

# THE SLU MCNAIR RESEARCH JOURNAL

---

Summer 2019, Vol 2



**Saint Louis University**



# THE SLU MCNAIR RESEARCH JOURNAL

Summer 2019, Vol. 2

Published by the  
Ronald E. McNair Post-Baccalaureate Achievement Program  
St. Louis University  
Center for Global Citizenship, Suite 130  
3672 West Pine Mall  
St. Louis, MO 63108

Made possible through a grant from the U.S. Department of Education to Saint Louis University, the Ronald E. McNair Post-Baccalaureate Achievement Program (McNair Scholars Program) is a TRIO program that prepares eligible high-achieving undergraduate students for the rigor of doctoral studies. These services are also extended to undergraduates from Harris-Stowe State University, Washington University in St. Louis, Webster University, University of Missouri St. Louis and Fontbonne University.

The SLU McNair Research Journal is published annually and is the official publication of the Ronald E. McNair Post-Baccalaureate Achievement Program (McNair Scholars Program) at Saint Louis University. Neither the McNair Scholars Program nor the editors of this journal assume responsibility for the views expressed by the authors featured in this publication.

© 2019 Ronald E. McNair Post-Baccalaureate Achievement Program, Saint Louis University

## MESSAGE FROM THE DIRECTOR



Greetings,

It is with great pleasure that we present the second volume of our SLU McNair Research Journal, which showcases some of the outstanding work that took place during our 2019 McNair Summer Research Internship Program here at Saint Louis University. Among the talented scholars whose research is featured in this volume are students from SLU, Fontbonne, and Harris-Stowe State University. We are especially grateful to the McNair Faculty Mentors who dedicated their time and energy during the eight weeks of the summer program by supervising the research of the scholars, as well as to the summer workshop facilitators, who contributed greatly to their professional development.

Special thanks to Anthony D. Parker-Gills, Sunita Manu, Raymond Moylan, Kofi Oyirifi and Sadita Salihovic for the many ways in which they have contributed to SLU McNair. Their talents, skills, and dedication have played a paramount role in the continued success of the program. Last but certainly not least, we are eternally grateful to William Perkins, Director of Pre-College, Access & TRIO Programs, without whom none of this would have been possible.

Sincerely,

Jamie D. Motley, Ph.D.  
McNair Scholars Program Director

## MCNAIR PROGRAM ADVISORY BOARD MEMBERS 2019

- ❖ Dr. Rhonda BeLue, Professor and Chair, Health Management & Policy
- ❖ Dr. Keon L. Gilbert, Associate Professor, Behavioral Science & Health Education
- ❖ Dr. Richard Harvey, Associate Professor, Psychology
- ❖ Dr. Amber Johnson, Associate Professor, Communication
- ❖ Dr. Ness Sandoval, Associate Professor, Sociology & Anthropology
- ❖ Dr. Karla D. Scott, Professor, Communication
- ❖ Dr. Jonathan C. Smith, Vice President, Diversity and Community Engagement
- ❖ Dr. Robert M. Wood, Associate Provost

## LIST OF 2019 MCNAIR SCHOLARS

- ❖ Wesley Agee
- ❖ Ciarra Anders
- ❖ Hope Conyers
- ❖ Janee Davis
- ❖ DelShawn Fowler
- ❖ Noah Gistover
- ❖ Dalia Harris
- ❖ Brandon T.M. Hughes
- ❖ Sequoyah Lopez
- ❖ Derek R. McFarland, Jr.
- ❖ Mya Robinson
- ❖ Rossana Sandoval
- ❖ Antonia Simpson
- ❖ Liza Sivriver
- ❖ Wendy Teal
- ❖ Jazmine Terrazas
- ❖ Brendan Underwood
- ❖ Carissa Villanueva

## MCNAIR STAFF



### **Jamie D. Motley, Ph.D.**

*Program Director*

Dr. Jamie D. Motley first began working in TRIO as a graduate student at the University of Illinois at Urbana-Champaign, where she earned her Master's Degree in Higher Education Administration and Ph.D. in Educational Policy Studies. She has held leadership positions at multiple colleges and universities in Illinois, Georgia, Alabama and Missouri. Dr. Motley began her tenure at Saint Louis University in 2014 as a member of the TRIO Student Support Services staff and was promoted to McNair Scholars Program Director in the fall of 2017. In addition to her graduate degrees, she holds a Bachelor of Arts Degree in Journalism from Western Illinois University.



### **Anthony D. Parker-Gills, MSW**

*Academic Coordinator*

Anthony Gills joined the McNair Scholars Program staff in November of 2017. Prior to that, he was a Relationship Manager, Post-Secondary Prep at Big Brothers Big Sisters of Eastern Missouri. He was also a practicum student with TRIO Student Support Services, as well as the TRIO Educational Talent Search Program at Saint Louis University. Anthony has a Bachelor of Arts in Criminology & Criminal Justice from Southern Illinois University-Carbondale and a Master of Social Work from Saint Louis University. He is currently pursuing a Ph.D. in Higher Education Administration. As the academic coordinator for McNair, Anthony provides academic and personal support to McNair Scholars, assisting with program-related projects and activities, coordinating workshops and monitoring each Scholar's participation and success in the program.



### **Sunita Manu, MPH, CPH**

*Graduate Assistant*

Sunita Manu became part of the McNair Scholars Program in September of 2018. She is a first-year PhD student at St. Louis University College for Public Health and Social Justice. Prior to McNair, Sunita was an assistant with L'Arche St. Louis where she worked with individual with intellectual disability. As the graduate assistant for the McNair Scholars program, Sunita oversees the Gateway to McNair Scholars Program, provides academic and personal support to scholars, assist scholars with completing their college application, and help with event planning.

## MCNAIR SUMMER INTERNS 2019



### *Janee Davis*

born in Naperville, IL is a graduating senior at Saint Louis University, completing her bachelor's degrees in Psychology and African American Studies. She has had the pleasure of working alongside her undergraduate mentor, Dr. Richard Harvey, for her summer research for the McNair internship. Her specialties of interest are leadership and group dynamics within I-O Psychology. In the midst of preparing for life after undergrad, Janee is determined to receive her Ph.D. in Organizational Psychology. Along with being a scholar, Janee also holds multiple leadership roles on campus such as president of the Black Student Alliance, and desk manager for the Housing and Residence Life department.



### *Noah Gistover*

is a senior from Columbus, OH. He is majoring in Investigative and Medical Sciences with minors in Biology and Health Care Ethics at Saint Louis University. His McNair Faculty Mentor is Dr. Enrico Di Cera, Professor and Chairman of Biochemistry and Molecular Biology at SLU. The two have co-authored a manuscript along with other student researchers. The manuscript is titled, “*Residues W215, E217 and E192 control the allosteric E\* -E equilibrium of thrombin*” and was published in the Scientific Reports.



## ***Dalia Harris***

is a senior pursuing a Bachelor's of Science degree in Biology at the illustrious Harris-Stowe State University. During the 2019 McNair Summer Research Internship Program, Dalia had the opportunity to conduct scientific research under the mentorship of Dr. Laurie Shornick. The project focused on comparing the expression of the PPAR-gamma receptor in adult and neonatal lungs in mice during a respiratory viral infection known as Sendai Virus. Recently, Dalia was able to present a poster presentation of her summer research at the 2019 Annual Biomedical Research Conference for Minority Students (ABRCMS), where she was also awarded a student travel award. Since then, she has been awarded another student travel award to present her summer research at the 2020 Emerging Research National conference (ERNS). After graduating with her Bachelor's Degree, she hopes to enroll into a graduate school for a Ph.D program that focuses on either cancer research or biomedical science. Dalia wants to become a clinical geneticist someday. A student leader on her campus, she is currently the president of the HSSU MOLSAMP Biology Club and works in a research lab



## ***Mya Robinson***

is a junior at Fontbonne University. She is currently pursuing a bachelor's degree in cyber security. Mya has a strong interest in the IT auditing space. She believes the role of an IT auditor would allow her to leverage her communication skills and technical abilities. She is active on her campus. Mya is a Residential Assistant, a mentor and an executive board member of Fontbonne University's Black Student Union.



## *Antonia Simpson*

is a senior at Saint Louis University pursuing her Bachelor's of Science in public health with minors in health care ethics and psychology. She was born and raised in Chicago. Over the Summer of 2019, she had the privilege of participating in the McNair Scholar's summer research internship. During the summer she conducted her independent research under the mentorship of Dr. Enbal Shacham. Her research was a systematic review over the intersection of food insecurity and mental health. In addition to her interest in the public health professional world, Antonia has a passion for community service and advocacy. She serves in multiple roles on campus ranging from Executive Vice President of her campus's chapter of Alpha Phi Omega-national service fraternity-, as well as being the co-chair from the Assembly for Sexual Assault Prevention, or ASAP. Antonia hopes to enter a MPH program during the Fall of 2020, and then move on to getting her PhD I shortly after.



## *Wendy Teal*

is a senior at Saint Louis University graduating with a Bachelor's of Science in Neuroscience with a Minor in Biology December 13, 2019. She is interested in neural circuitry and morphology, neuroendocrinology, and has recently discovered an interest in Artificial Intelligence. Wendy has completed two McNair Summer Internships in both 2018 and 2019, and has had the privilege of working under the mentorship of Dr. Alaina Baker-Nigh, and Dr. Ruth Warner, where she completed work on anti-transgender prejudice and established a dose response curve for neurite outgrowth in both Caffeine and Taurine. Currently, she is working with Dr. Judith Ogilvie's Retina Lab to annotate a connectome of the macaque retina. Specifically, she is helping classify the abundance of the types of bipolar cells that synapse onto parasol and smooth monostratified ganglion cells that contribute to the neural circuit of motion detection. Last year, she ran the initiative to introduce Neuroscience to Saint Louis Youth including the Juvenile Detention Center, Flance Early Learning Center and Marian Middle School. Her passions involve communicating neuroscience findings to the communities they will best serve, as well as, engaging in personal development, oil painting, and singing. She will continue with her studies in the Fall of 2020.



## ***Brendan Underwood***

is a senior at Saint Louis University pursuing his Bachelor of Arts in Philosophy and in African American Studies. Brendan is a Saint Louis native who has been deeply involved in thinking about the importance of liberation from the practical to the abstract. Brendan hopes that he has found the first leg of research in a lifelong work that will continue through his future Ph.D. program in philosophy and his teaching once he becomes a professor. He hopes to specialize in the fields of Ethics and Epistemology while also creating the groundwork for a potential new field of study in the philosophy of liberation.

## **INTENTION OVER IMPACT: AN EXAMINATION OF THE CAUSES AND EFFECTS OF INVOLVEMENT AND ENGAGEMENT IN THE WORKPLACE THROUGH THE MEDIATIONAL VARIABLE OF INCLUSIVENESS**

*Janee B.R. Davis*

*Faculty Mentor: Richard Harvey, Ph.D.*

*Saint Louis University*

### **Abstract**

*In the workplace, employees are evaluated by the amount of efficiency and productivity that their work brings. Engaged employees show high levels of energy and are enthusiastic about their work, whereas those who are not may be facing burnout (Schaufeli, Leiter, & Taris, 2008). Acts of engagement in the workplace are then linked to feelings of inclusiveness, which stem from the employer's efforts to create an inclusive environment in the workplace. In this study, the researcher examines how involvement may lead to feelings of inclusiveness in employees, affecting one's level engagement in turn. Recent literature has shown that engagement mediates the relationships between job performance, core-self evaluations, and organizational support. This study will be examined with the participation of 115 people using an online survey which will measure variables such as employee involvement, inclusiveness, engagement, organizational citizenship behavior, self-esteem and thriving. It is hypothesized that employees who feel high levels of inclusion in their workplace will be more engaged in their work.*

### **Introduction**

Engagement is defined as the investment of an individual's complete self into a role (Rich, Lapine, & Crawford, 2010). This motivational concept is a harness of an employee's full self in terms of physical, emotional, and cognitive abilities for work role performances. Rich et al. (2010) identified three antecedents of engagement: value congruence, perceived organizational support, and core self-evaluations. As for consequences, engagement has been linked to job involvement, intrinsic motivation, and job satisfaction.

Rich et al. (2010) hypothesized that engagement in the workplace was positively related to task performance, organizational citizenship behavior, perceived value congruence, and perceived organizational support. It was also hypothesized that job

engagement mediates the relationships between value congruence, task performance, and organizational support. The methods used to conduct Rich et al.'s study included a sample of 245 full-time firefighters and their supervisors (2010). The sample was noted to be predominantly male and Caucasian who have obtained at least an Associate's degree. Participants were rated on their own job engagement, job involvement, job satisfaction, intrinsic motivation, value congruence, perceived organizational support, and core self-evaluations using a 5-point Likert Scale ranging from "strongly disagree (1)" to "strongly agree (5)". In the results of the study, the hypotheses have supported that engagement, in fact, mediates the relationships between value congruence, perceived organizational support, core self-

evaluations, and task performances (Rich, Lapine, & Crawford, 2010).

Downey et al. (2014) brings relevance concerning diversity practices and its effect on engagement by investigating the association of diversity practices that organizations implement with employee-workplace engagement. In order to continue being competitive, organizations must be attentive towards today's diverse workforce and improve on their efforts to promote policies and practices that support and include all individuals from various backgrounds (Downey et al., 2014). Implementing diversity practices can cause positive individual and organizational growth.

Downey et al. theorized three hypotheses regarding diversity practices and their relevance towards engagement in the workplace. Hypothesis one stated that employee's positive perceptions of diversity practices will be positively related to employee engagement. Hypothesis two stated that a positive trust climate will mediate the relationship between diversity practices and engagement. Finally, hypothesis three stated that perceptions of inclusion will moderate the relationship between diversity practices and trust (2014). The four major variables of measurement evaluated in this study were engagement, diversity practices, inclusion, and trust climate. The data used for the study was obtained by an anonymous online survey that concerned diversity climate, where responses from 4,597 employees of a large healthcare organization were obtained. The assessment consisted of a 5 point- Likert scale where questions concerning the measuring variables were answered ranging from 1- "Strongly disagree" to 5- "Strongly agree". All three hypotheses were supported, suggesting that positive perceptions of

diversity practices, trust climate, and inclusion correlate to higher levels of engagement.

#### *Statement of Purpose*

The literature on employee engagement suggests that feelings of inclusiveness are a major antecedent to engagement. However, it is not clear exactly how feelings of inclusiveness may lead to engagement. This study proposes that employee involvement is a key mediator for this relationship. Thus, this study will test the theory that feelings of inclusiveness lead to employee involvement which in turn leads to higher engagement levels among employees. The need for cultural change in organizations is so pertinent because of newfound appreciation for the importance of inclusiveness to facilitating engagement, which is subsequently, imperative to business success (Sanyal et al., 2015). It follows then that understanding the essential components of a good inclusiveness model is also imperative if one is to ensure that inclusion will lead to engagement.

#### **Methods**

##### *Participants and Procedures*

Response from 115 anonymous participants were collected using Amazon Mechanical Turk, a well-validated and established online survey-for-pay system. To ensure confidentiality and anonymity, participants were given only worker ID's. Each participant was paid \$0.35 once they completed and passed the survey's screening question, designed to show the participant's attentiveness.

##### *Measures*

The reliability indexes (alphas) are reported on the diagonal of the correlation matrix in Table 1.

### *Inclusion*

An Inclusion measure was created by the researchers. The questions asked the degree to which respondents endorsed statements such as “Empowered to participate in important decisions”, and “Treated as an insider rather than an outsider” on a 5-point Likert scale ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

### *Organizational Identity*

Organizational identification was measured using Harvey, Blue, & Tennial’s (2012) piping measure of organizational identification. Respondents first listed five attributes to describe their organization. Secondly, they rated each attribute on the degree to which it is self-descriptive on a 0 (does not describe me) to 100 (describes me completely) scale. The five attribute ratings are aggregated into an overall organizational identification score.

### *Motivation*

Motivation was measured using the Schaufeli & Bakker (2003) UWES Utrecht Work Engagement Scale. This measure consisted of a 0 to 6 frequency scale. Sample items include: “When I get up in the morning, I feel like going to work” and “My job inspires me”.

### *Organizational Citizenship Behavior*

Organizational Citizenship Behavior was measured using nine items taken from Smith, Organ, and Near (1983) Organizational Citizenship Behaviors scale. This scale consisted of 1 “Never” to 5 “Very Often” frequency scale. Sample questions include: “How often do you attend meetings that are not mandatory, but are considered important?” and “How often do you help others who have been absent?”

### *Counterproductive Work Behavior*

To measure counterproductive work behavior, the shortened version of the CWB-C by Spector, P. E., Bauer, J. A., & Fox, S. (2010) was used. Sample items included “Came to work late without permission” and “Stayed home from work and said you were sick when you weren’t”.

### *Turnover Intentions*

Two questions were included to measure turnover intentions. Those items were “I intend to leave my organization within the next 6 months” and “If I had another job offer paying the same amount, I would take it”.

### *Life Satisfaction*

Life Satisfaction was measured using the Satisfaction with Life Scale (Diener, et al., 1985). Participants selected the image that described their level of satisfaction with their job, with a frequency scale of 1 “Not satisfied” to 11 “Very Satisfied.”

## **Results**

In this study, 228 (N=228) responses were recorded. However, some participant’s data were excluded from analysis in order to maintain validity in the study. Participants that were excluded were mainly those who failed the “Checking for attention” question in the survey, while others consistently answered with repeated responses. After screening recorded responses for their validity, 115 (N=115) responses were used for data analysis. The means and standard deviations, as well as correlations between the measures used in this study are presented in Table 1.

Regarding Hypothesis 1, it was found that inclusion was significantly correlated with measures of engagement, which included the variables of job involvement, organizational identification, job satisfaction, motivation, and organizational citizenship behavior (see

Table 1). Inclusion was significantly correlated with life satisfaction; however, inclusion was not significantly correlated with counterproductive work behavior and turnover intentions.

Consistent with the Hypothesis 2, job involvement mediated the relationship between inclusion and indicators of both cognitive/emotional engagement and physical engagement:

- *Motivation*: Job involvement mediated the relationship between inclusion and motivation, Indirect Effect= .43; 95% C.I (.21, .66)
- *Organizational Identification*: job involvement mediated the relationship between inclusion and organizational identification, Indirect Effect: 8.41; 95% C.I: (2.93, 14.85)
- *Job Satisfaction*: job involvement mediated the relationship between inclusion and job satisfaction, Indirect Effect: .88; 95% C.I: (.30, 1.60)
- *Organizational Citizenship Behavior*: job involvement mediated the relationship between inclusion and organizational citizenship behavior, Indirect Effect= .23; 95% C.I: (.10, .37).
- *Counterproductive Work Behavior*: Counterproductive work behavior was not significantly related to either inclusion or job involvement (see Table 1). Thus, a mediational effect was not tested.
- *Subjective Well-Being*: Job involvement did not mediate the relationship between inclusion and life satisfaction. Indirect Effect= .08, 95% C.I. (-.23, .39). However, inclusion did predict life satisfaction  $B=.76$ ,  $t(115)=8.87$ ,  $p<.001$ .
- *Turnover Intention*: Whereas turnover intentions were

significantly associated with both inclusion and job involvement (see Table 1), there was no mediational effect.

## Discussion

### *Major Findings*

H1: Inclusion was significantly correlated with measures of engagement: Job involvement, organizational identification, job satisfaction, motivation, and organizational citizenship behavior.

H1.1: Inclusion was significantly correlated with the measure of subjective well-being: life satisfaction.

H1.2: Inclusion was not significantly correlated with counterproductive work behavior and turnover intentions.

Organizational Inclusion is an important correlate of engagement and subjective well-being for organizational employees. The common saying, “what you give is what you get”, can be applied to organizations and their working relationship with their employees. As the landscape of the American workforce continues to shift, the demand for inclusive work environments continues to increase as well. Those who feel included in their work environment are shown to maximize productivity, thus contributing to the company’s success. To remain competitive, it is imperative that organizations enforce practices which include individuals from diverse backgrounds. Not only is this important for the employees working for a company, but also for the company’s consumers. Potentially, having a broadly inclusive work environment could benefit a company by gaining more perspective on what a variety of consumers are seeking within their specific industry (Sutphin, 2016).

H2: Job Involvement mediated the relationship between inclusion and some indicators of both cognitive/emotional engagement and physical engagement.

When an employee feels high levels of inclusion in their workplace, they are more likely to be involved and committed to their work, thus making positive contributions to their company's success. When an employee feels that their position at their company is valued (whether it be from their physical presence, or the work that they contribute), they then can experience high levels of engagement. This engagement can be shown through the frequency of actions with a positive impact on their role as an employee and overall success of a company.

Organizational Citizenship Behavior (an example of physical engagement) is shown through acts of employees arriving early to their job to get a head start on their work, staying late to finish a task, and covering someone's shift/work if they are sick.

Although these actions are not required of employees, they voluntarily commit these actions because of higher levels of commitment to their company and its success. In order to engage with their company through physical actions, the employee must be engaged mentally.

Therefore, job satisfaction and motivation are important factors of cognitive/emotional engagement. Those with low levels of job satisfaction and motivation to contribute to their company's success are less likely to then go above and beyond, outside of their required job description. The employees who are not mentally engaged with their company are less likely to come in on their day off, devote more time to their work than required, and less likely to have the motivation to continue working for the company.

### *Limitations*

The small sample size (N=115) impacts the survey's ability to detect a reliable effect and generate generalizable result. Though the hypotheses were supported, the small sample size calls into question whether these results would stand with more responses. The self-report methodology of this study also created some limitations. Participants could potentially give false information in their responses or complete the survey without thoughtful effort. Since the study did compensate with a monetary reward, some participants' answers were not appropriate to the study's theme or focus. Thus, many participants' answers were excluded from the study, creating its smaller sample size.

### *Future Direction*

Moving forward with the study, the next step would be analyzing marginalized groups' responses toward feelings of inclusiveness in the workplace. The groups of interest are people of color, and those who identify with the LGBTQ+ community. The only demographics analyzed were sex (62%), level of job professionalism (professional: 89%, non-professional: 11%), education level (mean: two years of college), and income (mean: \$30,000-40,000). From data analysis, most participants were men with professional jobs and an average of two years of college education. Even though race and ethnicity were not included in this study, it would have been insightful to analyze the racial demographics.

This study did not focus on identity, so including demographic questions would add a dimension to analysis and clarify the researcher's understanding of the effects of inclusiveness in the workforce. Gathering more responses will also be a future direction. As a result, data collection will be

a longer process. With the collection of more data and participants, it is taken into consideration that the overall cost that is

spent compensating participants would increase.

## References

- Arnold B. Bakker, Wilmar B. Schaufeli, Michael P. Leiter & Toon W. Taris (2008) Work engagement: An emerging concept in occupational health psychology, *Work & Stress*, 22:3, 187-200, DOI: [10.1080/02678370802393649](https://doi.org/10.1080/02678370802393649)
- Chandana Sanyal, Doirean Wilson, Charlotte Sweeney, Jude Smith Rachele, Satwant
- Kaur, Christine Yates, (2015) Diversity and inclusion depend on effective engagement: It is everyone's business to ensure that progress is maintained. *Human Resource Management International Digest*, Vol. 23 Issue: 5, pp.21-24, <https://doi.org/10.1108/HRMID-05-2015-0087>
- Diener, E., Emmons, R. A., Larsen, R. J., & Griffin, S. (1985). The Satisfaction with Life Scale. *Journal of Personality Assessment*, 49, 71-75.
- Downey, N.S., Van der Werff, L., Thomas, K.M., Plaut, V.C. (2014). The role of diversity practices and inclusion in promoting trust and employee engagement. *Journal of Applied Social Psychology*, 45(1), 35-44.
- Harvey, R. D., Blue, C. D., & Tennial, R. E. (2012). The Conceptualization and Measurement of Racial Identity and Racial Identification within Psychology. In J.M. Sullivan and A M. Esmail (Eds.)
- African American Racial Identity: Racial and Cultural Dimensions of the Black Experience* (pp. 29-52). New York: Lexington Books.
- Rich, B. L., Lepine, J. A., & Crawford, E. R. (2010). Job Engagement: Antecedents and Effects on Job Performance. *Academy of Management Journal*, 53(3), 617-635. doi:10.5465/amj.2010.51468988
- Sabharwal, M. (2014). Is Diversity Management Sufficient? Organizational Inclusion to Further Performance. *Sage Journals*, 43(2), 197-217.
- Schaufeli, W., & Bakker, A. (2003). UWES Utrecht Work Engagement Scale. Preliminary Manual [Version 1, November 2003]. Utrecht University: Occupational Health Psychology Unit.
- Smith, C.A., Organ, D.W., Near, J.P. (1983). Organizational Citizenship Behavior: It's Nature and Antecedents. *Journal of Applied Psychology*, 68, 4, 653 – 663
- Spector, P. E., Bauer, J. A., & Fox, S. (2010). Measurement artifacts in the assessment of counterproductive work behavior and organizational

citizenship behavior: Do we know what we think we know? Journal of Applied Psychology, 95, 781-790.

Workplace: Talent Management. Retrieved from <https://talentmanagement360.com/the-importance-of-inclusion-in-the-workplace/>

Sutphin, A. (2016, February 4). The Importance of Inclusion In the

**Appendix**  
Figure 1

	M	S	1	2	3	4	5	6	7	8	9
1. Inclusion	5.47	1.06	1								
2. Involvement	5.39	.98	.874**	1							
3. Organizational Identity	75.55	19.06	.569**	.621**	1						
4. Job Satisfaction	3.82	2.37	.572**	.621**	.543**	1					
5. Motivation	5.11	1.24	.739**	.742**	.561**	.685**	1				
6. OCB	3.70	.61	.670**	.690**	.549**	.485**	.724**	1			
7. CWB	2.48	1.23	.066	.095	.054	.006	.155*	.053	1		
8. Turnover intentions	3.38	1.22	.402	.447*	.335**	.458**	.394*	.368*	.166*	1	
9. Life Satisfaction	5.18	1.24	.647**	.579**	.491**	.547**	.749**	.552**	.276**	.286	1

\*\*Correlation is significant at the 0.01 level (2-tailed)

# OBSERVATION OF INHIBITORY THROMBIN-PPACK BINDING AND ALTERNATIVE THROMBIN CONFORMATION EQUILIBRIUM USING RAPID KINETICS AS A FUNCTION OF TEMPERATURE

Noah Gistover

Faculty Mentor: Enrico Di Cera, MD  
St Louis University

## Abstract

The study of enzyme-ligand binding is useful for the understanding of enzyme structure and function. The family of trypsin-like serine proteases are a moderately sized and clinically relevant family of proteins for which to study this class of reaction. The transition between closed and open forms (due to movement of the beta 215-217 residues) of activated thrombin allows for a useful metric to measure PPACK binding via cessation of 215-217 swinging. Using stopped-flow, thrombin-PPACK temperature studies show a relationship between  $k_{12}$  and temperature, and additionally  $k_{21}$ ,  $k_{on}$  and temperature. Thrombin-PPACK binding likely follows the theory of conformational selection, and activation energies and corresponding rate constants calculated by experimentally gathered stopped flow data help to provide more details about the model of equilibrium.

Keywords: thrombin conformation, thrombin inhibition,

## Introduction

Enzymes are a broad class of macromolecules responsible for the regulation of chemical reactions throughout the body. They provide a significant source of study for the regulation of metabolic processes that occur throughout the body, as well as for the study of protein structure and function. Enzymes and their respective ligands exist in a state of equilibrium between free enzyme and ligand, and the enzyme-ligand complex. By studying the reaction rates and/or substrate and product concentrations of this type of reaction, information about the equilibrium such as activation energies can be gleaned.

Regarding enzyme-ligand binding, there are two main competing theories of the order in which the enzyme conformation is altered for cases in which the model of lock-and-key is insufficiently descriptive. These theories are induced-fit and conformational selection. Induced-fit is characterized by the

enzyme altering conformation to a more favorable state after ligand binding, while conformational selection is characterized by the enzyme adopting a more favorable state before binding to its ligand.<sup>1</sup> Pozzi et al. determined that trypsin-like proteases are accurately modeled by conformation where the enzyme changes conformation from one inaccessible to ligand to a conformation accessible to ligand.<sup>2</sup>

Figure 1. Shows Model of Conformational Selection

Trypsin-like proteases are a large group of enzymes present in a variety of metabolic



systems in the body. They share a similarity in that they both cleave peptide bonds following lysine or arginine residues.<sup>2,3</sup> One

such trypsin-like protease for study is thrombin, also known as coagulation factor XIIa, which is responsible for the final step in thrombosis: the cleaving of fibrinogen into fibrin. In addition to its clinical relevance, thrombin is used in research studies for modification of proteins. After removal of the Gla and Kringle domains, activated thrombin exists in a state of equilibrium between the closed (E\*) and open (E) conformations caused by access to the active site being hindered by beta 215-217 residues in the closed conformation, and unhindered in the open conformation.<sup>2</sup> This change in conformation can be measured through the wavelength given off by the Trp 215 residue once excited by a wavelength of 295nm.

The synthetic molecule PPACK serves as a tool for the observation of rate constants contributing to the conformational equilibrium of thrombin. PPACK irreversibly binds to the active site and prevents the beta 215-217 residues from moving, which can be observed to determine the inactivation rate of thrombin. From that, several rate constants where substrate binding, dissociation, and associated activation energies can be derived from temperature dependence of  $k_{cat}/K_m$  and  $k_{cat}$ , as determined by Ayala & Di Cera.<sup>3</sup> This experiment seeks to apply the temperature-dependent method of study established by Ayala & Di Cera to study thrombin-PPACK binding, and more specifically to determine how the change in temperature impacts the  $k_{12}$ .

## Results

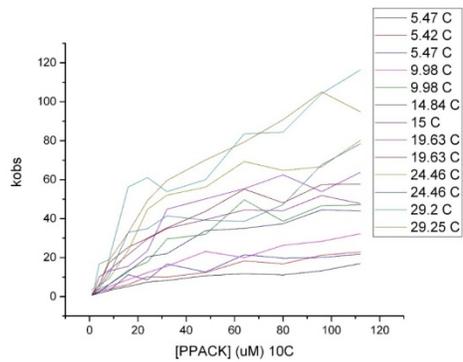
Graph 1. Shows Thrombin-PPACK temperature studies fitted to equation  $y=(F_0+F_1^{(x/k)})/(1+x/k)$ . 250nM Thrombin, 400mM ChCl, 50mM Tris, 0.1% PEG 8000, pH 8.

## Methods

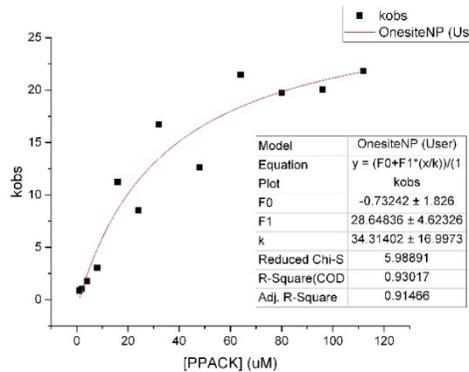
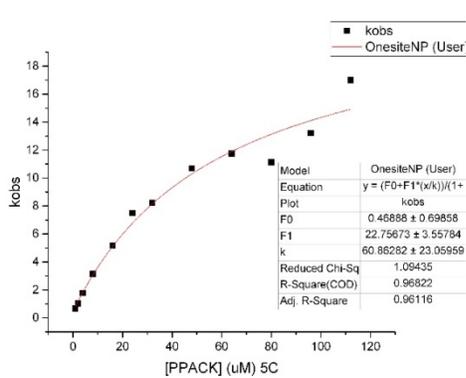
### Materials

- Wild-type alpha thrombin, activated
- Buffer – 400mM ChCl, 50mM Tris, 0.1% PEG 8000, pH 8 at experimental temperature
- PPACK
- Applied Photophysics SX20 stopped-flow spectrometer

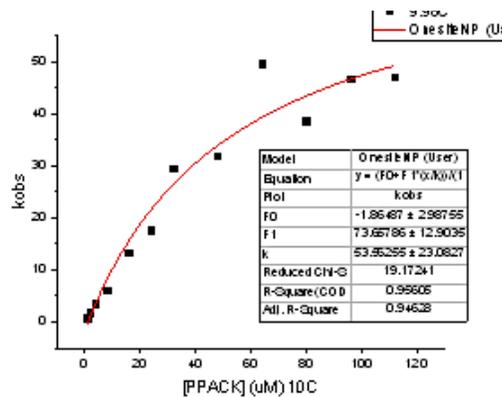
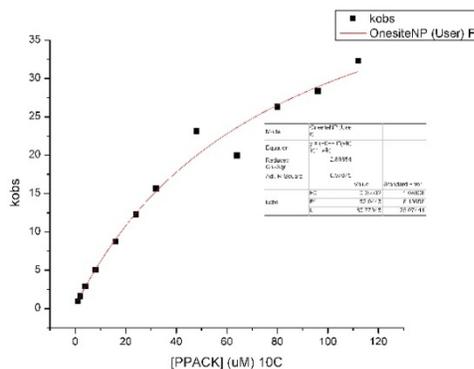
For each temperature study, a series of PPACK dilutions in buffer with a pH of 8 at incubation temperature was created with final concentrations of 1uM, 2uM, 4uM, 8uM, 16uM, 24uM, 32uM, 48uM, 64uM, 80uM, 96uM, and 112uM. A solution of activated wild-type thrombin was also created with a concentration of 250nM in buffer with a pH of 8 at incubation temperature. Solutions were incubated at the desired reaction temperature, then changed in fluorescence over a period of two seconds. The following reagent mixture was recorded for each sample. Protein blanks were recorded prior to reagent mixture for baseline. Each temperature study was completed in duplicate. Raw data was then fitted using single or double exponentials to find the initial velocity for each reaction, then each reaction was compiled for each temperature to find approximate  $k_{12}$  and  $X_m$ . Data was also entered into a custom computer program to find experimental  $E_{on}$ ,  $E_{12}$ , and  $E_{21}$  for calculation of  $k_{on}$ ,  $k_{12}$ , and  $k_{21}$ .



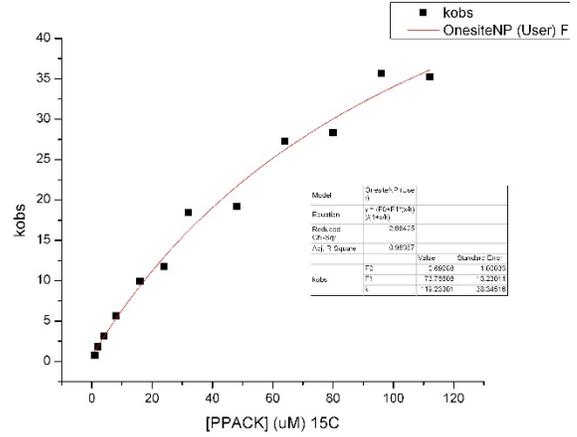
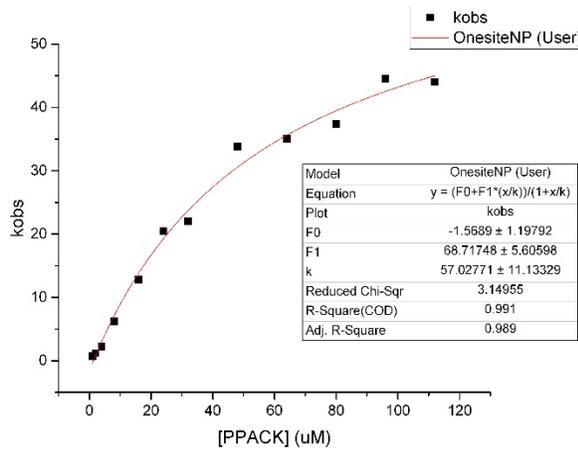
Graphs 2 and 3. Show the Relationship between Concentration PPACK and kobs at 5C, fitted to equation  $y=(F0+F1^{(x/k)})/(1+x/k)$ . 250nM Thrombin, 400mM ChCl, 50mM Tris, 0.1% PEG 8000, pH 8.



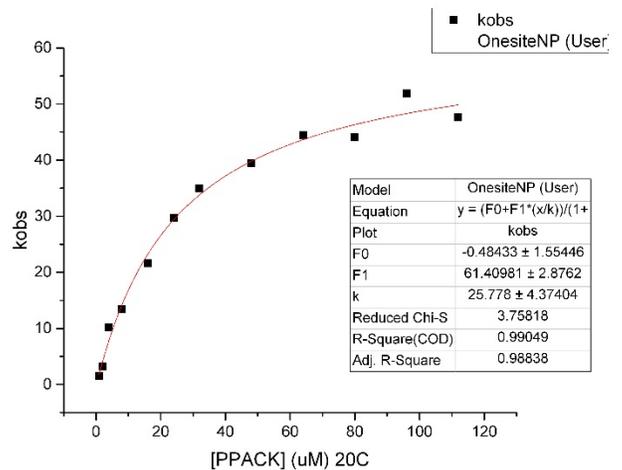
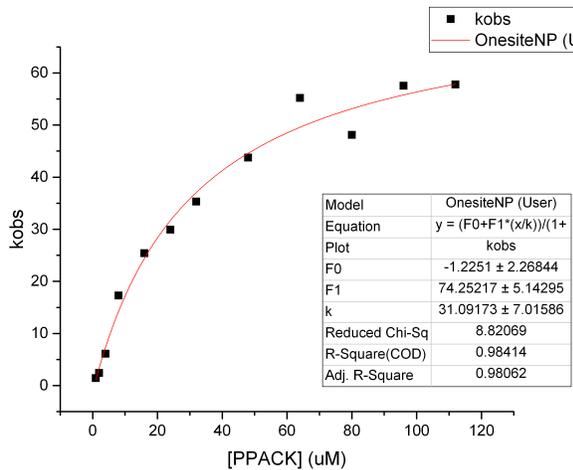
Graphs 4 and 5. Show the Relationship between Concentration PPACK and kobs at 10C, fitted to equation  $y=(F0+F1^{(x/k)})/(1+x/k)$ . 250nM Thrombin, 400mM ChCl, 50mM Tris, 0.1% PEG 8000, pH 8.



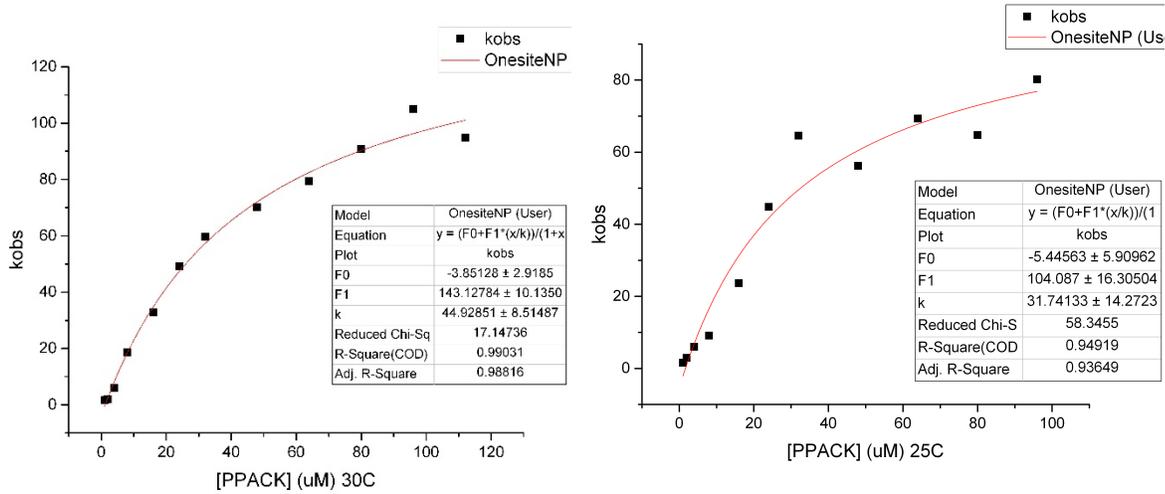
Graphs 6 and 7. Show the Relationship between Concentration PPACK and kobs at 115C, fitted to equation  $y=(F_0+F_1(x/k))/(1+x/k)$ . 250nM Thrombin, 400mM ChCl, 50mM Tris, 0.1% PEG 8000, pH 8.



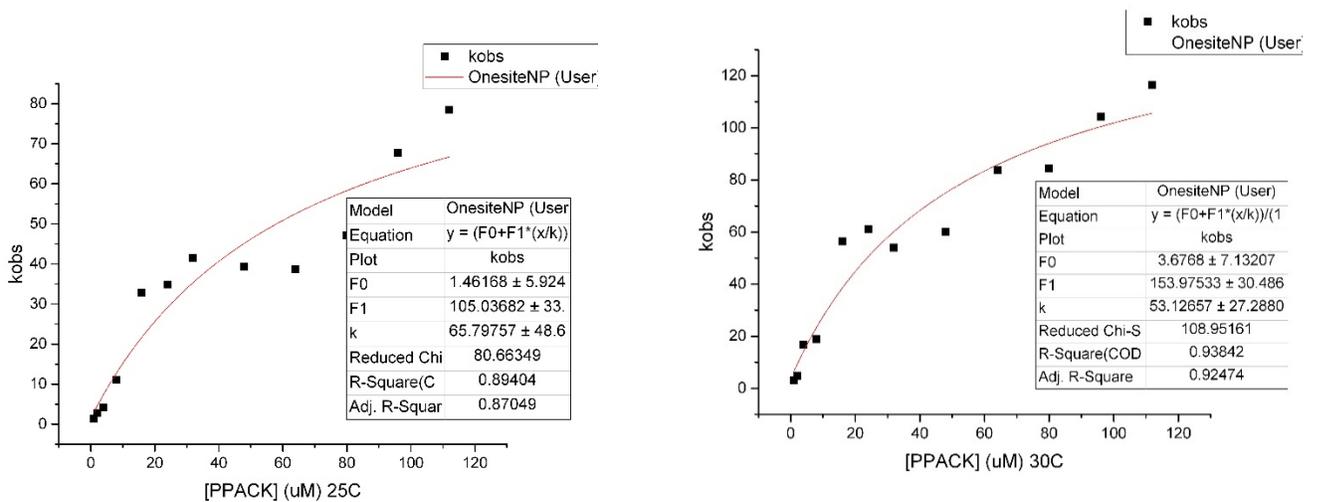
Graphs 8 and 9. Show the Relationship between Concentration PPACK and kobs at 20C, fitted to equation  $y=(F_0+F_1(x/k))/(1+x/k)$ . 250nM Thrombin, 400mM ChCl, 50mM Tris, 0.1% PEG 8000, pH 8.



Graphs 10 and 11. Show the Relationship between Concentration PPACK and kobs at 25C, fitted to equation  $y=(F_0+F_1(x/k))/(1+x/k)$ . 250nM Thrombin, 400mM ChCl, 50mM Tris, 0.1% PEG 8000, pH 8.



Graphs 12 and 13. Show the Relationship between Concentration PPACK and kobs at 30C, fitted to equation  $y=(F_0+F_1(x/k))/(1+x/k)$ . 250nM Thrombin, 400mM ChCl, 50mM Tris, 0.1% PEG 8000, pH 8.



Graph 14. Shows Linearity of Thrombin-PPACK temperature study-derived logk12/1000T

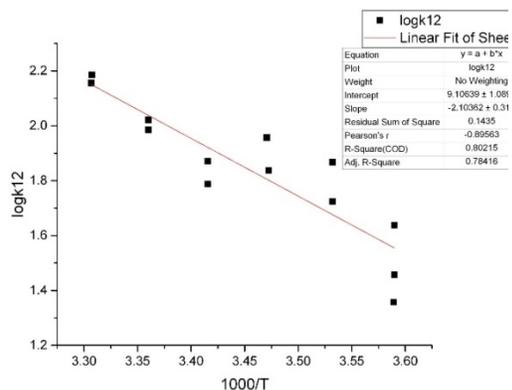
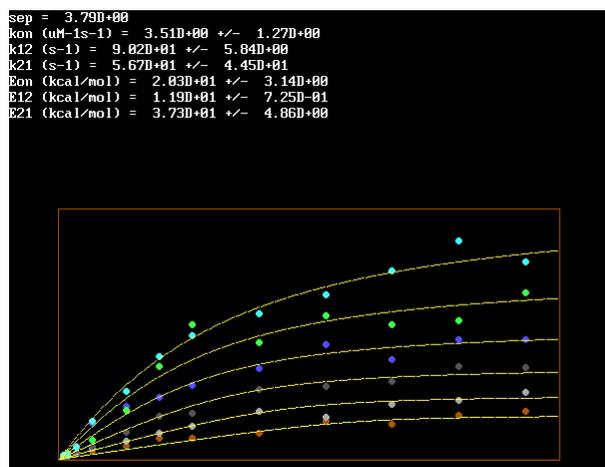


Image 1. Shows Experimentally Determined Activation Energies for Wild-Type Thrombin-PPACK Eon, E12, E21, and corresponding rate constants kon, k12, and k21 at reference temperature.



## Discussion

As the general trend in the data suggests, the initial rate at which PPACK binds to thrombin was found to increase with temperature, and the increase in the initial rate stops increasing exponentially at approximately 60uM PPACK, although this point shifts left with an increase in temperature.

When the log of the  $k_{12}$  is compared to the 1000-fold inverse of the temperature in Kelvin, a linear relationship forms between the magnitude of the  $k_{12}$  and the temperature of the experiment. This is consistent with serine protease substrate binding established by Ayala & Di Cera. When the comprehensive temperature study data was entered into a program that determined the activation energies and reference temperature rate constants of substrate binding, the resulting activation

energies  $E_{on}$  ( $20.3 \pm 3.14$  kcal/mol)  $E_{12}$  ( $11.9 \pm 7.25$  kcal/mol)  $E_{21}$  ( $37.3 \pm 4.86$  kcal/mol) can be relatively accurately determined as compared to literature values. Resulting reference temperature rate constants of  $k_{on}$  ( $3.51 \pm 1.27$   $\mu\text{M}^{-1}\text{s}^{-1}$ )  $k_{12}$  ( $90.2 \pm 5.84$   $\text{s}^{-1}$ ) and  $k_{21}$  ( $56.7 \pm 44.5$   $\text{s}^{-1}$ ) are found from experimentally determined activation energies.

## Conclusion

Using temperature as a parameter for the rate of inactivation results in the experimental determination of activation energies. Therefore, rate constants of conformational selection change from closed to open; thrombin-PPACK binding also occurs. Closed thrombin ( $E^*$ ) becomes more populated than open thrombin ( $E$ ) at higher temperatures due to a higher  $k_{21}$  in comparison to  $k_{12}$ .

## References

- Vogt, A. D., Pozzi, N., Chen, Z., & Di Cera, E. (2014). Essential role of conformational selection in ligand binding. *Biophysical Chemistry*, 186, 13–21.
- Pozzi, N., Vogt, A. D., Gohara, D. W., & Di Cera, E. (2012). Conformational selection in trypsin-like proteases. *Current Opinion in Structural Biology*, 22(4), 421–431.
- Ayala, Y. M., & Di Cera, E. (2000). A simple method for the determination of individual rate constants for substrate hydrolysis by serine proteases. *Protein Science*, (9), 1589-1593.

## THE EXPRESSION OF PPAR- $\gamma$ RECEPTOR IN ADULT AND NEONATAL LUNGS DURING RESPIRATORY VIRAL INFECTION

Dalia Harris\*

Faculty Mentor: Laurie P. Shornick, Ph.D<sup>†</sup>

<sup>†</sup>Saint Louis University; \*Harris-Stowe State University

### Abstract:

*Respiratory viral infection is a significant cause of morbidity and mortality worldwide. Severe illness during a viral lung infection may be due to inflammation as a result of the host immune response, rather than direct damage by the virus itself. Previously, a mouse model of respiratory viral infection demonstrated that there was significantly reduced inflammation in neonatal lungs compared to adults. This occurred even though the viral titer and viral clearance was similar in both adults and neonates. The reduced inflammation in neonates was associated with significantly higher levels of Prostaglandin D<sub>2</sub> (PGD<sub>2</sub>). PGD<sub>2</sub> is converted into prostaglandin J<sub>2</sub> (PGJ<sub>2</sub>), which binds to the receptor PPAR- $\gamma$ . Importantly, studies using PPAR- $\gamma$  agonists in adult lungs during infection reduced inflammation. In contrast, treatment of neonates with PPAR- $\gamma$  antagonists increased susceptibility to infection. These studies suggested that the anti-inflammatory effects of PGD<sub>2</sub> might be through its conversion to PGJ<sub>2</sub> and subsequent binding to the PPAR- $\gamma$  receptor. To date, the expression of PPAR- $\gamma$  in adult and neonatal lungs during respiratory viral infection has not been determined. Adult and neonatal C57BL/6 mice were infected with 500 pfu/g body weight Sendai virus (SeV) and lungs were fixed in formalin at various times after infection. Five  $\mu$ m lung sections were stained with an anti-PPAR- $\gamma$  antibody. Results showed that PPAR- $\gamma$  was expressed in the airway epithelium of uninfected adults and neonates. This expression decreased in both after viral infection. To analyze PPAR- $\gamma$  expression in isolated airway epithelial cells, tracheas from uninfected C57BL/6 adult mice were treated with pronase and the epithelial cells were cultured in an air-liquid interface. These cells were infected with SeV (MOI=0.1) and RNA was isolated at 24, 48 and 72 hours post-infection. PPAR- $\gamma$  mRNA expression was measured by qPCR. The results showed no difference in PPAR- $\gamma$  expression between uninfected and infected cultured airway epithelial cells. This suggests that viral infection of epithelial cells does not directly affect PPAR- $\gamma$  mRNA expression. Therefore, the mechanism of reduced PPAR- $\gamma$  protein expression in vivo will need to be determined.*

### Introduction

Lower respiratory infections were classified as the fourth leading cause of death back in 2016 and the deadliest communicable diseases, causing 3 million deaths worldwide [1]. Examples of viruses that cause lower respiratory viral infections include respiratory syncytial virus (RSV)

and influenza. In order to study respiratory viral infection, we use a mouse model of infection with Sendai virus. This virus is a natural mouse pathogen that causes a bronchiolitis similar to RSV infection in humans.

Previous studies showed that neonatal mice were able to clear Sendai virus from the lungs in the absence of inflammation compared to adult mice [2]. This reduction in inflammation was associated with increased levels of a lipid molecule called prostaglandin D<sub>2</sub> (PGD<sub>2</sub>) [3]. Prostaglandin D<sub>2</sub> is a lipid molecule that is derived from arachidonic acid. Arachidonic acid is released from membrane phospholipids and is then converted by a series of enzymatic reactions to PGD<sub>2</sub>. It can then be further converted by dehydration to PGJ<sub>2</sub>.

The PGD<sub>2</sub> and PGJ<sub>2</sub> molecules are able to bind receptors DP1 and DP2 on the plasma membrane, but PGJ<sub>2</sub> also can bind PPAR- $\gamma$  in the cytoplasm. The effects of PGD<sub>2</sub> or PGJ<sub>2</sub> depend on the cells that are expressing the receptors. In some cases, these molecules could induce inflammation and in other cases they could reduce inflammation. The PGD<sub>2</sub> ligand binds to the receptors DP1 (a protein-coupled receptor that is encoded by the PTGDR1 gene), and DP2; PGD<sub>2</sub> may also be converted into PGJ<sub>2</sub> that binds to receptors DP1, DP2, and PPAR $\gamma$ . DP1 is expressed by cells that are involved in mediating allergic and inflammatory reactions [4]. Through the process of cell signaling, the PGD<sub>2</sub> or PGJ<sub>2</sub> molecule may bind to its receptor and cause a reduction in inflammation. If that signal is blocked with an antagonist drug, then that may increase inflammation.

PPAR $\gamma$  (peroxisome proliferator-activated receptor- $\gamma$ ) is a form of transcription factor essential to regulating the immune response in the lung. This receptor may be expressed on multiple cell types with specific roles in controlling the development and functions of the lungs in neonatal and adult mice during respiratory viral infections. PPAR- $\gamma$

requires the binding of lipid ligand and dimerization with a retinoid acid receptor. The receptor then binds with a high affinity to a PPAR response element of a targeted gene promoter [5]. There are numerous endogenous lipid ligands that bind to the PPARs, and they typically include polyunsaturated fatty acids and conversion products of eicosanoids. Particularly, PPAR- $\gamma$  is activated by oxidized fatty acids that are found in oxidized low-density lipoprotein. Besides binding with targeted genes, PPAR- $\gamma$  can act as a transcriptional repressor of the pro-inflammatory transcription factor NF $\kappa$ B by inducing the proteasomal degradation of the NF $\kappa$ B subunit p65 directly [6].

Previous studies have compared the adult and neonatal response to Sendai virus. The virus was diluted in saline solution and one drop of Sendai virus (500 pfu/g body weight) was applied to the nose of each mouse. Figure 1.0 shows that the virus replicated the same in both adults and neonates on day 3. Both adults and neonates were able to clear the virus from the lungs by days 10 and 14. So, adult and neonatal mice were able to clear the virus in a similar fashion (Figure 1.0)

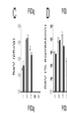


Figure 1.0. White bars represent the adults and the black bars represent the neonates. Graph on the left shows results from a viral plaque assay. Graph on the right shows results from qPCR for viral RNA

Hematoxylin and eosin staining was performed to determine the amount of inflammation in the lungs of adults and neonates that were infected with Sendai Virus. The hematoxylin stained the nuclei a purple color, so where we see more purple indicates that there are more immune cells coming into the lungs. The large white

spaces shown in the lung samples are large airways, and the sponge-like structures are the alveolar spaces (Figure 2.0) [2].

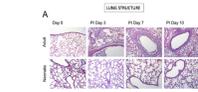


Figure 2.0. Hematoxylin and eosin staining of lung structures from adults and neonates after infection with Sendai virus (500 pfu / g body weight).

The reduction in inflammation in the neonates was associated with increased PGD<sub>2</sub> in the neonatal lungs compared to adults during infection (Figure 3.0). This suggested that PGD<sub>2</sub> may be involved in the reducing inflammation observed in neonatal lungs.

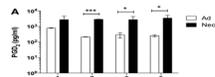


Figure 3.0 Adult and neonatal mice were infected with Sendai virus (500 pfu/g body weight). Bronchoalveolar lavage fluid was collected on the indicated days post-infection. PGD<sub>2</sub> levels were determined by ELISA.

The next experiment in the lab was to determine if inflammation would increase in neonatal mice during respiratory viral infection if we blocked the action of PGD<sub>2</sub> from binding to the receptor sites with a PPAR- $\gamma$  antagonist drug. Neonatal mice that received the PPAR- $\gamma$  antagonist were more susceptible to viral infection (Figure 4.0). The results of the study suggested that there was more inflammation when the PPAR- $\gamma$  receptor was blocked during Sendai virus.

## Methods

**Viral infection** Six – eight week old adult and two day old neonatal C57BL/6 mice were infected intranasally with Sendai Virus (500 pfu/g body weight). Mice were observed daily for general health and body weight measurements as previously described [7].

The white circles showed that all neonates infected with Sendai virus died by day 10. Neonates that received DP1 or DP2 antagonists had similar survival to the virus only group, but the group treated with PPAR- $\gamma$  antagonist did worse; there were no survivors by day 6.

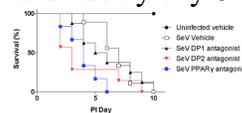


Figure 4.0 Survival of neonatal mice after Sendai virus infection. Some the neonates were treated with an antagonist drug that blocks PGD<sub>2</sub> or PGJ<sub>2</sub> from binding to the receptors DP1, DP2 and PPAR- $\gamma$  receptors sites

Together, these experiments suggest that treatment with PPAR- $\gamma$  agonists may be a way to reduce inflammation in adult lungs during viral infection. To better understand the role of PPAR- $\gamma$ , we wanted to determine how is it expressed in the lungs. We conducted two methods to determine PPAR- $\gamma$  expression in adult and neonatal lungs during viral infection. We used real time PCR to measure PPAR- $\gamma$  messenger RNA levels in neonatal and adult lungs, tracheas and cultured airway epithelial cells. We also determined PPAR- $\gamma$  protein expression in lung sections using immunohistochemistry. By using these two methods, we wanted to be able to find a comparison between the expression of PPAR- $\gamma$  receptor in adult and neonatal mice during respiratory viral infection.

**Immunostaining.** On different days post-infection, mice were euthanized and the lungs were inflated with 10% neutral buffered formalin. The lungs were dehydrated and embedded in paraffin. Five micron sections were used for immunostaining. The lung sections were stained with a rabbit antibody for PPAR- $\gamma$ . The primary antibody was then detected with a secondary antibody tagged with an

alkaline phosphatase enzyme and was visualized with a red substrate. Then the slides were counterstained with hematoxylin. We performed a comparison analysis between the adult and neonate lungs undergoing Sendai Virus from days 0 to day 7.

#### *Primary cultures of airway epithelial cells*

To discover if there would be a decrease of the expression of PPAR- $\gamma$  in cultured airway epithelial cells during viral infections, we cultured the airway epithelial cells from adult mice by isolating the cells from the tracheas [8]. Tracheas were placed in solution with pronase overnight at 4°C. The tubes were then gently inverted to release epithelial cells, so that we could spin the cells into pellets. Lastly, the cells are cultured in Transwells™. The tracheal epithelial cells are grown in grown in small Transwell™ in an air-liquid interface. This method allowed the cells to have liquid on one side and air on the other side just like in the lungs (Figure 5.0).

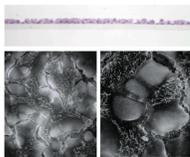


Figure 5.0. The top panel shows a cross-section of tracheal epithelial cells grown on a Transwell™. The bottom left micrograph shows a mouse trachea and the panel on the right shows a culture of tracheal epithelial cells.

The cultured airway epithelial cells were infected with Sendai Virus at a Multiplicity of Infection (MOI)=0.1. RNA was isolated at indicated times after infection and cDNA synthesis was performed (Figure 6.0).



Figure 6.0. Cells were infected with Sendai Virus MOI=0.1. RNA was isolated at the indicated times after infection.

To measure the amount of PPAR- $\gamma$  mRNA, we used the quantitative PCR method. The first step was conducting primer optimization to ensure that the primers amplified the correct sized band, that there were no primer-dimers formed and to determine the correct primer concentration. We then used Applied Biosystems Power Up SYBR Green Master Mix for real-time PCR to measure how much DNA has been amplified. To calculate the math for this method, we used the Delta Delta Ct analysis and normalized to the GAPDH housekeeping gene [9]. The results of primer optimization method is illustrated with a melt curve plot (Figure 8.0).

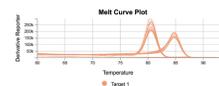


Figure 8.0. Melt Curve Plot displaying the results of measuring the amount of mRNA from the cultured airway epithelial cells. The higher peak represents the SeV group, and the control group is represented by the smaller peak.

The results of the real-time qPCR method for the melt curve plot displayed that there was only peak for each gene, no primer dimers, and no signal detected in the no cDNA control (Figure 8.0). The results of PPAR-g realtime PCR on infected airway epithelial cells in vitro are shown in Figure 7.0.

## Results

By immunostaining, we found that PPAR- $\gamma$  was expressed in airway epithelial cells in both uninfected adult and neonatal lungs. It was not expressed in the alveolar

epithelial cells. After viral infection, the levels of PPAR- $\gamma$  protein decreased in both adult and neonatal lungs (Figures 7.0 & 8.0).

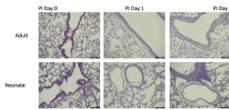


Figure 7.0 Expression of PPAR- $\gamma$  in adult and neonatal lungs was detected with an anti-PPAR-antibody and an alkaline phosphatase red substrate.

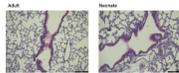


Figure 8.0 PPAR- $\gamma$  expressed in the airway epithelial cells in both uninfected adult and neonatal lungs. Cells that are positive for PPAR- $\gamma$  are bright pink.

The results from the PCR for PPAR- $\gamma$  showed that the expression of PPAR- $\gamma$  in adult cells did not change with Sendai virus infection *in vitro* (Figure 9.0).

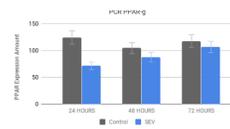


Figure 9.0. The bar graph shows the results of the PPAR- $\gamma$  PCR method from the cultured airway epithelial cells from the adult mice that were infected with SeV. Grey bars represent the control group and the blue bars represent the group that is infected with SeV.

## Conclusion

PPAR- $\gamma$  protein was expressed in the airway epithelium in uninfected adult and neonatal lungs during viral infection. The expression of PPAR- $\gamma$  was decreased in adults and neonates after infection. In the cultured cells, there was no difference in PPAR- $\gamma$  mRNA expression between infected and uninfected cells. Further studies will need to be performed to understand the differences between protein and mRNA PPAR- $\gamma$  expression and between the *in vivo* and *in vitro* results.

## References

1. World Health Organization. *The top 10 causes of death*. 2018 May 24, 2018; Available from: <https://www.who.int/news-room/fact-sheets/detail/the-top-10-causes-of-death>.
2. Bhattacharya, S., et al., *Reduced inflammation and altered innate response in neonates during paramyxoviral infection*. *Virology*, 2011. **8**: p. 549.
3. Tumala, B., et al., *Prostaglandin D2 Levels Regulate CD103(+) Conventional Dendritic Cell Activation in Neonates During Respiratory Viral Infection*. *Viral Immunology*, 2018.
4. Herlong, J.L. and T.R. Scott, *Positioning prostanoids of the D and J series in the immunopathogenic scheme*. *Immunology Letters*, 2006. **102**(2): p. 121-31.
5. Li, J., C. Guo, and J. Wu, *15-Deoxy--(12,14)-Prostaglandin J2 (15d-PGJ2), an Endogenous Ligand of PPAR-gamma: Function and Mechanism*. *PPAR Research*, 2019. **2019**: p. 7242030.
6. Nobs, S.P. and M. Kopf, *PPAR-gamma in innate and adaptive lung*

- immunity*. J Leukoc Biol, 2018. **104**(4): p. 737-741.
7. Shornick, L.P., et al., *Airway epithelial versus immune cell Stat1 function for innate defense against respiratory viral infection*. J Immunol, 2008. **180**(5): p. 3319-28.
  8. You, Y. and S.L. Brody, *Culture and differentiation of mouse tracheal epithelial cells*. Methods Mol Biol, 2013. **945**: p. 123-43.
  9. Livak, K.J. and T.D. Schmittgen, *Analysis of relative gene expression data using real-time quantitative PCR and the 2(-Delta Delta C(T)) Method*. Methods, 2001. **25**(4): p. 402-8.

# EXPLORING ONLINE RENTAL MARKETPLACES: THE CASE STUDY OF AIRBNB

*Mya I. Robinson\*<sup>†</sup>, Waqar Muhammad\**

*Faculty Mentor: Flavio Esposito\* Ph.D.*

*\*Saint Louis University, <sup>†</sup>Fontbonne University*

The work of Mya I. Robinson was conducted at Saint Louis University (SLU) thanks to a McNair Scholarship. Waqar Muhammad and Flavio Esposito are with the Computer Science Department at SLU. Reference authors: robinsonm@fontbonne.edu, waqar.muhammad@slu.edu, flavio.esposito@slu.edu.

## Abstract

*Since its entrance in the market, Airbnb has grown into a popular way for people to lodge both locally and internationally. Airbnb is an online marketplace that provides hospitality services. As the hospitality market expands and international travel increases, Airbnb is thriving globally. This study's objective is to identify and analyze various factors that may have an impact on an Airbnb listings price. The study aims to see how much the factors of an individual Airbnb listing determine an Airbnb's listing price. Many factors are used by Airbnb to describe a listing, such as, but not limited to, zip code, number of amenities, and host information. A web crawler was used to gather and interpret datasets from the Airbnb website. While this hypothesis is interesting, and a basic web crawler has been implemented, we are still collecting data to be able to validate our assumptions.*

## Introduction

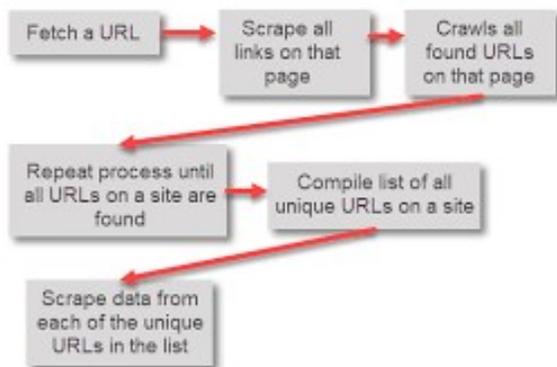
Airbnb advertises itself as a community marketplace that brings together people who have additional space and people who are in search of places to stay. Airbnb works by allowing people to become hosts and offer accommodation to guests. Hosts post descriptions and photos of their spare space for others to book. Hosts establish their nightly, weekly or monthly prices, and listings are ranked (somewhat mysteriously), after a location query. This shared marketplace provides convenience to hosts and guests in terms of flexibility and price. Guests can book unique accommodations from cities and countries all over the world. Host and guests have (mostly) direct contact with each other. Guests and hosts have the opportunity to write a review about their experience with the host and the property after their stay. Guests are

also encouraged to rate their stay based on elements like cleanliness and host communication. There is no cost for guests and host to sign up for Airbnb. Their business model is to charge guests an escrow fee ranging from 9% to 12% for each reservation, depending on the length of the stay, and an additional host service fee of 3%. Since its launch, Airbnb has grown rapidly, and it has millions of properties around the world. There are 2.9 million hosts on Airbnb averaging roughly 800,000 Airbnb stays a night.

The increasing popularity of Airbnb has gained worldwide attention, and several studies were conducted, see e.g., [1]–[3]. There is much debate as to whether Airbnb properties are a smart investment for those looking to become Airbnb hosts [4]. According to U.S. News & Money Report, the rise in Airbnb popularity is influencing people

to buy real estate with the assumption that it will be lucrative [5]. Financial experts warn that this strategy may not be as simple or lucrative as it seems. This initial study aims at providing potential hosts with information that could be used to generate more revenue through better planning. Being knowledgeable of the factors that determine an Airbnb listing's price, could help host see what type of Airbnbs are working in the market, especially as it relates to location [6]. For people looking into Airbnb for investment purposes, more data on listing factors could help them determine what properties are worth the investment [7]. The data used in this study was collected directly from crawling the Airbnb website [8].

Fig. 1: General process of crawling a website in six consecutive steps.

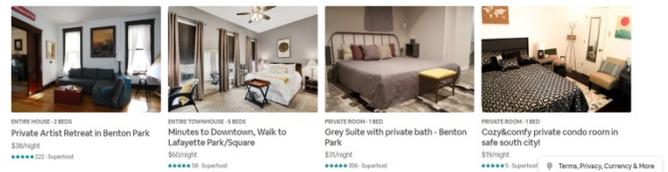


## Methods

The research data was gathered and analyzed through the creation of a web crawler. To collect data from the Airbnb website, the web crawler had to mimic the structure of the Airbnb website. The web crawler had to be able to read in the same information that is provided on the Airbnb website. During our research, we analyzed the Airbnb website by looking at the HTML structure of the website. The web crawler browses through the website

Fig. 2: Screenshot of the Airbnb website showing the way listings are described and displayed upon visiting the site. The factors that are shown for listings include the number of rooms available, the name of the listing, the rate, and ranking. Rankings are shown using the five-star rating system

Fig. 3: Snapshot of the dataset collected from airbnb



city	name	rooms	price	rate	rating	zipcode
Lebanon	Nice Camp to Relax for the Night	[2 bedroom, 2 beds, 1 bath]	\$50	Missouri MO	65536	
Lebanon	Cedar Glen Condo 3bdm, no steps, near osage beach	[3 bedroom, 4 beds, 2 baths]	\$200	Missouri MO	65536	
Lebanon	Beautiful 3BR/2BA Cedar Glen Condo	[3 bedroom, 4 beds, 2 baths]	\$165	Missouri MO	65536	
Lebanon	Buffalo Cedar Interior Getaway	[2 bedroom, 3 beds, 2 baths]	\$40	Missouri MO	65536	
Lebanon	Nautical Guestroom	[1 bedroom, 1 bed, 1 private bath]	\$90	Missouri MO	65536	
Lebanon	NEW! Condo w/Screened Porch on Lake of the Ozarks!	[2 bedroom, 2 beds, 2 baths]	\$177	Missouri MO	65536	
Lebanon	Kinsbrook Castle	[7 bedroom, 14 beds, 7.5 baths]	\$586	Missouri MO	65536	
Lebanon	Bennett Spring Ntangua River Cabin	[2 bedroom, 3 beds, 1 bath]	\$36	Missouri MO	65536	
Lebanon	Lake Side Cabin #5 at Fishermans Resort	[2 bedroom, 3 beds, 1 bath]	\$79	Missouri MO	65536	
Lebanon	NEW! Lakefront Camdenton Condo w/Deck, Shared Pool	[3 bedroom, 4 beds, 3 baths]	\$160	Missouri MO	65536	
Lebanon	Elegant accommodations near FLW and Route 66144	[1 bedroom, 1 bed, 1 bath]	\$80	Missouri MO	65536	
Lebanon	Off Market	[1 bedroom, 1 bed, 1 bath]	\$90	Missouri MO	65536	
Lebanon	Esperanza Lodge at Lake of the Ozarks. Sleeps 12	[3 bedroom, 7 beds, 2 baths]	\$175	Missouri MO	65536	
Lebanon	The Lodge @ White Buffalo Ranch - Sleeps 20	[10 bedroom, 16 beds, 8 baths]	\$1,200	Missouri MO	65536	
Lebanon	Quiet Cottage	[1 bedroom, 2 beds, 1 bath]	\$53	Missouri MO	65536	
Lebanon	Blair Street Cottage	[2 bedroom, 3 beds, 1 bath]	\$75	Missouri MO	65536	
Lebanon	Clean room for travelers :)	[1 bedroom, 1 bed, 2 baths]	\$60	Missouri MO	65536	
Lebanon	Mimowbrook Retreat	[5 bedroom, 8 beds, 4.5 baths]	\$659	Missouri MO	65536	
Lebanon	Maggie's One Bed (not really a bed!)	[1 bedroom, 1 beds, 1 bath]	\$54	Missouri MO	65536	
Lebanon	Private spacious room near Fort Leonard Wood	[1 bedroom, 1 bed, 1 private bath]	\$35	Missouri MO	65536	
Lebanon	Condo on Lake of the Ozarks w/ Boat Slip & Pool!	[3 bedroom, 4 beds, 2 baths]	\$215	Missouri MO	65536	
Lebanon	Lakeview Suite at Swan Song Inn	[1 bedroom, 1 bed, 1 bath]	\$147	Missouri MO	65536	

and reads each room link. Crawling the room links, extracted data on the room amenities, room owner, room owner rating, room images and all the other relevant information provided on each listing. The features of the Airbnb listing, such as zip codes, are being scraped from the Airbnb listings and being written into a database.

### Data description

Each listing comprises of seven attributes and 15,000 state-wide normally distributed listings. Some of the attributes used in the analysis are: price (continuous), state (categorical) and zipcode (categorical). We had to perform a few data transformations to create the desired visualizations. There were no major inconsistencies or mismatches in the data, but most of the features of interest did not contain data in the required format and hence were manipulated in a way that their meanings are retained.

### Key Feature Engineering

The first feature is the price (listing's value). The price column contained data in string format with the currency symbol '\$' and comma separator, attached to it. This column was manipulated to contain integer values for time-series and other analysis. The second feature was the plan (listing's floor plan): The floor plan column contained data with all the information about number of bedrooms, bathrooms and guest bedrooms available in one single comma separated string. The column was manipulated to engineer 2 additional columns "bathrooms" and "guest rooms" so it can be used in later analysis.

Finally, the state (state names): the state column contained the full string of state name for example "Missouri" which later then converted to state name's abbreviation "MO" and we generated an additional column for this purpose "state1" Dealing with missing values. Data likewise had NULL/Missing values in columns like "price" and floor plan. To preserve the information without creating any bias, we filled those NULL values with the average of other listings based on their floor plans and dropped the data points with

missing both floor plans and price to avoid any misleads regarding data because filling those values by usual means without enough information might lead to create unintentional outliers, so we could conduct meaningful analysis based on these attributes.

### Initial price statistics

After observing various parameters such as Name, Floor Plan, Price, City, State and Zip Code, we were able to execute basic analysis on the dataset still being collected.

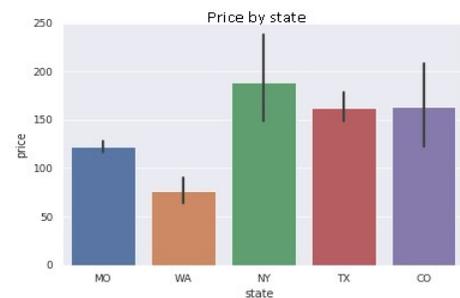


Fig. 4: Price variation based on different states over a sample of 15,000 crawled airbnb listings.

Figure 4 depicts price differences on average, by state. For example, Airbnb listing in the state of Washington, according to our sample, appear to be the most affordable with the average of \$76.22. On the other hand, the central tendency for New York state under the same condition and parameters came to be \$188.68.

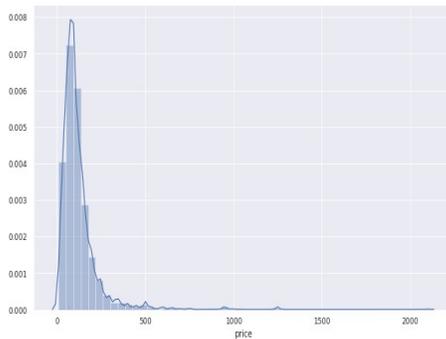


Fig. 5: Price parameter distribution over 15,000 listings

Figure 5 shows the normally distributed but positively skewed prices towards right meaning that the mean values are higher than the median and mode of the data set. While these are merely basic statistics concerning the 15,000 listings, in this pilot study, we were interested in merely learning the process of crawling and basic data analysis. Much further investigation is needed to mine the dataset and provide fruitful insights.

## References

- [1] John Byers, Flavio Esposito, Davide Proserpio, and Georgios Zervas. The hyper-local economic impact of airbnb. 06 2013.
- [2] Georgios Zervas, Davide Proserpio, and John W. Byers. The rise of the sharing economy: Estimating the impact of airbnb on the hotel industry. *Journal of Marketing Research*, 54(5):687–705, 2017.
- [3] Kyle Barron, Edward Kung, and Davide Proserpio. The sharing economy and housing affordability: Evidence from airbnb. In *Proceedings of the 2018 ACM Conference on Economics and Computation*, EC '18, pages 5–5, New York, NY, USA, 2018. ACM.
- [4] Kayleigh Kulp. Is Owning an Airbnb a Smart Investment? <https://money.usnews.com/investing/real-estate->

## Conclusion

It is known that Airbnb has grown into a competitive alternative that has impacted the revenue of some hotel categories. What is not well known instead is what the factors are that may have an impact on an Airbnb listing's price, since many comparable listings exist in most popular locations. This first characterization study aimed at determining some of these factors with a first crawling and data collection stage. We observed that the uneven distribution of low-priced and high-priced properties depends on several factors. Perhaps surprisingly, such factors are — the type of floor plan, and more obvious factors, such as the neighboring areas, user ratings, and reviews. This initial report is a petri dish for more advanced studies that may help validate patterns and identify causes of low-priced properties that appear to be too similar to listing with high prices.

[investments/articles/2018-07-31/is-owning-an-airbnb-a-smart-investment](#). 2018.

[5] Nick Wallace. Where Do Airbnb Hosts Make the Most Money?  
<https://smartasset.com/mortgage/where-do-airbnb-hosts-make-the-most-money>. 2018.

[6] DANIEL KURT. 5 Best and Worst Cities for Investing in Airbnb Properties  
<https://www.forbes.com/sites/omribarzilay/2017/04/04/things-to-consider-before-buying-an-airbnb-investment/>

[#1f7f7724869c](#). 2017.  
[Online; accessed 19-July-2008].

[7] O. Barzilay. 10 Things To Consider Before Buying An Airbnb Investment  
<https://www.forbes.com/sites/omribarzilay/2017/04/04/things-to-consider-before-buying-an-airbnb-investment/#1f7f7724869c>. 2017.  
[Online; accessed 19-July-2008].

[8] Airbnb. Vacation Rentals, Homes, Experiences Places.  
<https://www.airbnb.com/>.

# THE EXAMINATION OF THE INTERSECTION BETWEEN FOOD SECURITY AND MENTAL HEALTH: A SYSTEMATIC REVIEW

*Antonia Simpson*

*Faculty Mentor: Enbal Shacham, Ph.D.*

*Saint Louis University*

## **Abstract**

*Food insecurity is a phenomenon that attacks people at both the household and individual level. While there have been vast research studies on the effects of what living with food insecurity does to the physical body, there has been less attention on what food insecurity does to the mind. As living food insecure is typically associated with social determinants such as lower socioeconomic status, ignoring the possible psychological effects would be harmful to the affected populations. The conducted research is a systematic review of past interventions tackling food insecurity in terms of what was successful and what was not while also looking for studies that address the impact on mental health that arises from food insecurity. The findings from the research collection could serve as an indication for a possible association between food insecurity and mental health issues while posing implications for how current food insecurity interventions could be altered to address the mental health component.*

*Keywords: food insecurity, mental health, intervention, well-being, health, interventions, policy, United States*

## **Introduction**

Living food insecure is not a salient part of one's identity. The United States Department of Agriculture (USDA) defines food insecurity as "a lack of consistent access to enough food for an active, healthy lifestyle" (Health and Hunger, Feeding America, 2017). Unfortunately, according to the USDA in 2017, approximately 22% of Black non-Hispanic households were food insecure and 18% of Hispanic households were food insecure, but only 8% of White non-Hispanic households were food insecure (USDA, 2017). Food insecurity disproportionately affects demographics that have historically had social determinants of health such as being a racial or ethnic minority status and belonging to a lower socioeconomic status.

There was a study published in 2012 by McLaughlin et. al where data were collected from the National Comorbidity Survey Replication Adolescent Supplement to find subjects. The researchers were looking to examine whether food insecurity could be linked with mental disorders. Their results concluded that there could be an association between food insecurity and adolescent mental disorders such as mood, anxiety, behavior, and substance disorders. The researchers called for social interventions to address the issue (McLaughlin et. al, 2012). Existing research studies express well the outcomes that living food insecure can have on one's physical body. Children living food insecure are more likely to develop iron deficiencies and asthma (Corman et. al, 2014). Older adults are more at risk of developing diabetes and hypertension while experiencing higher levels of obesity and

poor sleep outcomes (Pooler et. al, 2018). However, there is less hard evidence to establish a direct relationship between food insecurity and mental well-being. Because of this paucity in current public health research, this study had three main objectives: 1) examine past food intervention studies in the US only, 2) identify public policies that surround food insecurity in the US, and 3) identify articles about studies pertaining to the relationship between mental health or mental well-being and food insecurity.

## Methods

The study started with determining what databases would be appropriate for the kind of data desired. The search for databases started with gathering knowledge on what type of information was presented on each database. Availability of databases was limited to where Saint Louis University had subscriptions for students to use. From there, the three designated research databases were PsychINFO, PubMed, and SLUth Search Plus.

### *Article eligibility criteria*

It was determined that no data would be synthesized for the review if the article was published before 2005. This was to prevent very outdated data to be presented while still having potential for a plethora of data to be found. Articles also had to be printed fully in English to avoid any misinterpretation errors. Qualifying articles also had to have come from peer reviewed journals. The subject matter from each qualifying article also needs to have taken place in the United States.

After establishing the eligibility criteria for the articles to be examined, the search began. At the beginning, only the abstracts

were read to gauge if the article met all the eligibility criteria to move further. Articles deemed eligible moved past the preliminary round of reading and were then categorized into three sections: interventions, policy, and association studies.

After the articles had been separated, they were then read in their entirety.

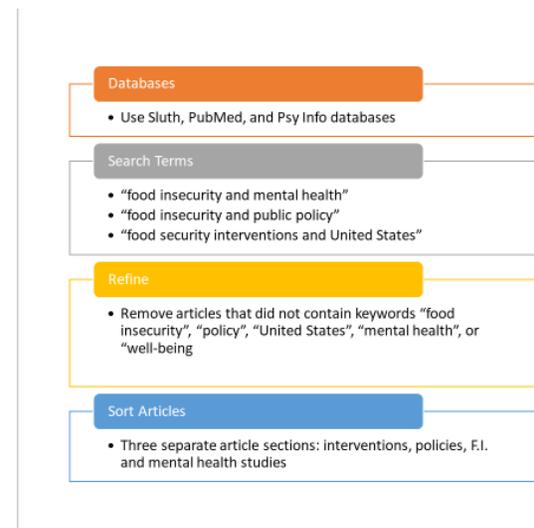


Figure 1. This graphic shows a flowchart of the process that was used for how articles were picked.

### *Risk of bias*

When performing systematic reviews, there exists room for researcher bias when deciding what articles are to be used for any data synthesis. For this particular systematic review, articles simply needed to meet their basic eligibility criteria. All the intervention studies were included in the results whether the intervention was successful or not. The mental health and food insecurity articles included in the results were judged on a study level as opposed to an outcome level, meaning that articles were included whether their results supported this study's hypothesis or not. Lastly, policy and programs articles were included in the final

pool of articles regardless of impact on the population.

## **Results**

A majority of the articles used for this review mentioned that those who are living food insecure have higher chances of suicidal ideations<sup>sub</sup>, depressive symptoms<sup>sub</sup>, and anxiety disorders<sup>sub</sup>. One thing that most of the articles reviewed agreed upon was that there is a need in public health to have more longitudinal food insecurity and mental health studies. The unfortunate issue to this is that longitudinal studies cost a lot of money and time. Interestingly, all the studies which investigated the intersection of food insecurity and mental health were observational. Most of the studies composed of online surveys or questionnaires at certain checkpoints throughout the duration of the study. Some were even long term interaction studies with both food secure and food insecure households, but never was an experiment carried out. While observational studies are good for forming a theory about associations, they cannot determine correlation.

## *Interventions*

Some interventions had a higher pay off than others. Take the Baltimore healthy food stores intervention, for example. This intervention was composed of presenting lower fat and lower sugar grocery items at the front of grocery and convenience stores in a Korean neighborhood in Baltimore. In addition to more presentation of healthier food options, customers were offered vouchers and coupons for other items and prizes (Gittelsohn, 2009). School breakfast interventions appeared to also have positive impacts on their intended communities. In a study that was published

in 2017, Fletcher & Frisvold investigated the causal effects of breakfast programs on a child's food insecurity (2017). Part of this intervention was to become more educated on the state requirements for eligibility for a food breakfast program. Later, the researchers then cross-examined the state requirements for eligibility and food insecurity. Their estimates overall suggested that participation in a school breakfast program does reduce food insecurity for elementary aged children.

## *Policy and programs*

The two policies examined were the Women, Infants, and Children (WIC) program and Supplemental Nutrition Assistance Program (SNAP), commonly referred to as "food stamps". WIC, a federally funded program which assists low-income mothers who are pregnant or currently have children, is obtainable for up to five years per child. WIC was shown to be beneficial to the mothers who utilized the service. Eligibility is assessed every six months which means if someone no longer qualifies, the resources can then go to someone else in need. This is an important food insecurity source as it addresses the need of proper nutrition in both the mother and the child (Metalino-Katsaras et. al, 2010).

On the other hand, SNAP has not always been the best policy and program. Previously, SNAP funds were distributed in voucher-like coupons to eligible participants; however, this method contributes to a stigma surrounding receiving public assistance for food. However, in 2014, SNAP transitioned from the coupon system to an Electronic Benefit Transfer (EBT) system. Now, participants can use SNAP funds via a debit card-like

payment card to alleviate the stress of using coupon-like vouchers in a store. The EBT system is also more efficient as it is simpler to use a card to pay for groceries as opposed to vouchers (Collins, Klerman, Wolf, & Briefel, 2017).

### **Conclusion & Discussion**

The purpose of this review was to examine the relationship between mental well-being and food insecurity and discuss past food security interventions. An overarching theme of needing more longitudinal studies emerged from the research. Longitudinal studies in public health typically consist of long-term observational studies.

Longitudinal studies are important when asking questions such as “is there a relationship between food insecurity and mental health?” because they provide insight that might not be obtained in any other way. Because longitudinal studies take longer in time, they also allow researchers to draw conclusions about changes over time. Unfortunately, a major setback to a longitudinal study is that they are expensive. Because of this, researchers would have to opt for a smaller subject pool which would make it harder to draw conclusion for large groups of people and demographics. In lieu of much needed longitudinal data, the majority of previously conducted research indicates a strong possibility that there is some sort of link between food insecurity and mental well-being. A potential next step, with this knowledge, is to implement long term interventions that address this intersecting issue.

### *Limitations*

One limitation to this systematic review is the data that is available. Saint Louis University only purchased subscriptions to certain article databases. Additionally, some

databases only had access to abstracts and references, but not whole articles and reports. This was especially a problem trying to move through the first and second stages of the review. Having a limited amount of data available has potential to change the results of a systematic review. However, this is an issue that could not be easily resolved for funding reasons. At a study level, a few other limitations exist. The multifaceted stigma around both mental illness and living food insecure may incur a lower participation rate than other types of survey research or observational studies.

### *Recommendations*

One recommendation, at the local level, would be for food pantries, food banks, etc. to partner with local therapists through a referral system. The referral would take place while a participant is signing up for their respective program. This intervention could also be accompanied by follow-up. While the referral system does not guarantee that a customer will use the mental health resources available to them, but they would know that those resources exist. Another suggestion along the same line of thinking would be to perform some type of screening at the time of application to a food insecurity intervention through a survey or similar mechanism. This device would gauge whether a participant could benefit from immediate mental health care.

### **References**

- Collins, A., Klerman, J. A., Wolf, A., Bell, S., & Briefel, R. (2017). The Effects the Summer Electronic Benefits Transfer for Children Demonstration has on Children’s Food Security. *Applied Economic Perspectives & Policy*, 39(3), 516–532. <https://doi.org/10.1093/acpp/ppw030>
- Corman, H. et al. (2014). Effects of Infant Health on Family Food Insecurity: Evidence from two

- US birth cohort studies. *Social Science & Medicine*, 123. 18-25.  
<https://doi.org/10.1016/j.socscimed.2014.10.041>
- Fletcher, J., & Frisvold, D., (2017). The Relationship between the School Breakfast Program and Food Insecurity. *Journal of Consumer Affairs*, 51. (3). 481-500.  
<https://doi.org/10.1111/joca.12163>
- Gittelsohn, J. (2009). Process Evaluation of Baltimore Healthy Stores: A Pilot Health Intervention Program With Supermarkets and Corner Stores in Baltimore City. *Health Promotion Practice*, 11 (5). 723-732. DOI: [10.1177/1524839908329118](https://doi.org/10.1177/1524839908329118)
- McLaughlin, K, et. al (2012). Food Insecurity and Mental Disorders in a National Sample of U.S. Adolescents. *Journal of the American Academy of Child & Adolescent Psychiatry*. 51 (12) 1293-1303. DOI: 10.1016/j.jaac.2012.09.009
- Metallino-Katsaras, E., et al. (2010). A Longitudinal Study of WIC Participation on Household Food Insecurity. *Maternal and Child Health Journal*, 15. (5). 627-633. DOI: 10.1007/s10995-010-0616-5
- Pooler, Jennifer A., et al. (2018). Food Insecurity: A Key Social Determinant of Health for Older Adults. *Journal of the American Geriatrics Society*, 67.  
<https://doi.org/10.1111/jgs.15736>
- What Is Food in America? Retrieved from <https://hungerandhealth.feedingamerica.org/understand-food-insecurity/>

# SEX DIFFERENCES, GENDER IDENTITY & THE CONSTITUTION OF SEXUAL HARASSMENT IN THE WORKPLACE

Wendy Teal

Faculty Mentor: Ruth Warner, Ph.D.

Saint Louis University

## Abstract

*The prevalence of sexual harassment is ubiquitous, however, there is room for interpretation of the events that may make up sexual harassment including the severity of the incident, gender identity of the victim, and sex of the judge. Current research practices have failed to provide an inclusive representation of trans individuals who have experienced sexual harassment in the workplace and other relevant areas. We examined how the sex of the judge (male or female) and the gender identity of the victim (transgender or cisgender) affected the perception of an ambiguous sexual harassment vignette including sexist remarks. We predicted that men will be less likely to perceive the incident as sexual harassment, assign the perpetrator less accountability and punishment, and will have more anti-trans prejudice and victim blame compared to women. We predicted that participants will perceive the transgender victim more negatively than the cisgender victim. A one-way analysis of variance was carried out for each of the hypotheses and found significant results of the sex of the judge on anti-trans prejudice  $F(1,418) = 8.31; p = .004$ , and an effect of the sex of the victim on believability  $F(1,421) = 8.76, p = .003$ .*

*Keywords: workplace sexual harassment; gender identity; sex differences; anti-transgender prejudice; accountability; punishment; victim blame; believability;*

## Introduction

The EEOC's definition of sexual harassment (SH) states the incident must be "severe and pervasive" to constitute sexual harassment action (2018). Therefore, it follows that there is room for interpretation of what sexual harassment is depending on who is judging the situation. In 1980, a report was written on sexual harassment defining five categories arranged in a hierarchical fashion based on the extremity of the incident, with the lowest order being Generalized Sexist Remarks or Behaviors and the highest order being Sexual Crimes (Till, 1980). Till's report was primarily focused on establishing a spectrum of SH scenarios that reflects victim experiences in response to a series of

sexual harassment cases that were going on at his teaching university.

Indubitably, we see gender inequality in our society through the types of professions typically represented by each sex in our health care, political, and legal sectors. For example, in 2017, researchers found that 51% of our population is female yet only 30% of all state judges are female (Tracey & Yoon, 2017). This inequality is one that is smaller than in previous decades, nevertheless, it still exists. This raises a question of what effects the sex of the judge has on the determination of workplace sexual harassment cases because it was found that 86% of perpetrators are male (Rosenthal, Schmidt, & Freyd, 2016).

Furthermore, in 2015, the EEOC's statistics state 56% of SH cases constituted no punishment for the perpetrators. Therefore, we hypothesize that males will be less likely to perceive sexual harassment in a scenario where there is some ambiguity like in Till's first category of general sexist remarks. Past research has found that men perceive some situations as less sexually harassing than women (LaRocca & Kromrey, 1999).

Not only does the sex of the judge affect perceptions of SH, but it has been shown that perpetrator accountability and perpetrator punishment are also affected by the sex of the victim and perpetrator. One study found that a victim is judged as less accountable when the perpetrator is male, and the victim is female. In addition, a female perpetrator is evaluated as less accountable and punished less severely than a male perpetrator (Rye et al., 2006). When the perpetrator and victim are both males, the punishment is less severe and the perpetrator is judged as less accountable compared to a case involving a perpetrator and victim of opposite sexes (Rye et al., 2006). This indubitably illustrates the difference of perception regarding sexual harassment based on the sex of the victim and perpetrator.

It is clear that perceptions of sexual harassment vary based on sex, including sex of the judge, sex of the victim, and sex of the perpetrator. As gender influences judgements regarding sexual harassment in a variety of ways, it is important to expand research on gender and sexual harassment to include gender identity. Little research has examined the effect of gender identity, which does not always match sex, on sexual harassment. Therefore, we don't know how or whether the effects previously found

would carry over to transgender individuals (individuals whose biological sex does not match their gender identity). Since a gap in the sexual harassment research exists regarding gender identity, one purpose of this study is to examine it.

What we do know is that workplace SH is ubiquitous in nature as 63% of the population is affected by SH and/or sexual assault (Kearl, 2018). Approximately, 83% of women and 43% of men reported that they have experienced sexual harassment and/or assault in their lifetime, with 57% of those women and 42% of those men reporting the first occurrence by 17 years of age (Kearl, 2018). Unfortunately, there has been sparse investigation into how transgender individuals experience sexual harassment. Part of the reason is that cis-gendered individuals (individuals whose biological sex matches their gender identity) are the majority of our population and research measures fail to capture the complexity of gender identity outside of sex. Another reason is that there may be a gap of reporting these incidents for trans victims in fear of not being believed, of being blamed, and suffering further repercussions (James et al., 2016). After all, action can only be taken if the incident is reported and trans individuals have many just reasons to prevent them from making reports. We see in past research that the sex of the victim can affect responses to them. The question arises—would this be the same for trans victims? In extreme forms of sexual misconduct, research has shown higher victim blaming of transgender individuals in heterosexual males (Davies & Hudson, 2011), but would this effect still hold true for less extreme cases of sexual misconduct such as using “pet” names like sweetheart or cutie-pie (Till's Category 1—Generalized

Sexist Remarks), regardless of indication of sexual orientation?

We think trans victims would be blamed more than cis victims because of the way trans victims are marginalized by our society. From the research that was conducted on trans individuals we know that they are more subject to sexual harassment across the categories of sexual harassment, including violence, than cis individuals. Transgender individuals face high rates of interpersonal violence in the U.S., with 1 in 12 being subject to murder. This rate is increased if they are also members of other minority groups, such as race and sexual orientation, bringing the statistic to a 1 out of 8 chance (Trans Student Educational Resources, 2015).

There has been an increase of awareness and testimonials of SH experiences in recent years (Shaw & Hegeswisch, 2018), which partly can be attributed to the #MeToo Movement's debut on social media in 2017, highlighting the prevalence and tolerance of SH in our society. Unfortunately, many agree the main aim of the movement has been overshadowed (maybe even backfired) by the participation of the mainstream in highlighting experiences of privileged victims (Kearl, 2018) and side-lining the experiences of minority SH experiences such as transgender and gender non-conforming individuals. In 2011, The National Transgender Discrimination Survey reported transgender individuals are victims of discrimination in almost every domain of life including home, school, work, public, health care and law with more discrimination of minority status (James et al., 2016) providing evidence that transgender workplace SH has not been given the attention it deserves. As 41% of

the population report attempted suicide (Grant et al., 2011), this signifies transgender individuals as a particularly vulnerable population.

Public attitudes towards transgender issues may be influenced by the context in which they are presented and the attitudes of the perceiver (Harrison & Michelson, 2017). One measure that may prove useful here in deciphering the interworking's of this complex predicament is measuring anti-transgender prejudice levels. By incorporating this measure, we can determine if anti-transgender prejudice is a contributing factor of the SH case judgement along with the beforementioned constructs. In 2008, researchers established a measure on transphobia and found that females are generally less transphobic ( $M = 4.25$  compared to men  $M = 5.05$ ) (Nagoshi, 2008). Therefore, we predict female judges will have less anti-transgender prejudice than male judges, which ultimately contributes to their decision to hold perpetrators accountable, giving due punishment, believing the victim, not blaming the victim, and being more likely to perceive an event as sexual harassment.

For this study, we are most interested in how the attitudes towards gender identity and the sex of the judge will change the interpretation of what constitutes sexual harassment in an ambiguous scenario with general sexist remarks. We have not come across any literature which investigates this specific question in the context of cis or transgender identity of a victim and we aim to fill the gap. However, past research about these constructs in similar contexts has given us insight into what we expect to happen. Therefore, a summary of our hypotheses are as follows:

**H1)** Male judges will assign greater victim blame and anti-transgender prejudice than female judges;

**H2)** Male judges will assign less accountability and choose a less severe punishment for the perpetrator, assign less believability for the victim, and perceive a lower rate of sexual harassment constitution than female judges;

**H3)** Trans victims will be blamed more than cis victims;

**H4)** Trans victims will have lower believability, constitution of sexual harassment, and less severe punishment and accountability for the perpetrator compared to cis victims. Ultimately, this study will attempt to understand a part of trans reality in the context of workplace sexual harassment and how these constructs contribute to the discrimination prevalent in our society. This study will also contribute to the growing body of recent literature on transgender individuals while also serving other bodies of literature concerning workplace sexual harassment.

## **Methods**

Subjects (N = 423) were recruited nationwide using Amazon's Mechanical Turk (mTurk), an interface which allows researchers to offer a small monetary payment of fifty cents to complete human intelligence tasks (HITs) to collect data. No other compensation was offered. Individuals were recruited in the mid-summer of 2019. Participants that spent less than four minutes on the test and participants that did not pass all three of the attention checks were excluded from analysis. All persons electronically signed an informed consent

form to be included in the study, which included a Trigger Warning Disclaimer stating this study pertains to sexual harassment in the workplace.

All participants completed a measure comprising views on anti-trans prejudice using Nagoshi's (2008) transphobia scale. Next, subjects were presented with a vignette portraying an ambiguous scenario of sexual harassment and asked to complete a series of questions about the victim, the perpetrator, and their thoughts on the incident.

The frame of the scenario is based upon the participant enacting the role of a Human Resources employee tasked to decipher if a given scenario constitutes sexual harassment based on the victim and perpetrators' reports. They were asked if the incident could have been avoided and if the victim could have brushed it off (victim blame), if the perpetrator meant any harm so no harm was done (perpetrator accountability), if this scenario constitutes sexual harassment, and if they believe the victim (believability). Next, they viewed a report from the accused denying the sexual harassment claim. They were then asked again if they believe the victim after reading both reports. Additionally, we asked if the perpetrator deserved punishment and if so, to what degree (i.e. verbal or written punishment, suspension, termination).

The perpetrator was a cis male in all cases and was of equal power to the victim to diminish hierarchical dynamics. To manipulate the perception of SH, we made four scenarios each comprising one victim who had one of four gender identities; cis-gender male or female, and transgendered male or female.

Demographics were collected at the end of the session before debriefing was executed explaining the purpose of the study and contact information to resources on sexual harassment in the workplace.

## Results

### *Descriptive Statistics*

The median age of our sample was 39 years old and a fair split between female (N = 216) and male (N = 204) participants, with a majority being Caucasian individuals (N = 315). Out of 423 participants, 41 have not had some college with the remaining ranging from community college to graduate school experience. We also asked about political affiliation ranging from socialist to anarchist, however, we will only report the dominant parties of Democrats (N = 212) and Republicans (N = 98) here. Furthermore, most of the individuals constituted this scenario as sexual harassment (N = 331).

**H1)** Testing the hypothesis that males (N = 204) will have a higher score on the anti-trans prejudice than females (N = 216), a one-way ANOVA was conducted to examine the effect of the sex of the judge on anti-transgender prejudice. It was revealed that female participants scored lower ( $M = 2.32$ ) than male participants ( $M = 2.15$ ) with significance,  $F(1,418) = 8.31$ ;  $p = .004$ ; (on a scale of one being high and three being low) on anti-transgender prejudice, therefore, we reject the null hypothesis. To test the same hypothesis but on victim blame, a one-way ANOVA was also conducted and revealed that females ( $M = 1.72$ ) were lower on victim blame than males ( $M = 1.65$ ), but this effect was not significant,  $F(1,418) = 2.41$ ;  $p = .121$ , therefore, we accept the null hypothesis.

**H2)** Testing the hypothesis that the female judges will have higher scores on perpetrator accountability, perpetrator punishment, sexual harassment constitution, and victim believability than the male judges. A one-way ANOVA was utilized and found that there was no significant difference for perpetrator accountability,  $F(1,418) = 3.14$ ;  $p = .077$  and perpetrator punishment,  $F(1,418) = 1.48$ ;  $p = .225$ , or sexual harassment constitution  $F(1,418) = .809$ ;  $p = .369$ , therefore, we accept the null hypothesis. However, there was a significant finding for the believability of the victim,  $F(1,418) = 12.99$ ;  $p = .000$ , such that female judges ( $M = 87.71$ ) believed the victim more than male judges ( $M = 81.88$ ) therefore, we reject the null hypothesis.

**H3)** Trans victims were predicted to have a lower score of sexual harassment constitution, perpetrator accountability, perpetrator punishment, and believability regardless of the sex of the judge. A one-way ANOVA was conducted on each of the former dependent variables and it was found that there was no significant difference between cis ( $M = 214$ ) and trans ( $M = 209$ ) victims on what constitutes harassment  $F(1,423) = .663$ ;  $p = .446$ , perpetrator accountability  $F(1,423) = .992$ ;  $p = .320$ , perpetrator punishment  $F(1,423) = 1.17$ ;  $p = .281$ , or victim believability  $F(1,423) = .029$ ;  $p = .864$ , therefore, we accept the null hypothesis.

**H4)** Our fourth hypothesis predicted trans victims will be blamed more than cis victims. A one-way ANOVA was conducted and revealed no significant difference between the two groups  $F(1,423) = .027$ ;  $p = .869$ , therefore, we accept the null hypothesis. We used an alpha level of .05 for all statistical tests.

### *Follow-Up Analysis*

Since there were significant findings on the sex of the judge and believability of victim and no significant findings on cis or transgender and the believability of the victim, we ran a follow-up analysis to develop the understanding of the effect of the gender of the victim without the construct of sex. A one-way ANOVA was conducted and revealed a significant difference in gender of the victim  $F(1,421) = 8.76; p = .003$ , such that victims that identify as female ( $M = 87.14$ ) were believed more than male victims ( $M = 82.34$ ). On the contrary, there were no significant findings on the sex of the judge and believability  $F(1,421) = 2.75; p = .098$ . The original hypotheses tested victim believability on the sex of the judge and if trans were subject to less believability, however, we gathered a believability measure before and after the perpetrator denied the accusations. To examine if there was a difference between the means in the presence of a denial we ran a Repeated-Measures ANOVA and found a difference between the mean scores on victim believability and found that before the denial the mean score was 3.35 points higher than after the denial,  $F(1,422) = 20.44; p = .000$ .

### **Discussion**

In general, we found mixed support for our hypotheses regarding how sex of the judge, sex of the victim, and gender identity of the victim would affect judgements regarding a sexual harassment scenario. Our results corroborated the findings of Nagoshi (2008) in that females had a lower score of anti-transgender prejudice than males, although this difference was small. There were no differences in the amount of victim blaming based on the sex of the judge. We see in Rye

et al.'s (2006) study that victim blame is mostly dependent on the combination of sex between the victim and the perpetrator. As we see in our results of victim blame based on cis or trans victims, the gender or sex made no difference and does not support their findings of sex differences of the victim. Our research also found that the amount of accountability assigned to the perpetrator and severity of punishment assigned to the perpetrator, was not different based on either sex of the judge or on the sex and gender identity of the victim. An explanation may be that in their study, However, we did not vary the gender of the perpetrator and it may be the interaction between perpetrator and victim sex that affects victim blame. In addition,

judgment of whether the scenario qualified as sexual harassment was not affected by the sex of the victim, sex of the judge, or by the gender identity of the victim. We found that the majority of the participants believed that the scenario was sexual harassment, meaning that it may not have been as ambiguous as we intended. However, this leaves us with a question of what influenced some individuals to disqualify this scenario as harassment if it was not their sex, or the gender identity and sex of the victim. It may be that features of the judges that were not measured, such as their level of sexism, could have affected perceptions of the scenario (Russell & Trigg, 2004).

Some insight was offered into the innerworkings of this scenario from our believability measure such that the sex of the judge did indeed influence the credibility of the victim with males finding the victim less believable (though both male and female judges had relatively high average scores in the believability of victim at

approximately low to mid 80's). This is consistent with past research on how people view female victims of sexual harassment less harshly than male victims (LaRocca & Kromrey, 1999). However, after the denial of the accusations by the perpetrator, male and female judges decreased in how much they believed the victim. Moreover, we found that individuals whose gender identity reflected females were believed more than individuals whose gender identity reflected males. These findings suggest that the individuals were influenced more by internal beliefs of gender roles. Conclusively, more research is needed to elucidate the factors contributing to the assignment of severity of punishment and accountability, victim blaming, and the qualification of sexual harassment scenario that is ambiguous in nature.

## References

- Davies, M., & Hudson, J. (2011). Judgments toward male and transgendered Victims in a depicted stranger rape. *Journal of Homosexuality*, 58(2), 237-247. doi:10.1080/00918369.2011.540179
- EEOC Releases Statistics on Sexual Harassment Charges. Eeoc.Gov, (2016). [www.eeoc.gov/eeoc/statistics/enforcement/sexual\\_harassment\\_new.cfm](http://www.eeoc.gov/eeoc/statistics/enforcement/sexual_harassment_new.cfm).
- EEOC Releases Preliminary FY 2018 Sexual Harassment Data. (2018). Retrieved from Eeoc.gov website: <https://www.eeoc.gov/eeoc/newsroom/release/10-4-18.cfm>
- Grant, J. M., Mottet, L. A., Tanis, J., Harrison, J., Herman, J. L., & Keisling, M. (2011). *Injustice at every turn: a report of the national transgender discrimination survey*. Washington: National Center for Transgender Equality and National Gay and Lesbian Task Force
- Harrison, B. F., & Michelson, M. R. (2017). Using experiments to understand public attitudes towards transgender rights. *Politics, Groups, and Identities*, 5(1), 152-160. doi:10.1080/21565503.2016.1256823
- James, S. E., Herman, J. L., Rankin, S., Keisling, M., Mottet, L., & Anafi, M. (2016). *The Report of the 2015 U.S. Transgender Survey*. Washington, DC: National Center for Transgender Equality.
- Kearl, H. (2018). The Facts Behind the #MeToo Movement: Study on Sexual Harassment and Assault Report. Retrieved from: <http://www.stopstreetharassment.org/wp-content/uploads/2018/01/Full-Report-2018-National-Study-on-Sexual-Harassment-and-Assault.pdf>
- LaRocca, M. A., & Kromrey, J. D. (1999). The perception of sexual harassment in higher education: Impact of gender and attractiveness. *Sex Roles*, 40 (11-12), 921-940.
- Nagoshi, J. L., Adams, K. A., Terrell, H. K., Hill, E. D., Brzuzy, S., & Nagoshi, C. T. (2008). Gender differences in correlates of homophobia and transphobia. *Sex Roles: A Journal of Research*, 59(7-8), 521-531. <http://dx.doi.org/10.1007/s11199-008-9458-7>

Rosenthal, M.N., Smidt, A.M., & Freyd, J.J. (2016). Still second class: Sexual harassment of graduate students. *Psychology of Women Quarterly*, 40, 364-377.

Russell, B.L., & Trigg, K.Y. (2004). Tolerance of sexual harassment: An examination of gender differences, ambivalent sexism, social dominance, and gender roles. *Sex Roles*, 50 (7-8), 565-573.

Rye, B. J., Greatrix, S. A., & Enright, C. S. (2006). The case of the guilty victim: The effects of gender of victim and gender perpetrator on attributions of blame and responsibility. *Sex Roles: A Journal of Research*, 54(9-10), 639-649. <http://dx.doi.org/10.1007/s11199-006-9034-y>

Shaw, E., Hegeswisch, A., & Hess, C. (2018). Sexual Harassment and Assault at Work: Understanding the Costs. *The Institute for Women's Policy Research (IWPR)*.

Till, F. J. (1980). Sexual Harassment. A report on the sexual harassment of students. *The National Advisory Council on Women's Educational Programs*.

Retrieved from:  
<https://files.eric.ed.gov/fulltext/ED197242.pdf>

Tracey, G., & Yoon, A. (2017). Report: Who sits in judgement on state courts? Retrieved from: GavelGap.org

# TRUTH AND LIBERATION: DELINEATING THE RELATIONSHIP BETWEEN TRUTH AND PHILOSOPHIES OF LIBERATION

*Brendan M. Underwood*

*Faculty Mentor: Jonathan Smith, Ph.D.*

*Saint Louis University*

## **Abstract**

*This project seeks to outline a practical framework of race, gender, and class in their liberation movements against a theory of truth while considering their ability to conform to the said framework in praxis. The research examined in this study seeks to articulate and rationalize the very nature, the philosophical core, of liberation movements pertaining to race, gender, and class struggle. The praxis of each will not only be internally compared to their own established frameworks, but also to one overarching framework for liberation movements. The ends of each will be investigated through expanding upon their cores and detailing the rational and logical ends of each and how they align or disregard their frameworks. Finally, upon establishing the core and the goals, there will be an applied ethics analysis on whether pursuing these various forms of liberation do more to help or hinder the praxis of marginalized identities.*

## **Introduction**

It is reasonably assumed that the ways in which one seeks their or another marginalized group's liberation is highly contextual to the social location within which they find themselves, the political situation which dictates that certain ideas are more efficacious than others, and the economic leverage which operates as an amplifier or a silencer of any given issue. Concerning most major pushes for parity in various aspects of society, there always seems to be a caveat which goes against a current-day understanding and approach to the topic. A major flashpoint for this phenomenon can be found in the slavery abolition movements that sought to end slavery in America. There was a strong biracial approach to dismantling the institution of slavery, but the methods and the articulations of the motivations could almost be broken down by the same race dichotomy. Many from a white religious background argued against slavery because

it was immoral and left a stain on the country. The Black people of the era argued the same, but many more argued for a deeper ontological claim: being represented as fully human and receiving all the rights that would follow. The Black people at the time knew this was radical for the current political situation they were in, but they also knew to work with those who saw them as less than a human would help move them toward a deeper goal.

The pursuit of this paper seeks to investigate this deeper goal that marginalized groups appeal toward and measure progress against, whether consciously or not. The material end goal of any given movement is highly contextual to the material conditions under which they achieve liberation. With that said, predicting the concrete reality of the liberated future for the various social movements goes beyond the scope of this paper. This project seeks to map out the unspoken framework upon which liberation

movements seemingly depend, that which has operated as an unspoken roadmap to liberation. While tracing the roadmap, there will be non-material definitions of liberation around which the framework is shaped.

There is an emphasis on discovering the frameworks of these movements because these underlining frameworks have been guiding their movements even without them being directly articulated.

### **Limitations of Paper**

There are many different eras and various liberation movements that can be used as examples to help map out the frameworks of liberation. This paper focuses on the 1890s to 1945 in the American context. Further, there will be a focus on Black or racial liberation, gender liberation, and class liberation from the Black perspective writers and advocates, especially those Black advocates that shared a common background of social location and political situation.

A couple of important social and political markers make this time period distinct and should inform our understanding of the liberation movements of the time. Leading into the 1890s, there were reports of a high number of lynchings that terrorized Black bodies from “sundown” towns to urban beacons. White women won the right to vote, but this great step was overshadowed by the deep disenfranchisement of women of color. Major coalitions formed for all their respective liberation movements from the NAACP to the Socialist Party of America. The landmark decision of Plessy V. Ferguson established separate, but equal as the law of America. A crucial economic marker was the burning and destruction of the Black Wall Street in Tulsa, Oklahoma by their white neighbors (*History.com* Editors 2018). Finally, throughout this period, and

beyond, there were mass migrations of Black bodies from the South to the North for better economic opportunities and haven from the infamous lynchings of the South.

### **Why the Correspondence Theory of Truth**

There will not be much room for the deliberation on which appeal to the truth will be used, but there will be an explanation on why the tool at prodding for the truth will be correspondence theory. Correspondence theory is “that what we believe or say is true if it corresponds to the way things actually are, to the facts.” (*Stanford Encyclopedia of Philosophy* 2018) This theory will be used as a tool in establishing the truth of the framework, but also as the corresponded facts upon which progress is being measured. Correspondence theory is being used, because we want to be able to say if something is positively working toward the goal of liberation, working in opposite directions, or working under an entirely unique set of criteria which recognized as such.

### **General Liberation**

Before initiating a discussion on the nature of the specific notions of liberation in each respective movement, there should be attention paid to the general notions of what liberation should entail. When one seeks liberation, they usually are seeking freedom from a superstructure or situation that in some ways constrains or oppresses them. There is a myriad of ways one can be exposed to oppressive forces, but a common thread among many of them is the idea of Otherness.

When one is being oppressed, there are usually superficial grounds on which they are being placed into a space of Otherness.

One is not white; they are other. One is not a man; they are other. One is not a capitalist; they are other. This forceful marginalization into the status of 'other' marks one as being less than the dominant group in almost every respect, for if they were perceived as equals, no distinction would exist. The act of being placed within the other is not inherently oppressive, but there are many such distinctions that powerfully manifest themselves. The liberations discussed in this paper illustrate such historical oppressive otherness.

There are many distinctions placed within society, but liberation from those that operate to reinforce oppressive structures have shown to have a similar structure in their frameworks. Liberation from oppressive otherness consists of the advocating for a diminishment of the otherness distinction or, at the very least, the diminishment of the oppressive otherness distinction and the systems that support and are supported by such a distinction. The fight against otherness is central to Black liberation, gender liberation, and class liberation. The recognition of the commonality of this pivotal concept will better help articulate the definition of liberation in each of these movements

### **Black Liberation**

There are complex intersecting needs usually included in into Black liberation that should be addressed. Black liberation, in the context of this paper, seeks to diminish and eliminate racial categories and the power they hold. It is crucial to understand that Black liberation is the deconstruction of the racial marginalization which seeks to other them from whiteness. This focus only on the racial otherness does not seek to discount the work of black feminist or womanist

authors but establishes that there are two different systems of otherness that interact with one another. It is important to see these are two separate structures because it would be limiting to prioritize racial distinction over gender distinction or vice versa.

Now, there needs to be a discussion on the period in question, to investigate the methods for Black liberation with the material conditions of the time against the non-material framework. Numerous issues define the period for Black people, but one of the most infamous examples is the lynching of Black bodies throughout the nation. There are many ways to see the issue of lynching, but one that shines through most examinations of the time is Ida B. Wells' analysis of lynching for a racialized economic purpose (Wells, 1893). Of course, many died unjustly due to reasons outside of economic jealousy, but that does not minimize the seemingly coordinated effort to weaponize mobs to push out competing Black businesses or even whole Black towns, as in the case of Tulsa, Oklahoma. Measuring against the framework, Wells and those like her actively deconstructed an othering distinction in meaningful ways by calling into question the fundamental nature of why Black bodies deserved less economic status and had to die for it.

There were always advocates who sought Black liberation in the socio-economic space. One of the giants of this space was Booker T. Washington who strived to convince Black people to develop in their own marginalized spaces separate from the larger, white society. Washington argued that "no race that has anything to contribute to the markets of the world is long in any degree ostracized." (Washington, 1895) Even at the time, this argument served as a

very contentious notion for the Black community. Although it seemed that Washington was being guided by the framework of seeking to eventually eliminate otherness by contributing heavily to the market of America, the material conditions demonstrated that those who accumulated too much capital within Black spaces resulted in whiteness seeing the otherness of Blackness as a threat rather than a benefit.

The opposite of the spectrum, in many cases, was an idea popularized by W.E.B. Du Bois who sought not only acceptance into the larger lexicon of America but forced the issue by building coalitions based on racial marginalization. Du Bois sought “a new organized group action along economic lines, guided by intelligence and with the express object of making it possible for negroes to earn a better living and, therefore, more effectively to support agencies for social uplift” (Du Bois 1933). The method of this approach is complicated when interacting with the framework put forth. With the material conditions, the need for coalition-building is clear and a needed feature for seeking structural change for the diminishment of racial otherness. When one first examines this notion against the framework, it may seem contradictory to form a coalition around race for the elimination of race, but there will be no tension if there are qualifications to said coalition. If the coalition does not seek to make eternal their classification and understand the purpose of the group is to eliminate the need for the group, then coalitions fall well within the framework of deconstructing otherness.

However, one example of such coalition-building that contradicts the framework in

very egregious ways is the rise of Black non-traditional religions which find their roots in the early 1900s. There are a few that are established, but they all share a similar underlying framework that is not liberation. They all seek, at the core, to make Blackness eternal. This is a direct response to ontological claims that Blackness was just a disease that grew malignant from whiteness. Some of these sought to flip this myth narrative on its head for the purposes of creating their own myths on race to gather support. Groups like the Nation of Islam are powerful organizations in the lexicon for perceived Black Liberation work, but their existence weakens any notion of deconstructing racial otherness, but rather flips the otherness on whiteness.

### **Gender Liberation**

Gender liberation efforts in Black spaces are not new endeavors to the 1890s to 1945, but there are few formal articulations in the likes of Booker T, Wells, or Du Bois. The Golden Age for these voices to break through to the common lexicon would not take place until years later which lies outside the scope of this research. However, there are still events which can be measured against the framework for Gender Liberation. The framework is as followed: Gender Liberation should seek to diminish and eliminate gendered categories and the power they hold.

One of the pivotal markers for gender liberation was the granting of the right to vote for women, but examined from the framework established by gender liberation we can see why it is measured as lackluster. The push for women to vote falls well within the lines of the framework, but the problem arises when white women pushed aside the need for other women to have the

right to vote. This was a deeply racialized issue, but this also negatively impacts the pursuit of gender liberation because there was still a superficial division of Black women and their right for parity under the law. The failure of meeting the standards of the framework cannot even be justified by the material conditions at the time, because Black men already could access the political system. Little to no justification exists as to why Black women were not allowed to take a step toward liberation as well.

While Black women were being pushed out of the larger gender liberation narrative, there were still Black women who fought to broaden the conversation and stay true to the framework. For example, Anna Julia Cooper saw the importance of more than a vote and envisioned many spaces where women should have a claim. She firmly argued that a “woman’s claim [should] be as broad in the concrete as in the abstract” (Cooper 1893). Cooper would lay the groundwork for many future gender liberation writers to think about the concrete and position women within it. When examined under the framework, Cooper’s assertion allows for the populating of women in all spaces and creating visibility. This represented an important step toward gender liberation established during this period.

### **Class Liberation**

Finally, there is the importance of the rise of class liberation in Black spaces during the early 1900s. Although entering formally into the United States as an established political group at the beginning of the 1900s, class liberation has a long history outside of the United States which has helped craft almost a direct connection from practical work to an underlying framework. The framework of class liberation is as follows: Class

liberation should seek to diminish and eliminate class categories and the power they hold.

Class liberation’s extensive history has a glaring hole in the way it interacts with race and class liberation. Many Black class liberators sought to address chasm of understanding that seemed to exist between white and Black advocates within the movement. White people in the movement believed that racism was simply a subsidiary of class struggle and would deconstruct on its own once the populace gained class consciousness. Black socialists agreed that racism was engineered by the owning class, but they also recognized that the once subsidiary was now its own superstructure which needed to be confronted. These critiques would bolster the larger class liberation movement to fully account for all those whom they would hope to liberate.

Black class consciousness theorist A. Phillip Randolph examines the reality of class and the intersection of Black liberation. There were strong rebukes that the “monetary contributions from white capitalists to Black churches, schools, and charities were the reason that the Black community remained ignorant” of their social situation (Cynthia 2006). Randolph and others sought to dissect the ways in which the owning class attempted to hamper class liberation by controlling all meeting places and centers of influence with capital. These were crucial steps into facing the ways that class liberation was inhibited by oppressive forces and created room for more in the class liberation space to flourish.

### **Objections**

There could still be some rejection of these frameworks on the grounds that they do

more to hinder the methods in which the oppressed pursue their freedom. How could a marginalized group conform to this framework when they are already restricted on all sides for their own survival already? One could say that these liberation movements should focus more on the material, and the non-material should be left on the side for slight reference and not an overarching tool.

This objection to these philosophical frameworks for liberation have adequate concern for the overall effectiveness of a movement over vague guidelines, but this is a dilemma that is not present in this work. This project sought to pull out what was already there. There was no creation of vague but confining guidelines from the abstract. Every notion of liberation was developed from the praxis of these movements. Instead, these frameworks seek to bolster the practical work of these movements by making sure they are creating future conditions that will better assist in the final goal of liberation. There is no tension, but rather a partnership of the material and the non-material in the hopes of creating constructive praxis.

### **Conclusion**

In conclusion, this project seeks to outline the practical framework of race, gender, and class in their liberation movements against a theory of truth, while considering their ability to conform to the said framework in praxis. While there was an overarching idea of liberation, there are different approaches when it comes to the implementations of liberation in specific marginalized groups. This work seeks to stress that the non-material framework of all Liberation movements should be laid out in the hopes of always working toward better material

conditions. While also using this framework to better understand the past of these movements, it is the hope of this project to establish the roadmap for future actions toward future progress.

### **References**

- Cooper, A. J., Lemert, C. C., Bhan, E., & Cooper, A. J. (1998). *The voice of Anna Julia Cooper: Including A voice from the South and other important essays, papers, and letters*. Lanham, MD: Rowman & Littlefield.
- Du Bois, W.E.B. (1933) *on Being Ashamed of oneself: An essay on race Pride*. The Crisis
- History.com Editors. (2018, March 8). Tulsa Race Massacre. Retrieved from <https://www.history.com/topics/roaring-twenties/tulsa-race-massacre>
- Taylor, C. (2006). *A. Philip Randolph: The religious journey of an African American labor leader*. New York: New York University Press, Washington, B. T. (2001). *Up from slavery: An autobiography*. New York: Quiet Vision Publications.
- WELLS-BARNETT, I. B. (2018). *SOUTHERN HORRORS: Lynch law in all its phases*. ALPHA EDITIONS.