ABSTRACT WRITING AND POSTER DESIGN

SPRING 2022
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 29, 2022. 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)
Sabeen 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)?

Results: Usability
Mean Usability Ratings (QUIS)

Results: Implementation
Average Weekly Usage By School

Results: Promise

Going Forward
★ 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, Arunika Das, Kim S. McKim**
Waksman Institute, Rutgers University, Piscataway, NJ 08854

### 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].

### 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 (α) are knocked down in oocytes, CPC-ring localization is not observed and no spindle assemblies [3].
- There is also 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 H2A 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].

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

- In order to get a deletion of Haspin α, we used a Minos element 418 bp upstream of the coding region to excise the gene. 225 excisions were obtained, but no deletions.

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<tr>
<th>Flies</th>
<th>TubulinGal4</th>
<th>nos-Gal4</th>
<th>mat-o-Gal4</th>
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<tbody>
<tr>
<td>Haspin RNAi</td>
<td>Viable</td>
<td>Fertile</td>
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- These data collected using a 85% knockdown of Haspin suggest that Haspin kinase is not required for mitosis or female meiosis.

### Bub1 is not essential for female meiotic chromosome segregation

- Expression of Bub1 RNAi in various tissues was performed using a 98% knockdown of Bub1 transcript. These results suggest Bub1 is not required for mitosis or female meiosis.

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

### 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 synthetic lethal [6].
- Females expressing both, Haspin and Bub1 RNAi in their germlines are fertile and form bipolar oocyte spindles.

### Understanding CPC Localization

- 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.

### References


### Acknowledgements

We would like to thank TRIP at Harvard University for RNAi lines; the Rutgers University Division of Life Sciences and the Arasy Research Center for funding; and the members of the McKim lab for all of their assistance and continued support.
WAM! Women in Art Music
Nathan Bishop, Glynis Gourhan, Bridget Knodel, Emily McGovern, Tracey Miller, and Nicholas Wagner

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/, 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 throughout 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.

Marga Richter
The career of American composer Marga Richter (born October 21, 1926) spanned most of the twentieth century. She worked with dancers, recorded with MGM, dabbled in the 12-tone technique (though she disliked it), and developed a neo-romantic, or, as she once called it, a "transcendental expressionist" style. She was the first female to graduate from Juilliard School of Music with a master’s degree in composition and composed over 100 works in a variety of genres including large-scale orchestral works. Richter forged a strong connection with nature, her biggest musical influence along with Asian influences. Although Richter has resisted the label "feminist," her involvement in women’s musical organizations and other aspects of her career point to a keen awareness of her exceptional status. Richter has noted the persistent bias against women in the field composition; as she has explained, "the very term tells the story. There is no category called ‘men composers.’"

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 practice. Z studied voice in school, but in her free time gravitated toward the singer-songwriter scene. Incorporating live electronics into her music allowed 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, including the presence of a musicologist Rachael Lansang, we discuss several of Pamela Z’s pieces, including “Badagada’ 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.

Women of Ferrara Italy

Marga Richter

Pamela Z

Women of Ferrara Italy

Acknowledgements
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 Aryn Jimenez, our advisor Dr. Rebecca Cypess, and Rutgers Aresty Undergraduate Research Department.
Crystal Convergence of the Twister Ribozyme
Grace L. Herdlin, 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 ribozyme (TR) is a recently discovered class of small self-splicing RNA ribozymes. TR-o-transphosphorylation as an Ni2+-catalyzed reaction. There are four main crystal structures deposited for the TR enzyme: PDB 3G1Q, 413G, 43Q1, and 3G1Q. Each of these have slightly different primary structures (while still conforming to the consensus sequence) that lead to numerous differences in secondary and tertiary structures, as observed with their crystallography. However, in solution, we hypothesize that all of these structures converge to a single active site - the Ni platform. This project utilized CPMD-assisted molecular dynamics simulations (MD) to arrive at this active site in solution. Computational resources (HPC) were provided through the Office of Advanced Computing Research.

Materials and Methods
In general, the procedure for our experiments follows the four charts above. For any unique PDB file we simulate, first initialize the Ni platform - Proposed Active Site Motif. Then hydrogen bonding, metal ion binding, nucleic acid interaction, and enzyme specificity are added. Each of the four TR enzymes in the PDB was equilibrated and then adjusted to see.

Results
Ten simulations of 413G showed a state change in which the hydrogen bond is lost between the exo-phosphate and the 5'-o-ribose of the 3'-terminal phosphate. This hydrogen bond loss, the metal ion, and the Ni platform stabilize the active site. The simulations show that the hydrogen bond distance is stable in time and shows a clear, steady, and quick change in the distance. The distance between the Ni and the 3'-terminal phosphate is stable and shows a clear, steady, and quick change in the distance. The distance between the Ni and the 3'-terminal phosphate is stable and shows a clear, steady, and quick change in the distance.

Conclusions
In order to determine whether the crystals converge to a common active site, more simulations must be done. Thus, further simulations that explored the 3G1Q and 413G platforms are necessary. (4) It was observed that the active site of the ribozyme is stable and all hydrogen bonds necessary play a role in its stability. However, further simulations for each crystal structure are promising.

Future Work
The 413G crystal structure needs to be simulated with and without the magnesium and without the nickel. MD in solution needs to be simulated due to lack of unblending; this is made more stable further simulations and analysis can be run. Similarly, 43Q1 has a step that must be simulated and the catalysis active site is the crystal. The simulations for 413G need to be continued for on-surface interactions as well. The Ni platform distance can be optimized with the addition of a catalyst, which may or may not be present in the aptamer. The catalyst may need to be in the active site for the reaction to occur. If we simulate the ribozyme with the addition of an active site, we hypothesize that the hydrogen bond distance will remain the same and the active site will be formed.

Acknowledgements
I am grateful for the support provided by the National Institutes of Health (Grants GM08254 and GM016746 to C.S. Y.) Computational resources were provided by the National Institutes of Health (Grant No. Y1/HG/10050-01) and by the Center for Scientific Computing and Engineering Discovery Environment (CSCED), which is supported by National Science Foundation Grant No. OCI-0725134 (Project No. 10MCB1101). This work benefited from access to HPC Research Instruments. Thank you to Colin S. Gaines and Darrin M. York for the guidance and support provided for the fabrication of this project.

References
2. Eiler et al., PNAS 2005, 9 (29).
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

In this study, we examined the relationship between trait anxiety and cardiovascular and physiological responses to stress. Participants were divided into high and low trait anxiety groups based on the Spielberger Trait Anxiety Inventory. The stressor was a modified Trier Social Stress Test (TSST), which elicited cortisol and heart rate responses. Significant differences were found between the high and low anxiety groups in heart rate, systolic blood pressure, and cortisol levels. The results suggest that trait anxiety may increase cardiovascular and physiological stress responses to social stressors.

RESULTS

- A significant increase in DHP was observed in the high anxiety group compared to the low anxiety group, p < 0.05.
- There was a significant difference in HR at baseline and during the 5-minute recovery period, p < 0.05.
- High anxiety group displayed higher SBP and DBP for the stress task, tending towards significance, p < 0.05.
- No significant differences were found in HR or DBP recovery.

CONCLUSIONS

- Greater anxiety is associated with greater CV reactivity and slower HRV recovery from psychological stressors. These results further suggest that aerobic fitness training may increase the ability of cardiovascular systems to control responses to acute stressors.
- Increased cortisol levels were observed in the high anxiety group, suggesting that stressors may have different effects on cortisol levels in individuals with higher anxiety.
- Overall, the findings indicate that trait anxiety is associated with greater cardiovascular reactivity and slower HRV recovery from psychological stressors.

ACKNOWLEDGEMENT

We would like to thank Rutgers University, the Exercise 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 fact of life, upon reflection we realize that walking becomes virtual in establishing our perception of place. An essential kinesthetic behavior helps us to alter our surroundings and our environment to shape our philosophical thinking. In the moment we start walking, we essentially redefine the topography and the landscape of the city from an unique, individual perspective. By that 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.

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 Fiorita” 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 city, the 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.

6 Filantropia: a 16th/17th 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.

7 Una Fiorita: The Flower girl.

8 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

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 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 Nicola Romano and Carol Cocone 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 work 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!

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