ABSTRACT WRITING AND POSTER DESIGN

SPRING 2021

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OFFICE OF THE PROVOST
Key INFO for the Spring Semester

- **Abstracts** are due March 1. All abstracts must have titles. These are submitted online. We will send you the link.

- **Posters due date TBA.** Posters are submitted online via Canvas and another platform TBA. Aresty will send this information. The Aresty Center has poster templates available for download at [https://aresty.rutgers.edu/resources/students/poster-design-and-printing](https://aresty.rutgers.edu/resources/students/poster-design-and-printing)

- **Symposium** is Friday, April 30, 2021 on a **virtual platform**. Session times for presentations will be TBA.

- **Group projects** should submit one abstract/poster that lists the name of everyone in the group.

- **Faculty mentors** must be given time to review abstracts and posters. Students who submit posters without faculty approval will not be permitted to present.
Your Symposium Audience is Diverse

Your audience will include:

Experts in your field
• Your professors
• Colleagues
• Students in your major

Intelligent non-experts
• Professors outside your field
• Graduate students outside your field
• Judges

Novices
• Friends
• Family
• Prospective students

Your abstract, poster and presentation itself should be able to balance the demands of each of these groups.
The Parts of a Poster

1. **Abstract or Introduction:** What is the research question and why is it important?
2. **Background or Overview:** How does it relate to previous work and how is your approach different?
3. **Materials and Methods:** What is the method for answering the question?
4. **Results:** What did you find?
5. **Conclusions:** What are the implications for your field, businesses, or individuals?
6. **Citations:** Who influenced this work or made it possible?
What Makes an Effective Poster?

Consider the following posters and discuss these questions:

1. Where does your eye go first when you view a poster?
2. Compare images on the various posters. What purpose do the charts and graphs play? What makes them more or less clear?
3. What makes the flow (the arrangement of the sections) easier or harder to follow?
4. What do you notice about the amount of text and use of white space on various posters?
5. At what point does it become hard to keep reading a poster?
Examining the Use of Interactive Virtual Training for Teachers (IVT-T)
Sabine Khan, Ashim Aganja, Elisa S. Shernoff, Christine Lisette, & Alban Delemarre
Rutgers University

Abstract/Background
Disruptive behaviors in the classroom is a major cause for early career teachers to leave teaching, and first year teachers in urban districts are the most impacted. Interactive Virtual Teacher Training is a software proposed as a potential solution. IVT-T is designed to help teachers practice responding to disruptive avatars, reflect on their choices, and receive feedback to improve their performance in the real classroom. This poster describes the feasibility study of IVT-T.

Research Questions
★ What was the level of ease of use and the satisfaction with the system for teachers (usability)?
★ To what extent did teachers use IVT-T as designed (implementation)?
★ Did teachers’ behavior management skills improve before and after using IVT-T (promise)?

Procedures
★ To examine the feasibility of IVT-T, which comprised of the usability, implementation, and promise, teachers (n=30) in two high poverty schools participated.
★ Teachers were asked to use IVT-T 60 mins/week
★ Data was gathered for pre- and post-usage of IVT-T, including rating scales, direct observations, and training logs.

Results: Usability

Mean Usability Ratings (QUIS)

Results: Implementation

Average Weekly Usage By School

Results: Promise

★ Usability data suggests overall acceptable usability, despite variance over time.
★ Implementation data suggested overall lower usage than what was recommended, again with variability between schools and teachers. More realistic parameters of how much time teachers have for IVT-T is an important consideration going forward.
★ Statistically significant difference in use of academic and behavioral praise between Time 1 and Time 2 suggests progress of the model.
★ Confidence levels rising in teachers is significant.
★ Limitations of this study included that the sample size was small, there were no control groups, the study only lasted 8 weeks, and there were only two time points.

The research reported here was supported by the Institute of Education Sciences, U.S. Department of Education, through Grant R305A150166 to the Rutgers, the State University of New Jersey. The opinions expressed are those of the authors and do not represent views of the Institute or the U.S. Department of Education.
**Are Haspin and Bub1 kinases redundant for female meiotic chromosome segregation in Drosophila?**

**Victoria Wagner, Arunka Das, Kim S. McKim**

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**Spindle assembly in female meiosis**

During oocyte meiosis, microtubules nucleate around the chromosomes which condense to form the karyosome and extend outward to build the meiotic spindle. This process occurs in the absence of microtubule organizing centers called centrosomes which guide mitotic spindle assembly [1].

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**Haspin is not independently essential for chromosome segregation in oocytes**

To investigate the role of Haspin in meiotic chromosome segregation, we used a Minos element at 418 bp upstream of the coding region to excise the gene. 225 excisions were obtained, but no deletions.

**The chromosomal passenger complex is required for accurate spindle assembly**

The chromosomal passenger complex (CPC) regulates spindle assembly and chromosome segregation. It is composed of four proteins and localizes in a ring around chromatin to organize the spindle in meiosis [2].

When CPC member proteins INCENP and Aurora B (a/b) are knocked down in oocytes, CPC ring localization is not observed and no spindle assemblies [3].

There is evidence for CPC localization at centromeres in early metaphase during female meiotic spindle assembly (S. Radford, personal communication).

**Haspin and Bub1 kinases recruit CPC subunits**

Through interaction with Pds5, Haspin kinase phosphorylates Histone H3 at Thr3 and recruits the CPC-member protein Survivin, which positions Aurora B at centromeres in mitosis [4].

The phosphorylation of histone H3A at Thr120 by Bub1 kinase recruits Shugoshin protein MEI-3332 to centromeres, which in turn contributes to the localization of CPC-member Borealin and activation of Aurora B [5].

**References**


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**Haspin and Bub1 kinases are not redundant for female meiotic spindle assembly or chromosome segregation**

Previous research in mitotic HeLa cells suggests that these two CPC recruitment pathways are functionally redundant. Furthermore, cells lacking both, Haspin and MEI-3332 are synthetically lethal [6].

- Females expressing both, Haspin and Bub1 RNAi in their germlines are fertile and form bipolar oocyte spindles.

- There is no increase in nondisjunction in the Haspin and Bub1 double RNAi females when compared with wild type. This suggests there is no evidence that Haspin and Bub1 are functionally redundant for oocyte chromosome segregation.

**Understanding CPC Localization**

To look at CPC localization in metaphase of Haspin and Bub1 double RNAi females, we imaged their oocytes and stain for CPC member INCENP.

Since these experiments rely on the use of a double knockdown that can have variable effects on protein expression, we will create a Pds5 and mei-3332 double mutant to further test the hypothesis of two redundant pathways in female meiotic CPC localization.

**Acknowledgements**

We would like to thank TRP at Harvard University for RNAi lines; the Rutgers University Division of Life Sciences and the Aresty Research Center for funding; and the members of the McKim lab for all of their assistance and continued support.
Abstract

The history of western art music as it is taught in schools and universities often reads as a history of musical composition, focusing heavily on the work of white, male composers while marginalizing the contributions of women and people of color. Our project, *Women In Art Music (WAM)*, aims to share the stories of women throughout history who contributed to the western musical tradition. In order to do this, we consult a wide range of academic sources - including journal articles, books, and live interviews - and use our findings to compile mini-documentaries, podcasts, and articles about these remarkable women. Our work often features interviews with scholars who are experts on the topics we are studying. We then publish these to our website, [https://wam.rutgers.edu/](https://wam.rutgers.edu/), with the goal of making these stories accessible to all.

In line with performers and organizations seeking to promote the musical contributions of women, our project has brought more attention to the work of women composers throughout history. We are working on several new publications to our website, as well as reviewing content submitted by faculty at other academic institutions, but we are especially looking forward to curating this year’s student concert highlighting works by women composers. We believe that it is incredibly important to have an accessible collection of resources about women in art music in order to empower today’s women musicians and to encourage a more well-rounded and nuanced view of music history.

Our Process

Each project begins a little differently, but the end goal is the same: to provide an easily accessible product that helps to shed light on work that has not been previously given the attention it deserves. First, we choose a focus. This choice can be made in a variety of ways, whether a recently published book piqued our interest, a new piece of music was just released, or someone from an outside source requests to be featured on our site. Once we decide on the direction, we then do our own research, and start to format the direction we would like the final product to go in. From here we will approach an expert on the subject generally the author of said book, or whoever approached us and set up an interview. We then record and edit the interview so that it is both easily understandable, and appealing to a general audience. This interview will eventually turn into a documentary, which will be published on the WAM website.

The Future of Our Project

This project aims to both educate and inspire. In line with the social progress being made in the world currently, we want to start a movement that will bring to light all of the hard work being done by women that has gone unnoticed. We hope to inspire current female artists to continue creating, and to not feel deterred by lack of recognition in our society. We hope to foster a culture where universities and other educational institutions place a higher level of importance on the contributions of female artists by including them in history courses, performing their works, and more. The goal of our work is to provide attention to those who have been buried in the pages of history, as well as to inspire those just getting started.

Sample Spotlights

**Women of exceptional musical skill contributed to developments in the musical life of the Italian city of Ferrara in the late sixteenth century. One famous ensemble, the concerto delle dame, has been known about for centuries, but only from the perspective of its patron, Duke Alfonso I d’Este. This music was his pride and joy, and he kept it secret enough that everyone knew about it, but no one could replicate it. However, the women that made up the concerto delle dame were accomplished musicians in their own right, and deserve to be acknowledged as such. Music played a large part in the lives of women throughout Ferrara - in the courts, in the convents, and beyond the city. Women in the Este court were trained in music from a young age, and would have learned both vocal and instrumental performance, as well as composition. Alfonso’s daughter, Leonora d’Este, was a nun at Corpus Domini, and published some works for women’s voices anonymously.**

**Pamela Z**

Pamela Z is an electroacoustic composer and performer who combines traditional bel canto-style singing with vocal extended techniques and electronic effects in order to create a unique performance experience. 2 studied voice in school, but in her free time gravitated toward the singer-songwriter scene. Incorporating live electronics into her music allows her to reconcile these two interests and to bring her own creativity and innovation to her music-making. Pamela Z subverts the audience’s association of vocal music with femininity by incorporating aspects of traditionally ‘masculine’ electronic music performance. As an electronic musician, musicologist Rachael Lansang, we discuss several of Pamela Z’s pieces, including “Madagasga” and “Quatre Couches”, which utilize techniques such as digital delay and looping that enable her to use her voice in an entirely new way. She has collaborated with various other artists and acoustic ensembles, including a string quartet. She is still active and performs regularly internationally - you can find out more about her recent work at [pamelaz.com](http://pamelaz.com).

We would like extend our sincerest gratitude to all that contributed to our project this year including Sharon Mirchandani, Laurie Stras, Rachael Lansang, and Candace Bailey, our video editor Arlyn Jimenez, our advisor Dr. Rebecca Cypess, and Rutgers Aresty Undergraduate Research Department.
Crystal Convergence of the Twister Ribozyme

Grace L. Herdelin, Colin S. Gaines, and Darrin M. York
Center for Integrative Proteomics Research, Laboratory for Biomolecular Simulation Research, Department of Chemistry & Chemical Biology, Rutgers University, Piscataway, NJ.

Abstract

The twister ribosome (TR) is a recently discovered class of self-cleaving RNA that catalyzes G2-transphosphorilation as an RNase III-related mechanism. There are four main crystal structures for the TR I sequence: PDB 3OE5, 4L2K, 4G24, 4Q0U, and 4Q1U. Each of these have slightly different primary structures (while still conforming to the consensus sequence) that lead to nuanced differences in secondary and tertiary structures, as observed with a very cryocrystallinity. However, in solution, we hypothesize that all of these structures converge to a single active site - the platform. This platform utilizes CP y-axis motions to disengage molecular dynamics simulations (MD) to arrive at this active site in solution. Computational resources (Hecatone) were provided through the Office of Advanced Computing Research.

Catalytic Strategies for 2'-O-transphosphorylation

Mechanism for 2'-O-transphosphorylation

\[ \text{Ribozyme} \rightarrow \text{Product} + \text{Sodium Phosphate} \]

Results

Ten simulations of 1G21 showed a state change in which the phosphate bond is lost between the G2 of the 3' and the G1p of the 2' of the phosphate (P'). With this hydrogen bond lost, the identity of the correct active site is randomized. The groups that can form the G3211U - A1p-p-G2 hydrogen bond over time and event shows a clear, steady, and quick change in the distance. The diagram below shows exactly what state change occurred - the phosphates roll over and the important bond is lost in 3D. The model state change does not occur until 30 ps. There is experimental evidence that this hydrogen bond is the essential catalytic site as further simulations may be necessary to confirm this hypothesis (1).

Acknowledgements

I am grateful to the support provided by the National Institutes of Health (Grants GM12549 and GM116746 to L.K.N.) and the National Institutes of Health under Grant No. R21HD092056 and by the Center for Genomic and Engineering Discovery Environment (CGEDE), which is supported by National Science Foundation Grant No. 1644773 (Principal PI: G.M.C. 201101). This work benefited from access to IGU Research Instruments. Thank you to Colin S. Gaines and Darrin M. York for their guidance and support provided for the training of this project.

References


Future Work

The IRE3 crystal structure needs to be simulated with and without the telomerase and with the release of a telomere. The PDB model can be simulated to obtain the unbound state; once it is made more stable further simulations and analysis can be carried. Similarly, 4Q0U has a stem that must be simulated to determine whether it is the active site or not. The simulation of 4Q1U needs to be carried out for random residues as well. The G2112-A1p-p-G2 hydrogen bond distance can be modeled with the addition of a carbon, which may or may not be necessary. A change in the G41U-A41p interaction distance can be modeled to determine whether the carbon is necessary or not. Further distance residues can be modeled. If we simulate the conformation with the addition of carbon, we hypothesize that the hydrogen bond will remain present in the active site will be restored.
Relations Between Aerobic Fitness, Trait Anxiety, and Cardiovascular Responses to Stress
Colleen D. Schreier, Ryan L. Olson, Brandon L. Alderman
Department of Exercise Science, Rutgers University

ABSTRACT
Investigations have indicated that aerobic fitness is strongly associated with reduced risk of mortality from both cardiovascular and non-cardiovascular diseases (Burkett et al., 2004). Our proposed mechanism for the protective effect of cardiovascular fitness is a decrease in cardiovascular reactivity (CVR) to psychological stress and improved recovery from stressors (Spiegel et al., 2004). In contrast, trait anxiety and hostility have been shown to be independent risk factors for coronary heart disease (CHD) (Miler et al., 2004). Therefore, the purpose of this study was to examine the relationship between aerobic fitness and trait anxiety on CVR and recovery from psychological stressors. A secondary purpose was to examine the moderating influence of aerobic fitness on the trait anxiety and stress-related CVR relationship.

HYPOTHESES
1. Greater aerobically fit individuals will exhibit lower levels of CVR in response to psychological stress.
2. Individuals with higher trait anxiety levels will evidence greater cardiovascular responses to psychological stress.
3. Aerobic fitness will moderate the relationship between trait anxiety and cardiovascular stress responses.

INTRODUCTION
A recent meta-analysis of the cross-sectional approach to aerobic fitness, which suggests that adaptations resulting from regular physical activity (e.g., aerobic fitness) lead to similar adaptations in response to psychological stressors (U.A. Young & Jager, 2008). For example, regular physical activity that resulted in increased physical activity, attenuated blood pressure, increased cardiovascular health, and decreased sympathetic activity in response to psychological stressors (Ruiz et al., 2004; J. D. Wilson & Dell, 2004).

METHODS
Maximal Aerobic Fitness
• VO2peak
Psychological Stressors
• Modified Spielberg Trait Anxiety Inventory (STAI), State Anxiety Inventory (SAI), Trait Anger Inventory (TAI), Trait Hostility Inventory (THI), Trait Hostility Scale, State Hostility Scale

RESULTS
• A significant increase in CRT was observed in the high fit group during the Stressor task, p < .05.
• Greater high frequency HRV was observed in individuals at baseline and during the 5-minute recovery period, p < .05.
• High anxiety group displayed lower HRV and CRT for the Stressor task, trending towards significance, p < .06.
• No significant relationships between hostility and CRT or recovery CRT were found, p > .05.

CONCLUSIONS
• Greater anxiety is associated with greater CV reactivity and slower CRT recovery from psychological stressors. These results further support the hypothesis that aerobic fitness training may increase the ability of cardiovascular systems to control responses to acute stressors.
• Therefore, the measures were effective as demonstrated by the CV variables as well as lower HRV (parasympathetic activity) during psychological stress exposure.
• Contrary to expectations, trait hostility was not associated with CRT stress responses.
• Physical fitness was associated with attenuated CRT responses to the Stressor task and although not statistically significant, also had a moderating effect on CRT responses.
• Fatigue was related to lower HR and CRT values at rest, suggesting that severe absolute cardiovascular deconditioning in fit individuals might explain the attenuated stress responses observed among fit individuals.
• Fatigue was associated with lower HRV on baseline and during recovery, indicating higher vagally mediated respiratory sinus arrhythmia.
• Although associations between aerobic fitness and attenuated cardiovascular reactivity may provide an additional mechanism through which exercise may lead to improvements in cardiovascular health and decrease risk for adverse cardiovascular outcomes, including hypertension and coronary heart disease.

ACKNOWLEDGEMENT
We would like to thank Rutgers University, the Artsy Research Center for Undergraduates, and the School of Arts and Sciences for their funding and assistance with this project.
Walking Through Italian Literature and Film
Mihaela Sanderson, Aresty Center Research Assistant to Professor Andrea Baldi, Ph.D
Rutgers University - School of Arts and Sciences - Department of Italian

Introduction

Engaging in what at first seems like an ordinary act of life, upon reflection we realize that walking becomes virtual in establishing our perception of place. An essential kinesthetic behavior helps us to construct our surroundings and use our environment to shape our philosophical thinking. In the moment we start walking, we essentially define the topography and the landscape of the city from an individual perspective. But, by a very act, as passersby, we become the sole architects in redefining and mapping the city in a new, different way. The common practice of walking not only permits us to geographically elaborate on the countless facets of the outside world, but often leads us to serious thought, consideration, reflection and soul searching.

Background

The Walking Through Italian Literature and Film research project originated from the larger concept of flânerie. The objective of this research project is to use a small scale base for a new course designed to examine different literary texts and films, all bound by a common theme, i.e. the practice of walking. Through the practice of walking in the city we are working in defining not only the geography of the space, but we are projecting new dimensions of cultural memory, the prioritization of individual freedom in relation to an ever-changing socio-economic framework, marked by the constant scientific and technological progress of the modernity. Among such literary texts, Maritlde Serao’s realistic short story entitled Una Fiorina is perfectly detecting such dynamics. In this short story Serao not only reveals the practice of walking and the mapping of the city from that individual perspective, but also exposes the cultural practices and different characteristics pertaining to the social dimensions of that time.

Methods

My research aimed to study the representation of walking in the Italian Literature and Film of the 19th and 20th century. I have solely worked on the short story Una Fiorina written by Matilde Serao. The first step in my research was to break down and organize the protagonist’s journey into four main sections. Two documents found at the New York Public Library were essential. After carefully studying a map of the city of Naples dating 1890, the document entitled ‘Risanamento della Città di Napoli del 1899’ which I translated from Italian into English, I reconstructed and captured in digital maps (Google Maps) the main character’s journey in order to reach a deeper understanding of the relationship between the protagonist and her urban environment. Such relationships shed light on historical intricacies, social and cultural dynamics of that period.

Discussion

The main character’s meandering experience on the streets of Naples is strictly delimited by specific geographical parameters and in conformity with the reality of her social dimension. Serao’s story sets the stage of a broken Naples, in which the cityscape is minutely observed through the visual, auditory and olfactory senses, thus revealing the spatial relationship within the city as bounded to two distinct spheres: the bright, dominant squares anchoring luxurious shops, and the dark slums of the city marked by the lack of sanitation, the accumulation of sewage, high rates of disease, crime and poverty.

While working on the short story I have come across two particular details which influenced my research and at the same time guided its outcome. Such findings are closely connected to Naples’s major urban intervention started in 1885 as a result of a serious cholera outbreak, and later on, the intense destruction of World War II. Both events radically changed the architecture of the most historic districts of the city. However, it was Naples’s urban rehabilitation that enabled extensively the replacement of pre-existing structures with new buildings, roads and squares. In reality, instead of solving the problems, it created a facade meant to conceal the poverty and the degradation of those areas. As a result, I have created a map that exposes the changes brought by the Rehabilitation, which helps us appreciate the city as it was then, as well as the struggles of the Neapolitan people.

Serao’s use of the practice of walking within the city space is an important tool that highlights much larger issues of social injustice and economic disparities, universal themes that calls for further research in order to better understand the past in relation to today’s social and cultural practices.

Glossary

- Kinesthetic: the use of the body and senses to learn about the world around you.
- Flânerie: a 19th/20th century French term denoting strolling, idling. The term was further explored in 19th century in the writings of Charles Baudelaire accumulating the significant meaning of the casual wanderer, the observer and the reporter of the street life in the modern city.
- Una Fiorina- The Flower girl.
- Risanamento della Città di Napoli 1899 - Rehabilitation of the City of Naples 1899 documents, but the project initiated in 1885, a year after the cholera outbreak in 1884.

Acknowledgements

I would like to express my gratitude to Professor Baldi for giving me this extraordinary opportunity to learn and grow, for his encouragement, continued support and guidance throughout the year. Many thanks to Francesca Gianetti, Digital Humanities Librarian Research at Archibald S. Alexander Library for providing me with a crash course in digital mapping. I cannot express enough thanks to the Aresty Research Center, the School of Arts and Sciences, and to my friends Nicolaia Romano and Carol Cofone for their invaluable advice. I would also like to acknowledge the New York Public Library staff, especially the map division for their patience and help provided during my week long stay while doing research.
Abstracts are Microcosms of Posters

- **Title** – A succinct description of the study or its findings. This is also the title of the poster.
- **Introduction** – What is the research question and why is it important?
- **Background** – How is your specific approach unique?
- **Methods or mode of analysis** – What is the method for addressing your question?
- **Results** - What did you find?
- **Conclusions** – What are the implications? Why should we care?
The Relationship between Undergraduate Research Participation and Subsequent Research Performance of Early Career STEM Graduate Students

Undergraduate research experiences have been adopted across higher education institutions. However, most studies examining benefits derived from undergraduate research rely on self-report of skill development.

This study used an empirical assessment of research skills to investigate associations between undergraduate research experiences and research skill performance in graduate school. Research experience characteristics including duration, autonomy, collaboration, and motivation were also examined.

Undergraduate research experience was linked to heightened graduate school performance in all research skills assessed. While autonomy and collaboration were highlighted in student interviews, duration was most strongly correlated to significant increases in research skill performance.

Based on these findings, we advocate for the inclusion of research experiences into the undergraduate science curriculum coupled with the creation of centralized offices of undergraduate research and faculty incentives for involving undergraduates in their research.

Questions/Contact us!

- Website: aresty.rutgers.edu

- E-mail: aresty@echo.rutgers.edu

- https://www.facebook.com/arestyresearchcenter/

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