in the current study. Hypothesis 1: It was expected that for perceived levels of commitment, satisfaction, investments, and closeness, college students would perceive the gay couple as having the lowest levels of the qualities, the lesbian couple as having slightly more, and the heterosexual couple as having the highest. Hypothesis 2: Conversely, no significant differences in the experimental groups were expected to be found when testing professional counselors. Hypothesis 3: It was anticipated that there would be a significant difference in the levels of commitment, satisfaction, investments, and closeness in the gay male and lesbian group as perceived by the student population compared to that of the counselor population.

Method

Participants

This study included two separate participant groups. The initial participant group consisted of 216 undergraduate students attending a metropolitan research university in the Northwestern United States. The students were enrolled in a general psychology course and were given the option to participate in ongoing research to fulfill
partial course credit. The demographic break down of the participants was as follows: 109 of the participants identified as female, and 107 identified as male. The participants were asked to identify their race or ethnicity; 81% identified as White, 6% as Hispanic, 1% as Black, 2% as Asian, and 11% as other or did not respond. The mean age of the participants was 20.6 years ($SD = 4.4$) with a range from 18 years to 51 years. The participants’ current romantic relationship status was assessed; 46% were currently single, 6% were dating more than one person, 30% were dating one person, 4% were engaged, 7% were cohabitating with their romantic partner, 6% were married, and 1% declined to answer. In response to the extended sexual orientation scale, 65 of the male students identified as exclusively heterosexual, 1 as exclusively homosexual, and 41 had mixed responses. For the female students, 64 identified as exclusively heterosexual, 3 as exclusively homosexual, and 42 had mixed responses.

The second group was asked two additional demographic questions. They were asked to identify which professional licenses they held; 9 held a LPC, 15 a LCPC, 9 a LMFT, and 37 a LCSW, 17 held a Ph.D. or Psy.D., and 11 of the respondents held other licenses. It should also be noted that 8.33% held multiple licenses. The participants were also asked how long they had been in practice. The mean time was 20 years ($SD = 8.67$), ranging from 3 to 40 years.

Materials

**Independent variable.** Participants were asked to read an excerpt from a fictional couple’s initial counseling session. Participants randomly received one of three variations of the transcript that were identical in all aspects except for the names of the couple members and associated pronouns. The control group (student group $n = 72$, counselor group $n = 27$) read about a couple with the names Jennifer and David. The first experimental group (student group $n = 73$, counselor group $n = 36$) read about a couple with the names John and David, and the second experimental group (student group $n = 71$, counselor group $n = 33$) read about a couple with the names Jennifer and Amy. The names used in the transcript were chosen from the most popular names for children born from 1974 to 1984 as listed by the Social Security Administration. The four names used were also chosen because of their gender specificity in order to accentuate the perception that the couple was either heterosexual, gay, or lesbian.

The transcript was brief, and in it the issues addressed by the couple include general, mild dissatisfaction with the relationship. An example of a conflict experienced by the couple was given. The example involved one partner prioritizing a career opportunity over a five-year anniversary celebration, and feeling that (s)he would be accused of infidelity.

A pre-test asked four professional counselors whether the fictional transcript appeared realistic. Each of the counselors who were asked to review the transcript was licensed to practice counseling and therapy in the state in which the research was developed. They held varying degrees of higher learning; two held Ph.D.s, one held a Psy.D., and one held a M.A. All four counselors attested to the transcript’s seeming authenticity.

After they read the transcript, all participants were asked to write a short response to two questions about the couple’s relationship. First, they were asked to write about what they felt the major issue or issues were in the relationship. Second they were asked what, if anything, the couple could do to overcome them.

**Dependent variables.** To measure perceived commitment, satisfaction, and investment, the participants responded to a seventeen item assessment that was a modified version of the Rusbult, Martz, and Agnew scale. The original scale has all items in first person (e.g., “My relationship is close to ideal”); the modified version used in the current study changed all items to refer to the couple from the transcript and asked the participants what they believed the likelihood of the statements was (e.g., “How likely is it that this couple has a relationship that is close to
their ideal?”). Participants responded to the items on a 7-point Likert scale ranging from 1 (very unlikely) to 7 (very likely). There were seven items assessing commitment, five items for satisfaction, and five items for investments. Internal consistency for the composite measures was very good (alpha = .83 for commitment, .85 for satisfaction, and .80 for investments).

The participants were next presented with the Inclusion of Other in Self Scale (IOS) pictograph representing seven different levels of interconnectedness, or relationship closeness. The scale uses seven pictographs of two circles that grow consecutively closer, so a rating of 1 (choosing the two circles that are barely touching) indicates the least amount of closeness, and a rating of 7 (choosing the two circles that are nearly on top of one another) indicates the greatest level of closeness. Participants were asked to circle the image they felt most accurately described the relationship of the couple about whom they had read 3. Demographic questions were then asked. Participants responded to questions regarding their age, gender, race/ethnicity, and relationship status, and in the counselor group licenses held, and length of time in practice.

Finally the participants responded to a forty-question social desirability scale 25. Responses were on a 7-point Likert scale ranging from 1 (not true) to 7 (very true). Examples of the questions asked include, “I have said something bad about a friend behind his or her back” and, “I never regret my decisions.” Internal consistency for the social desirability measures was good (alpha = .70 for self deception, and .79 for impression management).

Procedure

For the student participant group the survey occurred in a classroom setting. The participants were given 60 minutes to complete the full survey. Most participants completed the survey within 15 minutes. Following the conclusion of the survey the participants were thanked for their time and debriefed regarding the nature of the study.

The participant group consisting of professional counselors was mailed the survey along with a cover letter and standard consent information. The cover letter invited the recipient to participate in the enclosed survey to help the researchers better understand perceptions of people in relationships. They were also informed that in order to complete the research, the researchers require professional counselors to complete the survey. The letter directed the recipient to contact the researchers if he or she wished to be debriefed on the full nature of the research. One participant contacted the researchers and requested a report of the results of the research; this was provided.

Results

Hypothesis 1

The first hypothesis expected that for perceived levels of commitment, satisfaction, investments, and closeness, student participants would perceive the gay couple as having the lowest levels of the qualities, the lesbian couple perceived as having slightly more, and the heterosexual couple perceived as having the highest levels. A series of one-way analyses of variance were conducted to test Hypothesis 1, one test for each of the four dependent variables (commitment, satisfaction, investment, and closeness). No significant differences were found in commitment, \( F(2, 214) = 1.03, p = 0.36 \), satisfaction, \( F(2, 213) = 0.12, p = 0.89 \), or investment, \( F(2, 214) = 0.03, p = 0.97 \). As previously mentioned, perception of closeness was measured using the Inclusion of the Other in Self Scale (IOS). As with the other dependent variables in the student group, these means were not significantly different, \( F(2, 213) = 0.55, p = 0.58 \). Thus, Hypothesis 1 was not supported. For means and standard deviations on all four of the dependent variables for both the counselor and student group, please refer to Table 1.

Hypothesis 2

In the second hypothesis, no significant differences were expected to be found in perceptions of the three groups when testing professional counselors. As with the first hypothesis, a one-way analysis of variance was run for each of the four dependent variables (commitment, satisfaction, investment, and closeness). Contrary to the hypothesis, significant differences between the groups were found for satisfaction, \( F(2, 93) = 5.21, p < 0.01 \), and investments, \( F(2, 92) = 7.95, p < 0.001 \), and marginal significance was found for commitment, \( F(2, 92) = 3.04, p = .053 \). Interestingly, the gay couple was perceived as the most satisfied, the lesbian couple slightly less satisfied, and the heterosexual couple as the least satisfied. The same pattern held true for investments. The gay couple was perceived to be the most invested, followed by the lesbian couple, with the heterosexual couple perceived as significantly less invested than either the gay or lesbian couple. For commitment, the lesbian couple was rated as the
most committed, followed by the gay couple, and the heterosexual couple rated with the lowest level of commitment.

As with the student population, no significant differences were found among groups in perceived closeness. Although the differences were not statistically significant, \( F(2,82) = 1.27, p = 0.27 \), the trend in means showed a similar pattern as the other dependent variables, with the heterosexual couple being perceived to have the lowest level of closeness (refer to Table 1).

Hypothesis 3

The third hypothesis conjectured that there would be a significant difference in the levels of perceived commitment, satisfaction, investments, and closeness for the gay male and lesbian groups in the student sample, compared to the counselor sample. Paired samples t-tests were completed for each dependent variable.

For the first experimental group (gay male couple), there was a significant difference in the level of investments perceived by the student population and the counselor population, \( t(105) = -2.21, p = 0.03 \). The difference in perceived commitment was marginally significant, \( t(105) = -1.75, p = 0.08 \). The difference in closeness was also marginally significant, \( t(101) = -1.75, p = 0.08 \). No significant difference was found for perceived levels of satisfaction. In sum, for investments, commitment, and closeness, the counselors perceived the gay couple to have at least marginally higher levels of these variables than did the student sample.

Perceived closeness was the only significant difference in the second experimental group (lesbian couple), \( t(95) = -2.65, p < 0.01 \). Again, the counselors perceived the lesbian couple to have a higher level of closeness than did the student sample.

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Student</th>
<th>Counselor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Standard Deviation</td>
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<tr>
<td>Commitment</td>
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<td>Control</td>
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<td>Gay</td>
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<td>Lesbian</td>
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<tr>
<td>Satisfaction</td>
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<tr>
<td>Gay</td>
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<tr>
<td>Lesbian</td>
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</tr>
<tr>
<td>Investment</td>
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<td>Control</td>
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<td>Closeness</td>
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</tr>
<tr>
<td>Lesbian</td>
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<td>1.48</td>
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</table>

*Note.* Scores range form 1 to 7 with the higher number representing a greater perception of the given quality.
Discussion

The results of this study were surprising on a number of points. First, because prior research had found that gay males were perceived as having less emotional involvement in relationships, it was expected that in this study the student sample would perceive the gay male couple as having the least amount of commitment, satisfaction, investments, and closeness. However, this was not the case as the student sample did not perceive any significant differences between the groups.

It is suspected that the insignificance found in the students’ perceptions between groups might have been due to the type of instrument used. The Likert scale used in rating the levels of relationship commitment, satisfaction, and investments was designed such that the number 1 was labeled very unlikely, the number 4 was labeled neutral, and the number 7 was labeled very likely. The student responses for all groups tended to stay near the value of four. It is possible then that the students may have opted to remain “neutral” in general, rather than infer a conclusion about any of the couples. This did not seem to be an issue with the counselor population. Perhaps their professional position allowed them more confidence in asserting a position on the quality of relationship for the couples.

Secondly, the counselors were not expected to perceive any differences between the groups. This assumption was made because of the specialized training counselors receive, and the higher level of education. Just as in the first hypothesis, the results of the study tended to be opposite of those theorized. The counselor group did perceive a difference between the gay, lesbian, and heterosexual couples. Even more surprising is the fact that the non-heterosexual couples were perceived to be more committed, satisfied, and invested in their relationship than was the heterosexual couple.

Finally it was hypothesized that students and counselors would perceive different levels of commitment, satisfaction, investments, and closeness in gay, lesbian, and heterosexual couples when these two groups of participants were compared to each other. This hypothesis was supported, but again contrary to the expected direction. The student group perceived lower levels of commitment, investment, and satisfaction for the gay couple than did the counselor group. However, this was not due to the fact that the students perceived the gay couple as having any less of these traits than the heterosexual or lesbian couple. Instead the difference in the groups appears to come from the counselors perceiving the gay couple as being more committed, invested, and satisfied than the other two conditions. The same holds true with the lesbian couple being perceived by the counselors as having greater levels of closeness than did the student group.

The results of this research are especially noteworthy for the field of counseling psychology. All groups of clientele have the right to expect their relationship with a professional counselor or therapist to be free of prejudice that might affect the quality of care they receive. This is true regardless of whether the prejudice is positive or negative. A gay or lesbian couple should reasonably expect to receive the same level of care as a heterosexual couple. However, the results of this study imply that may not be the case. It could be inferred that some counselors may be withholding negative feedback from gay and lesbian clients in order to avoid the appearance of bias.

At first it would seem that these responses might be the result of impression management for greater social desirability on the part of the participants. However, the only instances where social desirability was correlated with the participants’ perceptions of the couple disproved this possibility. Impression management was found to be significantly correlated with the professional counselor group’s perceived level of satisfaction for the couples. However, the correlation was negative in nature, so that the higher the level of impression management, the lower the level of perceived satisfaction. Secondly, this trend held true for the control group as well as the experimental groups.

It was not unreasonable to expect that the gay and lesbian couples would be perceived as less committed, satisfied, invested, and close to their relationship or partner. Even though studies have shown no real differences in levels of the aforementioned qualities in gay and lesbian relationships compared to heterosexual relationships, previous research has shown that heterosexist tendencies in our society result in non-heterosexual couples being viewed less favorably. Moreover, non-heterosexual relationships are faced with additional stressors not felt by heterosexual couples. Fear of prejudice against their sexual orientation, internalized homophobia, and having a relationship that cannot be legally recognized are just a few of the stressors with which gay and lesbian couples must deal. Looking back on the results now, it is possible that the professional counselors may be aware of these stressors for homosexual couples, and therefore might infer that couples who stay together in spite of these societal hurdles have stronger levels of commitment (i.e., if you stay together through all of this, you must really be in love).

These additional stressors were noted by only five of the counselors who responded to the survey. Ninety-three of the 96 counselor respondents listed a number of possible issues they felt the couple would be dealing with. However, even though 69 of those respondents read about the gay or lesbian couple, only five noted that sexual orientation might play a role in their current relationship issues. Interestingly, of the five counselors who mentioned sexual orientation when listing the issues that the couple was facing, two self-identified as homosexual, one as
bisexual, and two as heterosexual. Examples of the types of comments these few counselors made include: “possible homophobia may also be involved,” “societal pressures on gay relationship (e.g., David may not feel comfortable asking for time off for anniversary because he doesn’t disclose his gay relationship at work, or this is not perceived as a ‘real’ anniversary),” and, “with gay couples anniversary could mean anniversary of the day they met, the day they moved in together, or the day of a commitment ceremony, it doesn’t imply marriage.” To be fair, it should be emphasized that the transcript was designed in such a way that sexual orientation was not implicated as a stressor by the couple.

**Implications for Future Research**

The results of this research are intriguing and warrant further study in this area. However, there are a few areas in which future researchers on this topic could improve. First, the measure used to assess perceived commitment, investment, and satisfaction could be improved in two ways. By removing the option of “neutrality” in the responses, future researchers might be able to avoid the unvaried responses seen in this research from the student group. If these results were replicated in future research with a modified Likert scale, the results could more strongly support the notion that the group honestly did not perceive any differences between the conditions. Second, the scale used in this research rated how likely the participant felt the statement was. A number of the counselor participants noted on their survey that the wording of these questions made them difficult to respond to. To prevent this in the future, it might be more beneficial to word the statements for levels of agreement rather than likelihood (e.g., change from “How likely is it that this couple has a relationship that is close to their ideal?” to, “This couple has a relationship that is close to their ideal”).

Further research may also benefit from using a transcript that is more in-depth. A number of the counselor respondents noted on their survey that they felt that the transcript was too short for them to confidently respond to the questions asked about the couple. In doing this, it might increase the likelihood of counselors responding to the survey. Although the response rate of 9.6% for this research was close to what can be expected for an unsolicited survey, even a small increase in number of responses would help bolster the statistical significance. In addition, we have no way of knowing differences between people who did respond and those who did not.

It might be beneficial to gather responses from a captive audience of professional counselors. This would minimize the chance of allowing respondent bias to affect the results. In the current study it is difficult to generalize the counselor responses to all professional counselors because we cannot rule out the possibility that those counselors who responded to the gay and lesbian conditions were not generally more prone to a positive prejudice towards gays and lesbians. In this case, it would also be useful for future researchers to gather data on how frequently the counselor works with non-heterosexual clients, as individuals and as couples.

Finally, future research would benefit from a sample that is more ethnically diverse (recall that both of the current samples are primarily White). It is possible that a different pattern of results would arise from minority participants; not only would this sample be more representative of the population, but individuals with any minority status in the U.S. may have greater insight into the issues such as prejudice which may be perceived as affecting the experimental couples in this research.

**Conclusion**

The field of research in gay, lesbian, bisexual, and transgender studies is growing steadily. It is important that researchers in the social sciences continue research of this nature, not only for the benefit of those individuals in the gay and lesbian communities, but for society in general. In order to better understand gay and lesbian couples we must also understand how they are perceived. We encourage future researchers to continue work in this area.

**Acknowledgements**

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References


Relationships between Self-esteem and Factors Known to Affect College Attendance

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Department of Psychology

There are many factors impacting student’s decisions to attend college. Researchers investigated self-esteem, perceived academic abilities, and intended college attendance in a group of high school seniors involved in a program aimed at assisting them get into college. Participants were 83 senior high school students (males = 28, females = 55) from various high schools in Idaho. Many students come from low socioeconomic backgrounds and were Caucasian (Caucasian = 40, Latino = 28, Asian = 6, African American = 2, and other = 6). Participants were asked 39 questions concerning intended college attendance, self-esteem, perceived academic abilities, and other factors that influenced their decision to attend college. Significant correlations were found between self-esteem and perceived academic abilities.

Introduction

The U.S. Department of Health and Human Services (1997) conducted multiple surveys between 1967 and 1994 that revealed a drop in the income to poverty ratio scale from 0.74 to 0.66, suggesting that families are getting poorer and are in need of more help if children are planning to attend college in the future. Understanding the adversity that low-income families face, it is relatively easy to see the difficulties that students from these families endure when considering post-secondary education. The financial portion of school is only part of the equation. Because of the growing number of families classified as low-income, programs helping low income youth overcome adversity are becoming increasingly important.

TRiO is an educational opportunity for low-income and disabled Americans and is present at more 1,000 colleges, universities, community colleges, and agencies in America. Their commitment is to provide educational opportunities for all Americans regardless of race, ethnic background or economic circumstance. Along with this commitment, Congress established a series of programs to help low-income Americans enter college, graduate and move on to participate more fully in American society. While student financial aid programs help students overcome financial barriers to higher education, TRiO programs help students overcome class, social and cultural barriers to higher education (http://www.coenet.us).

As mandated by Congress, two-thirds of the students served by TRiO must come from families with incomes under $28,000, where neither parent graduated from college. More than 2,700 TRiO programs currently serve nearly 866,000 low-income American students in sixth through twelfth grade. According to TRiO, 37% of the students are White, 35% are African-American, 19% are Hispanics, 4% are Native Americans, 4% are Asian-Americans, and 1% are listed as "Other," including multiracial students. TRiO programs serve twenty-two thousand students with disabilities and more than 25,000 U.S. veterans (http://www.coenet.us).

Students in TRiO’s Upward Bound program are said to be four times more likely to earn an undergraduate degree than are those students from similar backgrounds who did not participate in TRiO. Nearly 20 percent of all Black and Hispanic freshmen entering college in 1981 received assistance through the TRiO Talent Search or Educational Opportunity Center programs, and students in TRiO’s Student Support Services program are more than twice as likely to remain in college than are those students from similar backgrounds not enrolled in the program (http://www.coenet.us). Considering students in TRiO programs come from underrepresented groups, either in ethnicity or socioeconomic status, and the low percentage of these groups in higher education (Sallie Mae Foundation, 2006), the effect of TRiO in diversifying higher education has been immense. Yet, there are still students who choose not to pursue post-secondary education despite having resources provided by TRiO, which poses the question of what additional factors impact student’s intention of attending college.
There are many factors that influence student’s decisions to attend college, such as finances, peer influence, and self-esteem (Coleman, 1965; Garfinkel, 2003). Due to the similarities between students that constitute TRiO programs, such as low-income status, it is important to examine some of these factors, such as neighborhood quality, which was related to self-perceived academic abilities, and in turn, related to school effort (Ceballo, McLOyd, & Toyokawa, 2004). In addition to the previous study, Gerardi (2005) found academic self-concept (perceived academic abilities) to significantly predict academic performance in low-income students. Furthermore, academic self-concept was shown to better predict learning persistence by other studies (House, 1992; Li-Fang, 2006).

Furthermore, Rosenberg (1989) has shown there to be a relationship between socioeconomic status and self-esteem. Contrary to these findings, some studies have found no relationship between socioeconomic status and scholastic self-perception (Schmitz, 2006) or socioeconomic status and self-esteem (Lever, Pinol, & Uralde, 2005). In addition to socioeconomic status influencing student’s self-esteem and perceived academic abilities, a relationship between self-esteem and academic success has developed in the literature. Some studies have found self-esteem to be positively correlated with academic achievement and negatively correlated with counterproductive behavior, like aggression and delinquency (Alves-Martins, Peixoto, Gouveia-Pereira, Amaral, & Pedro, 2002; Donnellan, Trzesniewski, Robins, Moffitt, & Caspi, 2005). In addition, another study found a positive relationship between academic achievement and self-esteem (El-Anzi, 2005) and also, self-control was found to lead to higher self-esteem and higher grades (Tangney, 2004). Yet contrary to the previous studies, Sirin (2004) found self-esteem to have no relationship to academic performance. Because self-esteem has been found to play a role in academic performance, we found it necessary to incorporate a shortened version of the Rosenberg Self-Esteem Scale (Rosenberg, 1989) in our study.

It is in our interest to understand how self-esteem affects adolescents in their pre-college schooling to better help them adjust and become better prepared for higher education. Addressing the problem earlier or during a time when children are seeking the help of others, and doing what we can to encourage and increase their self-esteem would be beneficial to them in many ways. Thus, our study examines how self-esteem relates to intended college attendance. More specifically, we hypothesize that intended college attendance will decrease when self-esteem is low and conversely, intended college attendance will increase as self-esteem increases. In addition to questions about self-esteem, we also asked about the student’s perception of their math skills, writing skills, and grades, family support or pressure, helpfulness of career information and college visits, and level of involvement in TRiO related activities. Researchers felt it necessary to ask exploratory questions due to the relationship between self-esteem and academic achievement. It is well-established that variables such as perception of math skills relate to intended college attendance, but we wanted to examine how other variables known to relate to college attendance relate to self-esteem. Also, these questions have more practical implications for TRiO and are a way to understand student’s perception of common activities and other pressures surrounding college. Researchers hypothesize a positive correlation between self-esteem, greater perceived academic abilities, family support, and helpfulness of career information and college visits.

Method

Participants

Participants were 83 senior high school students (males = 28, females = 55) from various urban high schools in Idaho. The majority of the students were Caucasian (Caucasian = 40, Latino = 28, Asian = 6, African American = 2, and other = 6). All students were involved in a college preparation program designed for low income, underrepresented college students, TRiO. The vast majority of students reported that they planned on attending college. In fact, only seven of the 83 students reported not planning on attending college. Prior to any data collection, this study was approved by the Institutional Review Board.

Materials

Students were asked whether they planned on attending college. In addition, self-esteem was measured by an abridged 5-item version of the Rosenberg Self-Esteem Scale (1989; alpha = .87). Although an abridged version is not ideal, due to lack of time available with students we had to cut it down. In addition to self-esteem, researchers asked questions concerning student’s perception of their math and writing skills, grades, family support or pressure, helpfulness of career information and college visits, and
level of involvement in TRiO related activities. A four-point Likert scale was used, ranging from **strongly disagree** (0) to **strongly agree** (3). In addition to the above items, we collected demographic data.

**Procedure**

TRiO staff members were responsible for survey administration. TRiO staff members pulled students out of their classes at different times of the day and interacted with them on a one on one basis. Staff members read to all students prior to the survey a disclaimer stating that if any questions made them feel uncomfortable they did not have to answer it and they had the option to quit the survey. The survey took 10 to 15 minutes to complete. Students completed the survey on scantron sheets.

**Results**

To examine the relationship between intendance to attend college directly after high school and self-esteem, we ran an independent samples t-test. Given a small number of students that reported that they did not plan on attending college, it is not surprising that we did not find a significant difference in self-esteem between individuals that planned to attend college ($M = 11.65, SD = 3.28$) and those who did not plan to attend college ($M = 10.17, SD = 2.56$), $t(81) = 1.08$. To further examine the influence of self-esteem on variables related to college attendance, we ran correlations between self-esteem and survey items. As displayed in Table 1, many of the factors known to influence college attendance related to self esteem, including receptiveness to career information, college visits, perceived writing skills, perceived math skills, GPA, family support, family pressure, and participation in TRiO activities.

**Discussion**

The goal of this study was to examine associations between those who planned to attend college and those who did not. Some of our hypotheses were confirmed, whereas others were not. Our first hypothesis was that high self-esteem would predict planned college attendance. Previous research has suggested that high self-esteem is related to academic achievement (Alves-Martins et al., 2002; Donnellan et al., 2005). However, it was not found to be significant in the present study, which was likely due to the low number of students who reported they were not planning on attending college after high school. It also may be that we used five questions from the Rosenberg Self-Esteem scale, instead of the full scale due to the time constraints placed on our survey. This possibility should be investigated more because of the strong relation between academic achievement and self-esteem.

There were some interesting correlations between self-esteem and other variables known to relate to college attendance. First, there was a negative correlation between student’s perception of how helpful the career information was and self-esteem. It could be that students are discouraged about their future because they do not have a specific interest or know what they would like to do. Also, there was a negative correlation between self-esteem and how students perceived the college visits. That is, those students who have a low self-esteem were likely to have realized that college was not a possibility through college visits. In this case again, they may be discouraged about attending college. It could be that leaving their social support network makes it difficult for them to go to college. Probably the most interesting finding was that those who had lower self-esteem also reported that their math and writing skills were holding them back from attending college. Perhaps these students have anxiety over their abilities in these areas, which could contribute to lower self-esteem. Also, there was a positive correlation between self-esteem and student perception of adequacy of their grades for college; that is, those who had a higher self-esteem also perceived their grades as adequate for college. Perhaps math and writing skills provide a greater source of self-esteem measure than do grades and therefore, a reference point as to whether they ought to attend college.

**Limitations**

As with any study, there is room for improvement. First, we were not able to survey the entire population of TRiO students, nor were researchers able to ensure the survey was taken in the same setting for each student. Secondly, we did not have an adequate sample size. A third limitation was that we were surveying high school students that consisted primarily of Caucasian females. Fourth, survey length was an issue in the present study. If it were possible to create a longer survey with multiple questions for each
variable of interest, the end results may be different. Finally, our sample was composed of high school seniors who are awaiting graduation and basing their perception on what they foresee in the future. The fact that we did not have access to students who graduated and either advanced to college or not, contributed to a major loss of valuable data that undoubtedly would have influenced our results. Although only seven of the 83 students surveyed reported not planning on attending college after high school, the number could be more than seven that actually do not attend college when it comes time to enroll. Whether they plan on attending college or not is only what they plan on doing in the future and so the variables affecting whether that actually happens might not be measured accurately. In addition, the results in this study are a survey of potential reasons for these students not to attend college, whereas if we had access to graduated students, they could inform us better about which variables actually contributed to them not advancing to college in retrospect.

Conclusion

Our study examined the influence of self-esteem on intended college attendance, as well as the relation between self-esteem and several variables known to predict college attendance. Future research should examine why self-esteem is negatively correlated with college visits and career information. This could help guidance counselors and staff involved in planning college visits change aspects of college visits and career information in order to make them more appealing to students with lower self-esteem or help students not to be discouraged if they do not have a specific academic plan. Another interesting correlation found in our survey was that lower self-esteem individuals were more likely to report their math and writing skills were holding them back from attending college. Research should be done to discover if students are dealing with anxiety or are actually lacking in their math and writing skills and how each affects self-esteem by utilizing standardized test scores and comparing them to their perceived abilities. Regardless, to enhance college enrollment, guidance counselors and staff involved in college recruiting programs need to address issues such as anxiety over math and/or writing skills and self-esteem.

Tables

Table 1. Correlations between self-esteem and various survey questions.

<table>
<thead>
<tr>
<th>Survey Question</th>
<th>Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td>The career information did not help me in any way.</td>
<td>-.26*</td>
</tr>
<tr>
<td>The college visits made me realize that college was not a possibility for me.</td>
<td>-.41***</td>
</tr>
<tr>
<td>My writing skills are holding me back from going to college.</td>
<td>-.37***</td>
</tr>
<tr>
<td>My math skills are holding me back from attending college.</td>
<td>-.49***</td>
</tr>
<tr>
<td>My grades are adequate for college.</td>
<td>.40***</td>
</tr>
<tr>
<td>My family is supportive of me going to college.</td>
<td>.38***</td>
</tr>
<tr>
<td>My family is pressuring me not to attend college.</td>
<td>-.34***</td>
</tr>
<tr>
<td>How many hours per month do you participate in TRiO activities?</td>
<td>-.24*</td>
</tr>
</tbody>
</table>

Note: *p<.05, **p<.01, ***p<.001
Acknowledgments

I would like to acknowledge Dr. Mary Pritchard for her help and guidance through the research process and for always having an open door. I would also like to thank David Hall, Helen Barnes, and Greg Martinez, for providing such a great opportunity and creating a network of people that truly helped me succeed.

References

The goal of this ethnographic study is to document the way that tourism has affected the subsistence fishing activities on the island of Venado, Costa Rica. A key question is how tourism has forced the residents of this fishing community to make choices between a traditional economy and the need to survive in an expanding global market of ecological tourism. The method of research is ethnographic. The goal is to portray cultural issues through the life of the islanders. I hope that this research will create a better understanding of the cultural impact of global change on the people of Venado Island, as well as a wider appreciation of their rights and perspectives in this rapidly changing region of the Americas.

Ethnographic analysis is inductive and builds upon the perspective of the people studied. The primary strategy used in this study is participant-observation. The participant-observer maintains two primary data gathering tasks: developing interpersonal familiarity within the community through participation of typical, daily interaction, combined with note-taking, photographs and tape recording of natural developing events and interviewing to collect life histories or narratives (Spradley, 1979). The work of Laura Gonzales, Comunidades pesquero artesanales en Costa Rica, help me to understand the social dimension in the development of different small scale fishing communities in the Pacific Coast of Costa Rica, as well as the social and economic dynamic and the techniques in the small-scale fishing in Costa Rica. The works of A. Nygren, Environment as Discourse: Searching for Sustainable Development in Costa Rica and Maria Eugenia Bozzoli, A Role for Anthropology in Sustainable development in Costa Rica served as theoretical basis for my ethnographic field work. This study departs obviously from traditional ethnography yet from a different perspective, as Scheper-Hughes stated in her work on Death without Weeping: The Violence of Everyday Life in Brazil, “it departs from woman perspective and from a phenomenological grounded anthropology, anthropology with one’s feet on the ground (Scheper-Hughes 1992). This ethnography is about the people of Venado Island, the control over natural resources and their realities and dilemmas in this changing globalized world.

Venado Island is located in the Gulf of Nicoya to 22.5 kilometers from Puntarenas, the largest city in the Gulf of Nicoya. Isla Venado is about 35 to 45 minutes by boat from Puntarenas. There is public transportation via ferry and then bus to the closest inlet on the Peninsula, La Penca and from here, there is no public transportation. The only other way of transportation to reach the island is by boat (see figure 1 and 1a). During low tide the Gulf’s waters can retreat up to 50 meters from La Penca dock. Therefore, boats have to be anchored in deeper waters of the mangrove forest where people must walk through mud to reach the Penca dock. Since there are no deep-water docks I walked through the mud on several occasions when I traveled to Puntarenas or Jicaral to use the Internet. Venado Island is surrounded by two more islands, Chira and Bejuco.

Venado Island

When I first arrived to Puntarenas, Costa Rica was early in the morning. The weather was more humid that I expected. I met a professor, Arturo Medrano at the University Study Abroad Consortium. Dr. Medrano served as my cultural liaison in the island. Later that day, I was introduced to Marvin Salas, my host dad on the island. He and his son, Marvin Junior were waiting for me at the coast ready to leave to the island. Marvin was very surprised when Arturo introduced me to him, he could not believe how well I spoke Spanish; I told him that I was Mexican. We boarded Marvin’s motor boat to go the island in the company of Arturo, Marvin, Marvin Junior or Bebe, in addition to three girls from Puntarenas. The girls work for a Puntarenas bank and they wanted to talk to the people about financial opportunities within their bank. In forty minutes we arrived at the island.
I began the afternoon by having lunch with Marvin, he confessed me how glad he was that I am Latina and speak the same language; I was introduced to the rest of the family: Eugenia, Marvin’s wife, Douglas (22), Tony (21), Ariely (15) and Bebe, Marvin Junior who is 13 years old. I felt really pleased with their welcoming; they treated me just as another member of the family. After lunch I had a deep but informal conversation with Marvin and Eugenia about the government of our countries. It is very usual among Latinos to talk about the economic, political and social problems in our countries. They expressed their dislike of the United States. They see the United States as a monster that controls Latin America, and takes advantage of the resources of this continent. They told me that they hate the idea that rich gringos are buying land in Costa Rica; “tourism is not the best option to improve the economy of this country because only few benefit from tourism, and of course poor people are the most affected” said Eugenia. Marvin told me that the Costa Rican government is planning to transform the island into a tourist site. They want to build big hotels, restaurants and bars as well as to relocate the people from the island. The islanders have resisted the idea of being turned out of their homes. They believe that the government does not care about them and wants to sell their patrimony to rich Americans. Currently, the islanders are legally able to keep their land. They also informed me that the population in the island is around one thousand people, and that most of them are family. Almost everybody on the island is related to each other. After our conversation, Eugenia and Marvin told me how happy they were to have me at their home. I became their “Mexican daughter.” At night, we spent a fun time at the local bar, eating, drinking and dancing. I was very happy to enjoy the company of such genuine people. They enjoy the music with such a passion that makes me feel myself again. I ended the night very tired but very happy to have the company of the islanders.

The island social structure

The first settlers of the Venado Island were the Chorotegas, an indigenous group, that left the island for unknown reasons. After the abandonment of the island, some Spanish colonizers established themselves for a short period but they left the island for the lack of basic necessities like fresh water. Around 1912, the first families establish themselves permanently in the island. They formed three small communities: Oriente, Jicaro, and Florida which still exist today. The population of Venado is distributed among the three communities. Oriente forms part of Jicaro since there is no clarified borders between the two communities. The center of the island is not inhabited due to the thick forest and the steep slope of the mountain. The residents living in the south coast of the island in La Florida comprise forty percent of the population. The residents from Jicaro and Oriente have a more dense population sixty percent of the population of the island live in those communities. The forces that influence the values, social norms are the family and the church. There are four churches, one Catholic and three Protestants. The islanders live in a very peaceful life. They live in harmony with each other. They are very easy going and easy to talk to. The common Costa Rican phrase is “pura vida” a phrase that they used all the time to express their enjoyment of life. There is not a judicial representation or official on the island. There is a police department building which has become a home for a family. Marvin informed me that they used to have a policeman, who wanted to charge Venado residents for his service. Since they did not want to pay him, the policeman left and they have been without police for four years. According to Marvin, “there has never been a conflict, looting, assaults or any kind of problems where the police enforcement is needed. The island is a very secure and peaceful place.” Marvin says that he can leave the door open or any tool in the open, because no one will attempt to steal them. Also, his neighbors are his relatives and they take care of each other.

The family is a very important institution on the island. The family takes care of itself and this could be the reason why there is not formal or central committee to coordinate the population. The Universidad Nacional has helped the community to implement development associations that help with the organization of the community. The University has also contributed economically and morally to help the people of Venado. The island has thirteen associations among them associations of development, eco-tourism, fishermen from both sides of the island, progressive women from Jicaro, the association of women, the pioneers from Florida and the association of united youth of Venado Island. Each association has a purpose within island society. Eladio Aragona Solano is the president of the association for development on the island and a pastor of the Baptist church. He loves to serve the community and the people, and he told me that his association is the main association in the island. Currently now he is waiting for the approval of the government to receive material to reconstruct the roads in the island. He is a well respected member of the island, community who, as pastor, people trust.

The large extended family of the island creates the context for daily life (see figure 1.1). One of the things that really caught my attention was the way people share their things and the trust in each other; particularly between family and relatives. Marvin lend tools to his neighbors who are his relatives. They also share gasoline for the motor boats, essential services like water and drinks. My first days on the island, I was amazed and confused by all the people who visited Marvin’s home. Eugenia explained that most of those people were their relatives. Marvin and Eugenia’s relatives visit the house at any time of the day, but especially in the afternoon when all the chores are
done. They go in and watch the TV or ask for coffee at the time of “el cafecito” of the afternoon. They use the bathroom, drink water, and use the kitchen. Visitation between households is frequent and very informal.

History of the families

The history of the population in Venado Island began with the migration from families to the island around 1912. The first families that migrated to the island were few and they lived isolated from each other but as more families migrated to the island they started forming two communities, Jicaro and La Florida. One of the first families that first arrived to the island was the Barrios family. Rodrigo Barrios came to Venado when he was a child (see figure 1.2). He is now married and he has the biggest family in the island. He states,

“I am 74 years old and I came to the island when I was 12 years old, so I have 62 years living in Venado. We were not the first to live in the island, there were a few dwellings already, and Marvin’s mother was born here so Marvin’s grandparents were the first to live in the island. I have 17 sons and more than 70 grandsons. The Jicaro is the barrio of los Barrios. I live very happy in the island. I will die in the island. When I was young, I practice the small-scale fishing. I fished only with nets and my boat. I never had money to buy a motor or better tools, that is why I quit fishing 30 years ago and I have never been in the Gulf since then (Rodrigo Barrios, interview 06-13-06).

Nicolas Villegas, a second generation of Venado born residents, recalls the past of the island, the first services, the first school and how they struggled in the past. He relates,

“I am native of Venado Island, I am a second generation of inhabitants of this island, and my mom was one of the first individuals born in Venado. I remember that we were a few individuals living in the island because we had the first school. There were only 18 kids which means there were only 6 or 8 families, and this is 40 years ago. The first school was in Jicaro under a mango tree, and the school was established thanks to the support of some people from San Jose who came to Island every summer for vacation. They noticed that there were kids without receiving a formal education, so they fought to establish the first school. Later, a new school was built. It was a structure covered with leaves and bark but one day a storm blew away the school and even the health minister said that our community was not a good spot to build a school. When the population increased, the minister built a school, I couldn’t attend the new school, I only studied to third grade that was the highest grade in Venado before the new school was built. I quit school to help my dad, there were difficult times. I was 10 and I decided to help my family” (Nicolas Villegas, interview 6-21-06).

A daily round in the island

Venado islanders rise between 5:30 AM to 6:30 AM, although this varies from house to house. In my host's house Eugenia rises everyday at 6:30 to prepare breakfast and coffee. By 7:30, I was already having breakfast. Everyday, when the older kids have gone to school, the mothers begins their daily chores. In my host home, the chores included the following: cooking, washing plates, washing clothes, sweeping the floors, feeding the chickens and the goats and preparing food. Eugenia’s younger sister helped her with the chores and later I helped them with some of those chores, especially cleaning the house. After lunch, people often rest in the shade in a fishing net strung hammock-style; they play with the babies, listen to the radio, watch TV, and often sit silently in the breeze of the sea. In the late afternoon, between 4 and 5 PM, most people end their chores and have a cup of coffee. There is not set dinner time, but people generally eat anywhere from 5 to 9 in the evening. A lot of people use the evening to relax and to visit their relatives and watch soap operas. Most of the people do not wear shoes, only sandals and the kids are always bare foot. When they go to the port of Puntarenas or to San Jose they wear shoes. They wear fresh clothes to better suit the hot and humid weather. They are very clean people, the houses are always clean and smelling good. They take a shower everyday and their clothes although old for everyday use, are always clean.

The residents live a relaxing life in the island; the slow tempo keeps a certain harmony among the islanders. The first days on Venado, I was surprised every morning by the noises of the forest. After a week or so I got used to the noise of the birds and the kids who are awake very early in the morning, around 5:30 and 6 a.m. Children awake very early to make visits. Also, Eugenia wakes up early to prepare the coffee and breakfast, the traditional pinto which consists of fried rice and beans accompanied with scrambled eggs and a cup of coffee. Marvin and Eugenia wake up early so he can move the goats and cows. The children help him with the animals; they feed them and chase
them when they got lost in the forest. Marvin’s family also has chickens and they produced lots of eggs which Eugenia sells. A few families’ have animals like cows, pigs, chickens and goats, sheep.

Social services

“Life in Venado was a simple life. We lived in darkness pulling water from an underground well until 1990 when an Italian organization came to Costa Rica through a fishermen union from Puntarenas. The fishermen union made contact with the Italians who were very thrilled by the social movements; they explained to the Italians the marginalization of the small-scale fishermen in Costa Rica, they explained that the state did not provide any kind of support program for the fishermen, there was no and still there is no financial credit for the fishermen because we are stereotyped by being unethical and irresponsible. The Italians helped us to move out from the sub development by helping us built a mini aqueduct and the installation of electricity. The Italians provided the material and the engineering and Venado islanders provide the labor. La Florida was helped by a German organization to build an aqueduct but those aqueducts did not work in either side of the island, the water was not pure enough to drink, it was salty. When the president José María Figueres was in power, he came to Venado and asked the community what we need the most. We said we need water. He promised to provide us with potable water and we kept remind him of this promise. Venado Island has water and electricity because we work extremely hard. With the help from Montaña Grande community, we built 25 kilometers of pipes that pass under the sea to the island. Montana Grande has natural potable water and the community agreed to share the water with Venado Island. Finally, the Universidad Nacional helped us to bring phone lines to the island. UNA has been providing support and developing associations of development in the island (Nicolas Villegas, interview 06-21-06).

Venado Island has a few social services that serve the community. In Oriente, there are an elementary, middle school and a kindergarden where children from Jicaro and Oriente attend school. La Florida also has a school. The island has only one high school or tele-secondary which is based on a distance learning education program where all the adolescents form both sides of the island attend. The students follow the instruction by video lectures with a professor’s support. Not all the children attend school, some prefer to play all day or other students just quit going to school. Only five persons have left the island to continue with their higher education. Two of those who left are Marvin’s nephews, and the other three Nicolas Villegas’s sons. Oriente also has a health center which is visited by a doctor from the Peninsula once a week. For medical emergencies, the islanders must travel to the Municipal Hospital in Puntarenas or the health center in Jicaral. Most of the residents of Venado have their own home phone and cell phones as well other media as radio and television. They are not limited by the remoteness of the island. There are even a few residents that have a computer at home. The residents of Venado have “Pulperías” or small convenience stores managed by the families. These small stores sell the most necessary comestibles but the islanders travel once in a while to Puntarenas or Jicaral to buy the things not available in the “Pulperia.” Eugenia’s brother has a pulperia right in front of Eugenia’s home. There are two more pulperias in Jicaro and Nicolas’s pulperia in the Oriente. Florida has one pulperia.

Personal space and islanders’ view of foreigners

Western notion of personal space, are unknown on Venado Island. The room that was assigned to me for my personal use was not only for my own use was also used by the family. They keep their clothes there and they went in when they need something. They respected my belongings, but the rooms are for general use. I always kept the door open during the day except during night. The same happens when you are in a group of people, they get close to you, touch you and hug you. When Ticos talk, especially Venado islanders, they are very passionate, keep eye contact at every moment and touch your arm or shoulder, shake hands and give you hugs. When they talk to girls they call you (sweetie, love, beautiful), amorcito, mi vida, linda, vida, the language is very affectionate too.

Some of the islanders have a negative view of foreigners, especially because they have had bad experiences with them. Eugenia told me about a girl, a college student from San Jose, who came to the island to interview the people and to take pictures. The behavior and attitude of this girl really bothered Eugenia. She is still furious of the way this student approached the people from the island. This student had no tolerance and knowledge about Venado Island people. She apparently treated them as savages. I was told that she took a picture of some little girls who were playing outside wearing no shoes. She commented that the only things these girls needed was a loincloth (taparabo). This outsider was ignorant and ethnocentric about her own culture and country, and the people from Venado felt very insulted by her behavior. On another occasion, a group of college students and a professor from Universidad Nacional came to the island to have meetings and workshops with the different development associations in Venado. When they were leaving, one of the students started to take pictures of the island. Eugenia and I were sitting on an
confessed to me that she wants to come with me to the United States by hiding in my suitcase. “Yo me voy con usted, pero volveré algún día. Los ancianos dicen que no iban a hacerlo. Ariely, Marvin y Eugenia’s only daughter, was raised watching a lot of TV. I asked if they would like to leave the island and live somewhere else? The young people say they would love to, especially the young people. They ask questions about the American culture, if it is as they perceive it on television.

Growing up I was punished by my mom physically with an occasional spanking. People from the island see this punishment as a way to correct bad behavior.

One example of the sexual division of labor is the partition of responsibilities in the island. On one occasion, I accompanied Eugenia to the beach to help China weight the trash. On the island, there are people who are in charge of weighting the trash and taking it to Lepanto or Jicaral to be processed. All the islanders have to pay a fee of 35 cents per kilo of garbage. I was informed by China that the women associations, on both sides of the island, are in charge of collecting, weighting, and taking the garbage to the port. The development association of Venado Island almost put in charge the women association to collect the garbage of the island. La China complained that no one from the Arañas, (the women association from Jicaral and Oriente) wants to help her. I noticed that she was doing the job herself. She said that only she and Eugenia are the ones in charge, no one else from the women group wants to help. Not only do the women not want to help, but the people in general refused to pay for the services. They would rather burn the garbage or throw it in the ocean. This is exactly what the development association wants to prevent, contaminating of the environment and the propagation of disease. Eugenia informed me that the same is happening on the other side, La Florida, only two or three women are in charge of the whole load of garbage and the same people do not want to cooperate with them.

When La China finished weighting and collecting the garbage, and went to Lepanto and Jicaral (the garbage processor ports) there was a problem. They initially refused to accept the garbage because supposedly she did not call to inform them that she was making a delivery. She stayed there for hours until they finally agreed to accept the garbage. They buried the garbage in a huge hole, after separating the plastics all the recyclables. When she came back, she was tired and mad because, she said, that it is always the same problem every time she collects and takes the garbage to the port. She is getting tired and she said she might quit. The Women’s Associations from both sides of the islands have labor roles that men do not practice. With the support of Universidad Nacional de Costa Rica, the women associations received financial and instructional support to establish programs that help the women to learn skills. The association of women from Jicaral and Oriente created a Pulperia and a room to teach each other to be tailors. They then sell the clothing to the islanders. La China goes to Puntarneas once a week to receive instruction on this occupation and then she teaches the girls on the island. The associations of women from Florida, with parallel support from UNA have a bakery. In addition, some women make scrubs from natural fibers and they sell their products off of the island.

Gender division of labor

A significant element of life on the island is the sexual division of labor. I was informed that most of the women in the know how to fish with the cuerda or the cord which is the most rudimentary fishing tool and sometimes they go and fish with the men. I had the opportunity several times to go fishing with the cuerda with my host family. Marvin and Eugenia took two young girls, Eugenia’s nephews, Ariely and me to fish using this method. Eugenia and Ariely were having a lot of luck fishing and even the little girls were encouraged by Marvin to fish, and they learned at such early age. Women’s fishing, however, is not for commercial sale but for family consumption.

Women spend most of their time cleaning, taking care of the kids, cooking and doing all the house work. I have not seen any man doing house work, yet I have often seen men spending time with their children. Sometimes they carry their children in their arms. They are very affectionate parents and the affection is mutual between parents and children. I have not seen any corporal punishment toward the kids though but I have heard comments from Eugenia and other parents about hitting the kids that do not behave well. As a Latina, I found this behavior normal.

Growing up I was punished by my mom physically with an occasional spanking. People from the island see this punishment as a way to correct a bad behavior.

One example of the sexual division of labor is the partition of responsibilities in the island. On one occasion, I accompanied Eugenia to the beach to help China weight the trash. On the island, there are people who are in charge of weighting the trash and taking it to Lepanto or Jicaral to be processed. All the islanders have to pay 35 cents per kilo of garbage. I was informed by China that the women associations, on both sides of the island, are in charge of collecting, weighting, and taking the garbage to the port. The development association of Venado Island almost put in charge the women association to collect the garbage of the island. La China complained that no one from the Arañas, (the women association from Jicaral and Oriente) wants to help her. I noticed that she was doing the job herself. She said that only she and Eugenia are the ones in charge, no one else from the women group wants to help. Not only do the women not want to help, but the people in general refused to pay for the services. They would rather burn the garbage or throw it in the ocean. This is exactly what the development association wants to prevent, contaminating of the environment and the propagation of disease. Eugenia informed me that the same is happening on the other side, La Florida, only two or three women are in charge of the whole load of garbage and the same people do not want to cooperate with them.

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Youth and leisure time

I talked with Douglas, Eugenia and Marvin's oldest son. I realized the pressure on the need young people to leave the island and experience other life styles like those they see on television. Douglas is 22 years old and he has been a fisherman since he was a little kid helping his dad. He now does his own work, of course with his father since this is a family tradition. He and all the family love to hear me talk about the United States, the life style of the “gringos” especially the young people. They ask questions about the American culture, if it is as they perceive it on TV. I ask if they would like to leave the island and live somewhere else? The young people say they would love to leave but come back someday and the older people say they would not. Ariely, Marvin and Eugenia’s only daughter confessed to me that she wants to come with me to the United States by hiding in my suit case. “Yo me voy con usted en su maleta para los Estados Unidos.” Her cousin told me “yo me voy de indocumentada para los Estados Unidos”
that she will leave with me as undocumented to live in the United States. I imagine the young people wish to have a
different future beyond the island. Some young people leave school, and only a few continue with their high school
education. Ariely has her parents’ complete support to finish high school and pursue a technical education. She is in
high school. With three more years to go. She wants to get a technical education in Puntarenas to get a job, save
money and have a stable economic position and then study in a university. Eugenia told me that they want her to
study and be independent so if she gets married she won’t be dependent of her husband.

Most of the young women and men go to the plaza located at Jicaro. They play pool, arcade or just meet
with their friends to chat. Venado islanders love soccer. There are teams from Jicaro and Florida and most of the
time they play against each other. Before the game, the players chat and eat tacos which are different than Mexican
tacos. The Costa Rican version consists of rice, meat or fish and yucca and a small tortilla. There is another dish
called vivoron, which consists of fried pig skin with rice, cabbage, yucca with juice lemon over the cabbage. Some
residents set up their little restaurants during the games which is another way of generating income. When the game
starts they play music while the spectators enjoy the game, food, a beer and the music. In the month of July, a group
of women from Jicaro and Oriente, Eugenia and I started an exercise group. We walked everyday except for Sunday
around the island periphery. The first days were tough for me especially climbing the steep hills of the Albina road.
People from Florida have a fitness group too but they usually do not walk around the island, they only climb Albina
road. Most of the residents of Venado from older to the youngest residents keep in good shape. There were young
adults that ran around the island everyday or in the afternoons the boys and young men organized running
competitions around the island. They also have soccer practice when the sun is set. On one occasion, a North
American young man from Peace Corp, taught the residents of Venado to play football. The young man was a little
bit frustrated because they did not understand the rules but they played football anyway. It was great fun, especially
for us, the spectators.

Small-scale fishing tradition

On one occasion, I had the opportunity to go fish with the children, Marino 15 years of age, Bebe, Ariely
and Brian. The kids learned the fishing techniques in a really early age; by accompanying their parents. They know
how to catch the bait (carnada) and how to navigate by themselves in the boat-they even know the best spots to fish.
They cooperate with each other, while one is taking care of the carnada, another is driving the panga (boat), and a
third is raising the anchor. I was impressed by their cooperation. Marino, the oldest of the group, was in charge of
driving the panga. Brian, Bebe and Ariely’s cousin was in charge of taking care of the bait. Bebe prepared the
cuerdas for everyone and Ariely was in charge of filling bottles with drinking water for us to share. They all had
their own cuerda but since Brian was in charge of the bait, he inserted the bait in the hooks for everyone. They joke
with each other, making fun of one another for the poor luck to catch fish or if someone lost their bait in sea without
catching anything. Unfortunately, they did not have any luck fishing. none of the kids caught any fish, they gave up
and we return to the island. We could see a turtle swimming close to our panga. Upon the return from fishing, again
the same cooperation was evident, all worked together to separate tools, throw away the bait and to set the boat in
the shore at the beach (see figure 1.3).

Marvin and I talked everyday during dinner about the island and his experiences in the fishing practice, he
told me that 25 years ago the fishing was very productive. He recalled his grandparents having the luxury of
choosing the biggest fish and throwing away the smaller ones.

“The shrimp, there was no need to fish it, it came alone to the beach, it was amazing the quantity and quality of
shrimp, we fished more than 80 kilos of shrimp, now 15 kilos is much if we are lucky” (Field notes 06-08-06). The
small-scale fishing has changed a lot in the last 20 years, Marvin remember the good days we they did not have the
techniques they have today. They only used the cuerda, bote a remo (paddle boat), and at night they did not have
lights, but they all cooperated with one another to have a successful catch. The small scale fishing practices have
changed with the innovation of fishing techniques and equipment while the fish has decrease in numbers.

Fishing on Venado Island

“Mankind has always been characterized for exploiting its natural surrounding
and has survived with what the environment provides.
The first families to settle in the island were not entirely dependant of the small-
scale fishing practices. Fishing was a secondary activity; we opted to cultivate the
land first and then fish to complement our economy. The fishing activity was
something hard to practice because we needed to travel to Puntarenas to sell the
fish; Puntarenas was the economic power. Little by little the fishing activities
increased in the island, we started by fishing Mero, then the shark using rudimentary tools and then the fisherman was introduced with the invention of the ice, new fishing techniques were introduced as well and fishing became our lives” (Nicolas Villegas, interview 06-21-06).

The economy of the island is heavily dependant on the small-scale fishing practices. Almost everyone in the island practice subsistence fishing, from men, women and children. The small-scale fishing activities are the first link in the fishing industry of the Gulf of Nicoya. The small-scale fishermen usually fish in local waters and sell their product to one of the fisheries on the island or directly to the fisheries in Puntarenas. This is particularly true of shrimp, which then is sold for exportation. The local fisheries in the island are either family-owned or cooperatives. The most valuable seafood caught by the islanders is the jumbo shrimp. The mangroves serve as host ecology for the shrimp to lay their eggs before retreating to the deep waters of the ocean.

The small-scale fishermen on Venado employ traditional techniques such as the use of fishing rods, the traditional cuerda or rope, tackle, throw and drag nets (see figure 2.1). They rely on a paddle boat or motor boat for transportation to and from the fishing grounds. In the last 30 years the small-scale fishing techniques have change considerably and have brought a social change as well with the introduction of new techniques from foreigners. In the following story, Marvin describes these changes:

“There have been a lot of changes in the fishing techniques in the island, before the only tool was the cuerda, everybody used it, and we didn’t use the Trasmayo or Taiwanese line like nowadays. These changes made that lots of people decided to fish as a way to survive. The Jumbo shrimp was not fish because nobody knew how to trap it before but later people introduced the Trasmayo and they started to fish the Jumbo. With the introduction of Trasmayo, people from everywhere in Costa Rica sold their land to buy boats and fishing equipment like Trasmayos to become fishermen. Back then fishing was a good business; but little by little the fishing practice has declined until now that there is no much left in the Gulf of Nicoya. Fishing does not generate much and it was worse for the people who came with no experience. If the fisher has the experience to survive and if he has to fish with cuerda, the most rudimentary tool, he’ll survive. But to people who do not know what traditional fishing is and they only know how to use the Trasmayo, they have a difficult task to survive” (Marvin Salas, interview 06-04-06).

In some of my conversations with Marvin Salas, we talked about the foreigner population and their influences and effects on the small-scale fishing techniques. According to Marvin, the Chinese immigrant population brought new fishing techniques, huge fishing ships with hundreds of Chinese immigrants that were brought illegally so they work as slaves. The Chinese practiced external exploitation, everything that they fished was sold to other countries so in some way the Chinese did not immediately affect the small-scale fishing because the small-scale fishermen from the island and Puntarenas only sold their product in Puntarenas for national exportation. However, the Chinese ultimately affected the local and small-scale fishermen production because they had the technology, cheap labor, and new techniques, and the knowledge to know the location in the sea with the most fish. While the small-scale fishermen used very rudimentary techniques such as the cuerda and drag nets, Marvin explains that “by those times, when the Chinese took hand in the commercialization of fish, I was very depressed because thanks to the low production of fish he was close to losing his license. I was going to sell my license to a Taiwanese fishermen because the small-scale fishermen thought that there were no more fish in the Gulf of Nicoya” (Marvin Salas, field notes 06-07-06).

The Chinese fishermen improved the fishing activity in the Gulf of Nicoya by introducing the Taiwanese line which consists of a long line with more than two hundred hooks bailed with live bait. This technique extracted massive catches from the ocean of the gulf. They also introduced the Rastra, a huge net that sweeps the sea floor trapping any kind of marine species. The Rastra is very destructive because it exterminates large populations of sea life that are not commercially important. I will explain the ecological problems and the prohibition of these techniques in the Gulf of Nicoya later in this section.

“Thanks to the introduction of these techniques we also had the opportunity to buy motor boats which were cheaper back then. Now it is really hard to buy one, millions of colons, which we can’t afford (Marvin Salas, field notes 06-07-06). Marvin has a motor boat, a paddle boat and other tools such as rastra, Trasmayo, Taiwanese line, cuerdas and nets. Not all the islanders own their own fishing equipment. Some of the fishermen in the island work as peons for other fishermen that have their own equipment and required hired labor.
Puntarenas is the main port where local, national and international fishermen sell their catch. This port city has become a multicultural place where more of the commercial associates are of South American or Taiwanese origin which is affecting the small-scale fishermen and the national fishermen. The small-scale fishermen are selling their fishing licenses to foreigners especially to Taiwanese, Colombian and Venezuelan fishermen. In Puntarenas a center of fisherman include 1198 (small-scale fishing), 744 (medium), and 211 Advanced and 60 very large (Costa Rican Channel News, 07-06-06). The small-scale fishermen have access to two kind of license to fish: a license to fish in the Gulf and a license to fish out of the Gulf, in other seas. Unfortunately, the small-scale fishermen and the nationals are selling the fishing license to fish out in the ocean to foreigners because they can not afford a trip to fish in the ocean. A medium size fishing boat spends 30 millions Colones on a trip out of the Gulf of Nicoya. The competition among the fisherman in Puntarenas is causing the national fishermen to retire because they can not compete with the advanced equipment of the foreign fishermen, Marvin used to have a license to fish out in the ocean but he cancelled it because he could not afford it.

The average catch per fisherman in the Gulf of Nicoya has been declining over the last thirty years. This could be explained by the increase of fishermen which has caused an overexploitation and the environmental deterioration of the Gulf. The fishermen from Venado have respond to this issue by spending more time fishing. The Costa Rican government, in the last ten years, has responded to the over exploitation in the Gulf by implementing a bi-annual fishing restriction known as “Vedas.” Veda was introduced and created to let the species reproduce and replenish fish stocks in the Gulf. Veda starts in the month of May and lasts two months after the end of July. Fishermen are allowed to fish the whole moth of August and after that they have one more month of Veda. During the months of Veda the government provides financial assistance to the fisherman who have a legal license to fish. This fishing prohibition takes a tremendous toll on the lives of island people who have no other means of survive. In the following story Marvin describes his feeling about this period of no work and no income:

“The government does not provide the traditional fisherman with any kind of economical or financial assistance, the only help is Veda. During the three months of prohibition, the government provides a minimum amount of money to survive during prohibition that is not enough even to eat. During the months of Veda, in order to receive the (45 mil colones) financial aid from the government we need to contribute to the community by working in the schools, clearing the roads, and painting. If there is any kind of job at the school, the board of education presents the project and people are assigned to work at the school. If there is work at the streets another group is assigned” (Marvin Salas, interview 06-04-06).

During Veda, Venado’s economy is hit hard. Economic and sustainable problems become so serious that some people move temporally to San Jose or Puntarenas to find a job. Jose Antonio Solano Salas, who moves to San Jose during Veda to work in an electronic company, and has been a fisherman since he was able to walk, share sentiments that watch that of his cousin Marvin: “los 45 mil colones que ofrece el gobierno no son justos ni comprensibles, los isleños pescamos para subsistir y mantener la familia, el futuro de los pescadores va acarbarse, tendremos que ir nos a buscar otro futuro” (The monetary help from the government, 45 thousand colones are neither fair nor comprehensible. We, the islanders pescamos para subsistir y mantener la familia, el futuro de los pescadores va acarbarse, tendremos que ir nos a buscar otro futuro) (Antonio Solano Salas, interview 06-05-06). Some islanders move out of the island during Veda but the ones that stay find other ways to survive. Some opt to violate the Veda law and fish illegally risking their fishing license.

On one occasion I had the lamentable opportunity to observe a man fishing illegally and witnessing the consequences of his actions. That day I heard a lot of commotion outside so I decided to go out. Marvin, Eugenia, Marvin’s wife and her brothers and some kids were at the beach watching a boat. They told me that the man in the boat was being chased by the marine patrol; he was caught fishing during Veda and all the fishermen were concerned and feeling pity for the man. They said he is going to lose everything, license, boat, and fishing tools and the worse thing is that he is a peon, so all the equipment and the boat is not his. Some were reluctant about the situation because they think he deserved it, he never respected Veda and he had been fishing several days. Others think that it is not fair because they said that as fishermen they are poor and during Veda they really suffer. Marvin weighed both sides. He said that the man deserved to be arrested by fishing during Veda. He states that “yes, it is true that we really have a hard time surviving during Veda because the government help is just not enough, 45mil colones is not enough to survive during two moths, we have to pay for electricity, water and food for the family, that’s why some opt to go and fish but if they don’t respect Veda they are damaging their future and the future of others because they are working against nature and the law” (Marvin Salas, field notes 06-20-06).

Not only Marvin disagree with people fishing during Veda, there are lot of islanders who disapprove of this behavior especially the use of the rastra, one of the most harmful, banned techniques used in the Gulf of Nicoya.
“The rastra is one the most harmful techniques, if you ask me. Who are the ones that exterminated the shrimp in the Gulf of Nicoya? It was not the big shrimp embarkations from Puntarenas, it was us, the small-scale fishermen, because we do not let the shrimp grow and we do not respect Veda. I am totally against the rastra. I have never used it, and the day that I will have to use this technique, will be because I am starving to death. The Gulf of Nicoya is collapsing, people need to respect Veda, and if we do not respect this restriction we will destroy our own future. I think it will be hard to restore the Gulf because it is already too damaged” (Nicolas Villegas, interview 06-21-06).

In the first week of July, the second month in Veda, it was obvious that the people were having difficulty they had no money, no food and no work. Their situation is hard and somehow desperate; they can not wait until the end of the month to receive the government financial assistance, their families need to sustain their family. In that week, I noticed a lot of activity in the sea, lots of fishermen have been fishing with the rastra to fish shrimp even though is prohibited to fish during Veda and even worse is totally prohibited to use the rastra since is so destructive and harmful. I asked Marvin and other islanders about all the activity in the sea and he told me that during these days most the people do not have much to eat. In July the Gulf becomes like a hot spot for the shrimp so everybody takes advantage to catch the shrimp. Unfortunately, the most efficient tool is the rastra (see figure 2.2). The fishermen are aware of how harmful it is. Later that day, Eugenia told me to go with some of her relatives to fish with the rastra; I accepted the invitation although somehow reluctant due to Marvin’s objections. He was mad because they were risking the family fishing equipment and their own license. The young fishermen gathered all the equipment and we got in the panga or motor boat and started getting away from the island to the middle of the sea. They covered their faces and wore long sleeve shirts even though the day was cloudy. They did not want to get burned by the sun that was hiding behind the clouds. There were several pangas using the rastra. Some days ago I saw people fishing with rastra and even one of the fisherman commented that he hasn’t seen so many pangas in the Gulf not even in normal time. The young fishermen threw the net and the rastra.

The rastra consists of a net with two heavy squares of wood that keep the rastra on the sea floor. Once deployed, it is like a wall that goes sweeping the sea floor and trapping all marine species in an effort to catch the precious shrimp. The rastra works at certain speed. They keep the panga going at a slow pace and when they feel that it has enclosed enough they give a 180 degree turn to completely trap the product. They then start pulling the wood that runs along the sea floor, and then the net and put the entire catch in the panga. I was amazed by all the marine species that died only for the shrimp. We separated the shrimp and edible fish in a big bucket and threw away the rest of the species. The birds and pelicans got fed with the rest of fish. They used the rastra twice, only the first attempt was successful. The second time was not successful. This time they left the rastra in the sea for a shorter period because they were informed by other fishermen that the marine patrol was coming from Puntarenas. So they did the work very fast and we left the place at a high speed towards the island. On our way to the island, they were informing the other men to hurry up and hide from the patrol. I was so astonished by the devastation of a single fishing tool. No wonder the rastra is prohibited (see figure 2.3).

The Veda or prohibition time demands that the islanders, especially women, the obligation to support the family by employing an informal economy. Some women organized bingo games at the island plaza where the prizes are comestibles such as rice, beans, salt or sugar. The participants are mostly women, young girls and boys that want to contribute to their families’ economy. I observed the game several times. I never played but I did help the younger participants to fill the bingo table.

Another important and indispensable food supplement during Veda time is the clams. When the islanders of Venado do not have any money and the men do not fish, women are the ones that provide the food. They spend long hours looking for clams, when they find lots of them they sell them to other people on the island. The search for clams is primarily a woman’s job, although young girls and little boys also help with this activity and once in a while men accompanied their wives and children. The clams are in the sand always under the rocks, but only when the tide is low people are able to find them. I went with Eugenia and the family to find clams and pianguas (another kind of shell-fish). We went to Florida to look for the almejas (clams). Eugenia’s brother told us of a zone where he found several kilos of them and he was going to sell them, so we went there. We divided up and Eugenia and I went to look for the clams while Marvin, Ariely, Bebe, Marino and Brian went to the mangroves to look for Pianguas. Eugenia and I started to dig in the sand, which is very hard work. You have to bend your back or sit on the rocks, or only bend your knees because the rocks are like knives especially in Florida among the mangroves. The only tools used are a knife or stick, a cube to hold the clams and your own luck to find them. After an hour or so a group of women and two kids from the Florida joined us, even though the day was cloudy it was hot and humid. I was wearing water proof boots that Marvin loaned me because the rocks were very sharp. All of the women were only wearing sandals (see figure 2.4). The time went fast and enjoyable, since we were chatting while we worked. The women mentioned how useful the clams are during Veda time. I excavated in the sand just as Eugenia told me, it was hard to distinguish the clams from the rocks because both of them are covered with sand. But I was able to help Eugenia to fill the bucket. Marvin and the kids had luck finding pianguas, I have heard that finding pianguas is harder than clams because the pianguas are hiding in the mangroves and is hard to get through them because you can
cut or scratch yourself in the mangroves. They collected 100 or so pianguas and we went home. Eugenia prepared the clams with rice, they were delicious and they prepared the pianguas with onion, banana, tomatoes, and lime.

Globalization and the tourism industry in Venado Island

Globalization has transformed the subsistence economies of Costa Rica’s coastal fishing communities. These small, resource-based communities are particularly vulnerable to structural changes in the Costa Rican economy. One of the aspects of globalization impacting the island is tourism which is one of the fastest growing industries in the world (Turner 1973). It has the capability to bring the underdeveloped areas closer to the modern world and it can generate great opportunities for rapid economic growth. Developing countries, as well as less developed regions within developed nations are increasingly looking towards tourism as a potential contribution to growth and development (Loukissas 1978). Yet in recent decades, a different kind of tourism has made its appearance: Eco-tourism.

Eco-tourism has been hailed as a panacea: a way to fund conservation and scientific research; protect fragile and pristine ecosystems; benefit rural communities; promote development in poor countries; enhance ecological and cultural sensitivity; instill environmental awareness and a social conscience in the travel industry; satisfy and educate the discriminating tourist; and, some claim, build world peace. Costa Rica is ecotourism’s poster child (Honey 1999). Costa Rica has become a popular vacation site, in any tourism booklet Costa Rica appears as a country that offer all the necessary components to satisfy the millions of tourists that are looking for adventure, culture, beaches, and especially ecological experiences. Costa Rica has marked its beautiful tropical environment as an opportunity of economic development and within the tourism industry; eco-tourism has become a very popular form of investment. Tourism developers are looking for rural areas to promote eco-tourism. Honey (1999) asserts that Eco-tourism often involves seeking out the most pristine and isolated areas on earth. The physical separation and relative isolation have made islands very popular tourist destinations and Venado Island is currently trying to implement tourism.

Currently organized tourism does not exist on Venado Island, but there is one organization that is very interested in introducing eco-tourism. The association of Eco-Tourism of Venado Island favors the idea of ecotourism development, to preserve the natural surroundings and to benefit the local economy. The Association’s goal is to begin a small-scale ecotourism where the islanders could control the impact and protect the island’s natural and human environment. Jose Angel Gomez, the main representative of the association explains that “The main reason to create an association of eco-tourism on Venado Island is to find new way to earn income because fishing is not prolific anymore in the island. The association was created with the help of Universidad Nacional of Costa Rica three years ago. The activities that we would like to offer to the tourists are information centers, ridings in horses around the island, artistic works, our youth in Venado has a lot of artistic talent and we should utilize it. We do not intend to harm the fishermen with the implementation of eco-tourism; the tourists will share and learn from our community” (Jose Angel Gomez, interview 06-04-06).

The association of eco-tourism does not receive the complete support of the community. Many islanders have misconceptions about tourism, they are afraid of the consequences that any kind of tourism might bring to the community. Roberto Bolivar, representative of the association, asserts that, he, as well as many islanders disapproves the national or massive tourism because it harms the values and the environment of any community. That is why he believes eco-tourism is a better option for Venado Island. Bolivar states, “the social, environmental and cultural impact of eco-tourism in the island would be small because the tourist will interact with the community, the experience will be cultural and environmental exposure, and we can show the tourist to respect our values” (Roberto Bolivar, interview 06-04-06).

Venado Island has two cabins to provide shelter to tourists who visit the island. Both of the shelters are located by the beach and close to the cantina bar where the tourists have access to pool tables, karaoke, food and drinks. Venado Island does not have more accommodations for tourists but it does offers it’s beautiful environment and its genuine people. During the time I spend on Venado, I saw tourists only once in the local bar. They usually do not explore the island much, but spend the one day or two on the beach and at night they go to the local bar to sing along the karaoke machine, drink and have fun. Since there is no transportation from Puntarenas or Jicaral to the island, the tourists sometimes are exchange students or people who have contact with Venado islanders provide transportations from the mainland.

The Venado residents do not have much experience with tourists. Some of the islanders do not like the idea of tourists invading the island. My host mother, Eugenia Salas, believes that tourists have different values, ones that she would not like their daughter or sons to mimic. She also thinks tourists do not and won’t respect the islander’s values. The simple idea of foreigners on the island bothers her. My presence in the island was taken differently; my family loved the idea of me being Mexican or Latina because they know we share a lot of cultural and moral values especially the language. When I talked to the women about this issue, said that they disliked the idea of tourism or
eco-tourism in the island. Their main concern is the cultural impact on the islanders, they think that instead of the tourist learning from their culture they can be intruders. According to Honey (1999) ecotourism, as opposed to conventional tourism, holds out the twin promise of educating the visitor and respecting the local culture; however these two goals conflict. Eco-tourism is still struggling to find models for authentic cultural exchange that respects the rights of the host and satisfies the curiosity of the visitors.

Venado is a small island whose infrastructure is still developing and currently would not be able to support the increased population of tourists. Also all water and energy are generated to the consumption of the local community, while space and food resources are also limited. The overall limitation of Venado infrastructure is land which is an essential and main component to intensify the construction of housing for tourists, pathways across the mountain and the coast.

Rights to land on Venado Island

Venado residents have no rights to titled land because of the Costa Rican law, Ley sobre la zona maritima terrestre No. 6043, which restricts the development on the small islands and the repartition of land. The only documents that the islanders have to prove their occupation of land in the island are zoning maps that described the conditions of the soil, and the space occupied by a particular family. Those documents or maps were granted by the municipality thanks to the “Plan de Regulador” or zoning plan. This documentation does not prove ownership rights; it only proves the occupation of land. In some cases this documents also proves the illegal occupation of land by people living within on property banned or restricted by the law (Ley Maritima Terrestre 6043). Most of forty families from Oriente and Jicaro communities are under this legal situation. These residents of Venado had been living with the uncertainty of not knowing when the law will be enforced. The implementation and enforcement of the law seldom occurs due to insufficient municipal funds, nevertheless, there is already some native families of Venado that have a legal order to vacate the illegally occupied land.

The first peoples who settle the island were the Barrios, Salas, and Villegas families. They emigrated from other provinces of Costa Rica. Now their descendants, Venado born, have scattered across the island in the three communities. They established themselves on the island and since they were the first ones to settle in Venado, they assumed natural ownership of land. They passed the land to their sons, natives of Venado. My host family on the island, Salas-Barrios, lives under the legal situation of land. I talked with Eugenia Barrios about the Terrestrial-marine law. I immediately noticed her sadness and anger. She said that there is not an option for the islanders, the laws will relocate the people at the end: “Talvez la próxima vez que venga a la isla, nos va a encontrar en el cerro” (Maybe the next time you come to the island, you won’t find us here or maybe living in the steep mountain) (Eugenia Salas, field notes 06-19-06).

According to Terrestrial-Marine Law the marine terrestrial zone is composed of two hundred meters from the coastline. This zone is divided in to two sections: the public zone, which includes the first fifty meters from the coastline and the mangroves; and the restricted zone, which includes the last hundred and fifty meters. In both zones, it is totally prohibited to build houses or any kind of establishment unless the Costa Rican Institute of Tourism, the National Institute of Housing and Urbanism, and the municipality, approve the construction of houses or buildings. The people who are violating this law will be pushed out of their properties and they will have to pay for the demolition of their own houses or properties (Ley sobre la zona maritamo terrestre No. 6043). In Jicaro and Oriente, most of the people have their houses within the 200 meters. In Florida, thanks to the mangroves, they live out of those prohibited buildings but all the fishing equipment is within the forbidden zone (see figure 3.1).

Doña Regina or Virginia Matarrrita lives in the community of Florida. She moved to the island with her parents when she was ten years old and since then she has lived in the island. Her eighteen sons and daughters were born in the island. She is one of the oldest people on the island who still practices small-scale fishing using the most rudimentary tools. She is one of the islanders who have already got a legal order to vacate their premises from the municipality. “I am an old woman, I am 75 years old, and I don’t have much time in this world I believe. I don’t want to leave the island, this is home. I wish they can leave us live in the island, leave us live the way we live as a fishing community” (Virginia Matarrrita, interview and field notes 06-27-06).

Land is the primary issue on the island. Some islanders have opted to wait passively until the municipality and the government decides to enforce the law, while others have formed an association to fight back and defend their rights. The “Alianza” (alliance) is an association that was formed two years ago with the purpose to represent and fight for the community. Its members are the leaders of the different associations on the island and they are advised by the Universida Nacional of Costa Rica. Viviana Bolaños, a young woman from Lepanto and now a resident of Venado Island is one of the main leaders of this association. She is an activist who is encouraging the islanders to fight back. She has fought fiercely for Venado Island, but she also explains that some islanders are confused by the debate:
“A lot of people from the island believe that the Alianza is the one that is causing all the land and tourism issues in the island, and even though we have explained them several times the purpose of Alianza they don’t understand. I am not a native of Venado, but my husband and my sons are from Venado and here is their legacy and that’s why we need to fight. I came to Venado to build a home here, why do I have to leave? Or why I am going to let my husband be thrown away from his land, he was born here and my father in law has been here for than 50 years” (Viviana Bolaños, interview 07-07-06).

Venado residents have many misconceptions about Alianza and this has make the work of Viviana and the other members harder because they do not receive support from all islanders this is a particular dilemma for Viviana as a leader:

“…at the beginning it was very hard, Alianza is an association of community leaders, I was not a leader, and they didn’t know me. A woman, young and with different and radical ideas from all of them, at the beginning it was hard because they did not take me seriously but when they started noticing that my participation was outstanding, that I was useful then they started asking for my opinion to the point that today, if I am not here there is not Alianza. To me this has been a good, interesting and stressing experience. This is something that has no comparison because I felt that I am useful. I live for the community not from the community, I don’t wait for someone to do something and just wait for the benefits, I take action. I am studying, I am receiving educational and leadership instruction from the Universidad Nacional is that’s why the members from Alianza take me seriously now” (Viviana Bolaños, interview 07-07-06).

During my time in the island, there were two very important meetings. I missed the first meeting which was held in Jicaro. This meeting was about the implementation of massive tourism in the island. A representative from the government from the Libertarios party was leading the meeting. Based on reports I heard the meeting was really heated when Alianza appeared. I had the opportunity to be invited to the second community reunion where each of the representatives from the associations was present as well as members of the community. The reunion was planned to organize the community and unify the associations so they can find a solution to the problem of land in the island and the potential impacts of tourism. I was very happy to be at this meeting because ALIANZA was the organizer of the reunion. It was my opportunity to learn more about this controversial association.

It was very interesting for me to be an external spectator to listen, learn and analyze the people’s ideas from another perspective. The reunion started a little bit late and it was chaotic. All the people wanted to talk and discuss their issues. Viviana, the main representative of ALIANZA, was directing the meeting which was hard since all the people wanted to talk at the same time. I felt a lot of tension at the meeting. The atmosphere was tense and with different opinions about the land issue, everybody discussed their issues and defended them without even listen to the concerns of others. There was a man who consistently reminded the people about the law and how it was broken for the people that are living in the public zone. Others expressed the misconception that ALIANZA is responsible that the government wants to relocate people that are living within the 200 meters. Still others argued that they will never find a solution because the community does not speak up; they are just waiting until the law takes effect in the island. I have been informed by several informants that in fact; the law will never be enforced in Venado. The islanders will continue to live in the 200 meter and nothing is going to happen because the municipality has been talking for a long time but the people keep living in the same places. The meeting continued in a seemingly disorganized and heated fashion. Finally, Viviana reminded them what the meeting was about, to formulate a project that could be presented to the senators at congress in an attempt to do something for the people on Isla Venado. Eladio, the president of the development association and Viviana, informed the crowd that they were tired of working and to fighting alone for the community. They formally resigned to their positions in their respective associations.

There was a man besides me at the meeting who did not belong to the community. He remained quiet, observing and listening. I never thought that when he spoke, he was going to be able to change the meeting and the perspectives of everybody attending. “Jose” (a social activist, community organizer, and ecologist from the Universidad Nacional) talked to the crowd as an external spectator but as a national, a Costa Rican. He started by sharing his observations from the meeting. He gave them a lesson and provided examples that made the people understand and get united. He told them that the meeting was based on “I am telling you so you are telling me and you are being the toys of the senators. The senators get a group of people from the island and tell them one thing and promise another, and then gather another group and promise them a different thing. The thing is that they are dividing the community; “divide and conquest” the old same thing is happening in the island” (“Jose” Field notes 06-23-06). Everybody was divided in opinions, ones for ignorance, others for bad information; he told them how easy it is to be defeated if they are divided and that is the tactic of the senators. “Resistance” Jose exclaimed. He told
the group that they need to resist and make the senators respect them, their dignity as islanders and respect their way of life, like the indigenous groups in Costa Rica and in other parts of the world” (“Jose” field notes 06-23-06).

The fishing sector on Venado Island is the most susceptible and the most criticized. People from other parts of Costa Rica ignore how the fishermen and islanders make sense of their lives, the way of life. It seems that the government does not care either and that is why they want to implement the Terrestrial-Marine law and other tourism projects. “Jose” spoke at the ALIANZA meeting of a group of islanders that lived in the worse conditions some years ago. They lived in a small island with no light, and no drinkable water. Yet the government wanted the land where they lived. None of these islanders knew how to read or write, so the government met with each one separately and made them sign a treaty that expelled them from their land. If they could have stuck together, the story could have been different. He made his point that in Venado this is happening in the same way. Everybody is fighting their own battle and not looking for a collective solution. Jose told them that they are opinionated about the law and so it is impossible to find a solution, but he asserted that the law is man made, thus it is not permanent- it is not written in stone. The law is by men and for men and the law has to change, because the laws from a hundred years ago are not applicable in modern times. As people change through time the law must change too to accommodate to needs of the people. The Ley Maritima Terrestre can not apply to Venado Island because it would affect the whole population, especially the houses in the Oriente and Jicaro that are within the 200 meters prohibited. Most of the islanders established themselves by the beach not to break the law, they needed to have their equipment by the beach and also take care of the boats. The situation is different for the Florida residents because that side of the island is covered with mangroves so they built their houses further away from the beach but they will be affected by the law too because they will not be able to leave their pangas or boats in the beach since is public area. This will end their ability to fish.

The government has been very insensitive and incomprehensible about the fishing communities. If they relocate the people who are in the 200 meters, which is something islanders believe will happen, the whole population will be affected for the reasons mentioned above. They are a fishing community and the law does not respect their way of life. The government’s massive projects assure new jobs for the people; new opportunities for the young and more economic stability. Yet will these developments truly benefit the native population? Some portion of the population knows it will not. They disagree completely with massive tourism. They will be relocated and eventually end up without any property. A similar thigh occurred at the Isla Caballo where half the island belongs to foreigners and the rest of the people who live there are resisting the sale of their land. However they will eventually be forced to give up because the government cut the light and water, pushing them to sell. They are also worried about the consequences that massive tourism might bring- for example drugs, prostitution, unemployment and more difficulties for the fishermen. The community supports tourism but only eco-tourism where the community still can handle the situation.

Jose told them that the government wants to trick the people with ghost tourism projects but they all know that Oscar Arias, Costa Rica President, want to sign the TLC (Free Commerce Trade) to promote the massive tourism in Costa Rica. “Jose”affirms that Costa Rica will become another Centro-American poor country like Nicaragua, El Salvador or Mexico. He advised them to fight for what they believe in and what they live for. Jose words not only excited me but they encouraged the crowd. He changed the people’s perspective. For the first time during the meeting, the community began listen to each other. At the end of the meeting they found a solution to the problem in the island. The community decided to write a propuesta (proposal) and take it to the congress after being accepted and voted on by the whole community. They stipulated that they do not want any changes in Venado, they want to remain as a fishing community. So the next step was to set another reunion where the whole population will attend. This is more difficult since many people show no interest. They decided to make a mandatory meeting and they will need the help of the Fishermen Association since they are having the fishermen work for some hours for the community in order to receive the monetary help that the government provide to the fishermen during veda.

I attended to the next mandatory meeting which was held at the youth house. Unfortunately Viviana was depending on the Protestant pastor of the island to print the propuesta or proposal but he left to Nicaragua that morning and forgot to print the document so they postponed the meeting. I could see that Viviana was frustrated and mad. I got the chance to talk to her and we discussed the current events on the island. She expressed her feelings against the TLC. “Here in the Island not all the people know about the TLC and some just don’t care, they disregard that behind TLC there is so many problems. For example the Libertarios’s project would pass with the TLC, all the land would pass in their hands. I know that Costa Rica grants land to a foreigner if he or she is been a resident for ten years, but with the TLC they will be free to buy land. Everything will be affected, the fishing activities I meant everything and that’s why we should fight against it. I believe if the TLC takes action in Costa Rica, we are going to have armed forces again. What we can do to fight against the TLC is first to support all the labor unions in this country, all the student movements, all we can do is to support because can you imagine us organizing a movement in the island? Laughs” (Viviana Bolaños, interview and field notes 07-06-06).
I do approve and support this propuesta (proposal) but I have some concerns. All the fishing productivity in the gulf has been decreasing in the last few years, and the people are looking for opportunities beyond the island. Yet the people keep practicing the only thing they know better which is fishing. Also the Arias government is determined to support national tourism no matter what, so eco-tourism might be an economical option in Venado. I support the islander’s and fishermen’s causes, they deserve respect as any other human being; they have to defend their way of life and their property. Miscommunication and passiveness are the major problems on the island. That is why they do not organize themselves as they should and also why the Universidad Nacional cannot achieve most of their goals and projects successfully. I hope Venado residents get united to fight for their rights to land and to decide what to do for their future.

**Conclusion**

I finally had the opportunity to talk with the USAC professor, my cultural liaison on Venado Island. He came for the second and last time to the island during my stay. He has a tremendous amount of information and insight about the island. He is well known in the island and very loved by the people and especially the kids because every time he visits the island he brings food for them. He said he does it because the kids get really happy and the kids never get this kind of attention. Arturo and I talked for about an hour, he is very knowledgeable in law matters as well as the legal issues in the islands, and he is a lawyer and a biologist so he has information about the ecological and cultural history of the island. After we talked, he decided that would be neat to gather more people and have a group interview, so he called some of the Barrios, Marvin’ brothers, and some more people who joined us in this conversation. I felt very pleased once again to be part of a conversation to discuss and share views about the island matters. We kept talking even though the digital recorder was out of memory. I didn’t want to run and get the other one because the talk was so pleasant and open out of respect I decided to stay and listen to the people. Only one woman joined us, the rest were men. We held our conversation at the beach, in front of the sea which looked like an infinite lake, so calm, so peaceful and so alive. The tide was descending slowing leaving the sand naked under moon light and we kept talking and I admired the sea beauty for the last time. This was formally my last interview and conversation with the people from the island. In two days I was leaving the island. I went to a soccer game in Lapanto and by the end of the afternoon it started raining and the tide was amazingly far away from the dock. All the boats were beached at least a mile and half from the dock. They looked like deserted islands in the sand. All the Venado islanders that came to the game walked in the mud under the rain and we all pushed our respective boat for almost a mile to find deep water to start the motor boat, our feet were completely covered in mud. We had fun pushing the boat, the men were singing and they had fun imitating my Mexican accent.

The next day I woke up early. Marvin was waiting for me at the beach to take me to Puntarenas. I cried in Eugenia’s arms, I did not want to leave. It was so hard to leave. I saw the beach and the island for the last time and I promised to return for them and for the part of my soul that I leave in the island. I felt nostalgic and sad. I will miss the people, my island the one they offer me as my home, my second home. I truly appreciate all the generosity, kindness, and genuineness of the people. I will always live content and grateful with them.

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Figures

Figure 1a. Aerial photo of Venado Island. Taken by Ricardo Sánchez Murillo.

Figure 1.1 The Salas Family celebrating the grandmother’s birthday. Taken by Maria Venegas 07-02-06.

Figure 1.2 Rodrigo Barrios practicing his new job. Taken by Maria Venegas 06-13-06.

Figure 1.3 Children fishing with the traditional “cuerda.” Taken by Maria Venegas 06-04-06.

Figure 2.1. The traditional “cuerda” the most rudimentary fishing tool still used in Venado. Taken by Maria Venegas 06-04-06.

Figure 2.2. Young men fishing with the rastra. Taken by Maria Venegas 07-06-06.
Figure 2.3. Islanders separating the rastra's caught for shrimp and edible fish. Taken by Maria Venegas 07-06-06.

Figure 2.4. Women and children looking for clams in the mangroves. Taken by Maria Venegas 07-03-06.

Figure 3.1. Jicaro community, all the houses are within the 200 meters prohibited by the Marine-Terrestrial Law. Taken by Maria Venegas 06-16-06.
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