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Running head: MATERNAL INCARCERATION

**Maternal Incarceration as it Affects the Social and Behavioral  
Development of School Aged Children**

Akeya Carter-Bozman

Mentor: Dr. Pendergast

Major: Social Work

### **Abstract**

This research project will include an overall examination of pertinent information regarding Maternal Incarceration, as it affects the child. The project will seek explain what defines a good maternal relationship and the importance of healthy maternal relationships to the development of school aged children. The project will also seek to show the effect maternal incarceration has on a child. Most literature and research findings on maternal incarceration focus on chiefly maternal incarceration; this project's primary focus is on the child. This project will also help lay the foundation for the argument that the children of incarcerated mothers must also be studied as a separate issue.

Children of incarcerated mothers often endure the brunt of maternal incarceration, causing a delay on the child's development, especially school aged children. Considerable research and advocacy on behalf of incarcerated mothers has been done; however, much research in needed to help prevent issues of intergenerational incarceration-- the child too becomes part of the correctional system. This study will look at the common behavioral and social characteristics between the incarcerated mother and child. The project found a there is a positive correlation relationship between maternal incarceration and the behavioral and social development of the child. The project also found that maternal incarceration does affect children's cognitive, social, and behavioral development.

### **Introduction to the Issue**

The dramatic increase over the past two decades in the number of women in prison has prompted considerable research and advocacy on behalf of those who are mothers, much of it focused on improving or facilitating their ability to parent from prison (Halperin and Harris, 2004). The issue of mothers behind bars has been an issue since the late seventies; it is apparent in the research that there is a need for change in policy at both the state and federal level (Amlund-Hagen, Kennon, Myers and Smarsh, 1999). The barriers mothers' face in parenting from prison is compounded by a child welfare system not structured to meet their needs. Incarcerated mothers are among our nation's neediest citizens. Since the current ideology of incarceration focuses on punishment, the incarcerated mother receives little or no rehabilitation to prepare for her return to the family.

“Nevertheless, research has shown that aspects of children's behavior and psychological development are linked to the style of parenting with which they have been raised” (Steinberg 2006). Some incarcerated mothers have not had the opportunity to develop positive parenting styles, skills, or relationships with their children. More than likely this is due to the mothers' absence from the home at a time when the child requires the most rearing. The successful development of school aged children can be viewed in an architectural sense. A child of an incarcerated parent may be lacking in suitable molding, than that of their peers who have had the initial molding from their maternal parent. Proficient maternal involvement in the rearing of children is just as important as the foundation of a house which is essential to the first floor, which in turn must be structurally sound to support the second story, and so on.

### **Children of Incarcerated Mothers**

In the United States it is projected that, 1 in 10 children of prisoners will be incarcerated before reaching age 18 (Moses, 1995). Children of incarcerated mothers mourn the loss of their mother more so than if their father was incarcerated. Due to stigmas society places on children of incarcerated mother's children often become embarrassed or ashamed of their mother. Children of incarcerated mothers have a greater risk of experiencing exacerbated poverty, poor early care or educational environments, violent neighborhoods, and/or racism (Christian, 2005). Female children more than male children are affected by their mother's incarceration. Female children tend to be more angry, disappointed, resentful, frustrated, and unforgiving of their mother. Lastly children of incarcerated mothers suffer from behavioral, cognitive, and social developmental delays (Halperin and Harris, 2004).

### **Purpose of Study**

This study sought to answer the question: does the mothers' absence from the home, due to incarceration affect her child/children's development behaviorally and/or socially? With school aged children (3-10) maternal incarceration may primarily impact the child's social adjustment: this is because children are at their most impressionable state of mind at this age. School aged children are like clay, and healthy maternal relationships are needed to effectively mold children, clay is impressionable and so are children.

### **Subjects and Study Design**

The study was conducted using a blind sample with (n=11) subjects ranging in age and racial background. The subjects were inmates from the Charleston Work Release Center in Charleston, West Virginia. Forty-two percent of the subjects were non violent offenders, while

the other seventy-six percent of the offenders were incarcerated due to drug related crimes and property offenses; also most of the inmates were located more than 100 miles from their home. The subjects were asked to fill out a survey about how they felt their being incarcerated affected their child/ren attitude towards them. The survey consisted of 30 questions 16 qualitative and 14 quantitative questions concerning the subjects' child/ren behavior and social interaction during ages 2-6. The survey was self administered this was so there would be little to no influence impeded on the subjects.

### **Findings**

The data from the surveys were analyzed to measure the relationship between the incarcerated mothers and their children. The student found the most common form of communication between the subjects and their children were letters and phone calls. The researcher believes these were the most common forms of communication due the subjects being incarcerated so far from their homes. The study found 2 of the 11 subjects refused to have any contact with their children. Thirty-four percent of the subjects feared they would never see their children again. The study also showed that one-hundred percent of the subjects had no concerns for the safety of their children. Another eighty-five percent of the subjects feared their children would end up incarcerated at some point in their lives. The researcher believes this is because children of incarcerated mothers often fall victim to the same social problems as their mothers resulting in their being incarcerated.

In the study the average age of the subject's child/ren when their mother entered into custody was 4 ½ years old. The subjects were asked to rate on a Likert Scale what social and behavioral problems their children had exhibited. The Likert scale measured how the severity of the child's problems according to the subjects. The subjects identified their child/ren learning



environment as being most affected with of the subjects identifying this as a problem area. Twenty-seven point three of the subjects felt their child/ren behavioral development had been affected by their incarceration. Children of incarcerated mothers often do not communicate well with others for fear of being stigmatized or judged because of their mothers' behavior. This causes children to perform poorly in school. Children of incarcerated mothers often experience anxiety, developmental regression, acute traumatic stress, and survivor guilt. Often these factors can potentially cause behavioral problems in children of incarcerated mothers if their behavior goes uncorrected. This study also found that children of incarcerated mothers are at a higher risk for health and mental health complications, alcohol or drug use, poverty, and or drug use.

### **Conclusion**

To make changes in the issues described in this study will require changes at the policy level. Policy affects most the issues surrounding parental incarceration, whether it be visitation, service, or parent-child relationships issues. There is need for further research on the topic before affective change can take place. Children of incarcerated mothers are more likely to display aggressive behaviors and exhibit difficulty interacting with their peers. Unsuccessful maternal relationships are determined to the development of children, especially school aged children. Until society stops stigmatizing incarcerated mothers of their children the real victims the child of the incarcerated mothers will continue to be victimized.

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Running head: DILLARD

**Examination of a Possible College Student-Athlete  
Subculture in Revenue Sports**

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### Abstract

The impact of participating in a college revenue sport, men's basketball and football, has been researched heavily in recent years and there is evidence that these athletes do worse academically when compared to both athletes in non-revenue sports, including all other college sports, and non-athletes. The current study explores the possibility of a subculture within athletes in revenue-sports that places lower value on academic success when compared to athletes in non-revenue sports and non-athletes. The findings of the current study provide evidence of a subculture that is unique to athletes in revenue sports. This subculture may explain why athletes in revenue sports have lower levels of academic success and suggests that it may be beneficial to implement further changes within college athletic programs.

### Examination of a Possible College Student-Athlete Subculture in Revenue Sports

The impact that participation in college athletics has on athletes' academic success has been studied in great depth in recent years. Examining why some college student-athletes, to be referred to as athletes, are less academically successful than their non-athlete cohort is an area of great interest for many researchers. Extensive research has been conducted on many different aspects of athlete success and the National Collegiate Athletic Association (NCAA) has gone through many changes in attempts to help athletes succeed academically (NCAA, 2008).

In fact, due to concerns that athletes are hindered academically by their athletic participation, the NCAA adopted several new policies in 1991 in an effort to ensure that athletes have adequate time to devote to their classes. Two such policies are limiting practice hours per week during both the sports season and the off-season and strictly enforced grade point average (GPA) eligibility requirements. Currently, first-year athletes must have completed 14 core high school courses, including math, English, and science and must meet minimum requirements on a sliding scale that combines high school GPA's and ACT/SAT scores in order to compete in college. Once in college, athletes must have completed 40 percent of their graduation requirements and have a 1.8 GPA by the end of their second year. They must have completed 60 percent of their graduation requirements with a 2.0 GPA by the end of their third year; and 80 percent of their graduation requirements with a 2.0 GPA is required by the end of their fourth year (Coakley, 2007).

These measures that the NCAA has taken to try to help alleviate the academic difficulties of athletes have also required that schools track the academic progress of each athlete. This tracking of athletes has provided data for researchers to determine what methods are most

effective in helping athletes academically, and also determine whether certain athletes are more at-risk for failure than others. Additionally, many universities have also implemented special academic advising, tutoring, and study halls to further assist their athletes in the classroom (Bowen & Shulman, 2001). Several studies have contributed information to the field and have suggested various explanations regarding the factors that impact athletes' academic success (see Comeaux & Harrison, 2007; Ferris, Finster, & McDonald, 2004; Lang, 1991; Maloney 1993; Pascarella, 1995; Potuto 2007; Rishe 2003; Tucker, 1992).

Past research has used two general ways to measure college academic success, graduation rates and GPA. Several studies have reported that athletes generally have the same or slightly higher graduation rates than their non-athlete cohort (Ferris, et al., 2004; Rishe, 2003; Wolverton, 2006). According to Wolverton (2006), the 2006 NCAA annual graduation report found that Division I scholarship athletes who entered college in 1999-2000 graduated at a rate of 63 percent within six years, compared with 61 percent of students that were non-athletes. These statistics show that graduation rates of student-athletes are currently at an all time high, however, if not interpreted carefully, using graduation rates as a measure of success can be misleading.

When examined more closely, the research suggests that there are profound differences in graduation rates between different sports. Rishe (2003) collected data from 252 Division I schools and found that athletes as a whole have higher graduation rates than non-athletes. However, significant differences were found between graduation rates of athletes in revenue sports (men's basketball and football players), and all other athletes in non-revenue sports and non-athletes, with the athletes in revenue sports having lower graduation rates.

When considering why this might occur, Rishe (2003) reported that the SAT scores of athletes in revenue sports are lower, thus suggesting that lower graduation rates may occur because athletes in revenue sports come to college less academically prepared for college. Other researchers have also recognized background differences between athletes in revenue sports compared to athletes in non-revenue sports. Maloney and McCormick (1993) have reported that the average SAT scores of college athletes are about 150 points less and their high school rank is about 19 percentage points lower than their non-athlete cohort. Because of the profound differences between these two groups of athletes, Ferris, et al., (2004) noted that it is imperative for researchers to take into consideration and statistically control for background differences when comparing athletes in revenue sports to athletes in non-revenue sports and non-athletes.

Besides examining graduation rates, researchers have also measured academic success by college GPA. Research examining this variable suggests that although athletes as a whole have higher graduation rates, they have significantly lower GPA's than their non-athlete cohort. Maloney and McCormick (1993) studied the overall student body at Clemson University, a Division I University, and compared their academic performance to that of the athlete population. Their research suggests that although athletes display higher graduation rates, they have lower GPA's. It has been reported (see Rishe, 2003) that apart from participating in a sport, athletes (specifically athletes in revenue sports) are different from the overall student body because of their dissimilar backgrounds. However, even when background information was taken into consideration by statistically controlling for these differences, (see Ferris et. al., 2004) athletes in revenue sports still had significantly lower GPA's. Maloney and McCormick's (1993) findings were specific to athletes in revenue sports, while athletes in non-revenue sports

displayed about the same GPA as their non-athlete cohort. Additionally, they found that there is a seasonal phenomenon, that is, athletes in revenue sports consistently display lower GPA's during their semester of athletic participation while athletes in non-revenue sports do about the same academically all year long. The seasonal phenomenon is assumed to exist because athletes in revenue sports have increased pressures to succeed athletically during their athletic season when compared to athletes in non-revenue sports. These pressures to succeed athletically are assumed to distract athletes from their schoolwork and academic pursuits and may result in lower GPA's.

Supporting the idea that athletes in revenue sports have different academic backgrounds than athletes in non-revenue sports, Pascarella (1995) tested Division I, II, and III freshman athletes, and found that athletes in revenue sports had lower precollege scores than both athletes in non-revenue sports and non-athletes in reading comprehension, math, and critical thinking. Not only did athletes in revenue sports have lower pre-college scores, but when tested at the end of their freshman year to determine their academic progress, athletes in revenue sports did not have as much cognitive progress in reading comprehension and math when compared to athletes in non-revenue sports and non-athletes. Athletes in revenue sports also had lower scores in critical thinking, but it was not enough to be a significant difference.

It is important to note that these scores did control for important individual traits, including age, ethnicity, family social origins, credit hours taken during freshman year, and on or off-campus housing. In addition, there were institutional characteristics as well, including average reading and math scores, and size of the institution. Pascarella's (1995) study assumed that the results were due to the extensive time that athletes in revenue sports spend participating in their sport and pressures to succeed athletically because these factors result in athletes in



revenue sports having a different college experience when compared to athletes in non-revenue sports and non-athletes. Several studies (Ferris, et al., 2004; Maloney, 1993; Pascarella, 1995; Rishe, 3002) support the notion that there are fundamental differences between athletes in revenue sports and athletes in non-revenue sports. The fact that athletes enter college less prepared is significant because high school success has shown to be highly correlated with college success. In fact, Comeaux and Harrison (2007) found that for all college students, high school GPA is the most powerful predictor of college GPA.

Although research suggests that athletes in revenue sports are doing worse than both the athletes in non-revenue sports and the non-athlete cohort, when examining GPA, Potuto (2007) suggests that these differences are not because athletes in revenue sports are disinterested in succeeding academically. Potuto (2007) studied how athletes' view of their college experience and their commitment to a college education and found that 93 percent of athletes responded that it was "very important" to them that they graduate from college, while another 6.8 percent said that it was either "important" or "somewhat important". Additionally, 90 percent of athletes responded that their families felt it was "very important" that they graduate, and an additional 9.8 percent said their families felt it was either "important" or "somewhat important". However, these findings are limited because they did not include non-athletes in the study and the results were not analyzed to determine if there was a difference between athletes in revenue sports and non-revenue sports. Therefore one cannot tell if there were differences between athletes in revenue sports, athletes in non-revenue sports, and non-athletes. Additionally, there is a possibility of a bias, it may be that the athletes in revenue sports were responding to the questions in a way that they thought they would be expected to respond. That is, the results

could be due to the demand characteristics of the study. However, their study may still provide some insight on the extent that athletes value their college education.

Although almost 100 percent of athletes reported that they feel it is at least somewhat important to them to graduate (Potuto, 2007), the actual graduation rates for athletes does not reflect that belief. Recall that the overall athlete graduation rate, including athletes in revenue and non-revenue sports and allowing up to six years to graduate, is currently about 63%. Sander (2007) reported that the goal of Myles Brand, President of the NCAA, is an 80% graduation rate for all sports. Remember that even though the non-athlete graduation rate is slightly lower than the athletes', at 61%, when one separates the graduation rates of the athletes in revenue sports from the athletes in non-revenue sports, the graduation rates for athletes in revenue sports are lower than that of both non-athletes and athletes in non-revenue sports. Since research (Potuto, 2007) indicates that the vast majority of athletes enter college with the goal of graduating, the question then becomes why are so many of these athletes in revenue-sports not graduating?

There are clearly considerable differences between athletes in revenue sports and athletes in non-revenue sports. The fact that differences are evident even when statistical controls are made for various background differences, (see Maloney & McCormick, 1993) suggests that there must be something in addition to the background differences that contributes to the lower academic success of the athletes in revenue sports when compared to both athletes in non-revenue sports and non-athletes. One possible explanation for these findings is that there is a subculture within athletes in revenue sports. Past research supports this idea. For example, Lang (1991) reported that athletes who have one or more roommates who are either teammates or other athletes are significantly more likely to be in a low academic group. Lang categorized an

athlete as being in the low academic group if they had a GPA of less than 2.0 and missed two or more classes per week on average in and out of season.

In their book, The Game of Life, Shulman and Bowen (2001) suggest that athletes share a common culture because of their extensive time together and the time that they devote to their sport. They also propose that athletes come to college with similar aspirations, goals, and values that contribute to an athletic culture. Additionally, these authors suggest that because athletes in revenue sports are applauded by the public for their athletic participation, these athletes are in a sense reinforced for having this athletic culture. Several other studies (see Ferris, et al., 2004; Pascarella, 1995; Stoll, 1995) have also proposed that an athletic subculture may exist.

Mains (2007) defines a subculture as “a set of people differentiated from the dominant culture by specific behaviors and beliefs.” In fact, the main question may not be if an athletic subculture is present, since many subcultures may be present in a college community, but whether the subculture within athletes in revenue sports is one that places lower value on academic success when compared to other college subcultures and whether this would explain the poorer academic achievement of athletes in revenue sports.

Common explanations for lower GPA's displayed by the athletes in revenue sports when compared to athletes in non-revenue sports and non-athletes are background differences, factors related to the seasonal phenomenon, and increased pressures placed on athletes in revenue sports to succeed athletically. However, the fact that athletes in revenue sports display lower academic success may also be the result of a subculture that does not value academic success when compared to athletes in non-revenue sports and non-athletes. The current study aims to further examine the possibility of an athletic subculture within revenue sports, answering the questions

of whether a subculture indeed exists, and if so, does the subculture of the athletes in revenue sports negatively affect academic performance. If athletes in revenue sports are spending increased amounts of time together and display more negative attitudes towards academic achievement when compared to athletes in non-revenue sports and non-athletes, then we can say that there is evidence of a subculture within revenue-sports. It would then be reasonable to infer that this subculture is at least partially responsible for the lower levels of academic success of athletes in revenue sports.

Since the current study aims to not only determine whether there are differences between athletes in revenue and non-revenue sports, but also non-athletes, three groups will be used to represent each category of students. Athletes will be categorized as either revenue or non-revenue athletes and fraternity members will be used to represent non-athletes. Fraternity members were used as the non-athlete comparison group because of their similarities to athletes. For example, like athletes, fraternity members are already recognized for being a distinct group and they spend time together due to their group membership. Because of these characteristics, fraternities serve as a good control group of non-athletes who, like athletes, seem to have characteristics of a subculture.

## Method

### Participants

The coaches of all Concord University men's varsity athletic teams were contacted and asked to participate in the current study. Athletes that participated included 11 from men's basketball, 24 from football, 13 from golf, and 15 from cross country and track combined; no athletes from baseball, soccer, or tennis were represented. There were five participants who

participated in both football and track/cross country; these athletes were counted as revenue athletes since track/cross country is sometimes participated in to stay in shape for the football season. Each on-campus fraternity was also contacted. Fraternity members that participated included 17 from Sigma Tau Gamma, and 6 from Tau Kappa Epsilon; no fraternity members from the other two fraternities Phi Sigma Phi and Phi Kappa Phi were represented. There was a total of 28 athletes in non-revenue sports, 40 athletes in revenue sports, and 23 fraternity members for an overall sample of 91 participants.

### Materials

A survey containing various demographic questions and approximately 35 additional questions was used to assess the possible subcultures (see Appendix 1). The questions were designed to assess the importance that the participant placed on academic achievement as well as the academic achievement level of their friends. The survey was also designed to determine who the participant spent the majority of their time with, and who they lived with. The surveys that were given to the athletes in revenue and non-revenue sports were identical. The surveys given to fraternity members were identical to the athletes' surveys except for substituting terms like "athlete" and "fraternity member."

### Procedure

The participating athletes and fraternity members were administered the survey at a convenient time as determined by the coach or fraternity president. For some sports, the researcher administered the surveys before or after practice. For other sports, either a coach directly administered and collected the surveys or the coaches placed the surveys in a location

where the athletes' often met, like in a weight room, and the athletes completed the survey at their leisure and returned them to the coach. For both participating fraternities, the surveys were administered and collected by the fraternity president at their weekly meeting. There was no time limit to complete the survey. The surveys were anonymous and confidential.

### Results

Four questions were analyzed from the survey. Two addressed the participants' attitude towards academia and two addressed with whom the participant spent time. The first question that was analyzed was a Yes/No question that asked, "If you have a roommate/housemate, is he also a (n) athlete/fraternity member?" A Chi-Square test of independence was conducted to investigate differences between the three groups. A marginally significant difference was found,  $\chi^2 (2) = 5.794, p=.055$ .

Group	Yes	No	Total
Revenue	33	7	40
Non-Revenue	16	12	28
Fraternity	18	5	23
Total	67	24	91

Table 1: Frequencies athletes/fraternity members who live together

Additionally, a 1-way ANOVA was conducted and a marginally significant effect was obtained,  $F (2, 88) = 2.992, p=.055$ . Planned contrasts showed a significant difference between athletes in revenue and non-revenue sports,  $t (88) = -2.373, p=.02$ , with athletes in revenue sports more likely to respond "Yes". A significant difference was also found when athletes in revenue sports and fraternity members were combined and compared to athletes in non-revenue sports,  $t$

(88) = -2.332, p=.022, with the athletes in revenue sports and fraternity members more likely to respond “Yes” to this item.

Group	N	Mean	Standard Deviation
Revenue	40	1.1750	.38481
Non-Revenue	28	1.4286	.50395
Fraternity	23	1.2174	.42174
Total	91	1.2637	.44310

Table 2: Mean number of athletes/fraternity members who live together

The second question that was analyzed was, “Do you consider yourself more as an athlete/fraternity member, a student, or both about equally?” A Chi-Square test was conducted and an overall (N=88) significant difference was found,  $\chi^2 (2) = 31.523$ ,  $p < .01$ . For the athletes in revenue sports,  $\chi^2 (2) = 8.486$ ,  $p = .014$ .

Group	Observed N	Expected N
More as an Athlete	16	29.3
More as a Student	4	29.3
Both Athlete & Student Equally	17	29.3
Total	37	

Table 3: Frequencies of whether athletes in revenue sports consider themselves an athlete/fraternity, student, or both about equally

For the athletes in non-revenue sports,  $\chi^2 (2) = 9.071$ ,  $p = .011$ .

Group	Observed N	Expected N
More as an Athlete	9	29.3

More as a Student	3	29.3
Both Athlete & Student Equally	16	29.3
Total	28	

Table 4: Frequencies of whether athletes in non-revenue sports consider themselves an athlete/fraternity, student, or both about equally

For the fraternity members  $\chi^2 (2) = 21.478, p < .01$ .

Group	Observed N	Expected N
More as an Athlete	4	29.3
More as a Student	1	29.3
Both Athlete & Student Equally	18	29.3
Total	23	

Table 5: Frequencies of whether fraternity members consider themselves an athlete/fraternity, student, or both about equally

Athletes in revenue sports were significantly more likely to respond “Athlete,” while fraternity members and athletes in non-revenue sports were significantly more likely to respond “Both athlete and student about equally”.

The third question that was analyzed was a Likert-type question that said “It is important that I have a high GPA”. A one-way ANOVA was conducted and there was no significant difference,  $F (2, 84) = .564, p = .571$ . All participants tended to agree with this statement.

Group	N	Mean	Standard Deviation
Revenue	38	3.9474	1.18430
Non-Revenue	28	3.6429	1.39348



Fraternity	23	2.5217	1.37740
Total	89	3.4831	1.41512

Table 6: Mean number of athletes/fraternity members who say it is important to have a high GPA

The fourth question that was analyzed was also a Likert-type question that said, “My closest friendships are with my teammates.” A one-way ANOVA was conducted and a marginally significant effect was found,  $F(2, 83) = 2.692, p=.074$ . Significant differences were found when athletes in revenue sports and fraternity members were combined and compared to athletes in non-revenue sports,  $t(83) = 2.319, p=.023$ .

Group	N	Mean	Standard Deviation
Revenue	37	4.2973	1.05053
Non-Revenue	27	3.8148	1.07550
Fraternity	22	4.4091	.73414
Total	86	4.1744	1.00811

Table 7: Mean number of athletes/fraternity members who say their closest friendships are with their teammates

### Discussion

The hypothesis that there would be evidence of a subculture among athletes in revenue-sports and that this subculture does not place much value on academia when compared to athletes in non-revenue sports and non-athletes and fraternity members was supported. The pattern of results suggests a few things. First, we now have evidence that athletes in revenue sports are living together more frequently than athletes in non-revenue sports. We also have

evidence that athletes in revenue sports view themselves more as athletes, whereas athletes in non-revenue sports and fraternity members view themselves as both students and athletes/fraternity members equally. Additionally, both athletes in revenue sports and fraternity members feel their closest friendships are with their fraternity brothers or teammates. This suggests that athletes in revenue-sports and fraternity members have similar friendships and bonds, unlike athletes in non-revenue sports. This may not be surprising when one considers that revenue sports are team sports, whereas non-revenue sports include individual sports. However, the fact that fraternity members do not have lower GPA's and graduation rates like athletes in revenue sports suggests that the problem may not merely be the fact that athletes in revenue sports are spending time together, but that the problem may lie in these athletes' attitudes towards education.

Consistent with past findings, (Potuto, 2007) all participants tended to agree that it is important to them to maintain a high GPA. However, both past research (see Potuto, 2007) and the current study's results conflict with the athletes in revenue sports actual GPA's, since out of all of the groups, athletes in revenue sports have the lowest of the GPA's. These results again lead one to question why there are GPA differences between athletes in revenue-sports and athletes in non-revenue sports and non-athletes if they all feel that it is important to have a high GPA. A subculture that is exclusive to athletes in revenue sports and that promotes behaviors that do not value academia is a possible explanation.

The overall results of this study suggest that athletes in revenue sports are differentiating themselves from other athletes and the fact that they have lower GPA's differentiates them from other athletes and fraternity members. The current findings suggest that athletes in revenue sports consider themselves more as athletes than students when compared to both athletes in non-

revenue sports and fraternity members and is an example of how they place less value on being a student. There is evidence of a subculture unique to athletes in revenue sports that contributes to their lower academic success.

Although the current results are consistent with the hypothesis, there were a couple limitations to the study. One limitation is that there were some sports that were not represented. Another limitation was in the way that the surveys were distributed. Since the surveys were distributed inconsistently across sports and depended on the individual coaches' preference, there is a possibility of having a biased sample and biased data. For example, the athletes who knew they had to return their test to their coaches may have responded differently than athletes who handed their survey to the researcher. Additionally, the athletes who completed the survey before or after a practice or game may have responded differently than athletes who completed the survey at their leisure. Clearly, uniformity in administering the survey should be a top priority for future studies of this type.

One final concern is that there is evidence of a biased sample by examining the GPA's for revenue sports and non-revenue sports according to the surveys and comparing them to the actual GPA's, (as reported in the Concord University records). The actual GPA of athletes in revenue sports is 2.5, while the GPA of athletes in revenue sports according to the survey participants was 2.85. The GPA of athletes in non-revenue sports according to the survey is 2.95, while the actual GPA of athletes in non-revenue sports is 2.93. Since the athletes in revenue sports displayed an inflated GPA, according to the surveys, when compared to their actual GPA, this may suggest that only the athletes with higher GPA's completed the survey. Assuming that students with higher GPA's are more motivated to complete tasks than students

with lower GPA's, and the fact that football participants were the only participants who were not actually handed the surveys but were rather told about them and had to go pick one up, may explain why athletes in revenue sports had an inflated survey GPA. However, even with this being the case, significant results were still found on the survey items, suggesting that the results may be even more profound if a representative sample were used.

Another possible explanation for the inflated GPA's for the athletes in revenue sports is that the athletes in revenue-sports think they have higher GPA's than they actually have. Yet still, another possibility is that the athletes in revenue sports reported higher GPA's because of they did not want their coach to become aware of their real GPA. Future research with a more accurate sample would reveal whether athletes in revenue-sports are reporting inaccurate survey information or whether it is likely that this survey had a biased sample.

It is important to remember that the characteristics of the University may influence the findings as well. Concord University is a Division II institution, and the findings may be different if studied at a Division I or Division III institution. Past research has either combined the different Divisions together or has only focused on one particular Division so it is hard to tell from past research what differences lie between Division I, II, and III schools.

The results indicate that membership in a subculture itself may not be the problem since athletes in revenue sports and fraternity members seem to both have a subculture and fraternity members did not have lower graduation rates and GPA's like the athletes in revenue sports. But rather, it may be the negative attitudes towards academia shared by the athletes' in revenue sports within the subculture that may be the problem. Furthermore, eliminating a subculture altogether may not be possible since the mere nature of participating in a revenue sport requires

large amounts of time spent together. A more effective option is to change the attitude of the subculture from one that does not value academia to one that does in order to ultimately reach the goal of having athletes in revenue sports demonstrate GPA's and graduation rates at least at the same level as athletes in non-revenue sports and non-athletes. Future research on the effects of housing athletes in revenue sports with athletes in non-revenue sports or non-athletes would also be interesting. Future research should also gather data with a more representative sample of athletes and should also use non-athlete students as a control group as well. Discovering the root of why athletes in revenue sports do not value academic success as much as athletes in non-revenue sports should be a top priority for future researchers.

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Appendix 1

*Athlete Survey*

1. How many semesters have you completed as a student at Concord University? (If freshman or transfer, write less than 1) \_\_\_\_\_

2. Based on credit hours, what year are you? (please circle one)

Freshman (less than 30 hrs.)

Junior (60-90 hrs)

Sophomore (30-60 hrs.)

Senior (90+ hrs)

3. What sport do you play? (circle all that apply)

Track & Field

Basketball

Cross Country

Soccer

Golf

Baseball

Tennis

Football

4. What is your race/ethnicity?

Black/African American

Native American

White/Caucasian

Asian-Pacific Islander

Hispanic

Other \_\_\_\_\_

5. What is your major? \_\_\_\_\_

6. How old are you? \_\_\_\_\_

7. What was your highest ACT/SAT score? ACT \_\_\_\_ SAT \_\_\_\_

8. Approximately, what is your family's yearly income? (circle one)

Less than 10,000

10,000-20,000

20,000-30,000

30,000-40,000

40,000-50,000

50,000-60,000

60,000-70,000

70,000-80,000

Over 80,000

9. What is the highest level of your mother's education? (circle one)

Less than high school	2 year College degree (Associates)
Some high school	4 year College degree (BA, BS)
High school or GED	Master's Degree
Some college	Doctoral Degree/Professional Degree (MD/JD)

10. What is the highest level of your father's education? (circle one)

Less than high school	2 year College degree (Associates)
Some high school	4 year College degree (BA, BS)
High school or GED	Master's Degree
Some college	Doctoral Degree/Professional Degree (MD/JD)

11. Are you from a rural, suburban, or urban area? (circle one)

Rural                                  Suburban                                  Urban

12. What is your cumulative GPA? (if unsure, estimate) \_\_\_\_\_

13. Do you live on or off-campus? (circle one)

On-campus      Off-campus

14. If you have a roommate/housemate, is he also an athlete? (circle one)

Yes                  No

15. If your roommate/housemate is an athlete, what sport does he participate in? (circle one)

Track & Field	Basketball	Cross Country
Soccer	Golf	Baseball

- | Tennis  | Football    | Not Applicable, I live alone |
|---|-------------|------------------------------|
| 16. What do you consider a “high” GPA? (circle one)   |             |                              |
| .5-1.0 GPA  | 1.0-1.5 GPA | 1.5-2.0 GPA                  |
| 2.0-2.5 GPA   | 2.5-3.0 GPA | 3.0-3.5 GPA                  |
| 3.5-4.0 GPA   | 4.0 GPA     |                              |
| 17. What do you consider an “average” GPA? (circle one)   |             |                              |
| .5-1.0 GPA  | 1.0-1.5 GPA | 1.5-2.0 GPA                  |
| 2.0-2.5 GPA   | 2.5-3.0 GPA | 3.0-3.5 GPA                  |
| 3.5-4.0 GPA   | 4.0 GPA     |                              |
| 18. What do you consider a “low” GPA? (circle one)  |             |                              |
| .5-1.0 GPA  | 1.0-1.5 GPA | 1.5-2.0 GPA                  |
| 2.0-2.5 GPA   | 2.5-3.0 GPA | 3.0-3.5 GPA                  |
| 3.5-4.0 GPA   | 4.0 GPA     |                              |
| 19. Do you consider yourself more as an athlete, a student, or both about equally? (circle one)         |             |                              |
| More as an athlete  |             |                              |
| More as a student   |             |                              |
| Both athlete and student about equally  |             |                              |
| 20. Do you feel that others view you more as an athlete, a student, or both about equally? (circle one) |             |                              |
| More as an athlete  |             |                              |
| More as a student   |             |                              |
| Both athlete and student about equally  |             |                              |

21. Do the majority of your friends have cumulative Grade Point Averages (GPA's) that are higher, lower, or about the same as yours? (circle one)

Lower than mine

Higher than mine

About the same as mine

22. Do you think people generally view athletes who participate in your sport at your school in a positive, negative, or neither positive nor negative way? (circle one)

Positive

Negative

Neither Positive or Negative

23. Apart from athletic activities, I spend the majority of my time with: (circle one)

My teammates

Athletes from other sports

Non-athletes

A mixture of teammates and athletes from other sports

A mixture of teammates and non-athletes

A mixture of teammates, athletes from other sports, and non-athletes

24. If you selected "Athletes from other sports", "A mixture of teammates and athletes from other sports", or "A mixture of teammates, athletes from other sports, and non-athletes"

on item 20, what sport(s) do these athletes participate in? (circle all that apply)

Track & Field

Basketball

Cross Country

Soccer

Golf

Baseball

Tennis

Football

N/A

25. Which do you feel will benefit your future more? (circle one)

My college degree

My athletic participation

Both my college degree and my athletic participation about equally

On a scale from 1 to 5, please respond to the following statements by circling the appropriate number:

1- Strongly Disagree; 2- Disagree; 3- Neither Agree nor Disagree; 4- Agree; 5- Strongly

Agree

26. It is important for me to graduate from college.

1      2      3      4      5

27. It is important to my family that I graduate from college.

1      2      3      4      5

28. My teammates feel it is important to graduate from college.

1      2      3      4      5

29. My teammates feel it is important to maintain a high Grade Point Average (GPA).

1      2      3      4      5

30. It is important that I have a high Grade Point Average (GPA).

1      2      3      4      5

31. It is important that I maintain academic athletic eligibility.

1      2      3      4      5

32. The main reason I keep my GPA a particular level is to maintain athletic eligibility.

1      2      3      4      5

33. Participating in college athletics will greatly benefit my future.

1      2      3      4      5

34. Having a college degree will greatly benefit my future.

1      2      3      4      5

35. I am viewed differently by other students because of my athletic participation.

1      2      3      4      5

36. I am viewed differently by my professors because of my athletic participation.

1      2      3      4      5

37. Apart from athletic activities, I spend the majority of my time with students or athletes with the same ethnic background/race as me.

1      2      3      4      5

38. I feel that if I did not participate in a sport, my grades during the season would be higher.

1      2      3      4      5

39. I feel that if I did not participate in a sport, my grades during the off-season would be higher.

1      2      3      4      5

40. I have no idea what kind of job I want to pursue after graduating.

1      2      3      4      5

41. I plan on playing professional sports after graduation.

1      2      3      4      5

42. I chose my particular major because I plan on going into that field after graduating.

1      2      3      4      5

43. My closest friendships are with my teammates.

1 2 3 4 5

44. My team is considered a “clique” on campus.

1 2 3 4 5

45. People view athletes who play my sport differently than they view athletes who play other sports.

1 2 3 4 5

46. I receive special treatment by my professors because of my athletic participation.

1 2 3 4 5

47. The majority of my coaches genuinely care about my academic success.

1 2 3 4 5

48. I would have attended college even if I did not receive an athletic scholarship.

1 2 3 4 5

49. The main reason I participate in college athletics is because of the athletic scholarship I receive or that I am trying to receive.

1 2 3 4 5







**Social Aggression Among Adolescent Females and Their  
Relationship with Teachers**

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Elementary Education K-6

### **Abstract**

For years, the development of adolescent females has been of interest to researchers. Studies have shown that gender differences in self-esteem come into view during early adolescence. It has been found that more girls are affected by low self-esteem and aggression than boys. Adolescent females are labeled as individuals who are to remain polite, sweet, and reserved. While this is automatically accepted, we are in essence asking these females to hide their aggressive impulses. Therefore, in return, we see that these females begin to take their anger out socially among other females.

This study will help find ways to reduce social aggression among adolescent girls, and ways to identify these behaviors. This study will consist of a survey, two interviews, and the completion of a sociogram. Based on participant responses, I hope to find underlying principles of why girls socially aggress with one another, and identify outlets that adolescents can use for frustration and anger.

## **Social Aggression Among Adolescent Females and Their Relationship with Their Teachers**

### **Introduction**

“Our culture does a disservice to both kinds of girls: to the girls who need to hide their aggressive impulses, who rein them in so tightly that they find release in the unexpected, strangely hostile act that they claim came totally out of nowhere; and to the girls who are left to fight it out alone on the streets, to survive the pecking order of who is the toughest. Neither can survive well in there two opposing environment” (Lamb, 2001, p. 23). Young adolescent females are faced with so many dilemmas. Peer pressure, self-esteem issues, boys, school work, and extra-curricular activities all tie together in some way, shape, or form to mold adolescents into individuals. With these demands, it comes as no surprise that social aggression is prevalent among adolescent females. Not only that, but the society that we live in formulates many of these pressures. Several preconceived notions that people have about one another have to do with how the society classifies and organizes people within their culture. This also holds true for adolescent females in the classroom.

We live in a society that associates thinness with success, self-control, and strength, and fat as synonymous with failure, sloth, and weakness (Orenstein, 1994, p. 43). For adolescent females, this perception can cause many problems. Social aggression among adolescent females correlates with these preconceived notions in more ways than one. Recent studies have shown how social aggression among females is increasing and becoming more prevalent every day.

I have chosen to do my research on social aggression among adolescent females and their relationships with teachers. As a future teacher it is imperative to understand my students, and the problems and uses that they face as adolescents. It is also important for people to know what is causing social aggression among adolescent females and ways in which this problem can be eliminated. Several factors can contribute to the success of students in the classroom and for adolescent females, feeling socially accepted is a huge concern. Studies have shown that there are ways in which teachers can connect to their students and help diminish these problems. It is imperative that students and teachers have a strong relationship, and teachers need to be aware of problems that may exist in their classroom without being obvious.

In conducting this research I hope to find ways to reduce the use of social aggression among adolescents, and ways in which teachers can identify these types of behaviors in the classroom.

### **Social Aggression in Adolescent Females and Their Relationship with Their Teachers**

For several years, the development of adolescent females has been one of necessary interest to many researchers. Various studies have shown that gender differences in self-esteem emerge during early adolescence, with many more girls being plagued by low self-esteem than boys (Impett, 2008). During the ages of 9-13, numerous amounts of situations can mold a female into the type of person that she will become. Several factors can contribute to the behavior and lifestyles that they chose, and it is during the stage of adolescents that females become more concerned about how they are perceived by their peers.

In the effective summary of *Shortchanging Girls, Shortchanging America*, the analysis group found self-esteem to be an issue. It stated, "Girls around eight and nine are confident, assertive, and feel authoritative about themselves. Yet most emerge from adolescence with a poor self-image, constrained views of their future and their place in society, and much less confidence about themselves and their abilities" (Shortchanging Girls, Shortchanging America, p. 3). The research went on to show that in elementary schools, 67% of females stated that they were happy with the way that they were and as the students advanced to middle school, the number decreased to where only 37% stated that they were happy about with the way that they were (Shortchanging Girls, Shortchanging America). According to Piaget, he states that "our thinking processes change radically, though slowly, from birth to maturity because we constantly strive to make sense of the world" (Woolfolk, 2007, p. 34). When it comes to Piaget cognitive theory about adolescents, he believes that they go through a stage known as adolescent egocentrism. Within this stage, the adolescent believe that everyone else shares

one's thoughts, feelings, and concerns (Woolfolk, 2007). With respect to social aggression, this is something that can cause predicaments because they analyze their own beliefs and attitudes and feels that everyone else is in agreement with them. Their appearance and actions are two of their biggest concerns within this egocentrism.

In the book "SchoolGirls" by Peggy Orenstein, there are countless illustrations in which Orenstein focuses on the difficulties that females face when it comes to how they feel about their appearances. Orenstein comments that "not all teenage girls develop negative body images, but that it is the personal psychology, physiology, family dynamics, and culture that all play into an individual girl's vulnerability" (Orenstein, 1994, p. 54). Popular cases of self-harm in Orenstein's book deal with anorexia and self-infliction. Due to the fact that the viewpoints from society play such a vital role in the way people feel about themselves, it is extremely difficult for females to be happy. Many believe that it is the society that we live in, whether we like to believe it or not, that is the cause for many of the preconceived notions that people have about others. Society associates thinness with success, self-control, and strength, and fat as synonymous with failure, sloth, and weakness (Orenstein, 1994). For adolescent females, this perception can cause many problems.

As stated previously, in the 1994 effective summary, "Shortchanging Girls, Shortchanging America," only 37% of the middle school girls stated that they were happy with the way that they looked. As adolescent girls get older, they are more likely to have a declining sense of themselves that inhibit their actions and abilities (Shortchanging Girls, Shortchanging American, 1994). Not only that, but this is also a time period where females begin gaining a sense of

independence and feel as though they no longer need their parents as much. As means of compensation, adolescent friendships often serve as much-needed support systems that assist girls in processing the complex dynamics between self and environment (Field, Crothers, & Kolbert, 2008). For an adolescent female, the thought of “friendship” is very complex. Adolescent females are often portrayed to be extremely argumentative, backstabbing, competitive, and mean to one another. To the average person, this behavior is considered to be a normal part of development. However, research has suggested that the idea that social exclusion, ridicule, gossiping, and spreading rumors amongst adolescent females is by no means a normal part of development (Brown, 2003). If people continue to accept this type of behavior, we are only hurting and confusing female adolescents.

For an outsider, the perception of middle school is thought to be very similar to elementary school and high school. People see the transition from one school to the next to be a simple stepping stone into the next stage of one’s life. While this is true to some degree, several female adolescents could argue that middle school is a world of its own entirety. During this stage of a female’s life several factors play a part in their psychological growth and development. Contrary to popular belief, females do not only struggle with the idea of puberty, but they are also being subjected to several other stressful situations. For example, females are struggling with feeling as though they must “belong to” and “fit in with” to their different social class, are being subjected to different types of aggression, and are continuously trying to figure out their own sense of worth.

People consider middle school to be a stage in an adolescent’s life where they are trying to find themselves and figure out where they belong. To many, this could be looked at as a



beneficial part of one's life. However, it can also be a very trying and difficult time for individuals. For example, in the book "SchoolGirls" a young female by the name of Lisa accepts certain stereotypes that her classmates have given her and her friends. At the start of the school year, she was a student who had an academic drive, volunteered in class, and turned in her homework. It was not until she realized that she hung around a group of friends that were considered "losers" and she wanted to possess the same traits that her "loser" friends had. She stated, "I'm not supposed to do well in school anymore. I'm not the type. You see, I hang out with certain people. They're known as flunkers, so I'm like that too. And no one expects it of me—not the teachers, not the other kids, no one. If I started doing well, people would think it was weird" (Orenstein, pg 105). This is very disturbing to know that students will do whatever it may take in order to have a sense of belonging. Stereotypes in middle school are very common. In saying that, students tend to accept their social label and start to believe that the stereotypes are true.

One of the most feared stereotypes for female adolescents is to be called a "slut" or a "whore." Female adolescents have gone as far as labeling people to be sluts regardless of if they actually engage in sexual activity. According to Orenstein (1994), a "slut" is not merely a girl who "does it," but any girl who—through her makeup, hairstyle, or her speech—seems as if she *might*. There are several instances within "Schoolgirls" in which the young females struggle with keeping their reputations of a good standard. Female adolescents know that in middle school, boys and girls are held to different standards. If a girl were to do anything out of the norm with a guy, the girl's reputation is almost immediately harmed. In other words, if a girl

were to engage in any type of sexual activity with another guy, they would be ruined and frowned upon by their peers, whereas male adolescents would be smiled upon and praised by their peers. In saying that, it is the connection that females share with one another that is the cause for much concern and distress (Orenstein, 1994).

The relationship that adolescent females have with one another is very interesting. Girl's friendships intrigue many of those who have sought to understand the nature of their functioning and how they contribute to female psychological well-being and personal development (Field, Crothers, & Kolbert, 2008). One of the common characteristics found between all adolescent is the labeling of each other. In the book, *Girlfighting*, it states that labeling people, putting ideas and other kids into neat categories, gives the illusion of control and order in the midst of chaos (Brown, 2003). It went on to say that "girls seem both open to and vulnerable to such labeling, perhaps because in our culture girls tend to be branded in either-or terms: good or bad, madonnas or whores, nice girls or bitches" (Brown, 2003, p. 17). A student that was interviewed within that book stated, "the popular girls always pick on everybody else, so they know they are the tops...They're popular, touchy feely...always playing, hitting, playing with the other person's hair, hugging, and stuff like that....Everyone in the eighth grade knows them, they play around. It's like the two girls and then all the boys are all over them, be always toughing....They play too much and then they go around smelling each other's hair and...they think they're better than everybody else" (Brown, 2003, p. 53). As mentioned previously, excluding others, gossiping, and contributing to rumors are popular amongst adolescent females.

It was not until recently that research studies have started to give these types of manipulative and harassing behaviors a new name called “alternate aggression” (Simmons, 2002). Simmons defines alternate aggression as a “manipulative behavior that allows an individual to express anger and force others to follow orders while maintaining a kind and happy image” (Simmons, 2002, p. 27). The portrayal of adolescent females throughout the media makes it extremely difficult for female adolescents to identify with others who are similar to them and it also make it difficult for them to accept the person that they are. Society has shaped the perception of girls which make it very difficult for girls to express themselves in a positive manner. Girls are not encouraged to express their anger and frustration toward socially imposed gender inequalities and so therefore they take their anger out on their closest targets which are other girls (Ulloa & Ulibarri, 2005). A mother noticed this type of rejection happen to her daughter. She stated, “This time last year, my happy, friendly seventh-grade daughter was voted off the island. The stars aligned, the dice rolled, the ballots were cast and she was “it.” She went from being a member of the “in crowd” to becoming it designated exile. She was talked about, hated, despised, not invited, ridiculed, but mostly, most cruelly, ignored...Even the fringe girls, those not quite in the clique, started avoiding my daughter. Under strict ordering from the reigning queens to not speak to, look at or, God help you, sit near the victim, they complied until finally, the cheese stood alone” (Brown, 2003, p. 38). Because of the fact that alternate aggression does not physically cause harm, it has gone unnoticed by several teachers.

Alternate aggression is very difficult for teachers to punish because there is no proof of the threatening and manipulative behavior. In an interview that Simmons did with a group of

middle school girls, she found that many girls stated that girls act extremely different around their peers than they do around teachers. One of the interviewees stated, “some girls act real good around the teachers, and then when they do something bad, the teachers don’t believe it because they never seen them do it” (Simmons, 2002, p. 29). It is crucial that teachers are aware of this type of behavior, and in order for the behavior to be diminished, teachers must be aware of all the signs. By doing this, it can help lessen the self-esteem issues that the girls are struggling with and help increase their confidence levels. The Analysis Group, *Shortchanging Girls, Shortchanging America* was the first national survey to link the sharp drop in self-esteem suffered by pre-adolescent and adolescent American girls to what they learn in the classroom.

With female adolescents facing so many difficulties, it is time for teachers to be more engaged and active in the developmental process. Teachers must start meeting certain standards in order to ensure that female adolescents have an appreciation for who they are and who they want to be. It is obvious that middle school is an extremely tough age to teach. The National Middle School Association (NMSA) believes those teachers need the proper training before teaching at the middle school level. They feel as though professional preparation programs must instruct teachers about the development and needs of young adolescents; address middle-level philosophy, organization, curriculum planning, and assessments; and require middle-level field experiences (Adams, 2008). For an adolescent female, this type of teacher preparation is of extreme importance. The transition that female adolescents are making coming from the elementary level to the middle school level is very demanding and challenging. Adolescents look for a sense of comfort from their teachers, and they want to know that they can talk to their teachers in times of needs. As mentioned

previously, teachers are unaware of the many different dilemmas that their students are facing. The research on early adolescents and their middle school to secondary school has shown that student-teacher connectedness and trust are critical mechanisms for achieving quality in middle school classrooms (Eccles & Midgely, 1989).

The American Association of University Women has helped teachers through the Educational Foundation's Eleanor Roosevelt Fund to explore the new teaching methods that bolster girls' self-confidence and enhance their learning (Shortchanging Girls, Shortchanging American, 1994). Measures like these need to be taken in order to ensure that female adolescents are on the rise to success. Female adolescents are held on many different expectation levels which therefore makes it difficult when it comes to the learning process. It is time for middle school teachers to reinvent their own classrooms and start looking into ways to not only teach the curriculum but also be a guide and mentor to their students, especially females. Research has shown how difficult it is to be a female adolescent in middle school, and with the amount of time that teachers have with their female student, these difficulties can be diminished with the proper training, commitment, and dedication.

### **Methodology:**

The method that I used in conducting my research included the use of a survey as well as the conduction of individual and group interviews. The age ranges of my participants were between that ages of 18-22 year old, and they were each a Concord University student. The students were asked to think about their middle school experiences and to speak about how social aggression affected them. For the first part of my research, I handed out a survey to the different female athletic teams, and then I continued to distribute the survey to selected

University 100 classrooms, as well as randomly selected upper level classrooms. The reason for this type of distribution was to ensure that I would get a wide range of results from the different age groups. One of the very first things that I did before distributing my survey was to make certain that each of my participants understood that confidentiality was something that would be enforced. Once the students answered the various survey questions, I passed out a separate sheet of paper that asked the students if they would be willing to participate further with this study. The reason that I asked this question was because once I analyzed the survey, I used the participants who agreed to participate further with the study as potential subjects for the individual and group interviews. I needed to make sure I knew which students I could contact as well as the students who do not wish to be further participants. From the survey, I randomly selected 10 students to continue my research with.

For the final part of my research method I conducted guided interviews with the 10 participants. As a group, I asked very general questions and used the feedback that I received to formulate new interview questions for the individual interviews that I later conducted. I did this because I wanted to get a general idea on how each of the participants felt about social aggression and how it affected them. The majority of the questions were open-ended and I documented the various responses. Once I concluded the group interview, I then interviewed each of the participants individually and went into more descriptive detail about the different incidences that happened during their childhood that was related to social aggression. After this part of the research was completed, I recorded the information that I received and I found various correlations between the participant's responses as well as the literature that I read.

### **GROUP INTERVIEW QUESTIONS**

Questions that will be asked:

\*(Each of the participants understood at the beginning of the interview that the following questions required the participants to refer back to their past experiences)\*

1. How would you define social aggression?
2. Based up the definition of social aggression, do you feel that you were a victim of this?
3. Were you ever socially aggressive towards anyone? If so, how?
4. How did you deal with emotional and stressful situations as an adolescent?
5. What would you consider to be the most stressful situation as an adolescent?
6. How often did you compare yourself to your friends?
7. How would you define the word “clique?”
8. Did you feel that it was alright to associate with people outside of your clique?
9. How were your relationships with your teachers?
10. Do you feel that your teachers overlooked “catty arguments” as an adolescent?
11. Do you wish that you teacher would have taken more disciplinary action and stepped into arguments that you had with your peers?
12. Did you feel that your teacher noticed tension between girls whenever there was a problem?
13. Did you ever feel pressured as an adolescent? If so, how?

### **INDIVIDUAL INTERVIEW QUESTIONS**

Questions that will be asked:

\*(Each of the participants understood at the beginning of the interview that the following questions required the participants to refer back to their past experiences)\*

What type of relationship did you have with your friends?

1. What type of characteristics did you look for in yours friends?

2. When you and your friends got into an argument did it last for a long time or was the problem resolved by the end of the day?
3. When you were mad at someone what did you do?
4. When you were mad at someone, did you expect your friends to be mad at them too?
5. If someone was treating you bad, did you talk to someone else about it (another friend, teacher, parent, ect.)
6. Did you feel that your teacher noticed tension between girls whenever there was a problem?
7. What types of cliques were there at your school? What did you have to do or “be like” to be a part of these cliques?
8. How was your school organized? (Where did you sit during bus-hall, lunch, ect.)
9. What types of mean names did girls get called? What did they have to do to get called these names?
10. What did teachers do to discipline students?
11. Did your teachers treat boys and girls differently?

(While these are the types of questions I have, I realize that the answers I receive may cause me to branch off and ask different questions. Therefore, the questions I have may end up being different.)

## **Results**

In order to analyze my research I used Statistical Package for the Social Sciences (SPSS) which is a program designed to help analyze data. Based upon my data from my survey, there were nineteen females who felt that they were victims, four females who felt that they were aggressors and 38 females who felt that they were victims and aggressors. In addition, the



average age was 19.56, the majority of the females are from a rural area, and the average enrollment size of their middle school was 695.82. After analyzing and interpreting the data I choose to work with the questions that appeared to have the most significant impact on my research regardless of whether it was negative or positive. A one-way between ANOVA found that there was no significant difference between the types of aggressors regarding agreement with the following statements:

“I enjoy going to school.”

$$F(2, 58) = 1.264, p = .290$$

“I got along with my friends.”

$$F(2, 58) = .675, p = .513$$

“My teachers overlooked social aggression.”

$$F(2, 58) = .108, p = .898$$

“I had a good relationship with my teachers.”

$$F(2, 58) = .742, p = .481$$

When females agreed with the statement, “I was a victim of social aggression,” it correlated positively with agreement to the following statements:

“I was physically abused by other girls.”

$$r = .329, p = .01$$

“I was emotionally abused by other girls.”

$$r = .674, p < .01$$

“My teachers overlooked social aggression.”

$$r = .442, p < .01$$

Additionally, when females agreed with the statement, “I was a victim of social aggression,” it correlated negatively with agreement to the following statements:

“I have a good relationship with my teachers.”

$$r = -.325, p = .01$$

When females agreed with the statement, “I had a good relationship with my teachers,” it correlated positively with agreement to the following statements:

“I enjoyed going to school.”

$$r = .447, p < .01$$

“I got along with my friends.”

$$r = .279, p = .03$$

Furthermore, when females agreed with the statement, “I had a good relationship with my teachers,” it had a negative correlation with the following statements:

“I was a victim of social aggression.”

“I was physically abused by other girls.”

$$r = -.371, p < .01$$

“I was emotionally abused by other girls.”

$$r = -.303, p = .018$$

“I struggled with my self-esteem.”

$$r = -.368, p < .01$$

I was able to use the survey questions as a way to guide questions during the individual and group interviews.

After conducting the interviews, I came to conclude that there were four main reasons as to why social aggression took place with the women that I studied. These reasons include

insecurities, teacher manipulation, friendship manipulation, and popularity. In regards to insecurities, a female stated, "I remember being upset one day with how I looked and I automatically started gossiping about another girl because I was jealous of her." This is just one of several examples that the females stated about insecurities. As the females discussed teacher manipulation, they stated that many of them had different personalities around their friends and teachers. One of the females stated, "I was a completely different person around my teachers. I had them fooled. They thought I was an angel." I feel that if teachers could hear that statement that they would be surprised at how frequent this type of teacher manipulation occurs. However, not only did the females comment about teacher manipulation, but they also discussed how they manipulated their own friends. For many of the females, power was everything. If they were able to control their friends then they felt as though they had nothing to worry about. A female stated, "I remember 3-way calling. I would do this just to start an argument so that I had the power." As surprising as this may sound, every single girl in the interview admitted to manipulating their friends by using the 3-way calling method. 3-Way Calling is a telephone feature in voice communications which allows a person to conduct a conference call among three parties. However, the female adolescents used this in such a way that one of the two original parties would be silent on the phone while the second individual called the third party. From there, the second individual would talk about the silent individual to the third party. In other words, the original two parties were actually just manipulating and trying to get the third party to talk about someone. Another common method that they used was through letter writing. They would write a letter to one of their friends pretending to talk badly about another person. Once that person wrote back agreeing with the statement, they would then show that letter to the person that they were talking about. This started a great deal of conflict between friends. One of

the main reasons why friendship manipulation took place was for popularity. The females felt that being popular was the only way to be liked. One of the females stated that, “If my friends were being mean to someone, I was mean right back. Your “friends” are always on your side. I can see how they reinforced my behavior.”

As one can see, this research implied that females need to have different outlets for their aggressive impulses. Not only that, more research needs to be done to figure out why social aggression is being used. Based upon the research, one can see that teachers need to be more aware of the situations that are happening within the schools systems. Seeing that there was a negative correlation between females being victims of social aggression and them having a good relationship with their teachers allows one to see that many of these females did not have a good enough relationship with their teachers to reach out for help.

While I am pleased with the results that I received I still understand and realize that there are certain limitations to my research. For starters, I asked females between the ages of 18-22 to recall back to their adolescent years. I fear that there were issues with memory recall. While many of these females could remember several minute details, I still believe that there are certain parts of their adolescent years that were hindered due to memory recall. I also feel that the area was a limitation to my research. Many of the individuals that I surveyed and interviewed were from a rural area and I believe that my results would be different if I survey females from an urban area. Additionally, I believe that there were limitations with the individual and group interviews. Only seven females participated and I feel that if I had a larger number of participants I may have gotten different opinions and viewpoints which would have helped with the overall results and findings of my research.

## **Rationale**

There is an underlying principle behind conducting this research. Based upon the literature, there are entirely too many incidents that occur between females that are affecting them socially and emotionally. Teachers need to be aware of these types of behaviors that are going on within their classroom, and there needs to be ways in which teachers know how to help diminish these problems. While this study is geared towards people in the educational field, it will also help several other people. This study will allow people to see that aggression occurs between all adolescents, not just males. Whether it is physical or emotional it is prevalent, and it needs to be stopped. When students are in situations that are affecting them socially and emotionally it can be very dangerous not only to the students, but also to the teachers. This research study will open up many different venues and allow for people to see how social aggression is affecting female adolescents' worldwide. If female adolescents can find better outlets for their frustrations and anger, then social aggression would not be such a huge ordeal. Female adolescents are struggling with many different predicaments and this research study will allow for others, especially teachers, to see the types of situations that these students are going through and ways to correct and eliminate these problems. With that being said, it is important for teachers to get involved and help these females find "outlets" for their aggressive impulses as well as different ways to release their inner anger in a positive and productive manner.

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**The Effect of Stress on Communication, Job Attitude  
and Job Satisfaction**

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### **The effect of Work Stress on Communication, Job Attitude and Job Satisfaction**

#### **Abstract**

Many researchers of human resources and organizational behavior are inquiring to know what makes the work place conducive for employees to ensure continued increase in productivity and profit. One major workplace factor that has been found by researchers to affect both the employees' and the organization's performance is work stress. When there is stress in the work environment it can affect every other aspect of the organization such as communication, job attitude and job satisfaction. Stress in any organization is not uncommon, it can strain the relationships among co-workers, and in turn, it can lead to communication problems in the work place. Whenever an organization realizes that any of its employees are going through lingering stress situations and the stress is not well managed, communication can be strained, such that information is either not properly delivered at work or the information is not delivered at all, i.e. avoidance. Thus, when there is communication breakdown in any relationship such as in an organization, employees tend to develop and project the wrong attitude at work, and their attitude might eventually affect their relationship with fellow employees. Some researchers referred to such scenario as "attitude-behavior relationship" (Robbins and Judge, 78). The attitude-behavior relationship is said to occur when attitudes have been established for a while and are well defined in an individual; those attitudes are then likely to guide the behavior of such individual (Robbins and Judge, 79). Any wrong attitude at work that is reflected on the job, whether through employee performance or their relationship with coworkers, can potentially lead to less and less employee feeling of job satisfaction.

#### **Literature Review**

Many researchers of human resources and organizational behavior are inquiring to know what makes the work place conducive for employees while productivity and profit are increased. One major workplace factor that has been found by researchers to affect both the employees' and organization's performance is work stress. When there is stress in the work environment it can affect communication, job attitude and job satisfaction. When there is stress in any organization, it is not uncommon that it can strain the relationship among employees, and in turn communication is affected in the work place. Whenever an organization realizes that any of its employees are going through lingering stress situations and the stress is not well managed, communication can be strained in such a way that information is either not properly delivered at work or the information is not delivered at all, i.e. avoidance. As a result, employees have the tendency to have the wrong attitude at work, and their wrong attitude might eventually reflect in their behavior toward fellow employees. Earlier researchers referred to such scenarios as "attitude-behavior relationships" (Robbins and Judge, 78). The attitude-behavior relationship is said to occur when attitudes have been established for a while and are well defined in an individual; those attitudes are then likely to guide the behavior of such individual (Robbins and Judge, 79). Any wrong attitude at work that is reflected on the job can potentially lead to the employee feeling less and less job satisfaction.

The word stress often connotes a negative meaning to the average hearer but this need not always be the case; stress can be either positive or negative. Stress on the job can mean something positive from alertness to responsibility to an awareness of personal role significance. It can be negative when it either lingers or begins to infringe on employee wellness and ability to effectively perform assigned duties or responsibilities. "McGrath (1976) said, ' . . . there is a potential for stress when an environmental situation is perceived as presenting a demand which threatens to exceed the person's capabilities and resources for meeting it, under conditions where he expects a substantial differential in the rewards and costs from meeting the demand versus not meeting it p.1352'" (qtd. in Beehr and

Newman, p. 668). Stress, according to the Merriam-Webster dictionary, is “constraining force or influence” as well as “a state resulting from a stress; *especially*: one of bodily or mental tension resulting from factors that tend to alter an existent equilibrium.” Also, Robbins and Judge defines stress as “a dynamic condition in which an individual is confronted with an opportunity, demand, or resources related to what the individual desires and for which the outcome is perceived to be both uncertain and important” (Robbins and Judge, 666). Although stress results, according to Robbins and Judge, from a desired outcome that is perceived to be both uncertain and important, it can also result from a desired outcome that is perceived to be certain and important. The level of elasticity in the case of an outcome that is perceived to be both certain and important can lead to stress. For instance, a group of students have been given homework with information on all the necessary resources needed and a deadline for submission; although they know what the outcome should be, for various reason not every student is able to meet the deadline. This situation obviously can cause stress especially when it is quite clear that the professor is very strict on deadlines. For students who were not able to commit to the deadline set for submission, there could be various reasons for not turning in the assignment but one of those many reasons cannot be that they were confronted with a desired opportunity, demand or resources that were uncertain.

Communication, on the other hand, is defined by Webster as “a process by which information is exchanged between individuals through a common system of symbols, signs, or behavior: a technique for expressing ideas effectively.” As noted in the definition, communication is not restricted to verbal and written; there are also non-verbal or unwritten aspects of communication which often reveal more than any other communication mode. When any means of communication is occurring, it is assumed that both the sender and the receiver understand the message that is being passed across. For instance, if a sender sends a message and the receiver either has a hard time understanding the person due to the

accent, enunciation, speed, or even the language, then no communication is occurring. If employees feel like they are not being communicated with as they should be or as they would want to be, concerning their assignment, role, responsibility or performance at any given time, that can actually be quite a stressful experience for employees.

One means of communication that has recently found its way into research topics is the use of email in communication and its effect in organizations. Experts say emails have replaced real face to face conversations in many organizations. "... perhaps the biggest mistake you can make, experts say, is replacing conversations with email. ... It masquerades as communication when it is best used for informing, broadcasting, or scheduling" (Conlin, p. 114). Often times where there is conflict and tension in an organization, it is easier to immediately pull up the keyboard and start typing. After all, that allows for full and satisfactory venting without confrontation. But experts like Conlin say probably the best thing for employees to do when they feel a need to vent is to put their keyboard out of reach because of the many conflicts that the use of email for this purpose causes in any organization. "... Conflict comes because so many of us are using email improperly. Now it's blamed for fueling 'conflict spiral' that escalates ill feeling at double the rate of face-to-face communiqués. ... It's an introvert's dream" (Conlin, p.114). Although confrontation could be sometimes difficult or even a challenge, most especially for introverts, it is not worth taking the risk of venting or expressing anger through email because too much meaning could be read into an email that the sender would not be able to clarify and explain appropriately compared to if it were a face-to-face conversation. "...Never put anything sensitive or critical in an email that touches on employees' self esteem or job competence. Nor should you use it to give directions about a job activity or desired outcome if there is a risk of misinterpretation or political sensitivity" (Conlin, p.114).

Another reason why face-to-face communication would be a preferred means of communication in any organization besides announcement, scheduling and the other appropriate email purposes listed above, is what researchers call *communication apprehension*. "Communication apprehension is a broad-based fear or anxiety related to the act of communication, held by a large number of individuals." (McCroskey, Sorensen, Daly, p. 376) People with communication apprehension, according to McCroskey, Sorensen and Daly, are those that "anticipate negative feelings and outcomes from communication, and will avoid communication if possible, or suffer from a variety of anxiety-type feelings when forced to communicate" (p. 376).

The Biblical proverb is frequently quoted that "a gentle answer turns away wrath, but a harsh word stirs up anger." As communication in any relationship is vital and its emphasis cannot be overlooked, so also it is important and cannot be ignored in the work place. Work place communication is often expected to be very objective in its delivery regardless of the pressure, current or future situation, and even potential risk. But with the thought of increased demand and perhaps not enough resources to meet those responsibilities, pressures, obligations and the uncertainty of outcomes, all of these contribute to stress found in the work place and impede communication (Robbins and Judge, 666).

When stress invades the workplace, communication is often instantly affected. People with high communication apprehension could easily find this to trigger or even compound their stressful experience. This is because it becomes more and more difficult for them to communicate while the hostility or tension in the workplace can make it easier for them to isolate themselves and be isolated by others (McCroskey, Sorensen, Daly, p. 376). This is because impatience, irritation, nervousness, anger and many more emotional responses set in and there is a tendency to forget the importance of maintaining professionalism in the work place. While the expectation of professionalism may not

always be required outside the walls of an organization or a job-related gathering, it is necessary within either.

Attitude and behavior are also often portrayed before, while or even after communication. The word attitude is sometimes used with the wrong connotation. It is sometimes used to mean a negative or hostile state of mind; but just like stress, there are both positive and negative attitudes. A positive attitude often leads to increased performance although it does not necessarily lead to job satisfaction or increased level of job satisfaction. For instance, during an annual division meeting in an organization, the supervisor may use the opportunity to talk about strengths, weaknesses and growth opportunities in their division. In the process the supervisor takes time to enumerate progress in the work ethics of certain employees she is pleased with and finds no fault whatsoever in their performances. On the other hand, she also enumerates the weakness or failures in the work ethics of the employees she is not very pleased with. The employees in these two different categories are going to leave the meeting room with obviously different responses in reaction to the supervisor's remarks. Most likely those that were praised would respond with positive attitudes and probably greater satisfaction at least temporarily in the work place. This scenario can be categorized into *external* and *internal locus of control*. Judge and Robbins describes people that allow external situations to control their attitude or response to work especially as described above as having *external locus of control*. On the other hand, employees that were addressed as though they had no significant contribution to the company's progress, are typically likely to respond with a negative attitude to the performance feedback; yet responding positively are those Robbins and Judge describe as people with *internal locus of control*. This is because they typically do not allow themselves to be controlled by external influences. Therefore, a positive attitude does not always mean that the work place is stress free; it could, on the other hand, mean that employees or the workers have learned to be in control of their situation and not be controlled by it. The dictionary meaning for attitude is "an organismic state of readiness to respond in a characteristic way to a

stimulus.” Therefore, job attitude would be a readiness to respond in a characteristic way to a job-related stimulus. According to Robbins and Judge, “attitudes are evaluative statements – either favorable or unfavorable – concerning objects, people, or events. They reflect how one feels about something” (Robbins and Judge, p. 74).

Does a positive attitude imply that employees are satisfied with their job or the organization? Not necessarily. As stated earlier, experienced employees and employees with *internal locus of control* believe they can control their situation, and might be able to maintain a positive attitude in the midst of stress and chaos. Yet, that does not imply that they are necessarily satisfied with their job. In addition, satisfaction is a “fulfillment of a need or want” as well as a “convinced assurance or certainty” according to the Webster dictionary. Job satisfaction is therefore the fulfillment of a want or need (achievement, success, identity, accomplishment and more) or a convinced assurance or certainty employees have at their job.

This is not to say that well-designed compensation programs or effective supervision are unimportant; rather, it is that much can be done to influence job satisfaction by ensuring work is as interesting and challenging as possible. ... of all major job satisfaction areas, satisfaction with the nature of the work itself – which includes job challenge, autonomy, variety and scope - best predicts overall job satisfaction, (Saari and Judge, p. 397)

According to Saari and Judge, satisfaction in the workplace is not all about the pay, promotion or even compensation packages, but satisfaction is derived from the work design itself. Ivancevich supports this in what is referred to as the “job enrichment approach” using Fredric Herzberg’s job characteristics model. “Job enrichment tries to design jobs in ways that help incumbents satisfy their needs for growth, recognition and responsibility.” (Ivancevich, p. 171) This approach is an attempt to increase and expand

employee responsibility through motivation that will enhance their feeling of self worth. According to Ivancevich, for a job to produce certain outcomes it must have certain core dimensions that lead to certain critical psychological states and eventually certain personal and work outcomes are achieved. The core job dimensions are skill variety, task identity, task significance, autonomy and feedback. These core dimensions produce critical psychological states of meaningfulness, responsibility, and knowledge of actual results of the work in the individual employee. When all these characteristics are present in the work place, not only can it help promote individual employees, but it can also keep stress under control, enhance communication, and improve attitudes toward work, increase fulfillment and job satisfaction. These will be achieved due to the presence of high internal work motivation, high quality work performance, and high satisfaction with work, low absenteeism and low turnovers by employees. As a result, when stress is properly managed, productivity and profit increase and the work environment are conducive for workers. (Ivancevich, p. 171)

**Methods:**

Secondary data was the main source of data collection. There are quite ample amounts of research that has been performed in bits and pieces related to this topic. I have carefully selected various related researched information applicable to my research topic, and I have used these collected data for this research. The researched information I used were “An Exploratory Study of Employee Silence: Issues that Employees Don’t Communicate Upward and Why?” by Milliken, Morrison and Hewlin, 2003; “Objective and Subjective Work Monotony: Effects on Job Satisfaction, Psychological Distress and Absenteeism in Blue-Collar Worker” by Melamed, Ben-Avi, Luz and Green, 1995; “The Effect of Employee Satisfaction, Organizational Citizenship Behavior and Turnover on Organizational Effectiveness: A Unit-Level, Longitudinal Study” by Koys, 2001; and The Role of Human Resource Practices in Reducing Occupational Stress and Strain by Teo and Waters, 2002.



These data measured first, how comfortable employees were in discussing issues of concern with superiors. Some such concerns related to a colleague's or a supervisor's competence or performance, problems with organizational processes or performance and/or suggestions for improvement, concerns about pay or pay equity, disagreement with company policies or decisions, personal career issues or concern, ethical or fairness issues, harassment or abuse, conflict with coworkers. Second, employee attitudes and employee behaviors in the work place. Third, occupational stress, organizational commitment, human resource environment, and demographic items such as age, gender, marital status, number of dependants etc.

## **Results**

This data collection is research information that proves the authenticity of my conclusions and resolutions. I have not gone through a process of new data collection, during this research project. Much of my information and findings are based on secondary data from previously done research. In my research paper, I will use some of the previously collected data as I seek to integrate and show the relationship and effect of stress on communication, job attitude and job satisfaction.

The first data set is from the literature on "An Exploratory Study of Employee Silence: Issues that Employees Don't Communicate Upward and Why" (Milliken, Morrison and Hewlin, 2003) is good data that is very useful and applicable to my research topic. The interviews were conducted by one of the authors of this literature. Forty full-time, working industry employees were interviewed and the interview was recorded and coded for the purpose of this research. The purpose of the interview was to find out how comfortable employees were in discussing issues of concerns with superiors. Such concerns and issues that were uppermost on the list as revealed by data are concerns about

- 1 Colleague or supervisor's competence or performance,

- 2 Problems with organizational processes or performance and/or suggestions for improvement,
- 3 Concerns about pay or pay equity,
- 4 Disagreement with company's policies or decisions,
- 5 Personal career issues or concerns,
- 6 Ethical or fairness issues, harassment or abuse
- 7 Conflict with coworkers
- 8 Other issues

All these concerns were analyzed in the literature.

The second data set is from the research literature on "Objective and Subjective Work Monotony: Effects on Job Satisfaction, Psychological Distress and Absenteeism in Blue-Collar Worker." (Melamed, Ben-Avi, Luz and Green, 1995) About 1,278 blue-collar workers participated in the Cardiovascular Occupational Risk Factor Determination in Israel study with 885 men and 393 women. Job analysis was performed based on the work category and the differences in subjective monotony score of men and women in various work conditions were tested.

The third data set is from the literature on "The Effect of Employee Satisfaction, Organizational Citizenship Behavior and Turnover on Organizational Effectiveness: A Unit-Level, Longitudinal Study" research (Koys, 2001). Twenty-eight stores in a chain were used for data collection over a 2-year period. Cross-lagged correlation and regression analyses were used to test the hypothesis to avoid method bias. This study was done to measure employee attitudes and employee behaviors in the work place.

The final data set is from (Teo and Waters, 2002) literature on "The Role of Human Resource Practices in Reducing Occupational Stress and Strain." It tried to measure occupational stress, organizational commitment, human resource environment, and demographic items such as age, gender,

marital status, number of dependants etc. This field study was also done using a cross sectional design for the purpose of this research. There was a 36.6% response rate: 300 questionnaires were sent out and 109 were received back with responses. The respondents were 58% female and 42% male; the average respondent age was 35.88 years. The sample was quite varied; for example there were 18.9% legislators, senior officials or managers, 61.3% professionals, 5.7% clerical workers and 7.5% sales workers, taken from the Singapore Standard Occupational Classification (SSOC) 2000. Eighty percent of the respondents were from the private sector and the other 20% were public sector workers. Other demographics were that 90% were full time employees, 93% were in permanent positions, 81.4% went through tertiary education, 4.7% completed junior college, and 11.2% completed high school.

### **Conclusion**

Although stress is often viewed in a negative connotation that is not always the case; stress could be positive. It is positive when it leads to motivation, determination and growth; when it is negative is when it lingers and results in illnesses and frequent absenteeism. The effect of stress on communication, job satisfaction and job attitude cannot be over emphasized. When there is stress in the work environment it can affect the communication channels, attitudes on the job and the level of employee satisfaction. Therefore it is not uncommon that it can strain the relationship among employees.

Communication is very important in the workplace. It is the lifeline of a good organization. But when there is a breakdown in communication, employee effectiveness can be affected. A major workplace factor such as stress can take a negative toll on communication. When an employee is ill or distressed in anyway, they would not be able to communicate as effectively as expected or they may not be able to communicate at all if they are incapable of making it to work due to stress. On the other hand energy derived from positive stress can be positively channeled toward effective team building amongst

employees. Stress can also influence workplace communication in the form of noise. This happens when employees do not listen to one another because of the presence of stress.

Just like there are positive and negative forms of stress, there are also positive and negative attitudes. Positive attitude is often exhibited by people with Internal Locus of Control – such people believe they are in control of their response to a situation. Negative attitude is often exhibited by people with an External Locus of Control – such people believe that external forces are responsible for their response to a situation. (Judge and Robbins, P. 74) When stress lingers in the workplace, it can lead to an attitude behavior relationship – attitudes that have been established in an individual in a while are likely to guide the individual behavior.

Since profitability is always the ultimate goal of any company. Ultimate profit level is often achieved by companies scoring high on the customer satisfaction scale. Therefore, dissatisfied employees are not likely to be able to achieve ultimate profit and give quality customer services, because their motivation and determination level are likely to be low. So, if stress is consciously reduced in the workplace, communication can be more effective, attitude on the job among employees and customer relations can improve and as a result satisfaction would be more easily attainable. Delighted customers are often a product of happy employees and happy employees are assumed to have a good employer.

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Running head: OPERANT RESPONDING FOR ALCOHOL

## **Contextual Effects on Operant Responding for Alcohol**

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### Abstract

Alcohol addiction, and the role that different factors play, have been investigated in a wide range of procedures for many years. It has been shown that context can play a valuable role in learning specific behaviors (see Balsam, 1985). The present study examined the role of the contextual cues on the effects of alcohol consumption. Rats were given free access to alcohol in Context A, marked by the presence of a black 10 volt battery, and then tested to examine how many bar press responses they made in order to obtain alcohol in either Context A or a novel Context B, the absence of the battery. The hypothesis was that rats tested in Context A would produce more bar presses than those tested in Context B. No significant effects were obtained,  $t(9)=.448$ ,  $p=.664$  and  $t(9)=.329$ ,  $p=.755$ . However, after additional testing was conducted, significant results were obtained,  $t(9)=4.322$ ,  $p=.002$  and  $t(9)=4.610$ ,  $p=.001$ .



### Contextual Effects on Operant Responding for Alcohol

Drug tolerance and drug consumption have been topics of investigation for several years. It has been shown that habitual drug use often leads to drug tolerance. Additionally, habitual drug use and tolerance are often connected with the development of drug addiction (Ramsay & Woods, 1997). Tolerance refers to a situation that occurs with continued use of a drug in which an individual requires greater dosages to achieve the same results. Tolerance can lead to addiction, which is when a person's body requires the drug and suffers painful withdrawal symptoms such as the shakes, sweats, nausea, and a hangover, when the drug is not present. In the case of alcohol, withdrawal symptoms can even include death (Gerrig & Zimbardo, 2005). In 2005, 61 percent of adults in the United States drank alcohol and the number of alcohol related deaths, excluding accidents and homicides, was 21,634 people and as of 1998, 1 in 8 American adult drinkers were alcoholics or had experienced alcohol related problems (The National Center for Health Statistics, 2005). Research has suggested several variables that may play a role in drug and alcohol use. Some examples of these variables include cultural, contextual, social, and biological factors (see Ramsay & Woods, 1997).

One factor that has gained considerable research interest is the role of the context and it has become a common area of study in drug research. In addition, the effects of the context have also been demonstrated in other studies examining various behaviors such as lever pressing behavior for food and water reinforcers using rats. It has also been shown that context can play a valuable role in learning specific behaviors. At a logical and procedural level, all learning occurs in context. Learning occurs in a cognitive or associative context of what has been learned before and in an environmental context that is defined by the location, time, and specific features of the

task at hand (Balsam, 1985). Most drug research is conducted using animals for several reasons. One reason is that animals serve as a reliable model and can be studied more easily than humans with fewer ethical issues when compared to using humans for drug research.

Because it has been demonstrated that context can play an essential role in learning specific behaviors, there have been numerous studies examining the possible role of the environment in relation to the tolerance of various drugs (Ramos, Siegel, & Bueno, 2002).

Macnish (1859) was among the first to study drug addiction in his clinical work. In Macnish's book, *The Anatomy of Drunkenness*, he noted that:

Man is very much a creature of habit. By drinking regularly at certain times he feels the longing for liquor at the stated return of these periods—as after dinner, or immediately before going to bed, or whatever the period may be (Macnish, 1859, p.151).

Following Macnish's ideas, many other researchers have looked at contextual factors regarding alcohol addiction and tolerance. Some of the prominent researchers in this field include Shepard Siegel, Barbara Ramos, Marvin Krank, James Mansfield, José Bueno, and Joseph Kim to name a few. These researchers and others have demonstrated that tolerance is greater in an environment or context where the subject has previously been exposed to the drug (Tabakoff, Melchior, & Hoffman, 1984; & Bueno & Fachini, 2007.)

One study looking at alcohol tolerance and the environment was conducted by Ramos, Siegel and Bueno (2002). They demonstrated that alcohol induces hypothermia. Normally, alcohol consumption causes a decrease in body temperature, however, once tolerance has developed, the decrease in body temperature is reduced or non-existent. Thus, tolerance was measured by the lack of a decrease in body temperature. Their experiment consisted of three phases, a tolerance development phase, an extinction phase, and a tolerance test phase.

First, the tolerance development phase began and lasted 36 days. During this phase, the rats were administered either alcohol or saline injections every day in order to develop tolerance to alcohol. A quarter of the rats received alcohol injections during a 10 minute flashing light (Group A), a quarter received alcohol injections 10 minutes after the cessation of the flashing light (Group B), a quarter received saline injections during a 10 minute flashing light (Group C), and a quarter received saline injections 10 minutes after the cessation of the flashing light (Group D).

The rats then entered the extinction phase. During this phase, the four groups of rats from the previous phase, Groups A, B, C, and D, were each divided in half creating a total of eight groups A1, A2, B1, B2, C1, C2, and D1, D2. Rats in Groups A1, B1, C1, and D1 were presented with the flashing light every other day but were given no alcohol injections. The rats in Groups A2, B2, C2, and D2 were left to rest in their home colony.

Finally, during the tolerance test phase, all rats received alcohol injections either with or after the flashing light in the same temporal arrangement as they had received on the first day of the tolerance development phase. That is, rats who received injections with the flashing light in the tolerance development phase received an injection with the flashing light during the test phase and those who received an injection after the flashing light during the tolerance development phase received an injection after the flashing light during the test phase. The only difference was that all rats received alcohol, therefore, rats in Groups C1, C2, D1, and D2 received alcohol for the first time

After the tolerance test, the researchers found that the rats in Group A2, those that had previously received alcohol injections during the 10 minute flashing light, and then were left in the colony to rest during the extinction phase, had a much smaller decrease in body temperature

than all other groups, suggesting that rats in Group A2 had developed a higher tolerance as indicated by the decrease in hypothermia. That is, the flashing light acted as a conditioned stimulus that was directly associated with the effects of the drugs for Group A2 (Ramos, Siegel & Bueno, 2002). This suggests that the light cue acted as an environmental marker for the rats to be able to consume alcohol without the usual effects occurring. Their research is consistent with previous studies that alcohol tolerance can be associated with a direct environmental stimulus. (Holland, 1992; Kim, Siegel & Patenall, 1999).

A similar study, looking at environmental related tolerance to alcohol, was conducted by Melchior (1988). Before conducting this study, an initial test was conducted to determine the duration of the thermal response. For this, body temperature was measured by using a telethermometer attached to a rectal probe. The body temperature was measured before the injection and every five minutes after the injections. She found that the thermal response lasted about 30 minutes before it was completely gone. Her experiment then consisted of two phases, a treatment phase and a testing phase. She used 96 male rats and they were randomly assigned to one of eight groups. Half of the rats received cerebrospinal fluid (CSF) injections and the other half received alcohol injections in Context A. Then, half of the rats that received the CSF injections and half of the rats that received the alcohol injections were tested in Context A and the other half of these groups were tested in Context B. Context A differed from Context B by the addition of music.

During the treatment phase, to develop tolerance, all rats received either four injections per day of alcohol or CSF in Context A. The rat's temperatures were measured before each injection and five minutes after each injection and they remained in Context A to wait for the next injection.

All testing was then conducted on the following day. The rats were tested in either Context A or Context B. During this phase of the experiment, the rats were given an injection of either alcohol or cerebral spinal fluid (CSF).

As a result, Melchior (1988) found that the rats that received the alcohol treatment in the cued environment (Context A) and were tested in the cued environment (Context A) demonstrated more tolerance to alcohol than the other six groups. That is, she found that the only group to demonstrate tolerance was the group that received alcohol and was tested in the same context. That is, the group that received alcohol injections in the presence of music and tested in the presence of music demonstrated tolerance to alcohol, demonstrating that the context (environment) may play an important role in drug tolerance. Melchior's findings are also consistent with past research and provide further evidence that the environment can play a role in tolerance to alcohol.

Evidence for contextual effects on tolerance comes from a variety of studies. Together, these studies demonstrate context dependent tolerance to alcohol, thus, they provide support that tolerance to alcohol maybe context dependent. A number of studies have demonstrated this effect (Ramos, Siegel, and Bueno, 2002; Melchior, 1988; Kim, Siegel & Patenall, 1999; and Holland, 1992). While it is important that contextual effects can be demonstrated with tolerance to alcohol and other drugs, contextual effects can also be demonstrated with other aspects or drug behavior as well.

Another way contextual effects have been demonstrated is by examining self-administration, an example of this was a study conducted by Krank and O'Neill (2001). They conducted an experiment looking at alcohol self-administration and contextual cues using 36

male rats. Their experiment consisted of three phases, a bar press training phase, a conditioning phase, and a testing phase.

During the bar press training phase, the rats learned to press a bar for a sweetened solution under conditions of water deprivation for 10 sessions on a VI 20 schedule of reinforcement.

Then, during the Pavlovian conditioning phase, the rats were randomly assigned to groups. Half of the rats were in Group A and the other half were in Group B. Group A received alcohol solution in the operant chamber and saline solution in their home cage. Group B received saline solution in the operant chamber and alcohol solution in their home cage.

During the acquisition phase, all the rats would self-administer alcohol by bar pressing. The rats were placed in the operant chambers for 60 minutes and the number of bar press responses for alcohol was recorded.

Krank and O'Neill (2001) found that Group A had a higher response rate than Group B. Their findings suggest that the operant chamber served as a contextual cue for the rats to respond and consume a larger amount of alcohol because of the previous exposure to alcohol in the context of the operant chamber. These results are also consistent with past findings (Arroyo, Markou, Robbins, & Everitt, 1998).

Another example of a study involving self-administration was conducted by Files et. al (2006), however, their study also investigated how the presence of a tangible object would effect the rats responding rates. For this study, they used eight male rats. First, they trained the rats to bar press for a sucrose solution. Once the rats were consistently bar pressing for the sucrose solution, they added two percent alcohol to the solution. They gradually increased the alcohol in the solution and decreased the sucrose until it was eventually a 10 percent alcohol solution. For

the tangible marker, they placed a marble in the center of the operant chamber for ten sessions and then removed it for the last five. The marble was not present in the home cages.

As a result, Files et al. (2006) found that there was a significant decrease in responding when the marble was present and an increase when the marble was not present; however, the increase with the marble absent was not significant. They believe the marble decreased responding because the rats were distracted by it because they spent time moving the marble around in the operant chamber. Their study suggests that the presence of a tangible object may decrease alcohol intake and operant responding rates, however, it seems that this may be due to the object being a distraction rather than any contextual effect. Other researchers have reported similar findings suggesting that tangible objects such as marbles and balls can disrupt self-administration of alcohol (Boakes, Poli, Lockwood, & Goodall, 1978; & Timberlake, Wahl, & King, 1982).

Together, the previous studies provide examples of the contextual effects on various aspects of drug related behavior such as how context affects tolerance to alcohol as well as self-administration of alcohol in rats. One study also highlights what can happen if a tangible object is present in the operant chamber. While these studies provide an example of the research that has been conducted, it is important to remember that there have been several other studies demonstrating the effects with alcohol and other drugs such as cocaine and heroin as well as with food and water (see Arroyo, Markou, Robbins, & Everitt, 1998). As a result of these studies, it has been demonstrated that alcohol consumption is related to contextual cues. Based on the findings of past studies, the current study focused on whether a specific element of the context can produce the same results. The present study specifically examined the role of the environmental (contextual) cues on the effects of alcohol consumption. Rats were given free

access to alcohol in Context Battery, marked by the presence of a black, 10 volt battery, placed in the operant chamber, and then tested to examine how many bar press responses they would make in order to obtain alcohol in either the same context, Context Battery, or a novel context, Context No Battery, where the battery was absent. It was expected that exposure to alcohol in the specific context would result in higher responding to obtain alcohol when tested in the same context rather than when exposure and testing occur in different contexts. That is, the hypothesis was that the rats that were tested in Context Battery would produce more bar presses than those tested in Context No Battery which is consistent with past studies (Krank and O'Neill, 2001; & Arroyo, Markou, Robbins, & Everitt, 1998)

## Method

### Subjects

For this experiment, 11 female, Sprague-Dawley strain rats were used. They were housed in their home cages in the vivarium on a 12h light-dark cycle and all the rats had limited access to water for the duration of the experiment. All of the procedures were conducted during the 12h light period.

### Materials

Grain alcohol, sugar, and various containers to measure and store the alcohol and sugar solutions were used. In addition, one standard operant chamber model number 81335 manufactured by Lafayette Instrument Company was also used. The chamber contained one lever and one liquid-delivery system.

### Procedure

All rats were handled daily for 20 days prior to the start of the 12 day training phase. Twenty-four hours prior to the training period, all water bottles were removed from the rats'



cages. All rats had access to their water bottle for 10 minutes at the end of each day. This procedure was continued throughout the entire experiment. During the 12 day training period, the rats learned the bar press response. During this phase, the rats were placed in an operant chamber where they learned to bar press for a 10% sugar solution under conditions of limited access to water as previously described. All training sessions lasted 15 minutes and occurred at approximately the same time each day (evenings). All rats started on an FR 1 schedule of reinforcement and were gradually increased, on the same schedule and at the same time, to an FR 15 schedule of reinforcement by the end of the 12 day training phase. All bar press training occurred in Room A.

The next phase, alcohol acquisition, lasted for 8 days. Each rat was given daily, free access to alcohol in the operant chamber for 1, 15 minute session (evening) with the presence of a black, 10-volt battery. All rats started on a 2% alcohol/10% sugar solution for the first 3 days, a 5% alcohol/10% sugar solution for the next 2 days, and finally, a 10% alcohol/10% sugar solution for the last 3 days. All alcohol acquisition sessions occurred in Room B.

The test phase then began and lasted 2 days. During this phase, the rats were divided in two approximately equal groups based on performance in the first two phases and were referred to as Group Battery and Group No Battery. All rats were tested for alcohol consumption by the number of bar presses they performed. Each test session lasted for 15 minutes and the rats were tested on an FR 5 schedule of reinforcement on the first day of testing and an FR 15 schedule of reinforcement on the second day of testing. Rats in Group Battery were tested in the presence of the black, 10-volt battery in the operant chamber and rats in Group No Battery were tested without the presence of the battery. All testing occurred in Room A, where they had been trained to bar press.

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Insert Figure 1 about here

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### Results

On Test Day One, all rats were on an FR 5 schedule of reinforcement and were tested in Room A, where they had initially been trained to bar press. The mean number of responses for Group Battery was 65.80 bar presses and the mean number of responses for Group No Battery was 50.67 bar presses. An independent samples t-test was performed to examine a difference between Group Battery and Group No Battery and no significant difference was found,  $t(9)=.448$ ,  $p=.664$ .

For Test Day Two, all rats were on an FR15 schedule of reinforcement. The mean number of responses for Group Battery was 141.20 bar presses and the mean number of responses for Group No Battery was 118.33 bar presses. An independent samples t-test was again performed, and no significant difference was found,  $t(9)=.329$ ,  $p=.755$ .

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Insert Figure 2 about here

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The total mean number of responses for Test Day One was 57.55 bar presses and the total mean number of responses for Test Day Two was 128.73 bar presses. Additionally, a two-way ANOVA was performed to examine a difference between Test Day One and Test Day Two and a significant difference was found,  $F(1,9)=12.018$ ,  $p=.007$ . A two-way ANOVA was also performed to examine an interaction between Group Battery and Group No Batter for the two test days and no significant difference was found,  $F(1,9)=.035$ ,  $p=.856$ .

## Discussion

It was expected that the battery would serve as a contextual cue and influence the alcohol consumption rates of the rats. However, the hypothesis that the rats tested in Context A would produce more bar presses than those tested in Context B was not supported. These results are inconsistent with previous research that found that an operant chamber and other aspects of environments served as contextual cues for rats to respond and consume a larger amount of alcohol because of the previous exposure to alcohol in that specific context or environment (Krank & O'Neill, 2001; & Arroyo, Markou, Robbins, & Everitt, 1998). According to previous research, the rat's response rates should have been influenced by the context in which they were trained and tested. The inconsistent findings of the current study may be because the battery that was placed in the operant chamber wasn't a potent contextual cue. Since the hypothesis of this study was not supported and was inconsistent with previous research, further research was conducted that occurred over the course of four additional testing days.

Test Days 3 and 4 were conducted to confirm the findings of Test Days 1 and 2, therefore, it was not expected to produce any significant effects. These test days occurred 1 week after Test Day 1 and Test Day 2 and they were a repeat of Test Days 1 and 2. That is, each test session lasted for 15 minutes and the rats were tested on an FR 5 schedule of reinforcement on Test Day 3 and an FR 15 schedule of reinforcement on Test Day 4. Rats in Group Battery were tested in the presence of the black 10-volt battery and rats in Group No Battery were tested without the presence of the battery. All testing for Test Days 3 and 4 also occurred in Room A, the same room that was used on Test Days 1 and 2, which is where the rats initially learned to bar press. On Test Day 3, the mean number of responses for Group Battery was 117.40 bar presses, and the mean number of responses for Group No Battery was 109.83 bar presses. An

independent samples t-test was performed and found no significant difference between Group Battery and Group No Battery,  $t(9)=.102$ ,  $p=.921$ . On Test Day 4, the mean number of responses for Group Battery was 201.40 bar presses, and the mean number of responses for Group No Battery was 160.83 bar presses.

An independent samples t-test was again performed and found no significant difference between Group Battery and Group No Battery,  $t(9)=.510$ ,  $p=.622$ . The results for Test Days 3 and 4 are consistent with the results from Test Days 1 and 2 but are not consistent with other past research on contextual cues (Krank & O'Neill, 2002; & Arroyo, Markou, Robbins, & Everitt, 1998).

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Insert Figure 3 about here

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The total mean number of responses for Test Day Three was 113.27 bar presses and the total mean number of responses for Test Day Four was 179.27 bar presses. Additionally, a two-way ANOVA was again performed to examine a difference between Test Day Three and Test Day Four and a significant difference was found,  $F(1,9)=7.604$ ,  $p=.022$ . A two-way ANOVA was also performed to examine an interaction between Group Battery and Group No Batter for the two test days and no significant difference was found,  $F(1,9)=.109$ ,  $p=.749$ .

Because the findings of Test Days 3 and 4 were congruent with the findings of Test Days 1 and 2, two additional test days were added. These days were added to see if the room the rats were being tested in might be having an effect on their responding. That is, to see if there would be any significant findings if the rats were tested in Room B, the room where the acquisition phase had occurred. These test days were referred to as Test Days 5 and 6 and were conducted

two days after test days 3 and 4. For these test days everything was the same as on the previous test days except that all rats were tested in Room B. This was done because previous experience from a pilot study, that had used the same testing rooms for an operant conditioning project, had suggested that the rats could tell a difference in the rooms. This part of the study looked to see if the room where the rats learned to bar press (Room A) had an effect on their behavior compared to the room where they had received alcohol training (Room B). It was expected that the room change would have an effect on alcohol consumption rates. For these two test days, each test session lasted for 15 minutes and the rats were tested on an FR 5 schedule of reinforcement on Test Day 5 of testing and an FR 15 schedule of reinforcement on Test Day 6. Rats in Group Battery were tested in the presence of the black 10-volt battery and rats in Group No Battery were tested without the presence of the battery. On Test Day 5, the mean number of responses for Group Battery was 217.20 bar presses and the mean number of responses for Group No Battery was 77.17 bar presses. An independent samples t-test was performed and found a significant difference between Group Battery and Group No Battery,  $t(9)=4.322$ ,  $p=.002$ . On Test Day 6, the mean number of responses for Group Battery was 263.20 bar presses and the mean number of responses for Group No Battery was 107.17 bar presses. An independent samples t-test was again performed and found a significant difference between Group Battery and Group No Battery,  $t(9)=4.610$ ,  $p=.001$ . This pattern of results is consistent with past research demonstrating a contextual effect (Krank & O'Neill, 2002; & Arroyo, Markou, Robbins, & Everitt, 1998).

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Insert Figure 4 about here

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The total mean number of responses for Test Day Five was 140.82 bar presses and the total mean number of responses for Test Day Six was 178.09 bar presses. Once again, a two-way ANOVA was once more performed to examine a difference between Test Day Five and Test Day Six and a significant difference was found,  $F(1,9)=23.257$ ,  $p=.001$ . A two-way ANOVA was also performed to examine an interaction between Group Battery and Group No Batter for the two test days and a significant difference was found,  $F(1,9)=21.159$ ,  $p=.001$ .

It appears that on Test Days 1 and 2, as well as Test Days 3 and 4 that the battery that did not act as a contextual cue, however, it seems that the context of the room was more similar to that of the context when the rats were learning to bar press. The data seems to suggest that the overall context of the room was a more potent contextual cue. Therefore, it seems that when the rats were tested in Room A, there was not a significant effect because this was the room where the rats had learned the bar press behavior. As a result, the rats bar pressed because that was what was learned in that context. However, it seems that once the rats were moved into Room B for testing, there was a significant effect found because this is where the alcohol acquisition phase occurred. For these test days, it seems the room served as a context to consume alcohol, thus a contextual effect was demonstrated.

In conclusion, there are two major implications of this study. First, the findings from Test Days 5 and 6 of this study, as well as previous studies, can help with treatment programs for people who are addicted to alcohol and other various drugs because context may play a role in drug consumption. For example, if an alcoholic drinks alcohol or a drug addict does drugs in one context, they should avoid being in that context once they have stopped engaging in this behavior to help prevent the desire to do it again. Once they have stopped engaging in this destructive behavior, they should also stay in contexts similar to those in which they learned to

abstain from these destructive behaviors. Based on the findings from Test Days 5 and 6, when people learn to drink in a specific context, they are more likely to make the appropriate responses to obtain alcohol in that same context compared to when in a novel or new context.

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Appendix

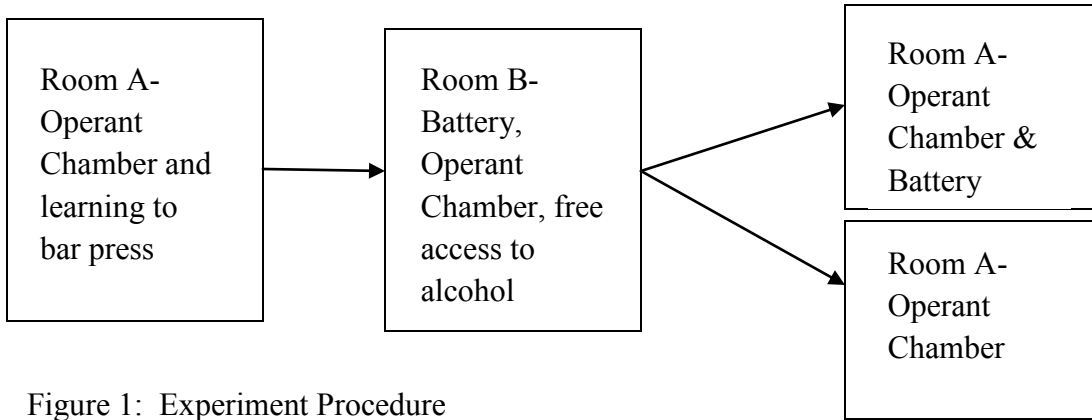


Figure 1: Experiment Procedure

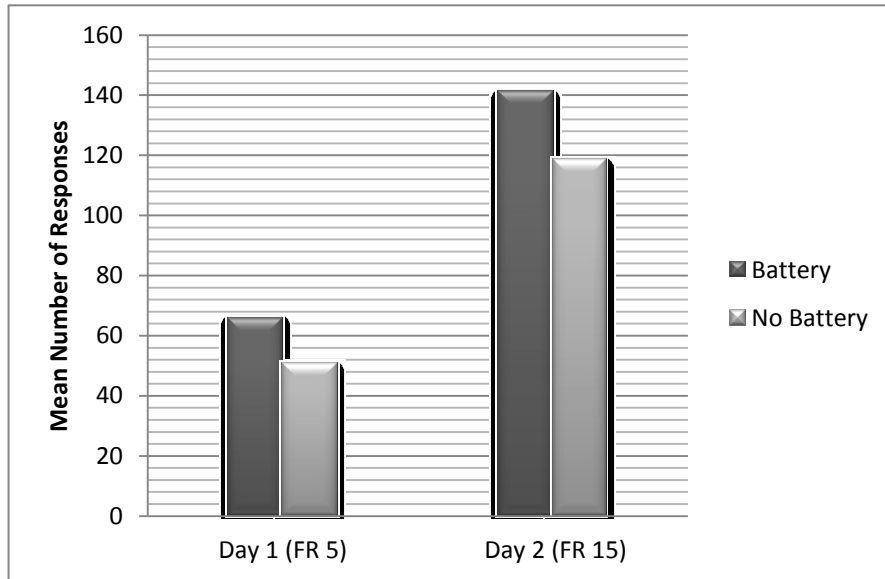


Figure 2: Mean number of responses for Test Days 1 and 2

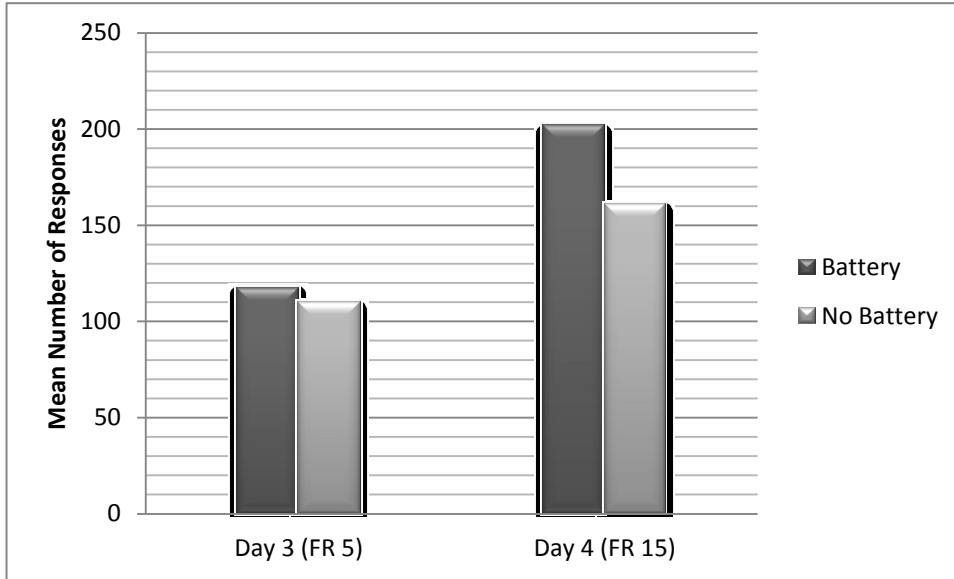


Figure 3: Mean number of responses for Test Days 3 and 4

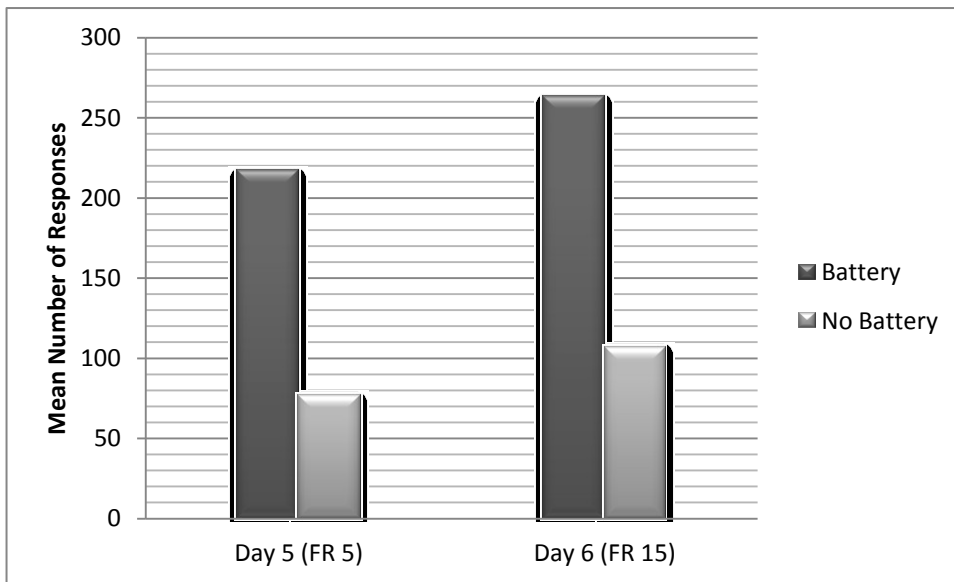


Figure 4: Mean number of responses for Test Days 5 and 6.

**Screening of antibodies against the oxytocin receptor (Oxtr)  
by western blotting**

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**Abstract**

The oxytocin receptor (Oxtr) is a G-protein coupled receptor found in tissues throughout the bodies of most mammals. It is the only known receptor for oxytocin (Oxt), but its homology with the vasopressin receptors (Avpr) raises the possibility of cross-reaction when examining it with antibodies. Five commercially available antibodies against the Oxtr were tested by western blot analysis to determine their efficacy as reagents for the Oxtr. None of them produced specific bands. These results lead to the question of whether better epitopes for antibodies could be selected, and calls some prior research into question.

## Introduction

Oxytocin is a nonapeptide involved in the regulation of parturition, lactation, and a wide variety of sexual and social behaviors. Its primary structure is very similar to that of vasopressin (Avp), differing by only two amino acids (Caldwell and Young 2006). This similarity necessarily requires that the receptors for both hormones be at least somewhat homologous, which proves to be the case. Oxtr and the three Avprs are between 40 and 85% homologous, being highest at the trans-membrane helices and the first extracellular loop near the N-terminus (Chini 2007). Gimpl and Fahrenholz (2001) note that Oxtr has only 10 times more affinity for Oxt than for Avp. This high degree of homology renders differentiation between Oxtr and the Avprs by the use of antibodies very difficult. Several researchers have managed to detect Oxtr by the use of antibodies (Faine and Nicholson 1998, Bussolati et al. 1996, Lollivier et al. 2006, Einspanier and Ivell 1997), but they have been concerned with detecting Oxtr in tissues like mammary and myometrial tissue, which contain a preponderance of Oxtr, or the reproductive tracts of male monkeys, in which there are few (if any) homologous GPCRs to cause nonspecific binding of a primary antibody. Research on Oxtr in the brain has proven quite difficult, since the brain contains a tremendous number of GPCRs of all types. Of particular concern are Avpr1a and Avpr1b, which are common throughout the brain. Those experiments which have been done on Oxtr in the brain have had to work around the lack of a specific antibody against Oxtr by using techniques such as receptor agonists and antagonists (Northrop and Erskine 2008) or mRNA quantification (Meddle et al. 2007). The availability of an antibody against Oxtr specific enough to distinguish it from the competing GPCRs in the brain would be a great boon to research on the effects of Oxt.

## Materials and Methods

Proteins were extracted by sonication in SDS from the livers, forebrains, and olfactory bulbs of Oxtr-wild-type and -knockout mice as detailed by Tomizawa et al. (2003). Additionally, a sample of Oxtr-

containing lysate was ordered from Santa Cruz Biotechnology. Western blots of the samples were probed by each of five primary antibodies against Oxtr, followed by a horseradish peroxidase- (HRP) conjugated secondary antibody to emit light where each primary antibody had bound. A peroxide-containing substrate was then added to each blot. Results were visualized on autoradiography film. To confirm the presence of protein, each blot was then stripped and rehybridized with an antibody against  $\beta$ -actin, followed by an HRP-conjugated secondary antibody. Peroxide substrate was again added, and the results were visualized on autoradiography film. An antibody which produced a specific band at 66 kD in the wild-type tissues and the lysate but not in the knockout tissues would be recognized as a specific antibody against Oxtr. All blots were performed at least three times.

### **Antibodies**

The following five antibodies were purchased:

1. C-20 is produced by Santa Cruz Biotechnology. It is a polyclonal goat antibody raised against a peptide homologous to the C-terminus of human Oxtr. It has been used to locate Oxtr in mouse hippocampus (Tomizawa et al. 2003). Two separate vials of C-20 were used in the experiments.

2. EB07183 is produced by Everest Biotech. It is a polyclonal goat antibody raised against a peptide homologous to an internal region of human Oxtr. Everest writes that the antibody is expected to react with human, mouse, rat, and dog Oxtr.

3. LS-A244 is produced by MBL International. It is a polyclonal rabbit antibody raised against a peptide homologous to the N-terminal extracellular domain of human Oxtr. MBL recommends it for use in immunohistochemistry.

4. NLS244 is produced by Novus Biologicals. It is a polyclonal rabbit antibody raised against a peptide homologous to the N-terminal extracellular domain of human Oxtr. Novus writes that cross-reactivity is expected with human, mouse, and rat Oxtr.



5. Oxtr11A is produced by Alpha Diagnostic. It is a polyclonal rabbit antibody raised against a peptide homologous to the C-terminal intracellular domain of rat Oxtr. Alpha Diagnostic notes that cross-reactivity is "not established", but points out the high homology of the rat Oxtr to that of mouse, sheep, human/monkey, bovine, and pig.

All blots were subsequently stripped and reprobed with a Cell Signaling Technology rabbit antibody against  $\beta$ -actin

## Results

We observed no bands of 66 kDa with any of the five tested antibodies.  $\beta$ -actin reprobing showed that protein was present in all wells. Figure 2 shows a faint band at approximately 75 kDa in the wild-type forebrain, but it appears in no other lane and is slightly heavier than the expected location for Oxtr.

## Discussion

As noted above, all of the blots were performed at least three times. In the course of those tests, not one of the antibodies produced a specific band as sought. The results were also highly variable, with bands appearing at different molecular weights from one test to the next with the same antibody. The only major constant was that no test resulted in the appearance of a specific band at 66 kD.  $\beta$ -actin tests reveal the presence of protein in each lane, ruling out the possibility of lost or degraded protein. Our results indicate that these five antibodies are not suitable for western blots of tissue extracts from mice, although they could still be useful for immunohistochemistry.

The most likely cause of this nonspecificity is the epitope selection of the antibody. NLS244 and LS-A244, in particular, were raised against an epitope occurring near the N-terminus of Oxtr, which has been shown to be the site of the highest homology that Oxtr bears to other GPCRs (Chini and Manning 2007). The failure of the other antibodies is not quite as easily explained, but is still most likely due to

the epitopes against which they were raised. In the future, closer examination of Oxtr and those GPCRs most homologous to it may reveal sites unique to Oxtr and thus more distinctive. Other possible explanations include poor-quality primary antibodies, but this is extremely unlikely, given that none of the five tested antibodies identified a specific 66 kD band.. Also, a new vial of C-20 was procured which did not produce appreciably different results. The likelihood of two vials of an antibody both being defective is quite low.

These results also call some prior research into question, particularly the paper by Tomizawa et al. of 2003 using the Santa Cruz C-20 antibody to examine Oxtr in mouse hippocampus. Until a specific antibody against Oxtr is found, research in this area would likely be more reliable if carried out by other means such as mRNA detection or autoradiography as recommended by Gimpl and Fahrenholz (2001).

## **Acknowledgments**

I wish to thank Dr. Heon-Jin Lee and Dr. W. S. Young III (NIH) for their tremendous amounts of help and guidance throughout the course of this experiment.

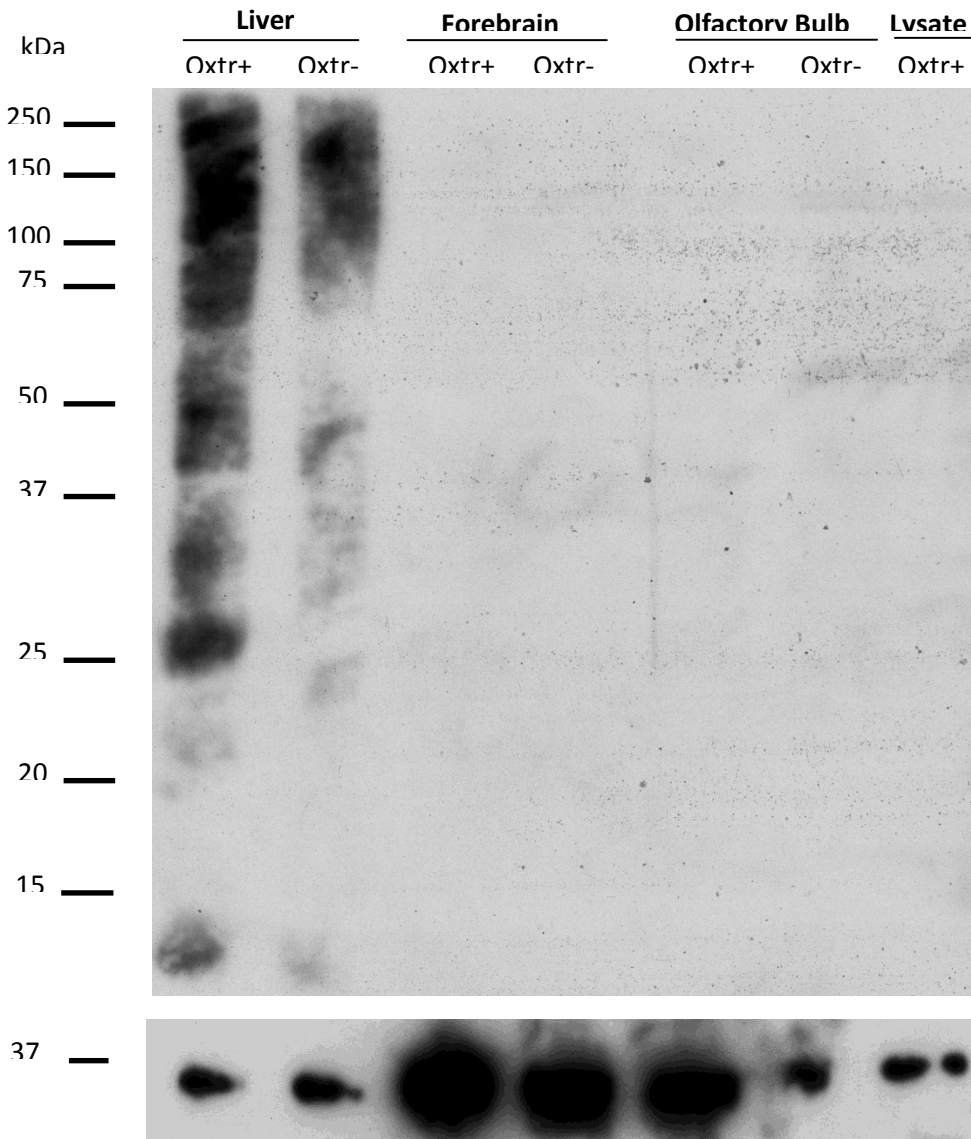
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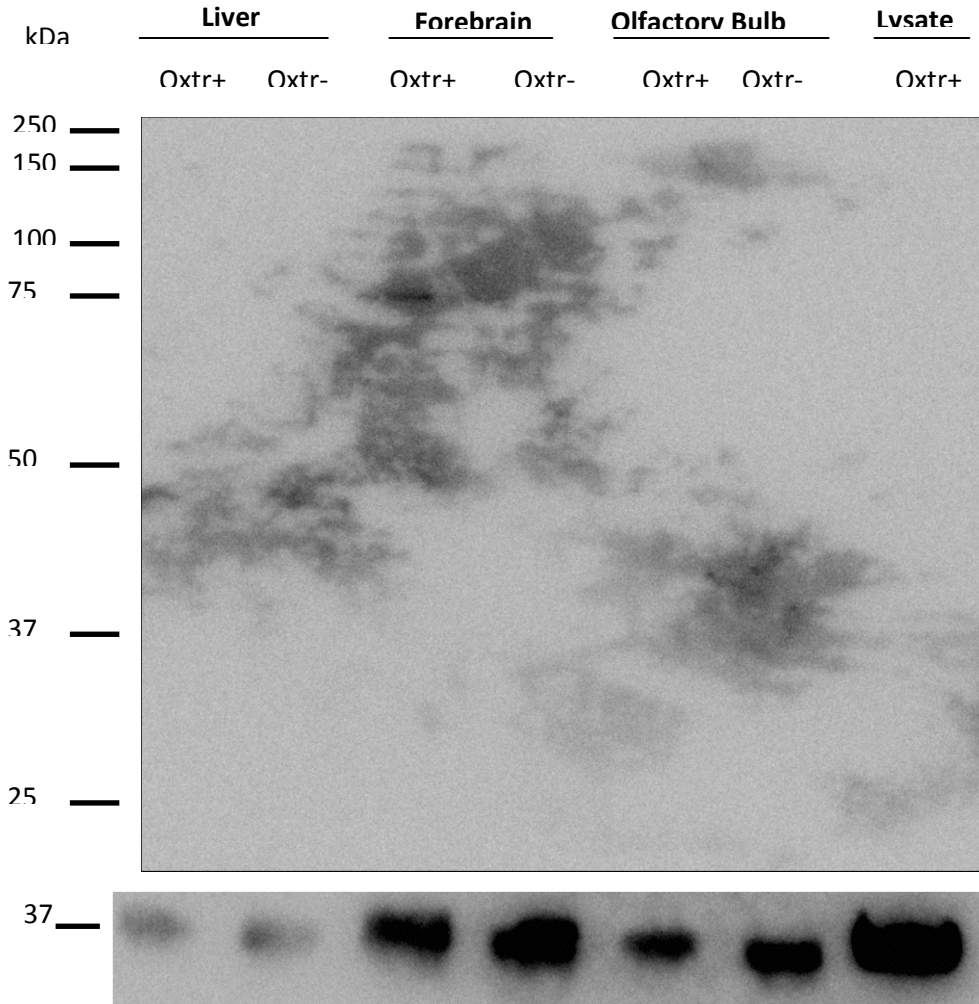
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Figures

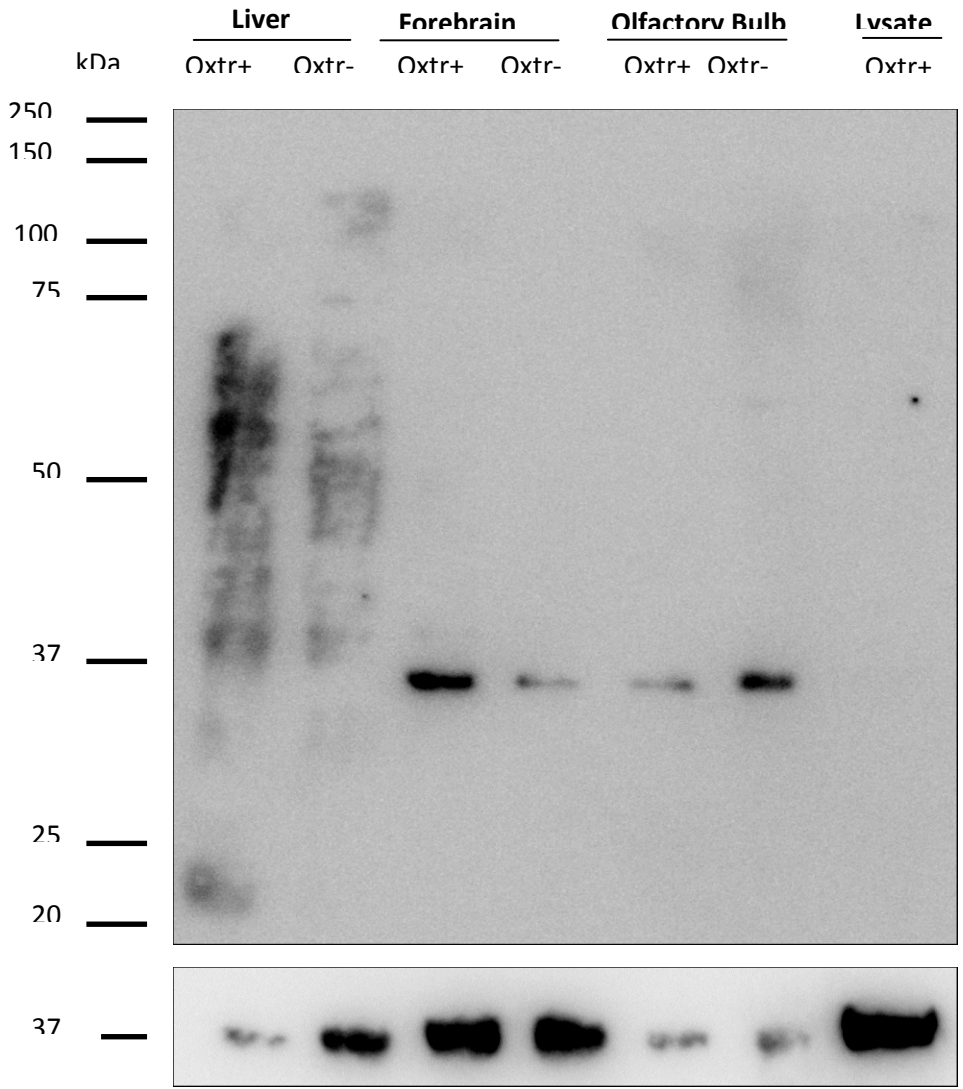
Figure 1. Santa Cruz C20 blot and reprobng with  $\beta$ -actin antibody.



**Figure 2.** Everest EB07183 blot and reprobing with  $\beta$ -actin antibody.



**Figure 3.** MBL LS-A244 blot and reprobing with  $\beta$ -actin antibody.







**Figure 5.** Alpha Diagnostic OTR11A blot and reprobing with  $\beta$ -actin antibody.

