

Journal of Student Research

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Foreword

At the start of the 2018 spring semester, the UW-Stout community was advised by Chancellor Meyer that, after months of doing whatever the digital alchemists must do to make a website operate, our wizards were prepared to launch the new UW-Stout website. I was wondering just how that works; my cyber-literacy being a bit stunted, the best I could do was to visualize the Chancellor standing next to a human-sized wall switch, looking to a group of technicians in lab coats, asking "READY?"

Well—however it got off, things have gone pretty smoothly, and UW-Stout has an appealing new website. Of course, among the 10,000 pages this site will ultimately manage, there are a few pages to find and links to repair, including, at this writing, the pages to the *Journal of Student Research*. Sniff...

Complex technical systems that represent a university, or a large business, or a branch of government, and help them function in tens of thousands of ways, are a reality of life. Making that happen takes people who are skilled, knowledgeable, and collaborative. We aim to prepare such people, turning them out to businesses, schools, and communities, READY to take on the challenges of our world.

We believe that the research work published in the JSR is evidence that our programs prepare information technology developers as well as financial analysts, human resource managers, child psychologists, and a host of other people who will prove their worth in future careers. Our student researchers have shown that they have the big-picture mentality to survey large swaths of our society's conditions and can develop research that is relevant, focused, and useful. They have also shown that they are detail-oriented in their commitment to preparing and revising their work for publication, each responding to the advice of advisor, reviewers, and editor.

Speaking of seeing the big picture, we are pleased to feature the winning essays of the 1st Annual Liberal Arts Essay contests, held in the spring of 2017. We look forward to seeing more of these in the future.

As always, I would like to thank all those who have helped bring this edition to fruition. In particular, I thank Elizabeth Buchanan, Matthew Gundrum, and Sydney Tylke of the Office of Research and Sponsored Programs, Ted Bensen of the Cross-Media Graphic Management program, Charles Lume from Art and Design, Brooke Rossi for helping ready the Liberal Arts essays, and this year, Janice Conti, Ann Vogl, Rachel Thompson and Courtney Elsner of the Robert S. Swanson Learning Center, who have made the JSR searchable through Minds at UW. You should see a search widget appear on the JSR web page, once the dust settles from the new UW-Stout site migration.

We are pleased to present Volume XVII of the UW-Stout *Journal of Student Research*. It represents a small slice of the great things we have at Stout: meaningful research, thought-provoking art, conscientious perspectives . . . these people are READY.

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Examining the Lived Experiences of Individuals with Multiple Childhood Traumas

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Abstract

Using participants from the University of Wisconsin-Stout who were enrolled in the Social Work Professional Certificate (SWPC) program on campus, the research examined how an individual's adverse childhood experiences led them into the field of Social Work. The research also assessed the impacts of parental substance use in the home. This paper presents an overview of the phenomenological research process and the research findings. It was discovered that each participant had chosen the field of Social Work as a result of childhood trauma. All indicated that they wanted to help individuals overcome similar obstacles.

Keywords: trauma, social work, substance use

Examining the Lived Experiences of Individuals with Multiple Childhood Traumas

Introduction

Society often dismisses the relationship between a troubled childhood and a troubled adult, however, adverse childhood experiences have the power to physically alter an individual's biological structure and function (Felitti et al., 1998). Pediatrician Nadine Harris sums up these assumptions very well in her TED talk on childhood trauma: "You have a rough childhood; you're more likely to drink and smoke and do all these things that are going to ruin your health. This isn't science. This is just bad behavior." (Harris, 2014). The fact is, the mental and emotional instability caused by childhood trauma is a result of the alterations to the brain (De Kloet, Joëls, & Holsboer, 2005).

Background

The basis of this research is centered on the Adverse Childhood Experiences (ACE) study (Felitti et al., 1998). In the ACE study, researchers identified the number of individuals in a selected population that had suffered

childhood trauma. Researchers then correlated each individual's physical and mental health to their number of childhood traumas. There were eight different traumas incorporated into the questionnaire including physical abuse, sexual abuse, psychological abuse, neglect, parental separation/divorce, parental criminal activity, parental mental illness, and parental substance use. This study found that individuals exposed to four or more traumatic events/situations were discovered to be four-and-a-half times more likely to develop depression, and 12 times more likely to experience suicidality, among other negative health outcomes (Felitti et al., 1998).

Purpose

The purpose of this research was to examine the lived experiences of individuals who endured childhood trauma. Furthermore, the researcher aimed to determine if the experience of childhood trauma impacted an individual's own life choices related to career.

Importance of Research

Felitti et al. (1998) suggested that there is a gap in literature regarding the frequency and severity of childhood traumas. "Increased awareness of the frequency and long-term consequences of adverse childhood experiences may also lead to improvements in health promotion and disease prevention programs" (Felitti et al., 1998, p. 256). The ACE study was quantitative in nature, whereas this study is qualitative. This research is significant because it highlights both frequency and severity of adverse childhood experiences and assessed the impact of parental substance use in the home.

Rationale

This study is beneficial to society because the data can contribute to the professional field. Ideally, the results will influence providers who work with children exposed to trauma and the services available to them, including best practices for those working with these children. It is crucial that providers for children who have experienced trauma take a trauma-informed care approach. This approach ensures that providers are educated in the aspect of trauma (Substance Abuse and Mental Health Services Administration [SAMHSA], 2014). When a child is exposed to severe trauma, certain situations can induce the same feelings of fear and panic that were experienced in the original trauma; this is referred to as a trigger (SAMHSA, 2014). Conducting in-depth interviews with individuals who have experienced multiple childhood traumas will help to provide a better understanding of the long-term impacts of childhood trauma, and identify

aspects of care that can be improved upon. Applying the trauma informed care approach when working with clients such as these would minimize the risk of harm by reducing the chance that the worker would ask questions that could trigger an individual's feelings during the original trauma (SAMHSA, 2014).

Research Questions

There are three main research questions that were considered. The research questions are as follows:

1. What are the adverse childhood experiences that were experienced by Social Work students?
2. How does the frequency and severity of childhood trauma impact a child?
3. What drove these individuals to choose a career in Social Work?

Literature Review

Family Dynamics

In the original ACE study, researchers generated a survey that consisted of questions pertaining to participants' first 18 years of life in the setting they considered to be "home" with their parent/guardian(s) (Felitti et al., 1998). Family dynamics are the patterns of relations or interactions between family members (Frewen et al., 2015). In order to evaluate and establish these patterns, researchers developed questions that would directly reflect how each participant interacted with various individuals in their household. One question reads, "Did a parent or other adult in the household often swear at you, insult you, put you down, or humiliate you?" (Felitti et al., 1998, p. 248). These questions were not only aimed at how the participant interacted with household members, but also the interactions of other individuals that were witnessed by the participant. Another question reads, "Was your mother or stepmother often pushed, grabbed, slapped, or had something thrown at her?" (Felitti et al., 1998, p. 248). Questions such as these were added to identify the risk factors of not only experiencing abuse first-hand, but also witnessing it. According to another related study on childhood trauma, "a growing literature suggests that witnessing violence can also have a significant impact on a wide range of adverse psychological outcomes" (Frewen et al., 2015, p. 2).

Categories of Abuse

In the ACE study there were three categories of childhood abuse: psychological, physical, and sexual (Felitti et al., 1998). There were then

four categories of household dysfunction relating to childhood trauma: exposure to substance abuse, mental illness, abuse of mother/stepmother, and criminal activity (Felitti et al., 1998). In each category there were one to two questions about an individual's exposure during childhood. It is important to acknowledge that while psychological abuse is not always as easy to recognize as physical abuse, the negative effects are equally as maladaptive (Agorastos et al., 2014). It has been found that individuals who experienced more than one form of abuse are at a higher risk for physical and mental health complications later in life (Agorastos et al., 2014).

Long-Term Health Effects

Researchers found that individuals exposed to four or more traumatic events/situations were discovered to be four-and-a-half times more likely to develop psychological and/or physical health conditions (Felitti et al., 1998). Depression is the most common mental health diagnosis experienced by children who endured trauma (Felitti et al., 1998). Furthermore, these individuals measured over 12% more likely to attempt suicide than those who did not experience childhood trauma (Felitti et al., 1998). Supporting these findings is a quote from another related study: "Secure attachments and emotional bonds with caregivers during childhood are thought to be protective against the development of mental health problems later in adulthood" (Frewen et al., 2015, p. 1).

Long-term physical health conditions related to the exposure of childhood trauma include ischemic heart disease, cancer, liver disease, and diabetes, among several others (Felitti et al., 1998). According to the results of the research, "the findings suggest that the impact of these adverse childhood experiences on adult health status is strong and cumulative" (Felitti et al., 1998, p. 251). Children not only suffer from the consequences of their parent/guardian's actions during the present situation, but years following the trauma. Individuals specialized in Trauma Informed Care are educated on all aspects of trauma. This would put them at an advantage as they would know what mental and physical health factors to look at (SAMSA, 2014).

Substance Use

In a qualitative study researching the price children pay for their parents' drug abuse, researchers conducted one-on-one interviews with parents who had recovered from a drug addiction (McKeganey, Barnard, & McIntosh, 2002). In one interview, a parent admitted to selling all of the household furniture in order to sustain her drug addiction (McKeganey, Barnard, & McIntosh, 2002). This is an important scenario to consider as it

shows the extremes to which substance abusers will go to sustain their drug addiction, even at the cost of their own children.

In previous years, Scotland and the UK have done studies regarding child welfare while in the parental care of substance abusers (Hogan, 1998). In order to ensure the well-being of these children, Scottish Executives have issued guidelines for services working with drug users and their families:

"For too long the needs and welfare of children in families affected by problem drug use have been overlooked. Professionals in specialist drug related services feel ill equipped to manage the often complex needs of both parents and their children and have focused on adults. Similarly, staff in children's services have lacked the knowledge, skills, and confidence to address parents' drug-related problems even where these are clearly affecting their children. We must now concentrate effort on helping these children." (McKeganey, Barnard, & McIntosh, 2002, p. 233).

Social Work as Chosen Field

It's a common misconception that people go into Human Services fields due to trauma they experienced as children. In fact, Triplett, Higgins, and Payne (2013) noted that there was no significant relationship between childhood exposure to violence and career choice. There are a variety of motivations for individuals to enter the field of social work, such as working with people and effecting social change (Globerman & Bogo, 2003; Hanson & McCullagh, 1995). While some Social Workers say that their motivation is due to their own personal experiences, it was less evident in research than extrinsic motivations (Globerman & Bogo, 2003).

Methodology

Overview

The current study is qualitative in nature. The researcher chose to use Moustakas' Phenomenological approach (Moustakas, 1994). The phenomenological approach is used in research to gain knowledge about an individual's experiences, and understand how they interpret those experiences (Moustakas, 1994). The purpose of this study was to gain insight into the lived experiences of individuals who endured childhood trauma. The goal was to have a better understanding of how individuals perceive trauma, and how it affects them later in life. The research examined behaviors and choices made in young adulthood, and how childhood exposure to trauma impacted those life choices. Furthermore, the researcher examined how an individual's adverse childhood experiences may have impacted their decision to choose the field of Social Work. An interview was conducted to answer relevant

questions about the participant's adverse childhood experiences.

Participants

The sample chosen for this study was purposeful. Participants were those in the Social Work Professional Certificate (SWPC) program who scored a four or more on the ACE questionnaire. Individuals self-reported the number of childhood traumas they were exposed to. The researcher chose this population because they are at a much higher risk for long-term negative health outcomes compared to those with a lower ACE score (Felitti et al., 1998). An additional qualifier for participation was that one of the four traumas experienced was parental substance use. This qualifier was added because the original ACE study determined it was the most prevalent of the traumas experienced by participants (Felitti et al., 1998). Participation in this research was presented as an opportunity to undergraduate SWPC students at University of Wisconsin-Stout.

Materials

The researcher used the original questionnaire from the 1998 ACE study to recruit participants for interviews (Felitti et al., 1998). A list of guiding questions was constructed based on the questions from the ACE questionnaire. At the conclusion of the interview, participants were given a flyer with mental health resources in case they needed professional guidance after the interviews. The researcher used a cell phone to record the interviews, and then downloaded the interviews to a laptop computer. The cell phone and laptop were both password-protected, and only the researcher knew the password.

Informed Consent

The researcher met with each participant in a private office to provide a comfortable and secluded space. The researcher began by going over the consent form with each participant, pointing out that the study would be confidential. The researcher assured the participants that their names would be changed following the interview. Each participant's right to withdraw was also emphasized. Due to the personal nature of the questions, participants were encouraged to take a break at any time they felt necessary, and/or to skip any questions they were uncomfortable answering. The researcher followed up with each participant within a day or two following their interview to ensure no harm was done in the process of the interviews.

Analysis

The researcher analyzed the results by carefully reviewing each recorded interview and then identifying what the participants had in common. Since the participants had all taken the ACE questionnaire, the researcher could see which questions each participant answered "yes" to. This made the analysis process simple to break down. After identifying commonalities between participants, the researcher identified themes that were evident throughout the interviews.

Results

Participant 1

Participant 1 lived with her mother, father, and older brother until she was 12 years old, when her parents separated. During the time before the separation, she witnessed her mother verbally and physically abuse her father. Her mother drank heavily and was rarely emotionally available when the participant needed her. Her mother often spoke negatively to her, which led her to self-doubt. The participant's relationship with her father grew stronger as she leaned on him for support and guidance.

After the participant's parents separated they each began dating new people. This was a hard transition for her. During the week she would stay with her mother, and on the weekends she would stay with her father. During the week her mother was rarely home, leaving the children to care for themselves. Because her mother did not provide them with food for the week, she had to get a part-time job as soon as she was old enough. While her brother was there for her when he could be, he was sent to boot camp at a young age for getting into trouble.

The participant believes she is a better person because of the trauma she experienced. She said she is less likely to be involved with drugs and alcohol after witnessing the effects the chemicals had on her mother. She also said that she is more cautious in her intimate relationships after watching the divorce her parents went through. Participant 1 wants to be a Social Worker because she feels she can better relate to clients as a result of her own experiences and wants to help others who may be in a negative situation such as she was.

Participant 2

Growing up, Participant 2 lived with her mother, step-father, three biological siblings, and one step-sibling. There was regularly tension in the household, which resulted in her running away on multiple occasions. The participant noted that this led to her feeling very anxious and depressed as

a child. Her parents verbally fought quite often; she feels this was a result of her mother's problem drinking. She remembers her mother often being unaware of her own actions or able to care for herself. After witnessing how alcohol affected her family she was very against drinking. The participant's mother suffered from extreme mood swings both while sober and intoxicated. She said that her mother was often reserved and would go days without interacting with the family. This prevented the participant from being able to bond with her mother. Participant 2 noted that she experienced thoughts of suicide while she lived with her mother and step-father.

Participant 2 feels that although she experienced childhood trauma, she was able to be successful in life. She just graduated with a degree in Psychology and plans to work in Child Welfare. The participant said that although her childhood wasn't terrible, she still wants to prevent children from enduring the trauma she has.

Participant 3

Participant 3 moved around a lot during her childhood. She lived with her mother and older brother; however there were always other people living with them. Her father died when she was very young. Growing up, her brother was always in and out of jail. Her mother and brother were often under the influence of drugs, which led to many arguments between them. She said she was often sent to her room during these times. The participant was exposed to multiple street drugs in her childhood home, including methamphetamine and marijuana.

Participant 3 said that because of her mother being on drugs, she often went without proper meals. She was made to take care of herself most of the time, which made her feel independent at a young age. She said she tries to compress her memories so that she doesn't think about the trauma she endured as a child. She feels that she has a lot of "mental problems," including anxiety and depression, as a result of her experiences. The participant said she was still able to lean on her father's family during times of need, which helped her remain hopeful and optimistic.

Participant 3 expressed that the trauma she endured allowed her a different perspective on life. She demonstrated a passion for helping others. She had recently been exposed to the field of social work and found it to be intriguing. While she is unsure if she will pursue a career in social work, she said her experiences have driven her desire to help others. She believes her experiences would give her an advantage if she ever worked one-on-one with clients.

Discussion

The researcher identified several themes shared amongst the three participants. These include family dynamics in the household, types of abuse endured, forms of neglect experienced, parental alcohol abuse, and long-term mental/emotional effects. For example, each participant had experienced a parental separation in their household, inducing further stress on the family. Additionally, each participant's mother drank heavily and was mentally/emotionally distant much of their childhood. Identifying and analyzing these themes shows how certain factors in a household can contribute to individuals sharing similar experiences.

Family Dynamics

Family dynamics can greatly affect an individual's experience during childhood. Each of the three participants in the current study disclosed that their biological parents were separated during a portion of their childhood. Participant 1's parents were together until she was roughly 12 years old. At this age she was able to understand and interpret the situation. Both Participants 2 and 3 were under the age of five when the separation occurred, which left them with minimal memories of the event. Participant 3's biological father died when she was very young. She stated that her mother never had a serious partner, which meant she did not have a father figure in her life. Participants 1 and 2 both experienced a shift in the household dynamics when their parents started dating other people. They both lived with their mothers most of the time and stated that they didn't like their stepfathers when they first came into the picture. They felt hostility towards this individual, whom they blamed for disrupting their family dynamics. Each of these participants said they visited their fathers regularly and maintained strong relationships with them. They noted that having their parents live in different households seemed to create a divide. They each put more blame on their mothers for the separation, which strained their maternal relationships.

Each participant had at least one sibling that they felt was a support for them during their childhood. Participants 1 and 3 each had an older brother who was involved in criminal activity throughout their childhood. They said this created even more conflict in an already tense household.

Types of Abuse

None of the participants endured physical or sexual abuse during their childhood. Participant 1 did witness her mother being aggressive toward her father at times. Participants 1 and 2 both experienced psychological abuse from their mothers. They were often put down by

their mothers and made to feel as if they were not adequate individuals. Each of the participants experienced the trauma of a separation amongst their biological parents. This created household dysfunction in each case. Each of the three participants were exposed to alcohol and/or street drugs by their parents during childhood. This exposure created a negative view of alcohol/street drugs for each participant. They each said they were more likely to avoid these substances and later situations where they might be exposed to them. Participants 1 and 3 experienced criminal activity in their household by their older brothers. This was emotionally conflicting for them as they were each close to their brothers. Participant 3 was brought to visit her brother while he was incarcerated. Although this could be a traumatic experience for some, she said she did not feel threatened.

Neglect

Each participant experienced some form of neglect during their childhood. Participant 1 said that her mother was often out of town, leaving her to care for herself. During these times she would not have supervision or adequate meals. She got a part-time job as soon as she was of age, so she could buy groceries. Participant 2 said that while her physical needs were always met, her emotional needs were often neglected. Her mother would regularly black out from being intoxicated. This led to her feeling disconnected from her mother and enhanced her feelings of depression. Participant 3 said that because of her mother's alcohol and other substance use, she and her brother were often left to care for themselves.

Substance Use

Shifting the focus from substance users to the children of these users is crucial to ensuring the children's safety and well-being. When an individual is suffering from a drug dependency disorder, they are often sent to treatment to manage their habits and offer them the skills necessary to recover. Unfortunately, there is usually no treatment for the children affected by the substance use. This leaves children at a disadvantage, as the effects of their exposure to the abuse are not taken into consideration. Having a system that focuses on the children in these situations will lead to the strengthening of younger generations while limiting the negative effects that substance use has on children.

Each of the three participants said they were exposed to alcohol on a frequent basis in their childhood homes. The majority of the drinking was done by their mothers. This influenced their relationships with their mothers, who were not mentally or emotionally available while intoxicated.

Long-Term Effects

Each participant believed that their experiences shaped the person they are today. Participant 1 said that witnessing the violence between her parents resulted in her being very cautious in her dating life. The neglect she experienced also impacted her long-term. Because she was made responsible for buying groceries at a young age, she learned to budget her money and is now financially independent. In this case, she was able to turn her negative circumstances into a positive self-attribute.

Participant 2 experienced negative self-esteem for the majority of her life as a result of her mother continuously putting her down. As a teenager, she was suicidal and ran away on more than one occasion. She noted that she currently suffers from depression and anxiety as a result of the trauma she endured.

Participant 3 grew to be very independent as a result of the neglect she experienced during her childhood. Because her mother was rarely emotionally available and she didn't have a father figure, she learned to rely on herself to meet her needs. The participant also said she suffers from poor mental health with feelings of anxiety and depression.

Social Work as Chosen Field

Each of the participants indicated that their childhood experiences influenced their decision to become involved in Social Work. Participants 1 and 2 are both minoring in Social Work, with the hopes of working with clients in the future. Participant 1 said that it will be easier to relate to individuals who have endured different forms of abuse because of her own experiences. Participant 2 is especially interested in the aspect of child welfare, and attributes this to wanting to help prevent other children from experiencing the traumas that she did. Participant 3 had not yet decided if she would pursue a field in Social Work, but said she was interested in helping people in need.

Conclusion

The purpose of this study was to gain insight into the lived experiences of individuals who experienced multiple childhood traumas. This research gives society an insight into the trauma each participant experienced. The results complement previous research findings on childhood trauma. This data can contribute to the professional field and ideally influence providers who work with children exposed to trauma and the services available to them, including best practices for those working with

children who have experienced trauma.

Limitations

There were several limitations to this study. One limitation was the research methodology of introspection. With self-report, individuals can choose which details to disclose during their interview, and which details to keep to themselves. Because the questions were all focused on the participants' childhood, there were multiple occasions where participants were unable to recall the exact events in question. Another limitation is the sample of individuals interviewed. The case study was very small, with only three participants. The sample chosen was strictly for insight. All three participants were white females in their early 20s, so it is not possible to generalize their experiences to the population as a whole.

Implication for Future Research

Further research should include participants of different ages, gender, and ethnicities to establish generalizability. It would be beneficial to use a mixed methods approach in order to draw some statistical analysis in combination with the qualitative interviews.

References

- Agorastos, A., Pittman, J. O., Angkaw, A. C., Nievergelt, C. M., Hansen, C. J., et al. (2014). The cumulative effect of different childhood trauma types on self-reported symptoms of adult male depression and PTSD, substance abuse and health-related quality of life in a large active-duty military cohort. *Journal of Psychiatric Research*, 46-54. <http://dx.doi.org/10.1016/j.jpsychires.2014.07.014>
- De Kloet, E. R., Joëls, M., & Holsboer, F. (2005). Stress and the brain: from adaptation to disease. *Nature Reviews Neuroscience*, 6(6), 463-475. doi:10.1038/nrn1683
- Frewen, P., Brown, M., Depierro, J., D'Andrea, W., & Schore, A. (2015). Assessing the family dynamics of childhood maltreatment history with the Childhood Attachment and Relational Trauma Screen (CARTS). *European Journal of Psychotraumatology*, 6(0).
- Felitti, V. J., Anda, R. F., Nordenberg, D., Williamson, D. F., Spitz, A. M., et al. (1998). Relationship of childhood abuse and household dysfunction to many of the leading causes of death in adults: The adverse childhood experiences (ACE) study. *American Journal of Preventive Medicine*, 14(4).
- Globerman, J., & Bogo, M. (2003). Changing times: Understanding social workers motivation to be field instructors. *Social Work*, 48(1), 65-73. doi:10.1093/sw/48.1.65
- Hanson, J. G., & McCullagh, J. G. (1995). Career choice factors for BSW students: A 10-year perspective. *Journal of Social Work Education*, 31(1), 28-37.
- Harris, N. B. (2014). How childhood trauma affects health across a lifetime. Retrieved from https://www.ted.com/talks/nadine_burke_harris_how_childhood_trauma_affects_health_across_a_lifetime
- Hogan, D. M. (1998). The psychological development and welfare of children of opiate and cocaine users: Review and research needs. *Journal of Child Psychology and Psychiatry*, 39(5), 609-620.
- McKeganey, N., Barnard, M., & McIntosh, J. (2002). Paying the price for their parents' addiction: meeting the needs of the children of drug-using parents. *Drugs: Education, Prevention & Policy*, 9(3), 233-246.
- Moustakas, C. (1994). *Phenomenological Research Methods*. Thousand Oaks, CA: Sage Publications.
- Substance Abuse and Mental Health Services Administration. SAMHSA's concept of trauma and guidance for a trauma-informed approach. Rockville, MD: Substance Abuse and Mental Health Services Administration, 2014.

Triplett, R., Higgins, G., & Payne, B. K. (2013). Experiences of domestic violence as a child and career choice. *Journal of Family Violence*, 28(3), 289-297. doi:10.1007/s10896-0139499-8I.

The Correlates of Trust Amongst Coworkers: Perceived Similarity, Team Satisfaction, and Sex

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Abstract

Trust is defined as the willingness to rely on others when there is something at risk. This study aimed to investigate the relationship between self-reported measures of trust, perceived similarity and team satisfaction for employees who work in teams. Specifically, the researcher wanted to replicate the findings of team satisfaction and trust related to perceived similarity found by Ennen et al. (2015). Seventy-eight participants completed the survey from a link on the researcher's Facebook page. A positive correlation between trust, perceived similarity, and team satisfaction was found, suggesting that the findings of the Ennen et al. (2015) study apply to work groups. Interestingly, the relationship between perceived similarity and trust only existed for women, and not for men.

Keywords: trust, perceived similarity, team satisfaction

The Correlates of Trust Amongst Coworkers: Perceived Similarity, Team Satisfaction, and Sex

Organizations often utilize teams to carry out projects because of the diverse experience that each member brings to a group. However, there are risks involved when asking individuals to work together as a team. Issues such as lack of trust and social loafing may reduce the effectiveness of teams. Ineffective social dynamics may also lead to additional financial costs to individuals, such as demotion or loss of job. Costs to the company overall may also occur if the team does not function well together. To reduce the likelihood of these risks, one must establish trust amongst group members.

Trust is defined as the reliance on others in risky or uncertain situations (Davis, Mayer, & Schoorman, 1995). There are four types of trust defined in the research conducted by Costa and Anderson (2011): the propensity to trust, perceived trustworthiness, cooperative trust, and

monitoring trust. Davis et al. (1995) proposed the definition of trust that is appropriate for current research do to the word risk that implies risk in an occupational setting. Costa and Anderson (2011) specify different types of trust that are related to work groups and the developing stages of trust in work groups. Applied to work, the definition of trust implies vulnerability between individuals within a work group with shared responsibilities needing to complete a task (Gambetta, 1988). Much of the previous research on trust in the work place has focused on the relationship between supervisors and their employees (Grant & Sumanth, 2009; Spector & Jones, 2004), and not between coworkers directly. While some work has examined team member trust dynamics, much of this work has focused on strangers in an experimental lab setting or students in a classroom setting. The purpose of the current study is to examine some of the correlates of trust amongst coworkers. Specifically, this study will examine how perceptions of similarity between coworkers, sex, and perceptions of the quality of the work produced by a team influence the self-reported feelings of trust.

Predictors of Trust in the Workplace

One factor that has been found to predict the amount of trust in supervisor-employee relationships is the amount of perceived similarity there is between the individuals (Grant & Sumanth, 2009; Lau & Liden, 2008; Schaubroeck & Lam, 2002). By perceiving others as like oneself, there is more likely to be a trusting relationship. Interestingly, similarity between supervisors and their employees has been found to positively predict an employees' likelihood of being promoted (Schaubroeck & Lam, 2002). For example, tellers from a multinational bank completed a survey questionnaire measuring personality similarities between an individual and their supervisor. Tellers who had personalities more like their supervisors were more likely to be promoted. Additionally, Grant and Sumanth (2009) found that trusting relationships with one's supervisor resulted in increased motivation and perceived value for job tasks. Task significance is the idea that employees consciously feel that the tasks they need to do will require quality and efficient work. Employees who viewed their managers as more trustworthy perceived their job tasks as more significant. Interestingly, this increased perception of task significance led to an increase in job performance as well (Grant & Sumanth, 2009).

Manager trustworthiness has also been found to not only predict employee performance, but also to increase the amount of trust of the other employees as well. Lau and Liden (2008) examined how the trust one has for their supervisor impacted the trust they had for their coworkers. Specifically,

having a strong trusting relationship with one's supervisor, would likely result in greater trust amongst one's coworkers. Similarly, Mayer, Davis, and Schoorman (1995) found that trust in one's supervisor positively predicted trust in one's coworkers. A small body of research has begun to look for other factors, beyond the supervisors, that may influence the levels of trust between coworkers such as the sex of the members of a group (Skojer-Peterson & Thorsell, 2008)

There is a lack of research on correlates of peer-to-peer trust in the workplace. One such predictor of trust is the extent to which there is perceived similarities between coworkers. In a study conducted by Ferguson and Peterson (2015) the impact of perceived similarity was examined in relation to trust. In their study, university students entering a class were assigned to groups. As part of these groups, participants completed assignments and surveys throughout the semester assessing propensity to trust, group trust, relationship conflict, and task performance. Researchers found that greater perceptions of dissimilarity reported in the surveys between team members significantly predicted poor team work. Specifically, dissimilarity amongst group mates led to in-group conflicts, declining levels of trust amongst the group members, and ultimately poor task performance. Ennen, Stark, and Lassiter (2015) conducted a similar study, focusing on the level of perceived similarity between group mates in a class project, the major research question for current research that has examined. Ennen et al. (2015) recruited participants in classes as students that were given a group assignment as part of a psychology course. The students worked together on the project throughout the semester. At three times during the semester participants were asked to rate their experience with the group regarding trust, perceived similarity, as well as team satisfaction. Similar to the findings by Ferguson and Peterson (2015), it was found that ratings of trust tended to be higher between groups who perceived themselves to be more similar to their group mates. Additionally, Ferguson and Peterson (2015) found that groups with higher levels of trust also reported experiencing greater team satisfaction at the end of the semester. Considering the importance of perceived similarity in these classroom-based studies, the current study sought to examine whether perceived similarity was also related to employee ratings of trust.

Ennen and colleagues (2015) noted that satisfaction with the team and the classwork completed were positively influenced by the feelings of trust with in the group. Other research also sought to investigate the quality of the work that results from trusting group dynamics. Dirks (1999) examined whether the level of trust in a group affects the performance of

the group as a unit as well as the members of the groups individually. These findings suggest that performance in the workplace can be affected by trust in teams, an important factor to consider when evaluating the success of a work group. There were two trust conditions: high and low trust. In the high-trust condition, all participants received information from the researcher indicating that their partners for the experiment were reliable and would not take advantage of them. In the low-trust condition, each participant received information indicating that their partners were unreliable and would likely take advantage of them. The study was conducted with groups of 3 college-aged students each working with a different colored set blocks used to build a tower as a group. Each member took a turn in stacking one block at a time for a set amount of time (Dirks, 1999). Each group completed eight trials of building the tower and the individual colored blocks were counted separately (i.e. all blue blocks for member 1, yellow for member 2 and green for member 3). Each trial was followed by a discussion period in which the researcher evaluated communication as a factor of cooperative or individualized behavior. The discussion period allowed for team members to discuss strategy for upcoming trials. The goal of the activity was to measure whether members of the group equally contributed to the group [indicating trust] or tried to work individually [indicating lack of trust], measured by the number of blocks total. It was found that those in the high trust condition performed more cooperatively relative to those in the low trust condition. Additionally, those in the high trust condition were able to stack a higher number of blocks, thus performing significantly better than those in the low trust condition. In this study, it was demonstrated that trust influenced the motivation to cooperate in high or low trust groups to affect group process and performance. For example, when the individuals were told their group members were reliable and would not take advantage of each other before they started the trials, the members developed an initial level of trust in their group. When trust in a group was low, members were more likely to work independently (Dirks, 1999). However, if trust was high, the study indicates that participants were more motivated to work together toward a common goal.

Current Study

Given the analysis of previous research on trust, the purpose of the current study was to expand and explore correlates of trust in the work environment. In order to do this, the measures of trust, perceived similarity, and team satisfaction used by Ennen and colleagues (2015) were also used in the current study to see if their results could be replicated for individuals reflecting on their relationships with their coworkers. In Ennen

and colleagues (2015) study, trust was examined using four measurements of trust designed by Costa and Anderson (2011): propensity to trust, perceived trustworthiness, cooperative behaviors, and monitoring behaviors (Ennen et al., 2015). It is important to note that one difference between the Ennen et al. (2015) study and the current study is that the current study is only examining participants after the completion of the task. Ennen and colleagues were able to assess students at multiple times throughout the semester.

Propensity to trust is the willingness to trust others before even meeting them. This type of initial trust is considered to be an individual difference characteristic that someone brings with them to new situations (Ennen et al., 2015). Perceived trustworthiness refers to the expectation of others to be and to behave based on current information (Costa & Anderson, 2011). What that individual does and says contributes to the perceived trustworthiness that they are assumed to have. Perceived trustworthiness is a subcomponent of the trust instrument that asked participants to evaluate the likelihood that their group members were trustworthy based on how they have interacted together thus far as a group. It is to be noted that the subcomponents propensity to trust and perceived trustworthiness are very similar. To differentiate the two, the propensity to trust is an initial trust given to someone before interacting with them. This is also considered the amount of trust and good intentions that one has for people, for example, assuming that others do not have bad intentions. Perceived trustworthiness, on the other hand, is trust that one assumes another to have after at least one interaction with that person. Given the reflective nature of the current study, it was anticipated that the responses to each of these measures would be quite similar, since we were unable to measure individual perceptions prior to meeting their work groups. Cooperative behaviors, the third subcomponent of the trust measure, is the number of positive interactions an individual has with their group members. A greater number of such positive interactions indicate a willingness to rely on one another and communicate openly about work and accept each other's opinions (Costa & Anderson, 2011). One way that teammates can cooperate is through reciprocity, the idea that others will return a favor (in this case the offering of trust). When trust is not reciprocated, a lack of collaborative effort often develops amongst teams (Ferguson & Peterson, 2015). The fourth measure of trust used by Ennen and colleagues (2015) and the current study is monitoring behaviors. Monitoring behaviors refers to the amount of control that a team member feels they need to have in the group for the team to successfully work together and complete a task. In the past, monitoring has been found to be negatively correlated with trust because it can lead to members of the group working to protect

their personal interests versus focusing on meeting team goals (Costa & Anderson, 2011).

Consistent with the results of Ennen and colleagues (2015), it was hypothesized that the different measure of trust would be correlated with self-reported feelings of perceived similarity towards one's work group members.

H1a: It was hypothesized that perceived similarity would be positively correlated with trust overall.

H1b: It was hypothesized that perceived similarity would be positively correlated with the propensity to trust.

H1c: It was hypothesized that perceived similarity would be positively correlated with perceived trustworthiness.

H1d: It was hypothesized that perceived similarity would be positively correlated with cooperative behaviors.

Given that increased monitoring behaviors would be a sign of an untrustworthy relationship, it was predicted that this measure of trust would show a negative relationship with the other variables, thus:

H1e: It was hypothesized that perceived similarity would be negatively correlated with monitoring behaviors.

Also, consistent with Ennen's (2015) study it was hypothesized that the measures of trust would be correlated with team satisfaction.

H2a: It was hypothesized that team satisfaction would be positively correlated with trust overall.

H2b: It was hypothesized that team satisfaction would be positively correlated with the propensity to trust.

H2c: It was hypothesized that team satisfaction would be positively correlated with perceived trustworthiness.

H2d: It was hypothesized that team satisfaction would be positively correlated with cooperative behaviors.

H2e: It was hypothesized that team satisfaction would be negatively correlated with monitoring behaviors.

While it was expected that this study would largely replicate the Ennen and colleagues (2015) findings, one area that the researcher expanded on was considering sex differences in the relationship between trust, perceived similarity, and team satisfaction. It should be noted that in Ennen's study, that the sample was predominantly female (70%), as is common in many psychology courses. It has been previously studied and found that men and women differ in the types of groups and team members that they prefer and the characteristics they see as important in groups. Specifically, Skojer-Peterson and Thorssell (2008) found that men prefer to work in teams

with members of importance and prestige, while women valued having team members that they could form personal relationships with. From this finding, it was speculated that perceived similarity may be valued by women more so than men. Women in the study may have placed a greater emphasis on forming personal connections within their work groups. Considering this, it was hypothesized that men and women would differ in the self-reported ratings of perceived similarity relative to trust.

H3a: It was hypothesized that perceived similarity would be positively correlated to trust overall for women but unrelated for men.

H3b: It was hypothesized that perceived similarity would be positively correlated to propensity to trust for women but unrelated for men.

H3c: It was hypothesized that perceived similarity would be positively correlated to perceived trustworthiness for women but unrelated for men.

H3d: It was hypothesized that perceived similarity would be positively correlated to cooperative behaviors for women but unrelated for men.

H3e: It was hypothesized that perceived similarity would be negatively correlated to monitoring behaviors for women but unrelated for men.

Method

Participants

Participants ($N = 78$) were recruited via Facebook post to the researcher's page to participate in an online survey study. Women made up 51.3% of the participants, 24.4% were men and 24.4% chose not to respond. The age of participants ranged from 18-52 ($M = 29.64$, $SD = 12.39$). Of the participants, 73.1% were Caucasian, 1.3% were American Indian or Alaskan native, and 25.6% chose not to respond. The educational background of the participants consisted of: high school/GED 12.8%, some college 33.3%, Associate's degree 9.0%, Bachelor's degree 11.5%, Master's degree 5.1%, advanced professional degree 3.8%, and 24.4% who chose not to respond. Participation was voluntary. No compensation was given for participating in this study.

Measures

Trust. The trust survey consisted of 21 items on four different of trust: propensity to trust, perceived trustworthiness, cooperative behaviors, and monitoring behaviors (Appendix A; Costa & Anderson, 2011). For propensity to trust, an example item was, "Most people in this team did not

hesitate to help a person in need," ($a = .75$). For perceived trustworthiness, an example item was, "We had complete confidence in each other's ability to perform tasks," ($a = .80$). For cooperative behaviors, an example item was, "While making a decision we took each other's opinion into consideration," ($a = .71$). For monitoring behaviors, an example item was, "In this team people watched each other very closely," ($a = .75$). For each item participants were asked to rate the degree to which they agreed or disagreed on a 7-point scale (1 = *completely disagree*, 2 = *disagree*, 3 = *somewhat disagree*, 4 = *neutral*, 5 = *somewhat agree*, 6 = *agree*, 7 = *completely agree*) regarding their experience working in a team. The Cronbach's alpha value for the combined measure of trust overall was .89.

Team Satisfaction. The team satisfaction scale consists of four items rating the level of satisfaction the member had with their team and team members (Appendix B; Park & DeShon, 2010). An example item from this instrument is, "All in all, how satisfied were you with your team's performance," ($a = .93$). The items were rated on a 7-point scale assessing satisfaction: (1 = *extremely dissatisfied*, 2 = *dissatisfied*, 3 = *somewhat dissatisfied*, 4 = *neutral*, 5 = *somewhat satisfied*, 6 = *satisfied*, 7 = *extremely satisfied*).

Perceived Similarity. Perceived similarity was measured using the Perceived Relational Diversity Scale (Appendix C; Clark, Ostroff & Atwater, 2002). This scale consists of 16 items asking the participant to consider personal comparisons between themselves and the members of their workgroup ($a = .81$). For each characteristic, the participant rated their perceived similarity to the group using a 5-point scale (1 = *not similar at all*, 2 = *somewhat dissimilar*, 3 = *slightly similar*, 4 = *somewhat similar*, 5 = *highly similar*). An example item from this measure included, "PERSONALITY (sociability, emotional stability, attention to detail, flexibility, importance of work, competitiveness, preference for working individually or in groups)." The participants rated their similarity to their work group based on each item description that followed in parentheses.

Procedures

The survey was administered via Qualtrics and recruitment was done via Facebook, encouraging viewers to participate in a survey study about group dynamics in the workplace. Participants were given the option to continue with the survey following their consent to participate. Those who selected the button to continue then completed the trust survey that was comprised of the four sub measures of trust: propensity to trust, perceived trustworthiness, controlling behaviors, and monitoring behaviors. Participants were then directed to the team satisfaction and perceived

similarity measures. Once each of these measures was completed, participants ended the survey with the demographics section (Appendix D). Participants who were currently employed and working on team-based projects were asked to complete a survey online to rate their experience with a previous team-based project at work. Before answering the items, participants were asked to think about the most recent experience they had working as a team in their job. Participants were asked to respond to measures of trust, perceived similarity, and team satisfaction, as well as some demographic questions. Following the study was a debriefing statement before exiting the survey software.

Results

It was hypothesized that perceiving oneself as similar to one’s coworkers would be positively correlated with the reporting of trust toward one’s work group. In order to test this, a set of Pearson’s correlations were conducted to examine the relationship between the measures of trust and perceived similarity. As expected, trust overall was positively correlated with perceived similarity $r = .39, p = .001, n = 69, R^2 = 0.15$. Similarly, many of the subscales of trust were also found to positively relate to perceived similarity: propensity to trust, $r = .35, p = .003, n = 69, R^2 = 0.12$; perceived trustworthiness, $r = .41, p < .001, n = 69, R^2 = 0.17$; cooperative behaviors, $r = .37, p = .002, n = 69, R^2 = 0.14$. Although it was predicted that monitoring behaviors would be negatively correlated with perceived similarity, interestingly, the two variables were unrelated in this study, $r = .01, p = .98, n = 69, R^2 < 0.01$.

Table 1
Summary of Interactions, Means, and Standard Deviations for the measures of trust, perceived similarity and team satisfaction for both men and women

Measure	1	2	3	4	5	6	7
1. Trust Overall	-						
2. Propensity to Trust	.88**	-					
3. Perceived Trustworthiness	.92**	.79**	-				
4. Cooperative Behaviors	.91**	.72**	.80**	-			
5. Monitoring Behaviors	.31**	.06	.07	.19	-		
6. Perceived Similarity	.39**	.35**	.41**	.37**	.00	-	
7. Team Satisfaction	.75**	.74**	.76**	.68**	-.03	.45**	-
<i>M</i>	4.75	5.02	4.89	4.95	3.57	5.61	3.30
<i>SD</i>	0.77	0.93	0.99	0.88	1.09	1.14	0.60

Note. * $p < .05$; ** $p < .01, n = 69$

In the hypothesis 2 set it was predicted that trust would be related to team satisfaction (see Table 1). A set of Pearson's correlations were conducted comparing variables of trust overall and team satisfaction overall, $r = .75$, $p < .001$, $n = 77$, $R^2 = 0.56$. A Pearson's correlation was also conducted to measure the four sections of trust individually with satisfaction: propensity to trust, $r = .74$, $p < .001$, $n = 77$, $R^2 = 0.55$; perceived trustworthiness, $r = .76$, $p < .001$, $n = 77$, $R^2 = 0.58$; cooperative behaviors, $r = .68$, $p < .001$, $n = 77$, $R^2 = 0.46$. While it was predicted that monitoring behaviors would have a negative correlation with team satisfaction, support for that prediction was not found, $r = -.03$, $p = .785$, $n = 77$, $R^2 < 0.01$.

In hypothesis 3, it was predicted that perceived similarity would be positively correlated to trust for women but unrelated for men. A set of Pearson's correlations was conducted comparing variables of women's self-reported trust and perceived similarity (see Table 2). For women, there was a positive correlation between trust overall and perceived similarity, $r = .49$, $p = .001$, $n = 40$, with an $R^2 = .24$. In general, support was also found for the relationship between perceived similarity and the individual measures of trust as well, propensity to trust, $r = .45$, $p = .004$, $n = 40$, $R^2 = 0.20$; perceived trustworthiness, $r = .53$, $p = .001$, $n = 40$, $R^2 = 0.28$; and cooperative behaviors, $r = .50$, $p = .001$, $n = 40$, $R^2 = 0.25$. Similar to the initial analysis, monitoring behaviors was found to be unrelated to perceived similarity, $r = .00$, $p = .984$, $n = 40$, $R^2 = 0.00$.

Table 2

Summary of Intercorrelations, Means and Standard Deviations for the measures of trust, perceived similarity, and team satisfaction for women

Measure	1	2	3	4	5	6	7
1. Trust Overall	-						
2. Propensity to Trust	.92**	-					
3. Perceived Trustworthiness	.94**	.88**	-				
4. Cooperative Behaviors	.92**	.80**	.83**	-			
5. Monitoring Behaviors	.38**	.16	.18	.27	-		
6. Perceived Similarity	.49**	.45**	.53**	.50**	.00	-	
7. Team Satisfaction	.80**	.77**	.81**	.77**	.10	.59**	-
<i>M</i>	4.77	5.02	4.89	4.98	3.64	5.53	3.33
<i>SD</i>	0.89	1.06	1.07	1.00	1.16	1.31	0.67

Note. * $p < .05$; ** $p < .01$, $n = 40$

A Pearson's correlation was also conducted comparing variables of men's self-reported trust and perceived similarity. As predicted, for men there

was a nonsignificant correlation between the measures of trust and perceived similarity (see Table 3): trust overall, $r = .15, p = .548, n = 18$, with a $R^2 = 0.02$, propensity to trust, $r = .20, p = .438, n = 18, R^2 = 0.04$; perceived trustworthiness, $r = .17, p = .512, n = 18, R^2 = 0.03$; cooperative behaviors, $r = .13, p = .617, n = 18, R^2 = 0.02$; and monitoring behaviors, $r = -.12, p = .678, n = 18, R^2 = 0.01$.

Table 3
Summary of Intercorrelations, Means and Standard Deviations for the measures of trust, perceived similarity, and team satisfaction for men

Measure	1	2	3	4	5	6	7
1. Trust Overall	-						
2. Propensity to Trust	.83**	-					
3. Perceived Trustworthiness	.88**	.73**	-				
4. Cooperative Behaviors	.85**	.53*	.69**	-			
5. Monitoring Behaviors	.36	-.04	.09	.35	-		
6. Perceived Similarity	.16	.20	.17	.13	-.11	-	
7. Team Satisfaction	.56*	.72**	.44	.36	-.04	-.02	-
<i>M</i>	4.70	4.92	4.83	5.08	3.28	5.61	3.15
<i>SD</i>	0.55	0.84	0.60	0.62	0.91	0.84	0.51

Note. * $p < .05$; ** $p < .01, n = 19$

Discussion

In the current study, it was hypothesized that trust would positively correlate with perceived similarity and results supported this hypothesis. Interestingly, monitoring behaviors, which were predicted to be negatively correlated, was not found to be related to perceived similarity. Monitoring behaviors were defined as being untrusting of one's group if they felt like they needed to monitor or control their group members, which is why it may be unrelated to the factor of trust. For example, if a group member was controlling others in the team, other factors such as perceived similarity would decrease when members felt like they were being controlled.

In general, the replication of Ennen and colleagues (2015) study produced results expected based on trust literature that has shown trust to be influenced by perceived similarity of individuals (Clark & Atwater, n.d.; Costa & Anderson, 2011). One way in which the current study expanded on their research is that relationships between perceived similarity and trust was further broken down by the sex of the respondent. Further analysis revealed that the amount of perceived similarity was only predictive of a trusting

relationship for women and was unrelated for men. One major difference between the current study and the Ennen and colleagues (2015) study was that they were able to assess participants at multiple times during a similar team-based interaction, while this study only assessed participants one time, from a variety of team work settings, after the completion of the work task. The prediction that trust would be correlated with team satisfaction was also supported, except for the null relationship with monitoring behaviors.

Reflecting on the results of the study, it is important to consider the findings as many people will work with teams in their careers. As an employee that works with a team, the results indicate that there are factors in the work environment that contribute to trusting employees. As noted in previous studies, working with a team one trusts can have many benefits that reflect on the team and positively influence the organization as a whole.

Limitations and Future Directions

There are limitations to note in the study. The survey was posted to the researcher's personal Facebook page as recruitment for participants which limits the pool to a targeted population. Additionally, participants were recruited from a large array of work settings. This study rather focused on individual participants reflecting on their own experiences in teams but did not account for the nature of these teams, such as size, longevity, and sex make-up of the teams, or perceptions of the supervisor. The major contributor to this aspect as a future direction is that different conflicts and ideas of trust between members can vary based on the type of work. Things to consider would be if each member does the same job, relatively, such as hair dressers, versus a group that all contributes a different specialty such as film makers with producers, designers and writers.

Considering the current findings, a greater emphasis on sex differences should be focused on in future research. Specifically, future studies should consider placing a greater emphasis on understanding how sex differences could influence the level of trust and the perceptions of similarity, and the subsequent performance of teams both in academic and work settings.

Additionally, an examination of whether the connection between trust and perceived similarity differs at all for same sex or mixed sex work groups would be beneficial to discover. It may also be useful to examine if team building activities designed to enhance trust work differently based on the sex of the team members.

Conclusions

The current study extended findings for correlations between trust and perceived similarity and trust and team satisfaction, as also shown in the Ennen et al. (2015) study of student work groups. This research has brought new information to work groups focusing primarily on experience in teams and factors that build trust. This research has also brought attention to sex differences in self-reported trust. However, there is not enough research on sex and trust to allow for stated patterns of differences in the work place.

References

- Clark, M., Ostroff, C., & Atwater, L. (n.d.). Perceived Relational Diversity: Moving Beyond Demographic Attributes. *SSRN Electronic Journal*. doi:10.2139/ssrn.1154016
- Colquitt, J. A., Scott, B. A., & Lepine, J. A. (2007). Trust, trustworthiness, and trust propensity: A meta-analytic test of their unique relationships with risk taking and job performance. *Journal of Applied Psychology, 92*(4), 909-927. doi:10.1037/0021-9010.92.4.909
- Costa, A. C., & Anderson, N. (2011). Measuring trust in teams: Development and validation of a multifaceted measure of formative and reflective indicators of team trust. *European Journal of Work and Organizational Psychology, 20*(1), 119-154. doi:10.1080/13594320903272083
- Dirks, K. T. (1999). The effects of interpersonal trust on work group performance. *Journal of Applied Psychology, 84*(3), 445-455. doi:10.1037//0021-9010.84.3.445
- Ennen, N. L., Stark, E., & Lassiter, A. (2015). The importance of trust for satisfaction, motivation, and academic performance in student learning groups. *Social Psychology of Education, 18*(3), 615-633. doi:10.1007/s11218-015-9306-x
- Ferguson, A., & Peterson, R. S. (2014). Sinking slowly: Asymmetry in propensity to trust predicts downward trust spirals in small groups. *Academy of Management Proceedings, 2014*(1), 13749-13749. doi:10.5465/ambpp.2014.294
- Gambetta, Diego (2000) 'Can We Trust Trust?' in Gambetta, Diego (ed.) *Trust: Making and Breaking Cooperative Relations*, electronic edition, Department of Sociology, University of Oxford, chapter 13, pp. 213-237.
- Grant, A. M., & Sumanth, J. J. (2009). Mission possible? The performance of prosocially motivated employees depends on manager trustworthiness. *Journal of Applied Psychology, 94*(4), 927-944. doi:10.1037/a0014391
- Lau, D. C., & Liden, R. C. (2008). Antecedents of coworker trust: Leaders blessings. *Journal of Applied Psychology, 93*(5), 1130-1138. doi:10.1037/0021-9010.93.5.1130
- Mayer, R. C., Davis, J. H., & Schoorman, F. D. (1995). An Integrative Model of Organizational Trust. *The Academy of Management Review, 20*(3), 709. doi:10.2307/258792
- Park, G., & Deshon, R. P. (2010). A multilevel model of minority opinion expression and team decision-making effectiveness. *Journal of Applied Psychology, 95*(5), 824-833. doi:10.1037/a0019939

- Schaubroeck, J., & Lam, S. S. (2002). How Similarity To Peers And Supervisor Influences Organizational Advancement In Different Cultures. *Academy of Management Journal*, 45(6), 1120-1136. doi:10.2307/3069428
- Sökjer-Petersen, M., & Thorssell, J. (2008). Women's View of Trust and its Influence on Entrepreneurship and Career Development. *Nordic Psychology*, 60(2), 114-128. doi:10.1027/1901-2276.60.2.114
- Spector, M. D., & Jones, G. E. (2004). Trust in the Workplace: Factors Affecting Trust Formation Between Team Members. *The Journal of Social Psychology*, 144(3), 311-321. doi:10.3200/socp.144.3.311-321

Journal Student Research

Appendix A: Trust Survey

1 = *completely disagree*, 2 = *disagree*, 3 = *somewhat disagree*,
4 = *neutral*, 5 = *somewhat agree*, 6 = *agree*, 7 = *completely agree*

Propensity to trust	
1	Most people in this team did not hesitate to help a person in need.
2	In this team most people spoke out for what they believe in.
3	In this team most people stood behind their convictions.
4	The typical person in this team was sincerely concerned about the problems of others.
5	Most people will act as "Good Samaritans" if given the opportunity.
6	People usually tell the truth, even when they know they will be better off by lying.
Perceived trustworthiness	
7	In this team people could rely on each other.
8	We had complete confidence in each other's ability to perform tasks.
9	In this team people kept their word.
10	There were some hidden agendas in this team. (r)
11	Some people in this team often tried to get out of previous commitments. (r)
12	In this team people looked for each other's interests honestly.
Cooperative behaviors	
13	In this team we worked in a climate of cooperation.
14	In this team we discussed and dealt with issues or problems openly.
15	While making a decision we took each other's opinion into consideration.
16	Some people held back relevant information in this team. (r)

	17	In this team people minimized what they would tell about themselves. (r)
	18	Most people in this team were open to advice and help from others.
Monitoring behaviors		
	19	In this team people watched each other very closely.
	20	In this team people checked whether others kept their promises.
	21	In this team most people would keep each other's work under surveillance.

Appendix B: Perceived Relational Diversity

1 = not similar at all, 2 = somewhat dissimilar, 3 = slightly similar, 4 = somewhat similar, 5 = highly similar

Rate	<p>The following questions ask you to consider personal comparisons between yourself and the members of your workgroup (that is, the group of coworkers who report to your same supervisor). For each characteristic, please rate your perceived similarity to the group as a whole using the rating scale below.</p> <p>Please describe your personal perspective on this similarity, rather than the perspective that you might be expected to have.</p>
	VALUES (what is important to you; family orientation, ethics, helping the organization beyond what is required)
	GOALS (high achievement, desire for promotion, degree motivated by money or status)
	PERSONALITY (sociability, emotional stability, attention to detail, flexibility, importance of work, competitiveness, preference for working individually or in groups)
	SENSE OF HUMOR (finding similar things to be funny)
	RISK-TAKING (tendency to engage in dangerous activities or those with a high failure rate)
	CREATIVITY (ability to come up with ideas and ways of solving problems; originality)
	INTELLIGENCE (intellect, competence, IQ, insight)

	WORK HABITS (early/late arrival to work, organized or not, pride in work, feel ownership of work, commitment level, accomplishment)
	INTERESTS (hobbies, sports, social activities)
	POWER (hierarchical position, control over others' decisions)
	POLITICS (political orientation – conservative, liberal, etc., level of involvement)
	WORK EXPERIENCES (struggles, common experiences at work)
	PARENTHOOD (having children, similar ages of children)
	PHYSICAL ABILITY/ DISABILITY (status of needing or not needing a wheelchair or walking cane, being physically weak, speech, hearing, or vision impairment)

Appendix C: Team Satisfaction

1 = *extremely dissatisfied*, 2 = *dissatisfied*, 3 = *somewhat dissatisfied*, 4 = *neutral*, 5 = *somewhat satisfied*, 6 = *satisfied*, 7 = *extremely satisfied*

All in all, how satisfied were you with your team's performance?
All in all, how satisfied were you with the members of your team?
How satisfied were you with the progress you made in this group?
Considering the effort you put into the group, how satisfied were you with your team's performance?

Appendix D: Demographic Questions

How long have you been working at this job	____ Months ____ Years
How long did/have you worked with the team you referenced in this survey?	____ Weeks ____ Months ____ Years
Including yourself, how many people were part of the work group	____ Members
Age	_____
Sex	____ Male ____ Female

<p>RACE/ETHNICITY</p>	<p> <input type="checkbox"/> American Indian or Alaska Native <input type="checkbox"/> Asian <input type="checkbox"/> African American <input type="checkbox"/> Caucasian <input type="checkbox"/> Hispanic <input type="checkbox"/> Latino <input type="checkbox"/> Other </p>
<p>Highest degree of education completed.</p>	<p> <input type="checkbox"/> Did not complete high school <input type="checkbox"/> High school/GED <input type="checkbox"/> Some college <input type="checkbox"/> Associate's degree <input type="checkbox"/> Bachelor's degree <input type="checkbox"/> Master's degree <input type="checkbox"/> Advanced graduate work of Ph.D. </p>

The Impact Of Uber's Presence On Taxi Fare

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Abstract

This study explored the impact of Uber, a ride-sharing platform, on the average taxi fare in various markets. Using data from Taxifarefinder.com, I collected taxi fares for hundreds of markets across the U.S. Specifically, I collected the average one-mile, five-mile, and 10-mile fares in each individual market. Controlling for regional differences and population, I estimated the difference in fare between taxi markets where Uber was present and those where Uber was not present. The empirical results suggest that the availability of the Uber platform reduces the average 10-mile ride by \$2.35.

Keywords: Uber, ride-sharing, taxi fare, pricing, disruptive business models

Introduction

A rapid acceleration of technology and growth of consumers using apps and smartphones has occurred in the past decade. Innovative businesses have formed and captured consumers' attention at an entirely new level. One of these businesses, Uber, is an example of an inventive application (hereafter "app") to take advantage of this technology expansion. The Uber app is one of the several apps that is part of the sharing economy, which has recently taken off in the world of technology. Although Uber itself does not own any vehicles, the app and its service provide a transportation network which connects riders and drivers in place of taxis (MarketLine, 2014).

Since its founding in 2009, Uber has seen rapid growth and now serves hundreds of cities worldwide. Today, Uber is only one of the many companies within the ride-sharing industry. Such technology companies have powerful advantages over the taxi industry, including the ability to avoid costs, e.g., taxes, associated with transportation services and governmental regulations placed on taxis. Ride-sharing platforms continue to insist that they are technology innovators, not transportation providers, so they bend the rules to maximize market share, and ultimately, profits (Meitrodt, 2017). Uber faces increasing legal battles from state governments and the taxi industry; many cities in the U.S. have implemented Uber bans (Edelman & Geradin, 2016).

This study examined the effect of the presence of Uber on taxi fares. To perform the analysis, I first gathered taxi fares in several cities, for rides of various distances. Then, I examined the difference of these fares in markets where Uber was present and operating, to those where Uber was not in operation or was banned. Empirical results suggest that the presence of Uber reduces the average one-mile, five-mile, and 10-mile fare, after adjusting for regional bias.

Literature Review

The use of ride-sharing platforms has substantially increased since 2009. These ride-sharing platforms have proven to create considerable tension with existing regulatory frameworks, even though consumers have an increasing interest in their use (Gevero, Durante, & Alves, 2016). Several studies have examined ride-sharing platforms, the dynamic pricing structures, the barriers to entry, and the effect of a disruptive competitor (Chen, 2016; Swelbar & Wittman, 2013; Wallsten, 2015). However, there is no research examining the direct impact of ride-sharing presence on taxi fare.

Uber introduced a dynamic pricing scheme that capitalizes on imbalances in supply and demand of rides during peak transportation times. The dynamic pricing model, i.e., surge pricing, is made up of two components: (1) to increase the supply of drivers by incentivizing them to provide additional rides, and (2) to intentionally reduce demand temporarily using price discrimination. Surge pricing is a salient and criticized feature of Uber (and other ride-sharing platforms) because passengers are required to pay a surcharge fee in addition to the original fare.

Surge pricing has proven to be effective for ride-sharing platforms but cannot be applied to the taxi industry. Taxi drivers provide services at regulated prices and cannot temporarily change prices due to fluctuations in supply and demand. Changes in price happen infrequently, and thus taxi drivers are limited in their opportunities to attract customers while remaining competitive with ride-sharing platforms (Wallsten, 2015).

Taxi services are subjected to various regulations, e.g., entry restriction, price control, in most urban areas. These regulations impose high barriers to entry in the taxi industry.¹ To become a taxi driver in New York City, drivers must secure a taxi medallion, which serves as a special license from the city. Each year the city distributes a fixed number of medallions

1 Regulations may impact the empirical results, due to regulation stickiness. Stickiness occurs when a price regulation is in place and restricts fares from being altered in response to competition. In the analysis, stickiness of pricing was not visible, which could be due to the cross-sectional data set. The results predict a lower bound estimation. The use of panel data in future analysis may allow for stickiness to appear. Additionally, the inclusion of additional control variables to account for market regulations would be beneficial.

to limit their supply, for example, the city of Seattle distributes only 55 taxicab medallions in a lottery system. In turn, this leads to a high purchase price. With the sudden increase in supply due to the growth of ride-sharing platforms, the price of the New York City taxi medallion has decreased. Several studies propose deregulation for the taxi industry to level the playing field against the ride-sharing industry (Chen, 2015; Edelman & Geradin, 2016; Gevero, et al., 2015).

Other studies look at the effects of a disruptive competitor in the airline industry. One such study displayed that direct or adjacent competition is associated with an increase in route traffic and a decrease in the average fare (Swelbar & Wittman, 2013). The results from the airline industry demonstrate the intensity of airfares decreasing over time, which may apply to the taxi industry. Studies on the effect of ride-sharing platforms on taxi fare have yet to be completed. This study will add to the literature by identifying the relationship between the downward pressure on taxi fare and the presence of Uber.

Background

There are several benefits and efficiency gains that have occurred from the success of ride-share platforms, including decreased transaction costs, improved information distribution, and pricing efficiencies (Edelman & Geradin, 2016). For example, the technology used in ride-sharing platforms has reduced transaction costs associated with finding an individual to exchange a ride service with by connecting the rider to the driver almost instantaneously. Platforms allow users to request a ride, receive a price estimate, access information regarding the make and model of a vehicle, receive an estimated time of arrival, and complete payment for the transaction in a matter of seconds.

The U.S. taxi medallion industry faces volatility in long-term profitability as the ride-sharing model continues to decrease utilization rates. The taxi industry is highly regulated by the government and has several restrictions for drivers. In several cities, taxi drivers must complete training and pass assessments to receive their taxi driver certification. These regulations also impose barriers of entry for taxi drivers. Comparatively, to become an Uber driver, across Uber markets, require a valid driver's license from the DMV, to pass a background and driving record check, and to own a car that is insured and less than ten years old. The low barriers to entry allow ride-sharing platforms to expand by circumventing the barriers in the traditional transportation market (Edelman & Geradin, 2016).

The taxi industry faces additional challenges when there is a

presence of ride-sharing platforms operating in similar markets. These challenges make it difficult for taxi drivers to proactively compete with additional competition, after being subjected to various barriers to entry and government regulations. Ride-sharing companies can ultimately raise taxi drivers' income over time, not lower them, due to the possibility of drivers choosing to sell their services to both taxi fleet owners and to companies like Uber. From this perspective, more competition on the market means higher income for taxi drivers who choose to earn supplemental income driving for Uber over an extended period (Salmon, 2013).

Although ride-sharing transactions may benefit consumers and ride-share companies, they impose a serious threat to the taxi industry and the government programs that depend on tax revenue that taxis produce. Millions of dollars in tax revenue is generated through taxi services, according to Edelman and Geradin (2016) "in 2014 New York City collected \$359 million in revenue by selling 350 taxi licenses, while other cities charge fees based on vehicle revenue. Circumventing the need for such permits, transportation platforms thus withhold the corresponding revenue from cities" (p.29). Although ride-sharing companies impose some negative externalities, such as traffic congestion and wear and tear on public infrastructure, there is no incentive for them to collect and pay taxes. "Official" taxi drivers, who are the legal owners of taxi medallions, are faced with high barriers to entry into the industry; thus, the value of becoming a driver is decreasing. Serious strategy improvements are needed to remain competitive with ride-sharing platforms. From a governmental perspective, the taxi industry provides tax revenue for infrastructure and other state projects. With the decrease of taxi utilization, the tax revenue for critical government projects is in jeopardy.

Conceptual framework

According to economic theory, when additional producers enter a marketplace, a rightward shift in the supply curve will occur. The assumption is made that the service from taxi drivers is the same as the service of Uber drivers and customers are indifferent between the two providers when price is held constant. As shown in Figure 1, this increase in supply will cause the equilibrium price of the good or service to decrease. In the case of ride-sharing, the increase in the supply of transportation services, such as ride-sharing platforms, is associated with a decrease in taxi fares. This framework assumes that the availability of supply of transportation

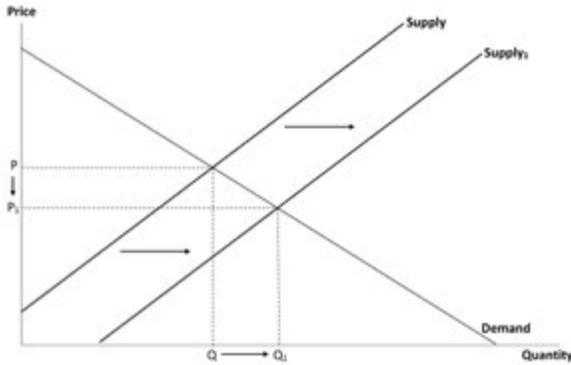


Figure 1: Increase in supply

Based on this theory, I arrive at the following empirically testable hypothesis:

H1: *The presence of Uber in a taxi market is associated with decreased average taxi fare in that market.*

Data

To perform the analysis, I collected the average taxi fare in several cities throughout the United States. These cities were chosen based on the fares available on TaxiFareFinder.com, which is publicly available. The website provided one-mile, five-mile, and 10-mile fare estimates based on actual fares and a mathematical algorithm.² I originally collected data for 370 taxi markets, for 2016 fares, which produced a cross-sectional dataset, as I only gathered data for one specific period. Out of the 370 observations, 265 were used in the final analysis (some observations were removed due to duplicates in geographic locations, e.g., multiple markets and fares were identical in San Francisco).



Figure 2: Locations of taxi markets used

2 Please see TaxiFareFinder.com for more information on this algorithm.

A map of the markets represented in this study can be found in Figure 2. The data was separated into four regions: West, Midwest, South, and Northeast based on the geographic regions given by the U.S. Census. The number of observations in each region are presented in Table 1.

Region	NE	South	West	MW
# of Observations	38	102	91	34

Table 1: Geographic breakdown of taxi markets

The official Uber app was used to identify if Uber was present in each taxi market.³ Each of the 265 observations was manually inputted into the "Request a Ride" search bar in the Uber app. From these search results, I coded an indicator of Uber presence in each taxi market. The market exhibits a "1" in the Uber category if the search results showed an available driver willing to offer a ride. The omitted category is if the search results showed "Unfortunately, Uber is currently unavailable in your area." A total of 40 taxi markets did not have Uber available, and the remaining 225 taxi markets had Uber available.

The Uber and non-Uber markets exhibited many similar characteristics. For example, the average fares for one-mile, five-mile, and 10-mile rides between the two groups do not statistically differ.⁴ The differences of means for the two groups are displayed in Table 2. Overall, the two groups reflect similar values for variables, except for 2010 population. The non-Uber group on average had lower population density and a lower population in the observations. It should be noted that the Uber group had several more observations than the non-Uber group, which is shown in Table 2.

	<i>no Uber</i>		<i>Uber</i>	
	Mean	Standard Error	Mean	Standard Error
<i>1-mile</i>	\$5.996	0.0706	\$5.02	0.0751
<i>5-mile</i>	\$18.07	0.1718	\$17.80	0.1814
<i>10-mile</i>	\$32.30	0.9889	\$31.42	0.3248
<i>2010 Population</i>	23,370	3,069	27,460	1,292

Table 2: Difference of means test for the Uber and non-Uber groups

-
- 3 It should be acknowledged that the presence of Uber could also impact alternate transportation methods, such as limos and other public transportation services, but this paper focuses solely on the impact on taxis.
- 4 Although this univariate analysis does not show a difference in fares, I am able to show a difference in fares between the groups when including control variables.

To account for differences among the markets other than the presence of Uber, I used each market's zip-code to collect information from the 2010 U.S. census, to gather a sufficient set of control variables. The control variables included population and region of the country. The summary statistics for the potential control variables are displayed in Table 3.

	<i>1-mile</i>	<i>5-mile</i>	<i>10-mile</i>	<i>2010 Population</i>
Mean	\$5.99	\$18.07	\$32.40	26,951
Standard Deviation	1.15	2.8	5.03	19,453
Count	265	265	265	265

Table 3: Sample summary statistics

Econometric Framework

As mentioned, the presence of Uber results in an increase in the supply of ride-sharing services in any market which the app enters. Thus, Hypothesis H1 predicts that Uber's presence results in a lower average taxi fare in the market. The primary regressor in my econometric analysis is the binary measure of Uber presence; "1" if Uber is present, "0" if Uber is not present. A parsimonious model, i.e., a model with only the primary regressor included, was run with the average taxi fare for one-mile, five-mile, and 10-mile rides serving as three separate dependent variables. As shown in Table 4, the presence of Uber does not significantly affect average taxi fare in this model (similar to the univariate analysis presented above).

	<i>Coefficients</i>	<i>t Stat</i>
Intercept	32.2979	36.800
Uber	0.121345	0.129367
Adjusted R Square	-0.00374	
Standard Error	5.041717	

Table 4: Estimation results for parsimonious model

Taxi fare is a function of many factors other than Uber presence, such as the distance of the ride, the time spent in the taxi, and the region of the country. Therefore, the insignificant results for the parsimonious model are not unexpected. Lack of control variables in this model specification contribute to the positive coefficient associated with Uber.

To correct for the omitted variable bias certainly present in the parsimonious model, a multiple linear regression model was used to identify the effect of the presence of Uber on taxi fare. A linear equation allows us to

isolate the effects of independent variables—such as 2010 population, region of the country, and population density - that may influence the dependent variable, which is taxi fare. After estimating the linear equation, the coefficients that are generated can be tested to prove if they are statistically different from zero. If they prove to be statistically significant, it can be concluded that they have a non-zero effect on taxi fare.

The 2010 population of an observation location was included as a control variable in my linear estimation, which was included to serve as a proxy for time spent in a taxi due to traffic congestion.⁵ The time spent in a taxi could be a result of other confounding factors, such as a city's infrastructure at the local level, that influence the taxi fare. These confounding factors are captured by the error term. The following variables were used as control variables in the final model: the distance of the ride, regional location, and 2010 population, which are listed in Table 5, and displayed in equation (1).

$$Taxi\ fare_i = \beta_0 + \beta_1*(Uber_i) + \beta_2*(2010\ Population_i) + \beta_3*(Northeast_i) + \beta_4*(South_i) + \beta_5*(Midwest_i) + \mu_i \quad (1)$$

Y_i	Taxi fare	Dependent	Continuous
X_1	Uber	Primary regressor	Binary
X_2	2010 population	Control	Continuous
X_3	Northeast	Control	Binary
X_4	South	Control	Binary
X_5	Midwest	Control	Binary

Table 5: Variables used in the multiple linear regression

Each of the variables used in the final model serves to represent determinant factors of taxi fare. The population of a city, the density of the population, and where the market is located can contribute to the taxi fare. The West regional variable was removed to avoid the dummy variable trap, which produces perfect multicollinearity in the regression equation, and thus, ordinary least squares (OLS) estimates cannot be computed.

Results

The regression model predicts that the average taxi fare (dependent variable) is a function of the presence of Uber, 2010 population, and region

⁵ I also estimated a linear-log model by taking the natural log of 2010 population. The results of this model showed the natural log of 2010 population to be less significant than the original.

of the country where each taxi market is located. The model was estimated using average fares for one-mile, five-mile, and 10-mile rides to estimate the effect of Uber on average taxi fare. The results of each model display different effects for each of the variables, which I expected. The multiple linear regression results are displayed in Table 6.

	1-mile		5-mile		10-mile	
	<i>Coefficients</i>	<i>t Stat</i>	<i>Coefficients</i>	<i>t Stat</i>	<i>Coefficients</i>	<i>t Stat</i>
Intercept	6.48***	24.41	21.11***	38.12	38.54***	39.25
2010 Population	0.00001	2.24	0.00001	1.45	0.00001	0.97
Uber	-0.172	-0.84	-1.12***	-2.65	-2.35***	-3.09
NE	-0.802***	-3.77	-3.63***	-8.17	-6.87***	-8.73
South	-0.799***	-4.93	-3.52***	-10.39	-6.62***	-11.04
MW	-0.953***	-4.18	-3.75***	-7.89	-6.91***	-8.19

Table 6: Estimation results

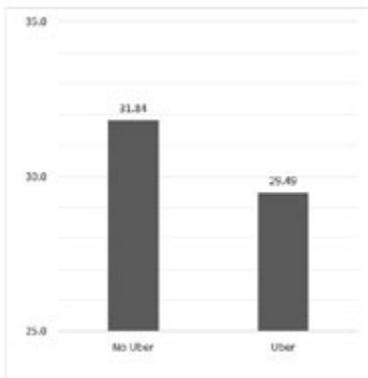
The linear regression model estimated with the 10-mile fare as the dependent variable displayed the highest level of statistical significance in each of the variables. The presence of Uber has an estimated effect of -\$2.35 on the average 10-mile taxi fare. The Uber variable is statistically significant at the 99% level. Examining the results for the 10-mile ride specification, each of the variables proved to be statistically significant at the 99% level, excepting 2010 population. The decrease in taxi fare associated with the presence of Uber is consistent with Hypothesis H1: The presence of Uber in a taxi market is associated with decreased average taxi fare in that market.

To check for robustness, the results of the parsimonious model and other models were compared. The results for the Uber indicator were not perfectly robust throughout the models. As mentioned, this is because omitted variable bias was present in the early models, control variables were necessary to estimate the true effect of Uber presence on taxi fare. One explanation for the insignificance could be the lack of regional control variables. In the final regression, results show that each regional control variable proves statistically significant and is associated with an average coefficient value of -\$6.00. Without controlling for regions, cities located in more expensive regions with Uber are compared to less expensive regions that do not have Uber. The control variables allow for the regional differences to be proportional.

Finally, a variance inflation factor (VIF) test was used on each of the variables to test for multicollinearity, which would cause the coefficient estimates to have increased variance. The results of the VIF test did not display any variables that were multicollinear.

Economic Forecast

To capture the estimated fare impact if Uber entered the marketplace in Menomonie, Wisconsin, I use the estimation results for the model using 10-mile fare.⁶ To simulate the effect of Uber entering the market, I must gather data for each of my variables for Menomonie. In Menomonie, the 2010 population was 16,264, there is currently no presence of Uber, and is in the Midwest region. The results of the model estimate the average 10-mile taxi fare to be \$31.84. If Uber entered the marketplace, the average 10-mile fare would change by the estimated coefficient from my estimation results. Based on this simulation, the presence of Uber would result in a \$29.49 average 10-mile taxi fare, as displayed in figure 3. Overall, the total net benefit of Uber entering Menomonie would be a \$2.35 decrease in the average 10-mile taxi fare.



Menomonie, WI:

- 2010 population: 16,264 residents
- MW=1
- Uber= 0

* = 90% significance, ** = 95% significance, *** = 99% significance

Conclusion

Ride-sharing platforms continue to expand, taking advantage of the available technology and tech-savvy populations. These technology companies operate with much lower costs than the taxi industry and are subject to lesser government regulation and taxation. The purpose of this study was to determine if the entrance of these ride-sharing companies impacts taxi fare, while specifically examining one such ride-sharing platform: Uber. Estimation results demonstrate that, on average, 10-mile taxi fares decrease \$2.35 due to the presence of Uber. The financial and convenience benefits that Uber provides to consumers continue to gain the company market share in the transportation industry.

⁶ The application of the model is for simulation purposes only. Several differences exist between the City of Menomonie and the cities included in the study. The results should be examined with caution.

Of course, the need for future research remains. An analysis that extends beyond one period is necessary to fully understand the impact of Uber and other ride-sharing platforms on taxi fare. Panel data analysis would be beneficial, as it could control for factors that vary over time; it may help identify any potential lags in the response of taxi fare adjustments. Panel data could also identify if the effect of Uber presence on fare softens after Uber has been in the marketplace for an extended period. Another limitation was obtaining ride-share data. Future research should account for the presence of all ride-sharing platforms - such as Uber, Lyft, and Sidecar - on taxi fare. This study displays the effect of Uber specifically, but the additional entry of other ride-share platforms theoretically should decrease the fare even further. The marginal effect of an additional ride-share platform would result in an additional decrease to taxi fare, but because Uber is near market saturation, the marginal effect would be lessened compared to the initial Uber entry. An expansion of the study could gather the impact of ride-sharing platforms overall. Finally, the lower cost business model that ride-share companies operate within allows for a dramatic decrease in tax revenue for states and municipalities. Examination of the consequences to government infrastructure because of these companies should be considered, due to lost tax revenues from taxi companies (Edelman & Geradin, 2016).

References

- Chen, M. K. (2016). Dynamic pricing in a labor market: Surge pricing and flexible work on the Uber platform. *Proceedings of the 2016 ACM Conference on Economics and Computation*, 455. doi:10.1145/2940716.2940798
- Edelman, B. G., & Geradin, D. (2016). Efficiencies and regulatory shortcuts: How should we regulate companies like Airbnb and Uber? *Stanford Technology Law Review*, 19, 293.
- Gevero, A., Durante, B., & Alves, E. (2016). How Uber and other ride-sharing companies are roiling the taxi medallion industry. *The RMA Journal*, 98(4), 36–41.
- Hall, J. V., & Krueger, A. B. (2016). An analysis of the labor market for Uber's driver-partners in the United States (Working paper No. 587). National Bureau of Economic Research, Inc.
- MarketLine. (2014, November). Uber Technologies, Inc. Calling a cab for the taxi industry? Case study. Retrieved February 1, 2017 from MarketLine Advantage database.
- Meitrodt, J. (2017, March 19). How Uber, Lyft bent the rules to win: Ride-share firms insist they are technology innovators, not transportation providers. *Star Tribune*. Retrieved from http://www.highbeam.com/doc/1G1-486212272.html?refid=easy_hf
- Salmon, F. (2013, December 12). Why cab drivers should love Uber. Retrieved March 1, 2017, from <http://blogs.reuters.com/felix-salmon/2013/12/11/why-cab-drivers-should-love-uber/>
- Swelbar, W. S., & Wittman, M. D. (2013). Evolving trends of U.S. domestic airfares: The impacts of competition, consolidation, and low-cost carriers. *MIT International Center for Air Transportation*. Retrieved from <https://dspace.mit.edu/bitstream/handle/1721.1/79878/ICAT-2013-07.pdf>
- Wallsten, S. (2015). The competitive effects of the sharing economy: How is Uber changing taxis? *Technology Policy Institute*. Retrieved from https://www.heartland.org/_template-assets/documents/publications/the-competitive-effects-of-the-2007713.pdf

One Month to Grieve- A Study of Menomonie's Mourning After 9/11

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Abstract

Most Americans participated in a shared experience of national grieving following the September 11 terrorist attacks in 2001. However, this grieving process was cut abruptly short, and Americans became desensitized to the violent aftermath of 9/11 by being overexposed to repetitive, violent imagery. By analyzing relevant American authors and columns in the University of Wisconsin-Stout student newspaper following the September 11 attacks, one can get a sense of the abrupt shift that occurred in American society shortly after the attacks, from unifying grief to calloused disengagement.

The nonstop national media coverage of the September 11 attacks on the World Trade Centers was jarring and overwhelming. Nearly everyone old enough to remember the event has stories of stopped cars and empty stores. The entire day was spent glued to the television watching the towers fall, and people feared that the once-thought-indominable American security was crumbling along with them. Newscasts everywhere, including those seen in the small city of Menomonie, Wisconsin, saturated the network with raw video footage of blood, tears, and chaos. People were horrified. For several days, while violent images continued to be plastered across every front page and television screen, Americans grappled with the trauma of the attack. Daily routines were suspended, public buildings were evacuated, public transportation ground to a halt, and everyday life suddenly seemed uncertain and frightening (Attack).

Just nine days after the attacks, American President George W. Bush addressed the reeling nation and a joint session of Congress in a televised speech, where he stated that the events of September 11 had fundamentally altered the United States of America. *The Washington Post's* transcript of his speech reads, "All of this was brought upon us [Americans] in a single day, and night fell on a different world" (Text). The President described the new America as a country "awakened to danger," but also as a country that had

already moved beyond grieving. Just nine days after the attacks, he said that "[Americans'] grief has turned to anger and anger to resolution" (Text). He then promised that America would "direct every resource at our command," not to the recovery of its citizens, but "to the destruction and to the defeat of the global terror network" (Text). The message was clear: American citizens do not value extended periods of grief. Instead of allowing themselves to fully process their grief, they endeavor to quickly haul themselves up by their bootstraps, believing that they must present themselves as strong and indomitable even in the face of insurmountable trauma.

On a societal level, this action-oriented, quick-resolution attitude makes sense. Displaying weakness after a terrorist attack would be seen as conceding victory. Furthermore, a constant state of shock and horror is not sustainable in a national economy and--frankly--it's not a desirable state of mind to maintain. No one wants to be scared all the time, grappling with grief and sadness, and the effects of fear can have crippling economic consequences (Schneider). At some point, whether it be out of a sense of duty or self-preservation, people find it necessary to attempt to return to their comforting routines and pursue a sense of normalcy, even it's built on shaky foundations. Society picks itself up and trundles on.

One of the ways trauma is suppressed is by repeated exposure to the same sets of images over and over until their meaning fades and their emotional effects become nondetrimental. For example, after the 9/11 terrorist attack, the footage of the twin towers collapsing was repeated so often that it was seared into Americans' minds. While the images are unquestionably unforgettable and inescapable, their emotional impact faded with each viewing until it became difficult to see the burning towers as anything other than icons, so abstracted and appropriated that it was hard to focus on the actual lives that were lost. Columbia University Professor of English and expert in cultural memory Marianne Hirsch writes that by turning traumatizing images into icons and repeating them incessantly, "they may lose their power to wound," allowing viewers to effectively "immunize" themselves against the memory of the traumatic events (Pines 185).

The scale of the 9/11 tragedy was utterly unprecedented, and the media coverage was so unrelenting that the trauma quickly became unwieldy--too large for an individual American to process. Even for those on the ground in Manhattan who experienced the event in person, the trauma and sheer scale of the tragedy was so large that it was difficult to react with anything but numbness. In her cathartic essay, "Instructions for Surviving the Unprecedented (Break Glass in Case of Emergency, if Glass Is Not Already Broken)," New York-based author Jenefer Shute writes about the missing

persons posters that popped up in Manhattan immediately following the attacks. "You will see [a poster] on a lamppost near your house," she writes. "It will break your heart. Then, in the next few days, you will see thousands. They will all break your heart. After several months, they'll still be there, tattered and rain-streaked, but you won't see them anymore" (92). There is a limit to how much trauma someone can carry before he grows exhausted and starts to distance himself (not out of apathy, but out of self-preservation), seeking familiarity wherever he can find it. This kind of detachment is intended as a coping mechanism but can also prematurely paralyze important discussions about a traumatic event. More importantly, growing calloused towards such violent images can have a cascading effect, where one not only becomes immunized to the trauma of the initial event, but also becomes unaffected by violence in the future. This effect is especially notable when that violence is depicted as justice or retaliation for the initial harm that occurred.

On October 11, 2001, one month after the World Trade Center attacks, the United States and Great Britain began a series of bombing runs in the Middle East as retaliation for the terrorist attacks (War 6). Even though the news was printed in *Stoutonia*, the student newspaper in Menomonie, Wisconsin, students at University of Wisconsin-Stout seemed more interested in the Sunday football game between the Minnesota Vikings and the New Orleans Saints, and student engagement with the latest military retaliation in the Middle East was muted. An anonymous *Stoutonia* staff editorial notes in October that, "as upset as we all got back on September 11, it has all seemed to taper off recently" (War 6). The author of the editorial was disturbed by students' numb reaction to the bombing run, writing, "While life [in Menomonie] was going on as usual at the start of these bombing runs, people were being killed. [...] Shouldn't we take notice?" (War 6). The students' lack of interest was reflected in the exponential decline of 9/11-related articles in *Stoutonia*. After devoting a three-page spread to the attacks and numerous pages to student testimonials in the issue immediately following September 11, the *Stoutonia* news section returned to more local concerns in its very next September issue. Similarly, the *Stoutonia's* columns section, which was saturated with personal stories about loss and mourning throughout September, returned to discussing homecoming and technology upgrades by mid-October. In one month, the stories surrounding 9/11 seemed to have grown repetitive to the point of being uninteresting, or simply too overwhelming to handle. In the event of such a massive tragedy and loss of life, a tidal wave of media can be detrimental—reading six near-identical stories about missing relatives takes away from the emotional impact

just one might have carried on its own. New York writer and composer Rinde Eckert wrote in his 9/11-inspired essay "Shorebirds Atlantic" that when death becomes "regrettably commonplace, not the grand affair it was," that there is no longer a "great communal outcry of grief for the dead departed souls," but rather that, "to the casual observer, nothing [is] out of the ordinary" (Eckert 80).

Philosopher and theorist Judith Butler writes in *Precarious Life* that, "when grieving is something to be feared, our fears can give rise to the impulse to resolve it quickly" (Butler 29), and this is exactly what post-9/11 America has done. America seems to fear grief as an implication of weakness, and it is incredibly difficult to mourn in American society. Distressing headlines fly by on a minute-to-minute basis, each new crisis trying to supersede the last one in its urgency. Students at University of Wisconsin-Stout barely had a moment's pause after the 9/11 attacks before being overrun with news about a local arsonist and the national anthrax scares. There is something new clamoring for attention every second, and Americans across the nation are pressured into such a constant state of busyness that it is difficult--shameful, even--to pause to reflect on grief and sadness.

On the first-year anniversary of the 9/11 attacks, student-journalist Nick Coenen wrote in his *Stoutonia* column that he was looking forward to the catharsis of the anniversary, but the day itself ended up being a "let down [sic]" (Coenen 5). Instead of being able to take the time to reflect on the lives lost 365 days ago, he found himself "scrambling to get to class and keep pace with [his] life" (Coenen 5). There were many opportunities for self-reflection in the city of Menomonie, especially for students. From candlelight vigils to art ceremonies to group discussions, the nation was invested in memorializing the event (Werner 4). However, Coenen's experience of being too caught up in his everyday life to emotionally engage is not unique. While there were many opportunities for discussion and remembrance, they were officially limited to this one-day anniversary—a controlled, officiated memorial that barely scratched the surface of the trauma that occurred a year before. Meanwhile, those who remained deeply affected by the tragedy were struggling every day to work through the grieving process, and were met with an increasingly hostile public reaction. 9/11 widow Alissa Torres writes about her struggle to mourn her husband's death after September 11 in her graphic novel, *American Widow*. Not only does she feel isolated as the country moves on, leaving her and many other grieving families in the lurch, but she is frequently shamed for taking necessary time to recover and return to society. "No one likes an arrogant, selfish, lazy, wealthy person," accused a close friend of hers (Torres 127). Taking time to mourn is seen

as a selfish choice by many Americans who would rather appear stoic and steadfast in the face of hardship, but those who remain unaffected by tragedy can come across as cold-hearted or apathetic. *Stoutonia* student-journalist Coenen lamented about this in his column, writing, "Is this not the true spirit of America in so many people's eyes? The self-absorbed tendencies and materialistic priorities that control so many have branded us as insensitive at best" (Coenen 5).

Butler writes that many people believe grief to be isolating, "solitary," or something to be feared, but the opposite has often proven to be true (Butler 22). Americans were at their most united immediately after the 9/11 attacks when they were unified in their grief. Empathy spawned candlelight vigils, blood drives, and donation banks for the victims. There are countless stories of quiet acts of kindness that took place in those first crucial days, when strangers helped strangers and communities banded together. Grief, and the process of grieving can be immensely constructive. Nine days after the September 11 attacks, President Bush said that he "[had] seen the decency of a loving and giving people who have made the grief of strangers their own" (text), yet instead of encouraging this comradeship, the nation pivoted to an attitude of aggression and retaliation. And yet, despite the American desire to avoid wallowing in grief and pursue resolution at all costs, those nine days of unity, selflessness, kindness, and grief in the face of an overwhelming tragedy were a far better testament to American strength and resilience than the seventeen years of divisive and cyclical violence that followed.

Works Cited

- “Attacks prompt widespread closings.” *Edition CNN*. CNN, 12 Sept. 2001. Web. 1 Jan. 2017.
<https://edition.cnn.com/2001/US/09/11/attack.closings/index.html>
- Butler, Judith. *Precarious Life: The Powers of Mourning and Violence*. Verso, 2004, p. 19-49.
- Coenen, Nick. “Never just ‘make time to remember.’” *Stoutonia*, 12 Sept. 2002, Vol 93, No. 2, p. 5.
- Eckert, Rinde. “Shorebirds Atlantic.” *110 Stories: New York Writers after September 11*, edited by Ulrich Baer, New York University Press, 2001, p. 80.
- Pines, Davida. “History, Memory, and Trauma.” *Drawing from Life*, edited by Jane Tolmie, 2013, p. 185-206.
- Schneider, Friedrich, Tilman Brück, and Daniel Meierrieks. “The Economics of Terrorism and Counter-Terrorism: A Survey (Part II).” *Economics of Security*, 2011. Web. https://www.diw.de/documents/publikationen/73/diw_01.c.372925.de/diw_econsec0045.pdf
- Shute, Jenefer. “Instructions for Surviving the Unprecedented (Break Glass in Case of Emergency, if Glass Is Not Already Broken)” *110 Stories: New York Writers after September 11*, edited by Ulrich Baer, New York University Press, 2001, p. 274.
- “Text: President Bush Addresses the Nation.” *Washington Post Online*. The Washington Post, 20 Sept. 2001. Web. 7 Oct. 2017. https://www.washingtonpost.com/wp-srv/nation/specials/attacked/transcripts/bushaddress_092001.html
- Torres, Alissa. *American Widow*. Villard, 2008. Print.
- “War has become a surreal experience.” *Stoutonia*, 11 Oct. 2001, Vol 92, No. 7, p. 6.
- Werner, Becky. “A Campus Remembers.” *Stoutonia*, 12 Sept. 2002, Vol 92, No. 2, p. 4

Alabama's Pretrial Criminal Process: Structural Violence Within the Bail Bond Industry

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Abstract

This policy analysis examines the Alabama Pretrial Criminal process—more specifically, the bail bond industry and the bail schedule in Alabama, where about 45,000 citizens are incarcerated (United States Bureau of Justice Statistics, 2015). Currently, the system disproportionately keeps people of lower socioeconomic status behind bars because of their inability to make bail. This causes them to lose jobs and properties and causes breaks within family households. The concept of structural violence is a useful analytical tool to use to understand how the pretrial criminal process is unjust. Johan Galtung defines structural violence as violence that is unified through a social structure, such as our judicial system, in order to prevent individuals or groups from meeting basic human needs. This study examines different policy paths to end this structural violence and concludes that a policy option would be an amendment made to Alabama's current bail schedule to lower the amount of bail set for non-violent crimes.

Keywords: Alabama incarceration, bail bond industry, pretrial criminal process

Alabama's Pretrial Criminal Process: Structural Violence Within the Bail Bond Industry

Historically, setting bail has allowed courts to deter defendants from fleeing before trial as well as prevent any danger to the public. Bail is set at certain levels by looking at the defendant's prior criminal record as well as the severity of the crime committed (Billings, 2016). The United States incarcerates roughly 780,000 individuals in local jails per year that have yet to be convicted of an actual crime (Wagner & Rabuy, 2016). Each of these individuals have been charged and taken into custody, all in one night, but they are still awaiting trial and conviction. This is because they cannot—or will not—pay the bail money to be released, which is an issue that many

citizens of Alabama endure.

Section 16 of the Alabama Constitution (1901) states that the people of Alabama are given the right to bail before conviction, unless a capital offense has been committed, and that excessive bail "shall not in any case be required." Similarly, rule 18(1)(A)(2)(B) of the Alabama Rules of Judicial Administration disallows courts from exceeding the cap set by the bail schedule, "unless approved by the court." However, this is not happening, and bail continues to be set at unjust levels. Thus, citizens are either taking plea bargains, often for crimes not even committed, to get lesser sentencing, or they are avoiding the bail bond system altogether because it is not feasible for them to be able to pay (Wagner & Rabuy, 2016). If the defendant doesn't pay, then they have to await their trial in jail. Each person awaiting trial in jails costs over sixty dollars per night at minimum, which leads up to about fourteen-billion taxpayer dollars spent just on people awaiting trial ("Bail in America," n.d.). That doesn't even account for those already sentenced or those sentenced to life without parole. This information alludes to the structural violence seen in the bail bond system. This policy analysis intends to review bail-setting procedures within Alabama's judicial system and provide possible solutions to distinguish the structural violence present.

Background

In the United States approximately half a million people, or one in five individuals incarcerated, are in jails and prisons due to non-violent drug-related offenses (Wagner & Rabuy, 2016). The United States is also one of two countries in the world that has legalized bail bond industries thus allowing private businesses to intermingle with state and federal judicial systems, which has allowed for exploitation, more specifically structural violence (Kight, 2017). One state that is affected largely by the structural violence within the pretrial criminal process is Alabama; this is directly in connection to its bail schedule. The following table is Alabama's bail schedule:

Alabama Bail Schedule

Felonies:

Capital felony	\$50,000 to No Bail Allowed
Murder	\$15,000 to \$75,000
Class A felony	\$10,000 to \$60,000
Class B felony	\$5,000 to \$30,000
Class C felony	\$2,500 to \$15,000
Drug manufacturing and trafficking	\$5,000 to \$1,500,000

Misdemeanors (not included elsewhere in the schedule):

Class A misdemeanor	\$300 to \$6,000
Class B misdemeanor	\$300 to \$3,000
Class C misdemeanor	\$300 to \$1,000
Violation	\$300 to \$500
Municipal Ordinance Violations	\$300 to \$1,000

Traffic Related Offenses:

DUI	\$1,000 to \$7,500
Reckless driving	\$300 to \$1,000
Speeding	\$300 to \$500
Other traffic violations	\$300 to \$500

In Alabama, non-violent drug-related crimes have bail set by judges ranging from \$5,000 to \$1,500,000; this is much unlike a violent crime—such as murder—which is set at \$15,000 to \$75,000 (Alabama Rules of Judicial Administration, Rule 7). Equal Justice Initiative notes that “Alabama law equates the possession of more than 2.2 pounds of marijuana with the most extreme violent crimes, including capital murder and terrorism,” meaning one could be provided no bail and be sentenced up to life in prison for marijuana possession (“EJI Will Challenge,” 2016). But if bail is set to ensure that individuals will attend trial, it is important to note that those who have committed violent crimes with greater expected penalties are more likely to flee before trial and are also a greater risk to the public than those who have committed a non-violent drug offense (Sigler & Formby, 1978). Thus, bail settings should be greater for violent crime offenders. Unfortunately, that is not often the case in Alabama. For example, seventy-five-year-old Alabama resident, Lee Carroll Brooker, was sentenced to life in prison for possession of less than three pounds of marijuana in addition to having a prior conviction (“EJI Will Challenge,” 2016). Alabama’s own Supreme Court Chief Justice, Roy Moore, stated that the sentence was “excessive and unjustified” (Hansen, 2016). It is difficult to understand why citizens who murder another human can get bail for \$75,000, while someone who is caught with three pounds of marijuana can get sentenced to die in prison without access to bail. Unfortunately, the court system in Alabama has not reviewed his case at this point (Hansen, 2016).

Similarly, with such high bail settings, lower income populations are disproportionately affected along with the disabled, mentally ill people, and African Americans and Latino/as. According to the Pretrial Racial Justice

Initiative (PRJI), 35% of African American males have higher bond rates than White males and 19% of Hispanic males have higher bond rates than White males ("Race," n.d.). There is a clear correlation between race and bail settings. Additionally, Alabama law ensures the right to bail, and it should also recognize that those of lower wealth need to have the same access to bail as individuals of greater wealth. The Pretrial Justice Initiative (PJI) states that 47% of the defendants remain in jail until their trial because of the price of their bail ("Race," n.d.). Sigler & Formby (1978) suggest Alabama's justice system lacks in the ability to protect the public from dangerous persons and enforces the structural violence against poor, non-violent offenders. This example of structural violence is because defendants of lower socioeconomic status find it difficult to find a cosigner or collateral for bail bonds. When bail is set at hyper-elevated amounts, defendants find difficulty paying for all aspects of the trial, and thus it affects the case both initially and throughout the course of courts (Billings, 2016). It also causes extreme effects in defendants' everyday lives through loss of income, occupations, housing, and custody of children as they await their day in court.

The pretrial process and mass incarceration itself has been defended so that the government can seem "tough on crime," when in reality the bail bond system is counterproductive and "fiscally irresponsible" ("Mass incarceration," n.d.). The American Civil Liberties Union (ACLU) states that prison system costs account for "1 out of every 15 state general fund discretionary dollars," making it the second largest cost in American finances ("Fiscal Cost," n.d.). It is difficult to see any type of alternatives because of the power of special interest groups like the bail bond companies, which make about one and a half billion dollars every year in nonrefundable fees from defendants and their families ("Mass Incarceration," 2017). That being said, there clearly is an opportunity, and need, for reform.

Evaluation Criteria & Projected Outcomes

The key issue is not that the bail schedule is too low for violent crime, but rather the bail schedule is too excessive for non-violent crime. Non-violent crimes are more common, and thus create higher revenue, which makes sense for bail bond companies, but the benefits for the constituents are basically nonexistent and the disadvantages are plenty. Different actions can occur that will maximize constituents' benefits and safety as well minimize the loss of revenue from the bail bond system. The following table offers three possible actions.

Action 1	Amendment of Alabama's bail schedule that would lower the bail settings for non-violent crimes
Action 2	Referendum requiring Alabama to provide representation for court appeals regarding unfit bail settings
Action 3	Creation of a new bail assessment strategy that will minimize ambiguity and initiate informed bail

Each action will be expanded upon in further detail and weigh the positive and negative repercussions on Alabama's justice system.

Action 1:

The first policy option would be an amendment made to Alabama's current bail schedule to lower the bail settings for non-violent crimes. This would allow citizens who are arrested for non-violent drug charges to have a more fitting bail setting rather than at heights greater than some of the most violent crimes such as murder. While this action may not create mass revenue like the current system does, it will have large benefits for the constituents as they would have a justice system that aims to keep dangerous persons out of the public and nonviolent offender available to bail. In order to re-inflate bail bond company profits, if that is an obstacle to reform, there could be an increase to the amount of bail set for violent crime as there is a higher chance of danger to the public as well as fleeing before trial. There would still be loss of revenue for the bail bond companies however this comes at no cost to the constituents with the benefit of safety; a more fitting bail schedule would ensure such.

Action 2:

The second policy option would be the creation of a referendum to ensure representation is provided for a court appeal regarding unfit bail settings. This would allow those to be represented in court, free of charge, if the bail setting is found excessive or unfit for the crime. This could minimize the amount of unfit bail settings for those of lower socioeconomic status as well as complete Alabama's goal of a citizen's right to bail. There are two negative repercussions of this policy option. One negative aspect that comes with this action is that Alabama would have to fund this public service. While it would be a "needs-based" system where those under the poverty line would be able to receive this entitlement, it would still be an expense to the state. The second negative aspect of this action is the possibility of backlash from constituents who do not support government entitlements. Nevertheless, it would be more cost effective than forcing constituents to stay in jails at the rate of \$60 per night ("Bail in America," n.d.). The funds saved from lower

occupancy numbers would be a great benefit for the state government of Alabama, however the possibility of constituent dissatisfaction makes this policy option weigh negatively.

Action 3:

The third policy option would be the adoption of a new Alabama bail assessment strategy that will create informed bail. Currently, bail settings are given regarding the severity of the crime, however this disproportionately keeps citizens of low socioeconomic status locked in jail until trial ("The Necessity," 1978). The Pretrial Justice Initiative suggests assessing defendant's "criminal history, employment, pending charges, socioeconomic status, residence, substance abuse, and failure to appear history" before setting bail ("Bail in America," n.d.). Because everything about the defendant is scrutinized when setting bail, the socioeconomic class should rightfully be noted as well in order to more justly set the bail amount, as well as any of the above listed attributes. Having a more mindful assessment strategy will minimize the excessive bail setting and exercise more appropriate bail settings. This policy option would be of no cost to the Alabama's government, which is a strong positive attribute, however this action does not consider the root of the Alabama justice system: disproportionate bail settings for violent and non-violent crimes.

Comparison of Alternatives, Recommendation, & Implementation

Each policy action attempts to resolve the structural violence with Alabama's bail bond industry however each option also has drawbacks. The following table shows both the positive and negative aspects of each action plan.

	Positive	Negative
Action 1	<ul style="list-style-type: none"> - No expense to Alabama's government - Bail settings to fit the violence level of crimes - Dangerous persons more likely remain in jails until trial - Safety to Alabama citizens 	<ul style="list-style-type: none"> - Bail bond industry loses money
Action 2	<ul style="list-style-type: none"> - Citizens would receive the right to representation in unjust situations - Cost effective with lower jail occupancy 	<ul style="list-style-type: none"> - Funding needed by Alabama's government - Constituent backlash to government entitlement
Action 3	<ul style="list-style-type: none"> - No expense to Alabama's government - Minimizes excessive bail settings - Provide more accessible bail settings 	<ul style="list-style-type: none"> - Does not address the issue setting bail to the severity of crimes

The main issue with amending the Alabama bail schedule is that the bail bond industry, which makes about 2 million dollars per year nationally and a large national lobbying group, would lose a large amount of money and a referendum to require representation for unfit bail settings would cost both the state and the citizens (Kight, 2017). Both the first and second actions leave at least one party with lower funds. Creation of a new bail assessment strategy may not be a cost to any party, but it does not address the issue of setting bail to the severity and level of violence of a crime, which is the root of the structural violence present in Alabama's justice system. The easy option would be to go with Action 3 because it would be of no cost to the state, but it does not fix all the issues that come with the bail bond industry such as; occurrences of excessive bail settings and the disproportionate bail settings for violent and non-violent crimes. Action 2 would come with a large amount of backlash because it would be an entitlement program, but it is one that is crucial to helping Alabamian citizens still awaiting trial in jail, because it is the only action plan that helps those already affected by the structural violence. Action 1, while most heavily concerning because of money, is the most preventative option; it would be able to decrease the most amount of people being affected by these laws. While this action would have received a large amount of backlash in the past when citizens believed in a "War on Drugs," it would likely have a large number of constituents supporting the change. Similarly, Williams (1978) argues that the bigger issue that must be addressed is the stigma of socialism that can accompany any type of government intervention in the privatized bail bond industry. There is a common perception that our government is growing substantially, and by creating amendments or referendums, there will likely be an outcry about too much government intervention. While there would be instances of backlash, the benefits for constituents outweigh threat of the prior.

Of the three options, Action 1 has the most benefits for constituents and result in the least amount of negative repercussions for the citizens of Alabama. Because of its preventative nature, it would benefit the majority. Implementation could begin with an initiative or referendum, or Alabama's state representatives could take action and create a bill alongside Alabama's Senate. It would lower the bail settings for non-violent crimes, including drug-related offenses. This would not legalize any drugs, but it would charge defendants with high bail. This system would also allow for those of lower socioeconomic status to get fair and just bail, which the current system fails to do. After implementation of the bill, it would also be beneficial to also examine past cases that have experienced excessive bail and get these defendants the justice they deserve.

Conclusion

The United States is one of the only countries that has legalized bail bond industries that intermix business with our judicial system, which leaves it vulnerable to structural violence and exploitation (Kight, 2017). The original objective of the bail system is to ensure all defendants appear in court, but the current system only ensures that *poor* defendants appear in court. The bail system continually punishes those of lower socioeconomic status for not having the funds to post bail. Sigler & Formby (1978) state that "punishment cannot legally occur prior to conviction," meaning poor people cannot continue to be affected by this structural violence that is the bail system. Regardless of changes to the bail system to make it more efficient, the affluent will continually be able to post bail and the poor will continually remain incarcerated, which is unjust. Similarly, continuing to incarcerate so many citizens is both directly and indirectly expensive. It directly affects citizens because our jail and prison systems make up one of the largest portions of our country's budget funds, and it indirectly affects citizens through loss of income, familial support, and living situations. The system continually glosses over this issue and claims the severity of the crime is a determinate as to why bail is set when it should also focus on one's ability to pay. The chosen policy option will fully ensure that all citizens will have access to just bail, and thus is an option that other states should consider as a remedy to the structural violence within their own justice systems.

References

- Bail in America: Unsafe, unfair, ineffective. (n.d.). *Pretrial Justice Initiative*. Retrieved from <http://www.pretrial.org/the-problem/>
- Billings, T. (2016). Private interest, public sphere: Eliminating the use of commercial bail bondsmen in the criminal justice system (Abstract). *Boston College Law Review*, 57(4), 1337-1365.
- Constitution of Alabama (1901). *Section 16*. Retrieved from <http://law.justia.com/constitution/alabama>
- EJI will challenge extreme sentences for drug offenses. (2016). *Equal Justice Initiative*. Retrieved from <http://eji.org/news/eji-challenges-extreme-drug-sentences-lee-brooker-v-alabama>
- Fiscal cost of mass incarceration. (n.d.). *American Civil Liberties Union*. Retrieved from <https://www.aclu.org/issues/mass-incarceration/fiscal-cost-mass-incarceration>
- Hansen, M. (2016). Supreme court refuses to hear challenge to life sentence for pot possession. *ABA Journal*. Retrieved from http://www.abajournal.com/news/article/supreme_court_refuses_to_hear_challenge_to_life_sentence_for_pot_possession
- Kight, S. W. (2017). How the bail bond industry thrives in the U.S. *Axios*. Retrieved from <https://www.axios.com/how-the-bail-bonding-industry-thrives-in-the-us-1513306419-ee08946e-4865-45b7-8172-f08b30b0cd1c.html>
- Mass incarceration costs \$182 every year, without adding much to public safety. (2017). *Equal Justice Initiative*. Retrieved from <http://eji.org/news/mass-incarceration-costs-182-billion-annually>
- Mass incarceration: Excessive punishment. (n.d.). *Equal Justice Initiative*. Retrieved from <http://eji.org/mass-incarceration/excessive-punishment>
- Race and Bail Reform. (n.d.). *Pretrial Racial Justice Initiative*. Retrieved from <http://projects.pretrial.org/racialjustice/>
- Sigler, R. T. & Formby, W. A. (1978). The necessity of bail reform. *Criminal Justice Review*, 3(1), 1-7.
- Supreme Court and State Law Library. *Alabama Rules of Judicial Administration Rule 7(2)*. Retrieved from http://judicial.alabama.gov/library/rules_crim_procedure.cfm
- Supreme Court and State Law Library. *Alabama Rule of Criminal Procedure Rule 18(l)(A)(2)(B)*. Retrieved from http://judicial.alabama.gov/library/rules_crim_procedure.cfm
- United States Bureau of Justice Statistics: The Sentencing Project. (2015). *State-by-State Data* (Data file). Retrieved from <http://www.sentencingproject.org/the-facts/#map>

- Wagner, P., & Rabuy, B. (2016). Mass incarceration: The whole pie 2016. *Prison Policy Initiative*. Retrieved from <https://www.prisonpolicy.org/reports/pie2016.html>
- Williams, V. L. (1978). Nine reasons to go slow on bail bond reform. *Criminal Justice Review*, 3(1), 9-16.

Urban Phosphorus Runoff and Loading to Half Moon Lake, Wisconsin

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Abstract

Half Moon Lake, a shallow oxbow, is located in the heart of Eau Claire, Wisconsin. Since the lake loses water volume from seepage, shallow groundwater from the Chippewa River is pumped in to maintain pool elevation. Other hydrological inputs to the lake include urban runoff from storm sewers draining ~ 15 subwatersheds, with a total area of 2.3 km², that surround the lake. While internal phosphorus (P) loading dominates the P budget, there is concern that P inputs from urban runoff could stimulate algal growth after aluminum sulfate treatment to control internal P loading. Best management practices (BMPs) have been implemented throughout the city to increase nutrient infiltration and reduce urban P loading to the lake. The objectives of this research were to examine flow, P concentrations and P loading from one of the storm sewer inputs in 2017 for comparison with a long-term data base, collected pre-1999 and from 2011-2017, to evaluate the potential impacts of BMPs on urban loading to the lake. Storm samplers (ISCO 6700) and area-velocity probes (ISCO 750) were deployed to capture flow (5-min intervals) and samples (15-min intervals) for total P and soluble P analysis between May and September 2017. Collection methodology for previous years followed the same protocol. Overall, numerous large and small precipitation events resulted in runoff to the lake and flow-weighted concentrations averaged ~ 0.10 mg/L total P and ~0.018 mg/L soluble reactive P between 2012 and 2017. These mean summer concentrations were lower than those estimated in 1999 (0.15 mg TP/L and 0.05 mg SRP/L), suggesting that implementation of BMPs post-1999 have led to reduced P loading from this subwatershed.

Introduction

Cultural eutrophication is the accelerated process of excess loading of nutrients, usually phosphorus (P) and nitrogen, to aquatic ecosystems (Carpenter et al. 1998, Cooke et al. 2005). Although eutrophication occurs

naturally in rivers, coastal waters, and lakes over geologic time (Wetzel 2001, Chislock et al. 2013), human activity and resultant changes in watershed land use have contributed to rapid cultural eutrophication and ecological deterioration of waterways

(Aulenbach et al. 2017). Because freshwater algal productivity is usually limited by P availability, anthropogenic P loading and ensuing eutrophication can lead to high algal biomass, shifts to cyanobacteria dominance, bottom water anoxia, decreased Secchi transparency, loss of macrophyte diversity, and decline in desirable fish species (Søndergaard et al. 2003). In addition to habitat degradation, cyanobacteria can produce microcystins that pose a human health risk (Backer & McGillicuddy 2006). Thus, eutrophication is a tremendous problem being amplified by human activity and needs to be reversed by reducing P inputs to freshwater systems (Carpenter, 2008).

Although soil management and fertilization in agricultural landscapes can be a major source of watershed P, urban areas are also major P contributors (Brezonik & Stadelmann 2002). Urban P runoff per unit area (i.e, kg/hectare) can be nearly as high as P export from agricultural row crop settings (Lin 2004). In urban settings, P loads to lakes usually come from impervious surfaces such as rooftops, sidewalks, parking lots, and streets. Because these urban features rapidly deflect water to storm drains rather than promoting infiltration of pollutants, P loading can be very rapid and amplified during precipitation events as most of the rainfall over a catchment area and phosphorus associated with debris, soils, dust, and litter on impervious surfaces can be flushed directly to a lake. Impervious surfaces allow storm water to run off the landscape picking up various pollutants before making its way to the nearest body of water without any treatment (Moore, 2015). In addition, developing urban areas may also contain a lot of construction sites. These areas can be a large contributing source of P runoff in urban settings (Brezonik & Stadelmann 2002).

Best management practices (BMPs) can be implemented to reduce urban P loading. Lake rehabilitation can be achieved if external P sources are reduced (Cooke et al. 2005; Jeppesen et al. 2005; Søndergaard et al. 2007). Traditionally, decreasing peak runoff rate, and creating a detention pond to prevent flooding have been traditional methods to manage storm water runoff (Moore, 2015). BMPs can include structural design like a detention pond, or nonstructural design like stream buffers or changes in construction codes (Aulenbach et al. 2017). When BMPs are implemented water quality improvements can be observed. For example, Aulenbach et al. (2017) noted that an increase in BMPs, especially detention ponds, attributed to a decrease in total P concentrations.

However, more information is needed on the long-term impacts of BMPs on urban P loading reductions (Liu et al. 2017). BMPs efficiency at reducing P loading needs to be quantified over a range of precipitation patterns and variable storm water hydrology in order to improve design. The objective of this study was to monitor P loading from a small urban watershed draining into Half Moon Lake, Eau Claire, Wisconsin, over a period of years to evaluate the effectiveness of BMP implementation. Flow and composite total P and soluble P samples were collected from a storm drain culvert in the summer before BMP implementation in 1999 (i.e., increased street sweeping and construction of infiltration areas in parking lots) and then post BMP implementation period of 2010-17 over a range of precipitation events to evaluate BMPs effectiveness.

Study Site

Half Moon Lake, a shallow (area = 153.3 acre, mean depth = 1.6 m) eutrophic oxbow lake located in downtown Eau Claire, Wisconsin, offers many recreational activities for users as well as habitat for aquatic wildlife and plants (Fig. 1)



Figure 1. Map of Half Moon Lake, Eau Claire, Wisconsin, showing the location of storm sewer 2. Source: Wisconsin Department of Natural Resources 608-266-2621 Half Moon Lake – Eau Claire County, Wisconsin DNR Lake Map Date – Aug 1965 - Historical Lake Map

However, excess P loading for decades has resulted in eutrophic conditions and high algal biomass dominated by cyanobacteria (James 2017).

Before implementation of management, the lake exhibited summer means of 0.11 mg/L P, 82 µg/L chlorophyll, and 1.1 m Secchi transparency (James et al. 2002). Consequently, Half Moon Lake was included on Wisconsin's impaired waters list in 1998 (Half Moon Lake Implementation Taskforce 2010). The P budget was dominated by sediment internal P loading, curly-leaf pondweed (CLP) decomposition, and sediment resuspension from motor boat activity, while storm water runoff contributed only ~ 5% of the P load to the lake (James et al. 2002). Sediment internal P loading was controlled by an aluminum sulfate (alum) treatment in 2011 and 2017 (James 2017), motor boat activity was banned in 2007, and CLP has been controlled by annual endothall herbicide treatments since 2009. However, since the lake is still impaired, there is concern that urban runoff and P loading will become an important source and subsidize algal productivity after management of these internal P loading sources.

Management has been implemented to curb urban watershed P loads. BMPs such as constructing driveways and parking lots to slope in a particular manner that encourages runoff to flow onto grassy and rock-based infiltration areas; constructing rain gardens and rock islands to collect and filter runoff; creating grassy buffers around impervious areas (Fig. 2) street sweeping to remove some of the pollutants on the street; and in-lake treatment with alum have been used to manage phosphorus inputs (Half Moon Lake Implementation Taskforce 2010).



Figure 2. Photographs of various rock islands and grass buffers added to parking lots during the Luther Hospital campus expansion.

Storm sewer two drain was originally constructed in 1952. Construction of the Mayo Clinic expansion, newer storm drains, and BMPs occurred in ~ 2008. The intention of the BMPs were to trap sediment and enhance infiltration (J. R. Genskow, PE. City of Eau Claire Engineering Department, Eau Claire, WI, personal communication).

The subwatershed draining into storm sewer 2 included several parking lots on the Luther Hospital campus (Fig. 3)



Figure 3. The subwatershed draining into storm sewer 2.

Expansion and upgrade of the campus occurred between 2008 and 2010 and included repavement of these parking lots with the addition of rock island infiltration zones and grassy infiltration areas to reduce runoff from these impervious areas (Fig. 2). This research examined flow, P concentrations and P loading from storm sewer two during 2017 for comparison with a long-term data base to evaluate the potential impacts of BMPs on urban loading to the lake

Methods

Storm water sampling theory and strategies

Choosing an efficient sampling strategy can result in more useable data and save researchers time and money. An efficient sampling strategy

can vary depending on length of the study, where the study is taking place, and what type of samples are being collected (Robertson & Roerish 1999; Harmel et al. 2003). Types of samples that can be collected include discrete or composite samples, and types of sampling strategies include time-interval or flow-interval (McFarland & Hauck 2001; King & Harmel 2003).

The types of samples collected have advantages and disadvantages. Discrete sampling collects one sample per bottle either over time or flow interval, whereas composite sampling combines several samples into one bottle (King & Harmel 2003). Discrete sampling allows for pollutant distribution data to be used and reduces sampling error (McFarland & Hauck 2001; Harmel et al. 2003). However, discrete sampling requires the analysis of many individual samples in the lab, which can be time consuming (King & Harmel 2003). Composite sampling can be advantageous by decreasing the numbers of samples that need to be analyzed (McFarland & Hauck 2001). However, load estimate errors are more likely to occur (Harmel et al. 2003). Discrete and composite sampling both have benefits and drawbacks, and choosing what type of sample to collect can depend on economic or time constraints.

The different types of sampling strategies also have advantages and disadvantages. For time interval sampling, samples can be collected at uniform or nonuniform time intervals (i.e. 15 min intervals). This sampling strategy is best when flow meters are unavailable and when sampling time intervals are small (Harmel et al. 2003; King & Harmel 2003). For flow interval sampling, samples are collected as a function of flow volume (i.e., every 100 gallons, Harmel et al. 2003). This sampling strategy can measure storm loads. However, flow-interval sampling requires flow meter monitoring to measure flow volume, and if a flow meter fails then no samples will be taken (Harmel et al. 2003). Harmel et al. (2003) designed a flow chart to help researchers choose the best samples to collect and type of sampling strategy to use.

Storm drain sampling approach on Half Moon Lake

The study site subwatershed (storm sewer 2) drains a 577-ac area containing an extensive parking lot that serves Luther Hospital (Fig. 3). The storm culvert is round (2 ft diameter) and drains into a riprap detention area to trap sediment before finally entering the lake. An automated storm sampler (ISCO 6700) equipped with a data logger (ISCO 750 module) and flow velocity probe were used to collect runoff samples. The flow velocity probe was equipped with a pressure transducer to measure water depth (ft or m) in the culvert and a Doppler sensor to measure flow velocity (ft/s or m/s). The

flow velocity probe and sample strainer were attached to a culvert ring that was slid ~ 4 ft into the culvert so that they were at the culvert bottom (Fig. 4)



Figure 4. Floor jack holding the culvert ring with flow velocity probe and sampling port in place.

Flow velocity and water depth were measured and recorded every 5 mins.

Since ranges in flow were not known prior to the study, a discrete time interval sampling program was used to characterize storm P concentration. However, mean summer flow for 2012-2017 ranged from 0.090 – 0.021 ft³/s (Table 1)

Year	Mean		Maximum	
	(ft ³ /s)	(m ³ /s)	(ft ³ /s)	(m ³ /s)
1999	0.091	0.0026	1.25	0.0356
2012	0.022	0.0006	0.64	0.0182
2013	0.021	0.0006	6.51	0.1844
2014	0.090	0.0026	1.38	0.0391
2015	0.047	0.0013	0.99	0.0279
2016	0.046	0.0013	0.49	0.0138
2017	0.022	0.0006	0.45	0.0126

Table 1. Summer mean and maximum flow

The 6700 sampler was programed to grab a sample every 15 min when the depth of the water moving by the sensor reached a certain height (usually 0.2 ft) and stop when the water level fell below the threshold. The

sampler was programed to draw a 100 mL water sample when the water level threshold was exceeded. The peristaltic pump first flushed the hose by pumping in the reverse direction then drew 100 mL into a 1-L sample bottle housed within the sampler carousel (Fig. 5).



Figure 5. ISCO® 6700 sampler carousel with 24 1 L bottles.

The sampler contained 24 1-L sample bottles, and therefore collected up to 24 discrete samples. After a storm, the bottles were collected and replaced with empty sample bottles. Depth, flow, and sample event data were also downloaded from the samplers.

Discrete time interval samples were composited into one sample that represented the entire storm using a flow integration technique. The software program Flowlink 5.1® and Microsoft Excel® were used to flow-composite the time-interval storm samples. Graphs generated from Flowlink 5.1® were created to examine water depth (ft), velocity (ft/s), and flow (ft³/s), sampling events over the duration of the sampling period. Data from these graphs were then exported to Microsoft Excel®. The volume of sample from each time interval was weighted by flow for compositing. Thus, a sample collected during a higher flow had a greater volume. Appropriate portions from each discrete sample were combined into a beaker and homogenized with a stir bar and magnetic stirrer to create a flow-weighted composite sample for each storm.

Chemical analyses

Samples for soluble reactive phosphorus (SRP) were filtered through a 0.45 μ syringe filter prior to analysis. Total P samples were predigested with potassium persulfate in an autoclave. P was determined colorimetrically using the ascorbic acid method (APHA 2015). Absorbance was measured on a UV-VIS spectrophotometer (Perkin-Elmer Lambda 25).

Data Analysis

Microsoft Excel® was used to determine mean event flow, mean daily flow, total P, and SRP. Mean event concentration (mg/m³) was multiplied by the corresponding mean event flow (m³/s) to estimate P loading (mg or g/s or event). Microsoft Excel® was also used to perform statistical regression analysis between precipitation and flow, total P, and SRP.

Results and Discussion

Between May and September of 2017, ~25 storm events were captured for P concentration determination from storm sewer two (Fig. 6) <

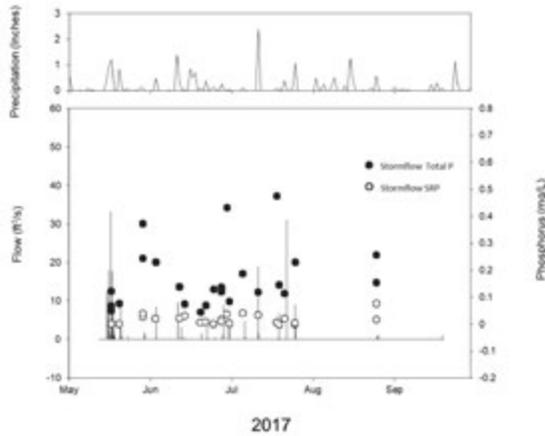


Figure 6. Seasonal variations in daily precipitation (upper panel), flow, and phosphorus ((P) concentration (lower panel) during the summer of 2017.

Each storm event contributed higher concentrations of total P and lower concentrations of SRP into Half Moon Lake, resulting in a summer flow-weighted mean total P and SRP concentration of 0.112 mg/L and 0.009 mg/L, respectively.

Mean summer precipitation was low in 1999 compared to the long-term mean (Fig. 7)

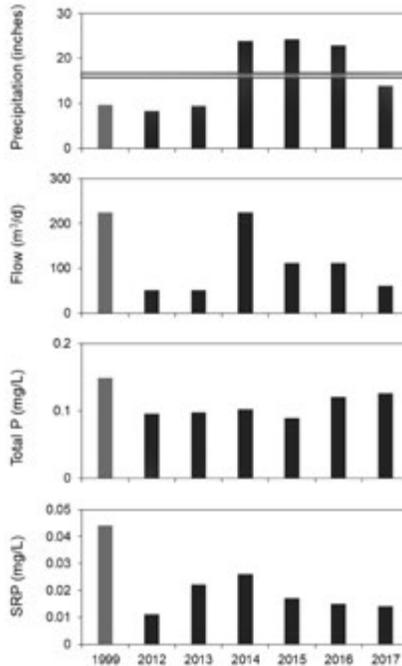


Figure 7. Total summer (June-September) precipitation and summer mean event flow, total phosphorus (P), and soluble reactive P (SRP) concentration for storm sewer 2 during various years. Red column denotes before BMP implementation while blue columns represent year after BMP implementation. Horizontal blue line represents mean summer precipitation over 10 years.

Precipitation was also low during the post-BMP summers of 2012 and 2013. In contrast, the summer mean exceeded long-term precipitation trends in 2014-16 (Fig. 7). Although mean summer precipitation was low in 1999, mean summer flow was high compared to other years that had much higher precipitation (Fig. 7). For instance, mean summer flow was much lower during the post-BMP years 2012, 2013, and 2017 under similar summer precipitation conditions (Fig. 7 and 8).

Flow-weighted summer mean concentrations of total P were slightly higher in 1999 relative to post-BMP years (Fig. 7). However, there was no relationship between total P concentration and summer precipitation (Fig. 8)

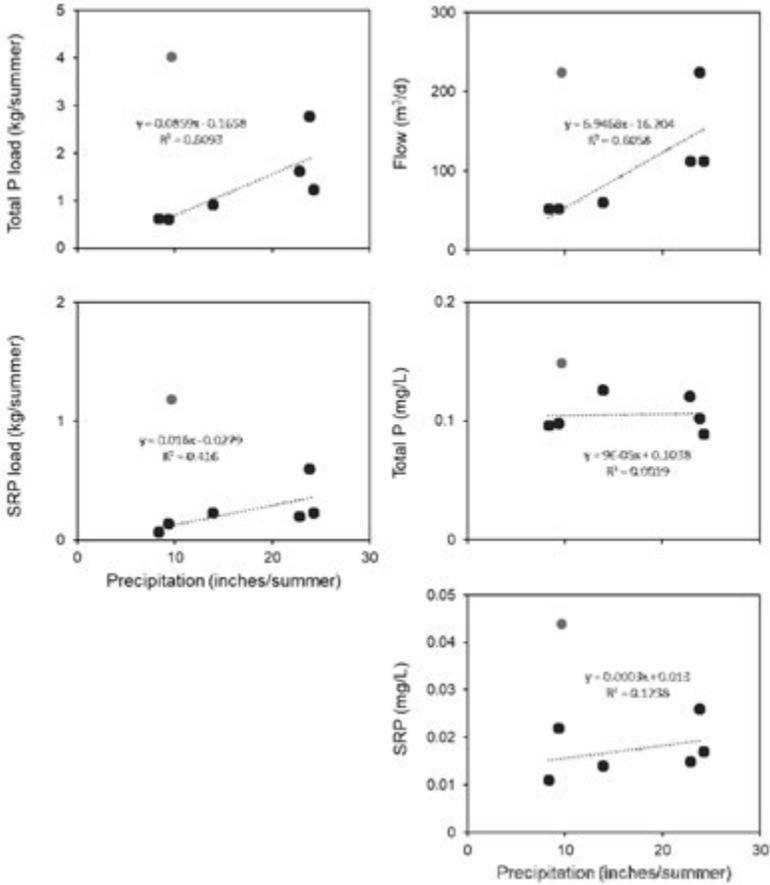


Figure 8. A comparison of mean daily flow, mean event total phosphorus (P) concentration, soluble reactive P (SRP) concentration, total P load, and SRP load versus summer precipitation. Red circle indicates the pre-BMP year 1999 while blue circles denote post-BMP years. Regression analysis was conducted on post-BMP means. 1999 was an outlier.

By comparison, the flow-weighted summer mean SRP concentration was substantially higher at > 0.04 mg/L in 1999 but much lower in all post-BMP years (Fig. 7). Although linear relationships between mean total P and SRP versus precipitation were weak for post-BMP years, concentrations tended to be lower during post-BMP years compared to 1999 under similar mean summer precipitation conditions (Fig. 8)

Total P and SRP loading were also lower during post-BMP years compared to 1999 (Fig. 9)

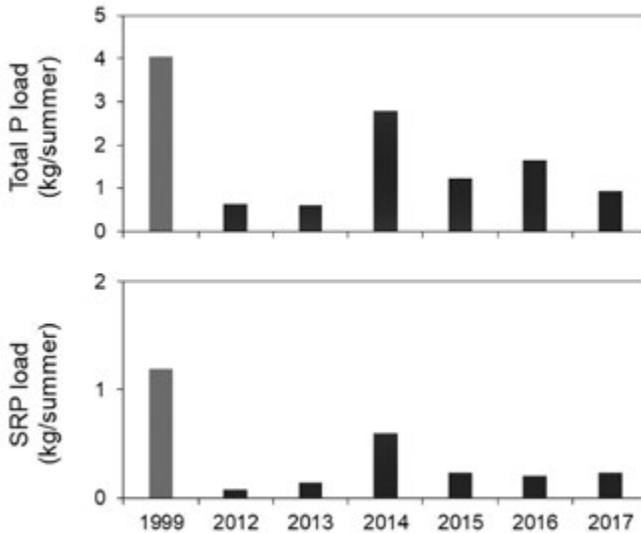


Figure 9. Total phosphorus (P) and soluble reactive P (SRP) loading for storm sewer 2 during various years. Red column denotes before BMP implementation while blue columns represent year after BMP implementation.

For total P loading, decreased flow in conjunction with BMP implementation appeared to be the primary explanation for lower total P loading. For SRP, however, both lower flow and lower SRP concentration contributed to less SRP loading to Half Moon Lake during the post-BMP summers (Fig. 9).

As cities like Eau Claire, Wisconsin, continue to develop, impervious surfaces will increase. This increase will lead to more runoff carrying pollutants, such as phosphorus, into lakes (Brezonik & Stadelmann 2002). As lakes receive excess nutrients they rapidly become eutrophic. Eutrophication is detrimental to lakes by deteriorating water quality and degrading habitat for wildlife (Søndergaard et al. 2003).

BMPs such as construction of grassy swales and rock islands were implemented in the Storm Sewer 2 subwatershed during remodeling and expansion of the Luther Hospital complex which was completed in 2010 (Half Moon Lake Implementation Taskforce 2010). This research examined flow, P concentrations and P loading from one storm sewer two during 2017 for comparison with a long-term data base to evaluate the potential impacts of BMPs on urban loading to the lake. I hypothesized that BMPs should reduce flow into this storm sewer by increasing infiltration (Moore 2015, Jeppesen et al. 2005). Summer total P and SRP loading was reduced by 68% and 79%, respectively, suggesting that runoff detention and infiltration were

having an improved impact. However, further investigation is required to determine which BMPs resulted in the greatest infiltration.

Although mean summer total P concentration declined only slightly, mean summer SRP concentrations decreased substantially after BMP implementation. I had expected the various BMPs to trap particulates and reduce the total P concentration. I observed that particulates and turbidity (not measured) were usually highest in the first few samples and then declined after peak flow. This pattern suggested that perhaps initial runoff could have exceeded the rate of infiltration into rock islands and grass buffers, resulting in some flushing of particulates into Half Moon Lake. Thus, re-evaluation of particulate runoff and BMPs to trap particles and total P more efficiently may be needed to reduce total P loading from this subwatershed.

Exact mechanisms and causes for the reduction in the mean SRP concentration post-BMP are not known. SRP approximates $\text{PO}_4\text{-P}$ that can be directly available for algal uptake. Thus, reducing SRP loading to Half Moon Lake was very beneficial. SRP concentration was consistently low during storm events in 2017 and did not vary compared to the greater fluctuation in total P concentration. Maybe exposure of runoff to the various rock islands and grass buffers was causing adsorption and retention of some of the SRP. Another possibility is that construction of numerous rock islands resulted in less fertilization of grass areas and gardens which decreased SRP runoff. Luther Hospital also reduced runoff by constructing a parking ramp with multiple levels. More information is needed on land use practices before and after the Luther Hospital campus upgrade to better understand SRP runoff dynamics in this subwatershed.

Acknowledgments

I gratefully acknowledge Heidi Lieffort and Amanda Wilson, University of Wisconsin-Stout, for help with sampling and analysis. Funding for the research was provided by the City of Eau Claire and the Wisconsin Department of Natural Resources. I also wish to thank the McNair Scholars program and Dr. Sarah Wynn and Jennifer Giesking, University of Wisconsin-Stout, for financial and educational support during the study. Lastly, none of this would have been possible if it wasn't for my magnanimous mentor, Bill James.

References

- Aulenbach, B. T., Landers, M. N., Musser, J. W., & Painter, J. A. (2017). Effects of Impervious Area and BMP Implementation and Design on Storm Runoff and Water Quality in Eight Small Watersheds. *JAWRA Journal of the American Water Resources Association*, 53(2), 382-399.
- Backer, L., & McGillicuddy, D. (2006). Harmful algal blooms. *Oceanography*, 19(2), 94-106.
- Brezonik, P. L., & Stadelmann, T. H. (2002). Analysis and predictive models of stormwater runoff volumes, loads, and pollutant concentrations from watersheds in the Twin Cities metropolitan area, Minnesota, USA. *Water Research*, 36(7), 1743-1757.
- Carpenter, S. R. (2008). Phosphorus control is critical to mitigating eutrophication. *Proceedings of the National Academy of Sciences*, 105(32), 11039-11040.
- Carpenter, S. R., Caraco, N. F., Correll, D. L., Howarth, R. W., Sharpley, A. N., & Smith, V. H. (1998). Nonpoint pollution of surface waters with phosphorus and nitrogen. *Ecological applications*, 8(3), 559-568.
- Chislock, M. F., Doster, E., Zitomer, R. A., & Wilson, A. E. (2013). Eutrophication: causes, consequences, and controls in aquatic ecosystems. *Nature Education Knowledge*, 4(4), 10.
- Cooke, G. D., Welch, E. B., Peterson, S., & Nichols, S. A. (2005). *Restoration and management of lakes and reservoirs*. CRC press.
- Half Moon Lake Implementation Taskforce. (2010, March 9). Update on the Half Moon Lake Water Quality Improvements. Retrieved from <http://www.ci.eau Claire.wi.us/home/showdocument?id=1140>
- Harmel, R. D., King, K. W., & Slade, R. M. (2003). Automated storm water sampling on small watersheds. *Applied Engineering in Agriculture*, 19(6), 667-674.
- James, W. F. (2017). Phosphorus binding dynamics in the aluminum floc layer of Half Moon Lake, Wisconsin. *Lake and Reservoir Management*, 33(2):130-142.
- James, W. F., Barko, J. W., Eakin, H. L., & Sorge, P. W. (2002). Phosphorus budget and management strategies for an urban Wisconsin lake. *Lake and Reservoir Management*, 18(2), 149-163.
- Jeppesen, E., Søndergaard, M., Jensen, J. P., Havens, K. E., Anneville, O., Carvalho, L., ... & Gerdeaux, D. (2005). Lake responses to reduced nutrient loading—an analysis of contemporary long-term data from 35 case studies. *Freshwater Biology*, 50(10), 1747-1771.
- King, K. W., & Harmel, R. D. (2003). Considerations in selecting a water quality sampling strategy. *Transactions of the ASAE*, 46(1), 63-73.

- Lin, J. P. (2004). *Review of published export coefficient and event mean concentration (EMC) data* (No. ERDC-TN-WRAP-04-3). ENGINEER RESEARCH AND DEVELOPMENT CENTER VICKSBURG MS.
- Liu, Y., Engel, B. A., Flanagan, D. C., Gitau, M. W., McMillan, S. K., & Chaubey, I. (2017). A review on effectiveness of best management practices in improving hydrology and water quality: Needs and opportunities. *Science of The Total Environment*, 601, 580-593.
- McFarland, A., & Hauck, L. (2001). Strategies for monitoring nonpoint-source runoff. *TIAER Report*, 115.
- Moore, J. (2015). Stormwater Runoff from Developed Lands. *Vt. J. Envntl. L.*, 17, 766.
- Robertson, D. M., & Roerish, E. D. (1999). Influence of various water quality sampling strategies on load estimates for small streams. *Water Resources Research*, 35(12), 3747-3759.
- Søndergaard, M., Jeppesen, E., Lauridsen, T. L., Skov, C., Van Nes, E. H., Roijackers, R., ... & Portielje, R. O. B. (2007). Lake restoration: successes, failures and long-term effects. *Journal of Applied ecology*, 44(6), 1095-1105.
- Søndergaard, M., Jensen, J. P., & Jeppesen, E. (2003). Role of sediment and internal loading of phosphorus in shallow lakes. *Hydrobiologia*, 506(1), 135-145.
- Wetzel, R. G. (2001). *Limnology: lake and river ecosystems*. Gulf Professional Publishing.

1st Annual UW-Stout Liberal Arts Essay Contest

All UW-Stout students are invited to submit an essay for the 1st Annual Liberal Arts Essay Contest. Writers of winning essays will receive a scholarship of \$1000 for 1st Place, \$500 for 2nd Place, and \$500 for 3rd Place. Winners will be recognized at Research Day in April 2017 and will be eligible for publication in the *Journal of Student Research*.

Topic:

The legendary peace activist Mahatma Gandhi, a five-time Nobel Prize nominee, insisted that "you must be the change you wish to see in the world." Nelson Mandela, a Nobel Prize winner, pointed to the importance of education in helping "you" bring about this change: "education is the most powerful weapon you can use to change the world." With these two statements in mind, discuss how your liberal arts education is preparing you to be an effective agent of the change you wish to see in the world.

On Paper Isn't Enough

Amber Georgakopoulos (First Place)

Junior, Applied Social Science

Concentration: Sociology and Anthropology

Thanks to my education, I know how to write an acceptable essay.

My professors taught me how to write a composition, how to cite properly, and to marshal my thoughts in a way that will be clear and easy to understand. The liberal arts lens taught me how to communicate with people who are different than me. A liberal arts education offers not just depth, but breadth, and fosters an empathetic approach to the world and its people. It firmly ingrained a habit of the mind towards intellectual curiosity, humanity, and a compassionate courage as a way to interact across lines of gender, ethnicity, class, and culture. An essay that could convey that would be a powerful thing.

This is not that essay.

Regardless of political affiliation, our world is changing faster than we can keep up. Many people who were trained for one specific job are feeling frustrated and obsolete, as social and technological changes leave them standing on shifting sand. Education, a broad and compassionate liberal arts curriculum, is preparation for life, not just for a job. It doesn't shape a person to fit a particular slot, but rather gives them the tools to shape that space and adapt it to their own infinite potential.

Taken from the cumulative teachings of Mahatma Gandhi, the admonition to "be the change you wish to see in the world" reaches across disciplines to gently knock us down from an elitist pedestal. To be a force for change requires self-reflection, softens our human tendency to judge others, and offers a course of action. Coming from a place of humility is a starting point for connection and change.

Education is a tool, and as Nelson Mandela said so eloquently, a powerful weapon. As we struggle against the degradation of hope, we need our weapons in good working order. The battle that looms on the horizon is against diversity and against common decency. This war brings indifference and paranoia, hauls dangerous and brutish ideologies into the light of day and gives them shape and form and power. Now is the time when we need our weapons. We need to gather all the tools at our disposal and use them to rage against the forces that would prefer us blind and meek. They can make rules to strip the people of their rights, but they cannot take away the ability

to think. Education gives us that. A habit of life-long learning built by a liberal arts education literally liberates the mind, freeing us from tyranny. Without the weapon of free thought, we are at the mercy of the powerful to define our reality.

This is not my essay.

There are stacks of essays about changing the world, read by discriminating panels in quiet rooms all over the country. As you read this, please understand that these thousand words do not constitute mine. What I'm taking from my liberal arts education must be written in the world to be true.

I hope I get the chance to write until my pen runs out of ink, miles and miles of ink, gallons of ink to carve words that give shape to the hopes and dreams of humankind. I would use the last piece of paper in the free world to write words that might change the minds and hearts of men, and when that runs out, scrape a message of love into the walls until my fingertips are ragged and bloody. Let me speak up when I see injustice, let my responses be to shelter the weary and protect the vulnerable. May I fight for children's right to learn and fight for them to have a land of clean water and forest to wander when they are grown. Let that be my weapon, my promise.

Let that be my essay.

And when my children ask me about what I learned at college, I hope that I can show them a path that didn't exist until I walked it. I hope they see a group of people walking that corridor with me, friends and colleagues I might not have considered before. I want to gather around kitchen tables and have the kind of talks that go beyond mortgages and social media, and instead build an active citizenship. I hope that my little girls will grow up with an engaged community which asks hard questions and is willing to work together towards hard truths. I want a world where millions of little girls are going to grow into adults who see science and art and mystery as valuable-girls who question the established order, and who bravely and kindly participate in their life. I want to raise little boys who are brave in their vulnerability and generous in their exchange. I hope they work together to tear down walls, to build longer tables, and to build the kind of world that we so desperately need, not the world we deserve. Changing the world must start within your arm's reach, but if you make sure to keep other people close enough to touch, close enough to reach farther together, that span extends and extends across the space and time. My education didn't start with me, and it won't end with me.

Let that be my essay.

When I die, I don't expect I'll have left much behind. Not books of "very important work," not great pieces of art, or quotes that inspire students to write powerful essays. But if there is just a short list of things I don't leave behind, that will be enough. If there is a little less suffering, or a little less cruelty, that would be an abundance. If I can do something to encourage just a fraction more generosity, it will feel like alchemy. If I can make one choice that speaks hope to the hopeless, or comfort to the broken, it will change the world. I can't tell you on paper what kind of difference a generous and encompassing liberal arts education brings, but I will try for the rest of my life to show you with my actions.

Let my life tell that story.

Let my essay be written on the world.

The Importance of a Liberal Arts Education

Sylvia Lechnir (Second Place)

Senior, Applied Science

Concentration: Biochemistry and Molecular Biology

Most people have the same expectation when they go into a medical facility to receive care and treatment. They want to be seen and recognized as an individual and not as another item to be fixed and discharged, which is unfortunately the case in too many experiences. It is my hope that one day everyone can receive individualized and supportive care within the medical field, but it is up to the quality and type of education that is provided for and delivered to people to bring about this change. One effective method to ensuring that medical professionals are receiving the proper education for their careers is to incorporate liberal arts courses into the program. There are several ways that my liberal arts education at UW-Stout is effectively preparing me to change the world in a beneficial and positive way as a health care employee.

Through participation in a General Ethics course, I was able to develop critical thinking and evaluation skills that will prove to be useful in my future medical career and allow me to have a positive impact on others. Many theoretical situations involving debatable courses of action were presented to me, and I was to carefully determine how to ethically approach the situation based on knowledge of traditional ethics. For example, I discussed ways of addressing circumstances in which a husband stole an expensive medication that he could not afford in hopes of saving his wife dying of an illness. Using current ethical views, I made points for and against the husband making the correct decision. The man made an incorrect decision to break the law and steal from the drug company, but his intent to cure his dying wife made part of his decision ethically correct in the eyes of many people. This prompt and several others required me to analyze all variables and possible outcomes, which is a valued skill in the medical field. Physicians must know how to think on the spot and make countless ethical decisions on a regular basis; it is necessary to understand common ethical views and apply them to making the best decisions. This will allow me to positively impact people and improve their quality of life. In the future, I will likely find myself in a situation in which I must determine the best path for someone with terminal cancer. My background of general ethics will enable

me to consider the wants and needs of the individual and their family, and I can examine whether a treatment plan that extends their life will be the most beneficial option. I must look at many factors within an individual's life that would make it the correct route to either let nature take its course or medically intervene.

Other important skills of mine were acquired by taking an introductory Sociology course and a Cultural Anthropology course, in which various aspects of society and social life were studied. From these classes, I learned to recognize that all people have the desire to be treated well and accepted by members of society, regardless of their cultural, economic, or educational backgrounds. I will most certainly apply this knowledge to my professional work in the future and ensure that all of my patients will get the individualized and quality care that they seek. These courses emphasized that it is important not to make subconscious judgments on how to treat an individual based on their current or past circumstances. Another concept that was emphasized in these classes is that culture heavily influences people's views and ideas about what is right and normal. When applying this to healthcare, one must consider values and rules that are taught in an individual's culture when attempting to make crucial decisions. In the case that I must decide whether or not to continue treatment for a person with a terminal illness, I should take into account the individual's views on life and if they believe they could sustain quality living throughout treatment. In addition, I need to consider how my decision could have an effect on the person's family and friends and their own values. Letting the illness take over naturally and quickly may negatively impact loved ones because they value the individual's company too much to let them go sooner. In contrast, this decision could correlate with the values of the family and friends; they may realize that even though the individual's life would be extended, treatment is harsh and reduces quality of life. Sociology and Cultural Anthropology have also taught me to be aware of the outcomes of every course of action and that I should fully understand the pros and cons of various consequences. This coincides with the previously stated example in which I must decide how to care for a terminally ill patient; certain decisions will lead to a variety of results that may be desirable or regrettable.

The skills and abilities to think analytically with ethical and social considerations will help me to create an extremely positive effect in people's lives. This will allow me to demonstrate and lead by example, which will set the grounds for changing the way patients are treated and monitored in the health care system. I believe that each patient should be acknowledged as a valued human being and be treated as such; everyone has the right to

exceptional medical care and support, regardless of their history. It may take time for all medical professionals to develop this same mindset, but incorporating a liberal arts education into the curriculum for all majors is a step in the right direction. Material learned from liberal arts classes cultivates a unique set of skills and an understanding of the world that cannot be easily obtained from other types of courses.

Becoming the Change and Changing the World

Noelle Sopotnick (Third Place)

Junior, Human Development and Family Studies

Social Work Professional Certificate

Mahatma Gandhi gave the call to “be the change you want to see in the world” and Nelson Mandela proclaimed that “education is the most powerful weapon you can use to change the world.” These two activists did indeed bring about real and lasting change; Gandhi with India’s fight for independence through nonviolent resistance and Mandela with his struggle against apartheid in South Africa. Both pointed to education as a powerful tool to bring about change, and my liberal arts education at the University of Wisconsin - Stout has indeed changed my own path in life by introducing me to the change that is needed in our world, encouraging me that change is possible, equipping me to be involved in that change, and influencing my plans for the future.

As I settled into my first year of college at UW-Stout, I didn’t know how much I didn’t know. Through my education, I have become introduced to new ideas, issues, and to the changes that I didn’t know were needed in our world. My first semester here I took History of Ideas in the 20th Century with Chris Freeman and I learned about the commercialism and consumerism that pervades every aspect of our society. For the first time I realized that so much of our lives – our products, our experiences, and our hobbies – are cheap, disposable, mass-produced, and profit-motivated. In our cookie-cutter, “keep up with the Jones” culture, there is an anxiety that is artificial and unnecessary, and the importance of stepping away from this suddenly became so apparent to me. My next semester I took Introduction to Sociology with Crystal Aschenbrenner, and I was introduced to the poverty, inequality, and abuse that is absolutely pervasive in the world today. These classes and others pushed me towards a desire to help people be treated fairly, have access to the resources they need, be free from violence and abuse, and have the opportunity to authentically connect with one another. I wanted to see change in our world, but I also felt a sense of helplessness at the enormity of the causes and concerns that exist. The enormity of a problem, however, is never an excuse to do nothing.

My education has also empowered me to see that change is possible

and that I can be a part of it. Nelson Mandela said "As long as poverty, injustice and gross inequality persist in our world, none of us can truly rest." (BBC News, 2005). I truly felt that sense of restlessness during my first year here, and it led me to switch my major to Human Development and Family Studies. This degree is an interdisciplinary study of psychology, sociology, human development, and family dynamics. It is about people, and people are the world I want to help. I recently declared the Social Work Professional Certificate as my concentration, as that is the field in which I feel I can make the greatest difference in poverty, injustice, and inequality whether at the micro level: helping individuals, or the macro: working towards societal change.

Further, this university is equipping me to be an effective change agent. I am currently the president of the student organization Force for Freedom: IJM Student Abolitionists. They are a student chapter of International Justice Mission, a group which works through the legal systems of countries around the world to help end poverty, human trafficking, and modern day slavery (IJM, 2017). Force for Freedom seeks to raise awareness of these issues, fundraise for International Justice Mission, and encourage Stout students to be involved in this mission through volunteering and donating. I love being a part of this organization, because, while I have chosen a career path that furthers these causes, I recognize it is not the responsibility of my field alone to enact these changes in our world. It is my hope, then, to bring to others greater awareness of these issues and of ways that they can help.

These experiences in and out of the classroom are influencing my plans for the future in every way. I would love to complete an internship with International Justice Mission and after that it is my hope to be employed in the social work field, either abroad with an organization like IJM, or here in the states. Either way I want to assist children and families get out of poverty, maintain strong families, step away from the rush of modern consumerism, and feel safe and protected. In every one of my classes, I've been introduced to different professions and organizations that seek to do these things and are able to make a difference in this world. I am truly grateful for this wealth of connections and opportunities as well as the empowerment to pursue them that I have received from this university.

Since beginning my time at UW-Stout, I have been introduced to issues I was unaware of, I have altered my career path to be one that champions the causes I've become passionate about, I've started to become equipped with the skills necessary to make a difference in this world, and I have planned my future around the values I have developed. Nelson Mandela once said "There is nothing like returning to a place that remains

unchanged to find the ways in which you yourself have altered." (Mandela, 1994). Whenever I return home, I made aware anew of how much my education has changed me. I have found, and I believe I will continue to find, that in seeking to change the world we live in, I myself am growing and changing for the better. While I have chosen a path that's purpose is to help others, I am fully aware that it is not only my responsibility or that of the people in my major to champion these causes. Rather it is that of the business men and women who are able to reduce poverty through providing equitable employment. It is that of the engineers able to design sustainable infrastructure to aid the developing world. It is that of the psychologists and sociologists and of the scientists. In short, it is all of us. That is why I am most grateful to be surrounded by an array of people and professions that, in addition to their major classes, are receiving a liberal arts education similar to my own, so that they too may be empowered to be the change they wish to see in the world.

References

- BBC News. (2005). *In Full: Mandela's Poverty Speech*. Retrieved from http://news.bbc.co.uk/2/hi/uk_news/politics/4232603.stm
- IJM. (2017). *IJM*. Retrieved from <https://www.ijm.org/>
- Mandela, N. (1994). *Long walk to freedom: the autobiography of Nelson Mandela*. Boston: Little, Brown and Company.
Retrieved from <http://www.sowetanlive.co.za/news/mandela/2013/07/18/67-awesome-quotes-by-nelson-mandela>

Forgetting the Lines

Claire Kayser

Senior, BFA in Studio Art: Concentrations in Contemporary Sculptural Practices and Metals and Contemporary Art Jewelry

Forgetting the Lines exposes the relationships formed between expectation and the objects associated with routine. I investigate the role that emotional attachment plays in our daily interactions with objects and their assigned conventions. Routine in this context applies to human behavior—specifically the personal rituals we perform in order to feel socially comfortable. By drawing attention to current obsession, I acknowledge my own compulsions and affairs within object and ritual.

I explore familiar forms and their functionalities in order to maintain specific context, while introducing newly created forms and meaning. Through the addition of fabric, this synthetic material comments on the treatment applied to self, acting as a covering to hide the surface beneath, much like a skin or shell. My process of making through repetition, manipulation, and covering directly relates to the compulsive ritualistic up-keep I attribute to my forms. Viewers are invited to explore the space where my installations and forms are living and conscious while revealing personal obsessions and insecurities.



Force Fed.

2015

MDF, latex Paint, Performer, skin tone bra, skin tone underwear, warm light.

Dimensions Variable.



Upkeep.

2017

Bud and Betty Micheels Student Artist-in-Residence Grant

white faux leather vinyl, white polyester thread

Dimensions Variable



Forgetting the Lines.

2017

melon faux leather vinyl, peach polyester thread, sono-tubes, ventilation piping and elbows, PVC piping and connectors, pool noodles, cardboard rolls, toilet parts, plumbing, shrink tube, steel, pine, MDF, plywood, screws, duct tape.

Dimensions Variable



Forgetting the Lines (Detail).

2017

melon faux leather vinyl, peach polyester thread, sono-tubes, ventilation piping and elbows, PVC piping and connectors, pool noodles, cardboard rolls, toilet parts, plumbing, shrink tube, steel, pine, MDF, plywood, screws, duct tape.

Dimensions Variable

Let Them Eat Cake

Andrea White

Senior, BFA in Studio Art: Concentration in Metals & Contemporary Art Jewelry

This body of work focuses on the absurdity of opulence. I have observed that the United States of America has entered an age where the rich are becoming richer and the middle class is disappearing.

The phrase "let them eat cake" illustrates the similarities of today's upper class and the French aristocracy preceding the French revolution. This work pulls inspiration from this lavish life style, typically displayed in Rococo art, leading up to the French revolution. Marie Antoinette would have told today's impoverished and disenfranchised:

"Let them eat cake."

The ignorance of the young queen has startling parallels to today's upper class. They assume that people can't be poor unless it is of their own making. "If only they would help themselves, they wouldn't be poor."

I feel that my studio research and practice continually drive me to ask questions while in conversation with my audience. This body of work is in response to our collective and current social climate. *Let Them Eat Cake* is meant to mirror our socioeconomic structure, drawing attention to the question,

"What are the repercussions from a culture of excess?"



Tea Cup
2017
sterling silver, porcelite, gold leaf
4" by 3"



Cuff Links

2017

sterling silver, porcelite, gold leaf

2.5" by 2.5"



Ring
2017
sterling silver, resin, gold leaf
8" by 3"



Collar
2017
sterling silver, porcelite, gold leaf
9" by 2"

The Tips of Fingers, the Falling of Things

Bennett Pearson

Senior, BFA in Studio Art: Concentration in Contemporary Sculpture Practices

There are certain moments that take precedence in life and for me it is art's role to pay homage to these moments and memories. As I analyze moments, memories, and phenomena around me, I envision what their barest and more sincere elements are to me. This analysis will often take hold too early, without leaving room for the work to breathe. My work is often object-oriented, remnants of words and/or pun, or my own attempts to merge thought and physicality. This work presents itself as a conversational, stream-of-consciousness prose that later, upon reflection, becomes something new. It starts as research, becomes abstracted through working and reworking, and becomes research again when it is complete, finding visual connections to the other writings that surround it. In this way, it doesn't differ from other arts that are visual, or more actually tangible.

The work presented in *The Tips of Fingers, the Falling of Things* is a retelling of selected stories from Pu Songling's *Strange Stories from a Chinese Studio*, done in a way that, by it being retold in the present, finds itself contemporary. By processing multiple translations of the same piece side-by-side, I was able to make sense of the words, but not always the content. This dissonance forces me to re-envision the context of the work, placing it where I stand today. The addition of */fingers slipping away from/* acts as a way to create a visual hierarchy in the prose, and, additionally, acts as a material, giving reference to its creator and maintaining cohesiveness to all pieces. Content immediately following these markers becomes more noticeable, allowing the reader to find importance where I see it, where I've marked it, and where it is.

An Earthquake

Our wine cups are emotional states and statements that whine and worry as the rest of our shaken world. An imbalance set from a Romantic lets a building breath as we do, while modernity takes this breath and renders complex heaving up and down, not standing, planting feet, falling and getting back up. */fingers slipping away from/* Companions more sentient than cups but less sentient than We played reactionary courses when the floor, dirt, and structure rattled and quaked in a grandiose display of wavering, overcoming, of displaced rivers flowing outside their own bounds. A surprising feat surprising Us to be less Us keeps simple cloth robes disrobed from our persons, clarifying need within worry and the need to worry itself. Our houses get spun around in an opposite direction than wanted. This river splits our mountain terrain, makes lakes wherever. */fingers slipping away from/* Truly rare, extraordinary, a phenomenal occurrence when an Earthquake shatters.

Stealing a Peach, Theft of the Peach

Losing specificity, locale remains without directness in the eyes of difference. Spry yamen bring spring festival by a forced celebration of banners and drums bombastic put forth by the merchants. Officials, mandarins or otherwise, kept left and right of me, humor about me, above me, in crimson robes, but I do not know who they are, and the distractions kept me interested more than the seriousness. Between these left and right crimson lined megaliths, a man and a boy walked to the dais. There were two, I think, maybe not any but a box, and a pole, for sure a pole, on his shoulder. Unknown to me, but apparent to the world surrounding, was the performative stature of the man and this boy. They were ordered to lead in some gesture or action, of which was decidedly best. Nature, now, could be turned upside down, */fingers slipping away from/* an inverted reality which seems plausible only in contemporary science, and even then, only speculatively, but these peaches, out of season peaches, presented soon, which in showmanship seemed absurd. Woe, &c., &c., avoiding anger. Sun now shines light on forgotten knowns, to the Royal Queen Mother of the West, heaven-somehow, in a garden where said peaches could grow. Void opens where a cord continues to writhe out, being persuaded towards its potential opposite, the sky. Its tens or dozens of feet seeming indifferent, yet confused, in a careful choreograph as its thrown into the air. The cord, riled, stops when it's almost lost, and the fingertips of the man slightly slip its grasp in a release as it becomes flaccid at a height just above the waist. The fortune of the son, known son now, not boy, is to climb and be above only momentarily to acquire */fingers slipping away from/* peach-knowledge/forgotten-fruit/to-be-stolen-fruit/peach-theft. The boy climbs. The rope might fray and murder, but the promise of future wealth, love, and respect bothers the bother and keeps the boy motivated. Like a spider running up a thread. Of its web it doesn't know, but this strand shows a direction and momentary lapse of judgment. A peach fell. It was the size of a soup bowl, as large as a basin, somehow real and imitation, of Us and Nether. Of Nether and Us a rope falls, no longer tethered and no longer alive, cut to keep theft away. A head fell. It was the boy's head. The gardener, the watchman, the Queen's hench cut limb from son limb, tossing lightly-initially as gravity falls stone feet, arms, and legs. A father is a way to bury. He must away.

The peach presented to the officials was obtained at the cost of the boy's life. */fingers slipping away from/* Some pardon of cash must be able to hinder some cries of fatherhood. Then obliged. Ah, some trick kept at bay until payment. Babar! Pa-pa'rh! Money received and a small box holds and out steps a grown boy, safe and counter-asunder. They were thankful, however. They either learned or taught this trick, this rope-to-heavens trick, to the White Lotus, erm, White Lily, sect.

Making Animals

It is less important to me whether or not a man is extendedly tortured or beheaded, but rather that a man was put to death at all. There are many tricks within witchcraft and sorcery. A sweet food may be poisoned, then eaten, then dazed may a food glutton follow a new captor. To hit, pa, or drag, ch'e, the wad, to be poisoned and taken advantage. A child's sweet tooth takes captive senses rendered nonsensical. Making animal, making me animal, taking consciousness away, take sentience away, take me far away from the here of my own here to a new place not I, but new Thou, */fingers slipping away from/* object for others. Five donkeys arrived with a man at an inn in Yangzhou. No water for the donkeys, no food for the donkeys, not allowed by the man as told to the keeper. When gone, keeper freed the donkeys, keeper tried taking them from the sun to the shade, but the water drew them closer than the shade did. Five women now, were donkeys, transformed from their poison-food to a human again, without speech or ability, but only that of which to follow. They followed the keep to a private apartment and stayed without direction indefinitely. The man who brought the donkeys came back with five sheep, and a wonder of where his donkeys had wandered and an aggression of his need for his Things. In the meantime, the inn keeper gave his sheep water, and they became five boys.

What happens when one transforms and tries to come back? Will the spring of life forgive one who has forsaken a past? A person turned animal turned back is hard-pressed to keep any sense of previous-ness, and it's in this previous-ness, */fingers slipping away from/* that true innate, that makes up what is real. A truth can be lost in translation completely. The stranger was arrested and forthwith beheaded.

Growing Pears, Planting a Pear Tree

A countryman had pears sold, sweet and fragrant, at exceedingly expensive prices in a market. A man in tattered clothes, a Taoist monk or priest, begged him to give a single pear, yet his presence only angered the entrepreneur, and off he cursed, he abused, the Taoist. There are several hundred pears on the cart, and a price is still high, as if industrialization doesn't exist, and the simple growth of plant warrants special treatment. One gone would be unnoticed, especially one sub-par, one of less pride. I am a less-than-wanted pear, the tattered clothes, */fingers slipping away from/* the tattered robes. I don't understand anger and am confused by it, am given up on certain things are relatable or definable. The known taught unknowns are ignored, me ignorant.

A looker-on passes me a purchased pear, and I process it through a bow. I promise to make a tree of it, and have enough pears to feed the crowd. Skeptical, the crowd worried it was impossible, but */fingers slipping away from/* the seed and pip allows this future. The thought alone was able to grow a tree, and the tree manifested itself in a true form of imagery in front of everyone. Now the vendor's pears were gone, after my seed had been boiled-over and grown, and his cart had been broken as I had chopped down the immediacy of the tree that had grown in a collective thought. */fingers slipping away from/* The specialness of the pears of mine were more so, an ideal set individually yet togetherly. With the limbs of the tree cut down, the Taoist sauntered away, dropping the handle of the now-broken-cart in an alleyway by a wall. All of the countryman's pears were gone and what was left was his anger. When all his material things had vanished, he was estranged from the world. There were no traces of the monk, only anger remained.

Untitled (Aberrant)

Justin Nelson

Senior, BFA in Studio Art: Concentration in Drawing

This artwork is blunt and indulgent and focuses on the narrative of being a queer, kinky, Midwestern individual. As a child, my gay curiosity was chastised by members of my family and my rural community. Drawing was one of the first ways that I explored my sexuality and rejected the sentiment that sexuality is shameful. It was through these handmade, crude, sexual images, that I satiated my curiosity and accepted my sexuality. I developed my obsession with drawing. Drawing was my "pornography." Drawing became fetish.

My drawings exist within an immersive context of sculpture and installation. These sculptures are banal and take inspiration from traditional Midwestern décor and furniture. I use familiar materials such as wood, wood stain, and interior paint in my sculptures. The drawings contrast these sculptures by being fantastical, provocative, and hyperrealistic. The drawings portray figures, still-lives, and occasionally in the form of collage. They consist of contemporary and historical queer symbolism and explore concepts like cruising, party drugs, and my own personal fetishes.

Peering in a small hole, crouching to the ground, stepping on a stool: these are all examples of how I intend the audience's engagement to mimic my curiosity as a young gay boy. I want my audience to be aware of how they feel looking at provocative drawings, and how that sensation varies when they are alone versus when they are experiencing it in a crowd of onlookers.

I create this art for two reasons. One, I want mainstream society to have more empathy for people who have been deemed sexually aberrant. Traditional society has a derogatory outlook on the sexually deviant often on hypocritical standards. Specifically, in the Midwest, conversations of sexuality are indirect and passive. Second, I am addressing the shame and guilt of my upbringing, not through modesty and censorship, but through acceptance and celebration. I wish to reclaim and empower my own type of "perversion."



Self-Portrait

2017

metallic powder pigment, colored pencil on paper in a wooden frame

6x13 inches



Selbsteckel, 2017

wood and iphone, 9x9 inches

Description: This piece is interactive and consists of six drawings that exist as images on my phone. Viewers can swipe to see each image as well as zoom in and out. There are three marker drawings of men and three colored pencil drawings of hankies. Each hanky correlates with each man. The order of the images goes man, yellow hanky, man, green hanky, man, red hanky.



Selbstekel

2017

detail, marker on paper

9x12 inches



Unknown Man
2017
pinhole photography

