ABSTRACT WRITING AND POSTER DESIGN

SPRING 2020

aretsty.rutgers.edu/symposium

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** are due April 10 (but people are encouraged to print elsewhere). Posters are submitted online. 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 24, 2020 in the Livingston Student Center. There are two sessions (AM and PM) and students will select which one they prefer when they submit their abstracts.

- **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.
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?
Examing 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)?

Visual of the Simulation

Participants

<table>
<thead>
<tr>
<th>Mean Years Teaching (LSI)</th>
<th>Grade/Race</th>
<th>Highest Degree</th>
<th>Gender Race/Ethnicity</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.5 (2.29)</td>
<td>7-10th</td>
<td>49% B.A./B.S.</td>
<td>92% Female�</td>
</tr>
<tr>
<td>Range = 1-30 years</td>
<td>Missing (n=1)</td>
<td>22% African American</td>
<td>33% Hispanic</td>
</tr>
<tr>
<td>Academic Res. Opportunities</td>
<td>14.3, 36.3</td>
<td>4% Middle Eastern</td>
<td>4% Asian American</td>
</tr>
<tr>
<td>Academic Praise</td>
<td>4.2, 5.4</td>
<td>26% European American</td>
<td>3.7% Caucasian</td>
</tr>
<tr>
<td>Academic Corrective Feedback</td>
<td>8.0, 11.2</td>
<td>100% White</td>
<td></td>
</tr>
</tbody>
</table>

Goind 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.
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

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*, we used a Minos element 418 bp upstream of the coding region to excise the gene. 225 exons were obtained, but no deletions.

These data collected using a 65% 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.

- Females expressing *Bub1* RNAi in their germlines did not have increased nondisjunction events. This indicates that *Bub1* is not essential for accurate chromosome segregation in oocytes.

References


Acknowledgements

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

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 sythetic 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 meiosis of *Haspin* and *Bub1* double RNAi females, we will image 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.
WAM! Women in Art Music
Nathan Bishop, Glynnis 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.

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 just 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 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-styling with vocal extended techniques and electronic effects in order to create a unique performance experience. 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 performance. In her work, Pamela Z collaborates with composers and other artists, resulting in a string quartet. She is still active and performs regularly internationally - you can find out more about her recent work at pamelaZ.com.

Our Process

Choose a Topic → Gather Information

Edit and Publish ← Interview an Expert

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.

The Future of Our Project

On April 7th, 2019 WAM RAs organized a concert that exclusively highlighted the works of female composers both past and contemporary.

Visit our website: wam.rutgers.edu

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 Arlyn Jimenez, our advisor Dr. Rebecca Cypess, and Rutgers Arestry 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 (rTi) is a recently discovered class of self-cleaving RNA catalyzed by a transphosphorylation as an RNA-induced mechanism. There are four main crystal structures for the rTi sequence, PDB 3eq5, 3eq8, 4eq2, and 4eq3, and each of these forms slightly different tertiary structures with the same secondary structures, and finally, there is a crystallography. However, in solution, we hypothesize that all of these structures converge to a single active site. This platform. The project utilized OPLS parameterized molecular dynamics simulations (MDS) to arrive at this active site in solution. Computational resources (HPC) were provided through the Office of Advanced Computing Research.

Catalytic Strategies for 2'-O-transphosphorylation

The mechanism of 2'-O-transphosphorylation involves the nucleotide backbone modification. The ribozyme catalyzes the transfer of a phosphate group from a nucleotide to a ribose moiety. The active site of the ribozyme is formed by the backbone conformation and hydrogen bonding patterns.

Materials and Methods

In general, the procedures for our experiments follow the four charts above. For every unique PDB file, we simulated the conditions for the ribozyme crystal structure. Then, we examined the structures and then stereomayed the residues that were to be re-equilibrated. Each of the four rTi structures in the PDB database was equilibrated and scores were adjusted as necessary.

Results

Ten simulations of 1G3I showed a state change in which the two phosphate bonds are broken and the ribose ring is re-oriented. The hydrogen bonds between the backbone of the ribozyme and the phosphate groups change, showing a 40% decrease in the value of the hydrogen bond. The bond length between the two phosphates decreases from 3.2 Å to 3.0 Å, and the dihedral angles change from 30° to 45°. Therefore, the hydrogen bond conformation is altered, and further simulations may be necessary for this structure.

Future Work

The 4P1G crystal structure needs to be simulated with an explicit titration and an intrinsic protonation state. 4P1G is not solvated, and the hydrogen bond distance between the two phosphates, which is 3.0 Å, is only 2.8 Å in the crystal.

Conclusions

In order to determine whether the crystals converge to a common active site, more simulations must be done. Future simulations will be performed to further study the active site and structure of the ribozyme.

Acknowledgements

I am grateful to the support provided by the National Institutes of Health ( Grants GM02544 and GM16748 to R.K.Y.) and the National Institutes of Health (Grant No. 1R15GM120829-01A1). I am also grateful to Dr. York for his assistance and support for this project.

References

Relations Between Aerobic Fitness, Trait Anxiety, and Cardiovascular Responses to Stress
Colleen D. Schreirer, 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 (Bouillon et al., 2001). One proposed mechanism for the protective effect of cardiovascular fitness is reduction in cardiovascular reactivity (CVR) to psychological stress, and improved recovery from stressors (Spalding et al., 2004). In contrast, trait anxiety and hostility have been shown to be independent risk factors for coronary heart disease (CHD) (Miller et al., 1996). Therefore, the purpose of this study was to examine the relationship between aerobic fitness and trait anxiety in 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 and faster recovery 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
Recent evidence for the cross-nerve system theory which suggests that adaptations resulting from regular physical activity-training leads to similar adaptations in response to psychological stressors (Teum, Young, & Zagor, 1998). For example, regular physical activity that results in increased heart rate, attenuates blood pressure, increased cardiac autonomic activity and increased sympathetic activity in response to psychological stressors (Butler et al., 2000; O'Leary & Dell, 2001).

METHODS
Maximal Aerobic Fitness
- VO2 peak
- Psychological Stressors:
  - modified Stroop task
  - Serial Subtraction task: Continuous subtraction of 2-digit number (17, 15, and 13) from a random 4-digit number

Cardiovascular Autonomic Measures
HR and HRV were continuously assessed during the stressors task. Through the use of electrocardiography, pre-ejection period (PEP) and high frequency (0.15-0.4 Hz) heart rate variability (HRV) were assessed as primary measures of sympathetic and parasympathetic cardiac control, respectively.

RESULTS
- Greater anxiety was 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 stressors.

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 stressors.
- Future research should examine the potential for aerobic fitness training to modulate cardiovascular responses to stressors.

ACKNOWLEDGEMENT
We would like to thank Rutgers University, the Areas Research Center for Understanding, 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 vital in establishing our perception of place. An essential kinaesthetic behavior helps us articulate 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 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.

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 supplement the 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 we are engaging, 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, Marilide Sera’s? realistic short story entitled Una Fiorita is perfectly detecting such dynamics. In this short story Sera 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.

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 written by Matilde Sera. 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 The 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.

Urban Structure of the Journey in “Una Fiorita”

NYPRL Topographic Map of the City of Naples 1899

NYPRL Topographic Map of the City of Naples 1899

NYPRL Topographic Map of the City of Naples 1899

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 reporte of the street life in the modern city.

Una Fiorita - The Flower girl.

Risanamento della Città di Napoli 1899 - Rehabilitation of the City of Naples 1899 document, but the project initiated in 1885, a year after the cholera outbreak in 1884.

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. Sera’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 outcomes. Such findings are closely connected to Naples’ 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’ 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.

Sera’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 pass in relation to today’s social and cultural practices.

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 Nicolita 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
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- https://www.facebook.com/arestyresearchcenter/
- New Office Location:
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