

# Aquila

The FGCU Student Research Journal



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## CALL FOR SUBMISSIONS

We are accepting submissions of student scholarly articles for Volume 4, Issue 1 (Fall 2017). **Authors who submit before the deadline of Sunday, April 30, 2017 can expect to receive a decision in May and have their manuscript published in the Fall issue if accepted.**

*Aquila* will accept rolling submissions outside of this deadline; however, we cannot predict decision and publication dates for rolling submissions.

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## A Message from Dr. Yih, Associate Vice President for Research

Research is the innovation or revolution of human intelligence to improve the quality of life. Research is also defined by the U.S. federal sponsoring agencies as “*a systematic study intended to increase knowledge or understanding of the subject studied, a systematic study specifically directed toward applying new knowledge to meet a recognized need, or a systematic application of knowledge to the production of useful materials, devices, systems or methods.*”

FGCU is a regional, comprehensive public university known for its primary mission of fostering a student-centered, excellence in teaching environment. Nevertheless, research plays an equally important role in the daily practice of our faculty and students to advance their academic careers. Research enriches students’ hands-on experience in solving real-world problems. In particular, faculty mentored, interdisciplinary student research is strongly encouraged and motivated across the FGCU campus.



The Council on Undergraduate Research (CUR) defines undergraduate research as “*an inquiry or investigation conducted by an undergraduate student that makes an original intellectual or creative contribution to the discipline.*” CUR believes that faculty members enhance their teaching and contribution to society by remaining active in research and by involving undergraduates in research. Students can excel and succeed in their studies through participation in undergraduate research.

*Aquila* (Latin for *eagle*) is one of the few student research journals in the nation managed by FGCU students under the mentorship of FGCU faculty. Both undergraduate and graduate students are able to publish their intellectual findings in *Aquila*.

The Office of Research & Graduate Studies (ORGS) is privileged to have been involved in founding *Aquila* and will continue to collaborate with other university offices (e.g., the Office of Undergraduate Scholarship in the Office of Undergraduate Studies) to promote and support faculty and student research across all disciplines at FGCU.

As we look into the future, research will continue to be an essential part of our mission. I encourage all FGCU students to participate in research activities to extend and enhance their learning experience. I also challenge all FGCU students to engage with the best and brightest FGCU faculty researchers to explore the boundless human intelligence.

*T.C. Yih, Ph.D.*

Associate Vice President for Research & Dean of Graduate Studies  
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# *Aquila* – The FGCU Student Research Journal

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## From the Editorial Board

Humans are curious by nature and have an inborn desire to ask questions and find answers. The articles in this edition of *Aquila*, as well as the presentations at the 2017 FGCU Research Day, demonstrate how well our students and faculty are channeling this natural curiosity into outstanding scholarship. Just like in previous issues, the range of topics covered by our graduate and undergraduate authors is exciting and impressive. Having three articles written by graduate students is another milestone for us, and we hope to publish more in future editions.

A critical moment for student authors, who submit their first article to a peer reviewed journal, comes when they receive the email informing them of the comments and suggestions made by reviewers. Even seasoned authors find it sometimes hard to accept those critical voices, although we know by now that the final article will be stronger because of the changes we make. However, students facing the same situation for the first time need guidance and support so they can use the feedback as a learning experience that helps them grow as a scholar. Thanks to dedicated and patient faculty mentors, our student authors handled even repeated review-and-revise cycles very well and the articles published pay tribute to their hard work and dedication to succeed.

We are very grateful for the continued financial support from the FCGU Student Government Senate, who again passed a bill to help us pay for the printing costs of this issue of *Aquila*. We would also like to thank the Deans of all the Colleges for supporting student scholarship, especially those who placed paid advertisements in this issue. The students of our Registered Student Organization (*Aquila* Student Research Journal) will use the funds raised to support student scholarship at FGCU starting with the academic year 2017/18. This is another shining example of the FGCU Effect.

I hope you will enjoy reading the articles in this issue as much as the reviewers and I. If you missed past issues, please go to our website ([fgcu.edu/aquila](http://fgcu.edu/aquila)), where you will find more than we can offer you in print. Hopefully this edition of *Aquila* will inspire more students to work on and submit articles for our Fall issue. Many of you presented posters at Research Day, the STEM Symposium and other occasions, and quite a few students submitted entries to the FGCU Writing Awards. We would love for all of you to develop them further and to submit to us. Nothing would be more fun than having to deal with an avalanche of submissions.

On behalf of the *Aquila* Editorial Board

*Peter Reuter, M.D., Ph.D.*

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## Measuring Research Impact with Altmetrics

*Chealsye Bowley, FGCU Scholarly Communication Librarian*

Journal impact factor, citation counts, an author's H-index, and number of publications are traditional bibliometrics for measuring the impact of research and the attention it receives. These are important aspects of scholarly communication, but traditional bibliometrics do not provide insight into non-traditional sources where research may be being received and used. That's where altmetrics come in. Altmetrics are "alternative metrics" based on non-traditional sources and are a complementary to traditional metrics. Altmetrics provide a broader view of research attention and impact, gathering mentions in news reports, reference in policy documents, social media, Wikipedia citations, reference manager reading, among other non-traditional sources.

For early career researchers - whether you're an undergraduate student or a post-doc - altmetrics provide an important feature: real-time, immediate results. Citations may take years to appear even for high-quality, popular research articles. When there is a need to demonstrate research attention and impact to supervisors, committees, and potential employers in a short timeframe altmetrics are a great method to understanding the early impact of research. Theses and dissertations or student research journals are also less likely to be cited by scholars, but may still experience research attention and use that could be uncovered by altmetrics scores.

You can get altmetrics data for any research output with a digital object identifier (DOI). By Summer 2017 all *Aquila* articles will receive a DOI. An easy way to view altmetrics information is to use the Altmetric Bookmarklet. Download it for free from [altmetric.it](http://altmetric.it), install it to your browser, and click the bookmarklet on any published paper. Check it out on the last article you read!

Altmetric is one of the two main sources for altmetrics. The "Altmetric Donut" or Altmetric Attention Score is an easy way to decipher the attention and impact of research. Different colors represent different sources of attention. Altmetric donuts with strong red have received attention from news outlets, purple denotes mentions in policy documents, and a lot of blue means the research has been shared on Twitter or other social media.



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## The FGCU Honors College

Anniversaries are times for backward reflection and future anticipation. As Florida Gulf Coast University celebrates its 20<sup>th</sup> anniversary by recalling its many past achievements, the FGCU community is also excited about the future. In 2017 FGCU welcomes a new President, begins a new five-year strategic plan, and enrolls the inaugural class for the new Honors College. The transition from Honors Program to Honors College signals the university's full commitment to recruiting high-achieving students and providing with them enhanced opportunities to be challenged both inside and outside of the classroom.

Building upon FGCU's successful Honors Program, the Honors College provides students a distinctive 24-hour academic curriculum that blends interdisciplinary courses with significant Honors courses and activities in the students' majors. More than ever before, students in the Honors College will have the opportunity to take more Honors courses, taught by a wider variety of faculty, increasingly offered by academic departments throughout campus. Students will participate in the Honors College curriculum during their entire four years at FGCU.

Readers of *Aquila* will be pleased that the Honors College is designing a research-intensive track for students wishing to gain significant research skills and experiences in their academic discipline. This includes a two-course sequence during the students' first year that introduces discipline-specific research skills, a second-year Honors research course, followed in the third and fourth year by working with faculty in the student's major on research projects, culminating in an Honors Thesis guided by a faculty committee. The Honors College will hold several annual research conferences for students to share and develop their research projects with one another and the university community.

The Honors College will also have enhanced resources to support students inside and outside of the classroom. Hiring additional professional staff will enable us to develop events and programming that build community, guide students through the Honors Thesis process, and advise them on nationally competitive scholarships and fellowship opportunities. Resources can also take the form of increased financial support for students to study abroad, purchase materials for service and research projects, and travel to participate at regional and national academic conferences. The Honors Program was founded on five "pillars": Academic Excellence, Cultural Exploration, Service Learning and Civic Engagement, Transformative Leadership, and Personal Transformation. The Honors College's enhanced curriculum and resources will directly and meaningfully assist student development in these key areas to a greater degree than ever before.

I am proud that Honors students currently major in every undergraduate program at FGCU. The 829 Honors students at FGCU are part of our university's fabric, in everyone's classrooms, in diverse student organizations, playing in music ensembles, helping as student mentors and lab assistants, and creating service projects that enrich our region. As the Honors College's enrollment grows, and as it continues to develop its curriculum, programs, and resources, it is uniquely positioned to positively impact many facets of FGCU and beyond. Walking around campus today, it is hard to believe that FGCU is only twenty years old. I am looking forward to FGCU's promising future and how the Honors College can play an important part in the next chapter of FGCU's story.

*Clay Motley, Ph.D.*

Director, Honors College

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# Literacy Applications for Common Core English/Language Arts: Teacher Perspectives of Digital Literacy

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## ABSTRACT

This report will share findings related to implementation of digital literacy applications for literacy instruction in Common Core English/Language Arts classrooms. This study provides insights into the utility of using digital literacy in order to provide K-12 readers and writers with engaging texts at instructionally appropriate levels. Findings indicate K-12 teacher candidates and teachers had positive experiences in implementing digital technology, and offered solutions for associated challenges. Three themes emerged from teacher candidates and teacher responses: implications for content and assessment, student engagement with literacy applications, and the significance of professional development for teachers who implement. Teachers found that integrating the literacy applications helped their students. The applications recorded student progress, recommended lessons, and automatically matched the student to texts at their appropriate reading level. Recommendations provided by teachers were ongoing professional development and effective classroom management prior to implementation. Further research is needed in connecting readers with authentic digital literacy applications for enjoyment and comprehension.

**Keywords:** digital literacy, literacy applications, reading comprehension, teacher education

## INTRODUCTION

Digital technology has become a prominent mainstay in today's classrooms. Integrating technology is a topic often discussed in teacher preparation programs, and school districts are collaborating with educators as they make considerations for curriculum planning and instruction. Parents are being provided information through school districts about Bring Your Own Device (BYOD) programs, through which students can have increased access to devices. Additionally, initiatives such as grants are providing funding for technology budgets.

Constructing knowledge is an activity which can be facilitated by technology; but for this to occur, students must go beyond seeing technology as entertainment and instead view it as a tool to accomplish specific learning outcomes (Mishra & Koehler, 2006). However, motivation to use technology is insufficient, as students must get past its novelty and begin to use it because they see how the tools will facilitate their learning in specific settings, such as formal education (Clark, Logan, Luckin, Mee & Oliver, 2009; Davies, 2011).

The sheer amount of digital technology applications available is overwhelming. According to Walker (2011), there are 566,165 applications developed by 101,764 active publishers available through the Apple store, and on average, 775 new applications are submitted to Apple by developers each day. While there are numerous applications available for every subject area, teachers with strong pedagogical knowledge need access to educational application review sites to assist them in choosing applications to meet their instructional goals (Mishra & Koehler, 2006; Walker, 2011). While the resources are available, collaboration among

teachers to determine what types of applications will best suit their students' needs while meeting curriculum goals is necessary (Ertmer & Ottenbreit-Leftwich, 2010). In addition, types of classroom management considerations would be worthwhile prior to implementation. Teachers must be provided with the time and support to learn how to use the applications and understand how they may be used to monitor student progress (Gorder, 2008). After teachers are familiar with the applications they would like to use, considerations need to be made about how they will train students to use them within the classroom (Gorder, 2008; Walker, 2011). Consequently, more research on the best practices of technology implementation is needed.

The purpose of this study was to identify how teacher candidates and teachers have integrated digital applications in Common Core English/Language Arts classrooms and to provide insight on the usefulness of digital literacy to provide K-12 readers and writers with engaging texts at instructionally appropriate levels.

## OVERVIEW OF DIGITAL LITERACY IN ENGLISH/LANGUAGE ARTS CLASSROOMS

While the acquisition of knowledge is still the focus of today's classrooms, education reform movements have shifted the ways English/Language Arts teachers plan and deliver literacy instruction (Shannon, Ortega, Pitcher & Robbins, 2009). The acquisition of knowledge includes positive reinforcement, motivation, increased attention, and a greater connection to students' preferred learning styles. Gambrell (2011) states that motivation to read and reading achievement are higher when the classroom environment is rich in reading materials and includes books from a variety

of genres and text types, such as magazines, the Internet, resource materials, and real-life documents. In addition, Gambrell (2011) indicated students are more motivated to read when classroom incentives reflect the value and importance of reading.

The components of effective reading programs have also remained the same, with a focus on phonological and phonemic awareness, phonics, fluency, comprehension, vocabulary, and oral language. However, the way educators implement Common Core Standards/English Language Arts (CCS/ELA) to engage students in higher-order thinking skills and text comprehension has become a priority (Shannon et al., 2009). Literacy teachers are now looking for ways for students to read closely while encountering advanced levels of text complexity. As students make connections to, and find meaning in the texts, they are posed higher-order questions from Bloom's Taxonomy and Webb's Depth of Knowledge. The reader must not only know basic levels of recall, but must also use this as a foundation to utilize complex skills such as evaluating, analyzing, and hypothesizing (Herman & Linn, 2014; Keene, Colvins & Sisson, 2010).

Teacher candidates and professional teachers need to plan important instructional methods for implementing digital technology in the English/Language Arts classroom. In addition to effective content and pedagogical knowledge, recent characteristics of high-quality teachers include the ability to differentiate instruction and make data-based decisions with new technology resources. As teacher self-efficacy is an integral component of digital technology implementation, meaningful professional development is critical (Ertmer & Ottenbreit-Leftwich, 2010; Rodriguez, Strnadova & Cumming, 2013).

Discussions of how and why such applications will meet student learning goals are essential (Davies, 2011). While access to technology resources are available, the conversations which take place between students, parents, teachers and administrators are what enable participants and stakeholders to use technology effectively in the classroom. These conversations raise awareness about the purpose of using technology as an instructional tool, management considerations for using best-rated applications for instruction, and how thoughtful planning aligns standards-based instruction to curriculum goals and outcomes. Professional development at both the university and district level is an important outlet and can be effective if implemented as a Professional Learning Community. Professional Learning Communities (PLCs) provide three big ideas which foster growth: a focus on student learning, their results, and a culture of collaboration (DuFour, 2004). As teachers and administrators meet in PLCs, participants need to create an initial focus or starting point and determine which of the digital applications they would like to implement. When PLCs have targeted specific applications that have been previously evaluated as "best-rated," the focus on student learning can be identified for

individual school cultures and students. Technology has been shown to support and foster diverse instruction methods, support second-language learners and students with special needs, and increase reading comprehension (McClanahan, Williams, Kennedy & Tate, 2012; Rodriguez et al., 2013).

### **EMERGING TECHNOLOGY IN ENGLISH/ LANGUAGE ARTS**

Liu et al. (2014) defined mobile learning (or m-learning) as an educational tool in which the dominant technology is a handheld or palmtop device. Mobile devices, including cellular phones, smartphones, tablet computers, and the advantages they create, have changed the way individuals access and share information, and connect with one another. According to Liu et al. (2014), the four advantages of mobilized lessons include: offering students multiple entry points and learning paths which are connected to different learning styles, enabling multiple modalities, supporting student improvisation as needed within the context of learning, and supporting learning creation with creating and sharing artifacts. Wong and Looi (2010) reported that learners were actively engaged in classroom or online discussion of their semantic constructions. Furthermore, their understandings of the proper usage of prepositions or idioms were enhanced.

Technology can support and enhance students' experiences with texts during the reading process. Digital tools, such as text-to-speech, hyperlinked dictionaries, vocabulary support, and e-books, can increase students' volume of reading and create strategic and independent readers. Digital tools create opportunities for literature response. As students create responses from a variety of images, sounds, music, and texts, they have more opportunities to develop personal and critical connections to texts. Digital spaces have also provided new ways to collaborate and share information. iPad apps, such as Storybook Maker for creating e-books, Croak.it, which is a podcasting app, and Fotobabble, which is an app that allows users to take and share mobile photo and audio content in real time, have all been used for critical literary response (Wood & Jocius, 2014).

### **THE NEED FOR QUALITY IMPLEMENTATIONS OF TECHNOLOGY APPLICATIONS**

While technology has been shown to support and foster learning, more research on the best practices of technology implementation is needed. Mishra & Koehler (2006) states that technological pedagogical content knowledge (TPCK) is implemented by classroom teachers who demonstrate technology literacy at the mastery level. To teach effectively, teachers must have content knowledge (CK) and pedagogy knowledge (PK). TPCK is acquired when teachers gain technology knowledge (TK), which is effectively and appropriately integrating technology in the learning process. These teachers use specific technology because they

understand the pedagogy for teaching specific content and know how the technology can support the intended learning goal. When evaluating technology literacy of teachers and their effectiveness in integrating technology into classrooms, it is necessary to look at why a certain technology is being used. Technology use must be aligned with intended learning objectives. When it has been determined why the technology is being used, then the question becomes how well the technology is being used. Research on the best practices of technology is needed to help teachers move from technology operators to technology integrators (Davies, 2011; Gorder, 2008).

An evaluation rubric is suggested to determine the best applications for individual student needs. These rubrics can be used by teachers to evaluate content, as well as for feedback, differentiating, motivation, and reporting. While many practitioners have been reviewing apps, a standard evaluation system has not been established. Walker (2011) developed an evaluation rubric for iPod apps which included the domains of curriculum connection, authenticity, feedback, differentiation, user friendliness, and student motivation. Schrock (2014) created an application for the iPad/iPod which included curriculum connection, authenticity, feedback, differentiation, user friendliness, student motivation, reporting, sound, instructions, a support page, navigation, modalities, levels of Bloom's taxonomy addressed with the app, and a summary of the application.

## **PURPOSE**

The purpose of this study was to identify how preservice teachers and those actively teaching have integrated digital applications in Common Core English/Language Arts classrooms. The research questions addressed were:

In what ways has the integration of literacy applications for Common Core/English Language Arts influenced instructional practice for classroom teachers?

What are the limitations/concerns of applications which were discovered?

In what ways did these literacy applications influence student engagement?

What suggestions or recommendations do teachers think are important to share with educators who are interested in using the applications for literacy instruction?

## **METHODOLOGY**

### **Participants**

Participants were a convenience sample of undergraduate teacher candidates and graduate students who were teaching professionals attending a regional university located in the southern United States (Table 1). Cooperating teachers who supervise teacher candidates in local school districts also participated. Approximately 40 university students and teachers were invited to participate in the survey, and nine participants responded: one kindergarten teacher candidate, one kindergarten teacher, one fourth grade teacher, one fifth grade teacher, one middle school teacher (grades six,

seven, and eight), two high school teachers, one Reading Coach (former sixth and seventh grade teacher), and one K-5 administrator. Participants responded to the survey voluntarily and anonymously. While the survey questions were open-ended, some responses were limited or brief and additional responses were needed through interviews (Table 1).

### **Procedure and Data Collection**

In case study research, a qualitative approach was used as a method in which the investigators explored a real-life, contemporary, bounded system over time, through detailed, in-depth data collection involving surveys. Through data collection, a detailed description of the case emerges in which the researcher details the activities of the case. After this description, the researcher focused on an analysis of themes (Creswell, 2013). Due to the specific research questions, purposeful sampling was used to select participants. All procedures were reviewed and approved by the Florida Gulf Coast University Institutional Review Board. Through previously established networks, the participants selected met the criteria of the research question. The participants invited to participate in the study were undergraduate and graduate students in the College of Education, as well as cooperating district K-12 teachers, literacy coaches and district administrators. Participants were recruited with the assistance of the College of Education department, who ensured anonymity. Recruitment took place through e-mail. Recent advancements in interviewing methods have included computer-based surveys. The use of computerized interviewing has simplified the demands of the respondent and has made the administration feasible. Internet surveys are now administered in ways that may produce reliable and valid results (Hair, Black, & Anderson, 2010). A consent form was used. An electronic copy of the consent form was provided to the participant during the recruitment process, along with a copy of the survey questions for data collection. If the participant was in agreement, he/she acknowledged consent for the principal investigator by completing and submitting the anonymous survey for the study.

### **Data Analysis**

The data was analyzed for themes to articulate the significance of the participants' experiences. All questions were open-ended in the survey and a text box was provided for participants to provide feedback. Results were analyzed and reviewed after itinerant reading and coding of the data. Forming codes included reading, describing, classifying and interpreting the data. The following themes emerged: a) implications for content and assessment, b) student engagement, and c) meaningful professional development.

### **RESULTS**

Examples of literacy applications the respondents implemented included: Question-Answer Relationship

(QAR) codes, I-Station, I-Ready, Compass, Accelerated Reader, TeenBiz 3000, Reading Street K-5, ReadWorks Passages, Achieve 3000, Read Aloud/Think Aloud, Padlet, Socrative, Powtoon, iMovie, Spring Board, Earobics, Raz-Kids, Discovery Horizons and Destination Reading, and Riverdeep (Table 1).

The results indicate the majority of teachers felt that they were able to use the literacy applications to meet individual student needs and differentiate instruction through monitoring progress. I-station was an online intervention program used in the intermediate grades. Students were required to use the program if their results from the previous year's high stakes testing were below proficiency levels in reading. The majority of teacher perceptions concluded that the literacy applications provided teachers and students with formative assessment, exit tickets, group work, projects and intervention, Lexile levels, access to texts which require citing evidence through written responses, leveled reading and writing activities, close reads, skills-based strategy instruction, scaffolding for challenging levels of text complexity, and a focus on comprehension. TeenBiz 3000 provided leveled texts and leveled written-response prompts, including evidence and citation of supporting information. It provided comprehension quizzes linked to each article and the results affected Lexile levels. Both TeenBiz 3000 and Springboard were used for skills instruction and close reads while Read Aloud/Think Aloud was used daily to get started with reading complex texts. Students accessed the applications using iPads and computers during independent literacy centers, guided reading, and whole group instruction. Some classrooms loaned sets of iPads provided by the school while other children took turns using the computers (Table 2).

Teachers found integrating the literacy applications to be helpful to their students. They shared that the applications they used recorded student progress for analysis, recommended lessons, automatically matched the student to texts at their appropriate reading level, and provided basic foundational skills, such as phonemic awareness for emergent readers. Students enjoyed Earobics because it was described by the teacher as being child-friendly. Within TeenBiz 3000, there was an ability to provide specific teacher feedback online to intermediate and secondary students after they submitted essay writing. I-Station was helpful to an intermediate fourth grade teacher for progress monitoring. It provided a website where the teacher logged in to view individual student progress. The program recommended scripted lessons for teacher-led instruction in small groups. The respondent indicated the program was aligned to the individual's developmental reading level as it consistently placed students in an appropriate reading pathway. Similarly, Compass provided assessments and automatically assigned appropriate lessons based on the assessment data (Table 3).

The majority of teachers provided responses which indicated the applications used in the English/Language

Arts classroom were highly engaging for students. The applications, including Compass, Accelerated Reader, Read Works passages, Read Aloud/Think Aloud, Padlet, iMovie, and Socrative, were described as animated. Students interacted and understood the texts more in digital form. This was especially true when reading complex texts. Some programs provided rewards in the form of games, students were able to create projects to express themselves, and there were opportunities for intervention and enrichment. Teachers reported additional success in increasing student engagement when they incorporated cooperative learning strategies and activities along with the digital literacy applications (Table 5).

Each of the respondents reported that alignment of the applications to the district curriculum occurred with relative ease. The applications provided instruction in the essential components of reading, including phonemic awareness, phonics, vocabulary, fluency, comprehension, and oral language. District academic plans were available to teachers, and most of the curriculum alignment was previously completed and accessible (Table 6).

As teachers expressed their experiences in learning how to implement the literacy applications, there was an overall focus on the value and importance of professional development. While some teachers indicated inservice was provided and support was available through the reading specialist and reading endorsement classes, some teachers indicated the process was rushed, they received limited training, and they learned on their own through trial and error. Teen Biz 3000 provided resources through a learning center. Support from administration for professional development and support from colleagues were working solutions (Table 7).

Teachers commented it is best practice to have a thorough understanding of how to use the literacy applications first before training students. When teachers were informed of how to use the applications and manage their features, they were more successful in supporting students who required assistance. Consistent rules and procedures were necessary for using technology prior to implementation. Teachers indicated students were successful in learning how to use the applications with relative ease, especially students in the intermediate grades, as they brought prior knowledge from the primary grades.

### **LIMITATIONS AND CONCERNS**

The limitations and concerns in implementing the digital technology included timing. Some of the application programs such as I-Station and I-Ready had a specific time range. If the students completed the session in less time, it did not record their progress, as they needed to remain logged in for the duration of the entire session for complete documentation. Teachers did not have the option to pause a lesson to provide further clarification or explanation. While teachers have the option of reassigning a lesson for mastery, the same lesson and text is provided to the student.



An additional concern was students not taking the time to pre-write, revise, proofread, and edit their work when using Teen Biz 3000. One teacher provided a solution to this issue by asking her students to write the essay response on paper. After writing, they would then log in to the application and type their hand-written copy in the electronic document.

While some of the applications, such as I-Ready and I-Station, are district-mandated for progress monitoring, teachers commented that the applications were most beneficial to the students when the teachers had choice in how to use them.

One high school teacher listed ease of use as a concern and one kindergarten teacher candidate indicated preparing kindergartners to use the iPads was time-consuming. A reading coach expressed that the amount of resources is overwhelming to teachers with limited experience in planning curriculum and instruction. New teachers are being asked to use literacy programs and teach them cover-to-cover. While some students respond to this approach, it does not work for all (Table 4).

Some of the roadblocks included students who rushed through the tasks or those who repeatedly clicked on the mouse with no specific purpose. Proficient reading comprehension and writing skills were also a concern in both a digital or paper/pencil format. Several respondents indicated students have previous experience using the applications in the primary grades, which provided seamless transfer of knowledge in the intermediate grades. Once classroom procedures were in place, training students with the Earobics application required minimal time because the program instructs students with specific directions (Table 8).

Participants in the survey recommended learning the applications thoroughly up front, starting small by mastering one application at a time, asking students for their preferences and interests in digital applications so there is choice, requesting professional development from administrators, and collaborating with colleagues who share similar teaching interests. Requesting temporary duty time in order to fully understand the applications was a recommendation. Teen Biz 3000 had a tracking feature to measure Lexile improvement. One teacher recommended reviewing this tool for monitoring student progress. Reviewing student results provided by the applications assisted with instructional decision-making. Taking the time in the beginning to fully learn the programs before assigning them to students was a suggested strategy to best support students (Table 9).

## **DISCUSSION**

According to Hutchinson (2012), professional development opportunities have steadily increased and they have included integrating technology into teaching and learning. Hutchinson (2012) surveyed 1,441 literacy teachers in the United States to understand the integration of digital technology into instruction. Thirty-seven percent of teachers reported using digital technology on a daily basis, and three

percent of teachers reported they did not use digital literacy at all in their instruction (Lawless & Pellegrino, 2007). Ninety-eight percent of the teachers indicated that they would like to increase their integration of digital technology (Hutchinson, 2012). While there has been access to professional development in digital literacy, the professional development has not included substantial knowledge from research about what works and why.

Teachers in this study who explored the applications suggested taking the time up front to thoroughly learn the programs before training students. Participants also recommended using the applications on a consistent basis and collaborating with other teachers who share similar interests in technology. Adequate time for professional development was essential for consistent implementation.

Classroom management issues were essential as students needed to understand how to use the applications in order for them to be an authentic instructional and assessment tool. Teachers indicated a further need for professional development and communication at the school and district level. This finding was consistent with the literature, which indicated meaningful professional development is critical, and digital literacy is not being applied in classrooms as much as research suggests it should (Davies, 2011; Rodriguez et al., 2013; Ertmer & Ottenbreit-Leftwich, 2010; Gorder, 2008).

In addition to literacy applications, participants indicated they used district-mandated literacy programs such as I-Station and I-Ready for intervention, monitoring student progress, and collecting results. One participant shared that this has been a function of responding to achievement on standardized tests.

Participants indicated alignment to the state standards was accomplished with relative ease. Alignment was either provided for them by the school districts or they were able to use the district provided curriculum plans to accomplish it on their own. Reading endorsements by teacher certification and literacy professionals, including reading specialists and literacy coaches, supports curriculum and professional development. Teachers who participated in the study know the instruction they are providing through digital literacy applications is addressing Common Core standards in English/Language Arts. It does so through professional development, district curriculum maps, and literacy coaches.

A limitation to this study is the small sample size of people who completed the electronic survey, which was comprised of nine participants. Additional recruiting, including invitations to complete the electronic survey and face-to-face focus groups, would have increased the overall sample size of participants in the study. Further recruitment would also increase the participant responses in particular grade levels. While the sample size is small, the survey responses reported by the nine participants including university students, teachers, literacy coaches, and administrators are authentic.

Learning styles have been incorporated through the

application of digital literacy. McClanahan et al. (2012) discussed the manipulative touch screen of the iPad promoted the use of learning styles, especially the visual and tactile/kinesthetic. These modalities suggested the possibility that the higher levels of sensory stimulation using the iPad may have allowed a student with ADHD to engage in the learning task in ways that the typical classroom experiences do not. Teachers have indicated the literacy applications examined in this study have contributed towards learning. They provided positive reinforcement, motivation, increased attention, and a greater connection to students' preferred learning styles.

### CONCLUSIONS

Constructive and supportive teacher feedback provides a powerful and motivating incentive to learn. Guthrie, McRae & Klauda (2007) articulated that the engaged reader is internally motivated to read. These motivations include intrinsic motivation and self-efficacy. The engaged reader uses strategies to link prior knowledge to new information in texts. The engaged reader is behaviorally active in task participation, effort, persistence in face of difficulty, and reading frequently for pleasure and learning. After analyzing responses, continued content knowledge and implementation of digital literacy applications in the English/Language Arts classroom are essential for reading comprehension, student engagement in reading, and assessment, which leads to effective instructional decision making. In addition, creating spaces for collaboration and ongoing professional development within digital literacy will best support teaching and learning in a digital world.

Education will continue to experience incredible transformations in the upcoming years. According to Packard (2013), five to ten percent of students will attend schools completely online, and every high school student will take at least one to two courses online. Summer school attendance will increase, as online learning is cost-effective,

and online learning will increase high school graduation rates. Foreign language instruction will begin in elementary schools and courses will be available in multiple languages, causing foreign language proficiency to increase.

Digital literacy requires skills in defining goals, and searching for and locating significant information. Traditional reading and writing models have focused on the individual and transacting with an author. Digital readers experience alternative forms of transactions, including interaction with colleagues and with individuals in numerous time zones (Tierney, 2009).

Integrating digital applications for readers and writers is an ongoing process. Instructional applications are routinely developed and require review. Within the cycle of changes, curriculum and standards develop through education reform. Digital literacy applications in the English/Language Arts have the possibility to connect students to texts, which provide engagement and enjoyment. As students make meaning from the texts, teachers scaffold comprehension through effective strategy instruction. According to Tierney (2009), progress in the professional practice of teachers connecting students with digital learning occurred when the approach to teaching was genuine, interactive, collaborative, resource-abundant, and inquiry-based. As students understand, teacher educators are responsible for ongoing, meaningful professional development.

Further research is needed regarding relationships which exist between digital literacy applications and students' intrinsic motivation and engagement. Also, many of the participants discussed implementation of district-mandated technology programs which are used for progress monitoring. Additional inquiry is needed in how authentic literacy applications, which promote comprehension, engagement, and collection of assessment data, may be used for students to make connections between reading and enjoyment.

**Table 1**

*Grade level taught and types of applications integrated in English/Language Arts*

<b>Participant</b>	<b>What is the grade level you teach?</b>	<b>What are names of literacy applications you have integrated in your English/Language Arts instruction?</b>
1	Kindergarten	QAR Codes: The students would look at the picture and tell me the letter that the word starts with; they will scan the code and then see if they were right.
2	4th	I-Station
3	5th	Compass, Accelerated Reader
4	6th, 7th, 8th	I have used TeenBiz 3000, which is a website that provides non-fiction text tied to a student's exact Lexile, with self-adjusting level set tests at the beginning and end of the school year. I have also used the apps provided by various text publishers to support the physical texts.
5	Administration (K-5)	Reading Street K-5, Accelerated Reader, ReadWorks Passages
6	High School	Tech - Teen Biz, Achieve3000, Non-tech- Read Aloud/Think Aloud, NGCARPD
7	9th	Padlet, Socrative, vocabulary workshop, PowerPoint, Prezi, Powtoon, iMovie
8	Former 6th and 7th grade classroom teacher now in other school building instructional role.	Teen Biz SpringBoard
9	Kindergarten	I-Ready, Earobics, Raz-Kids, Discovery Horizons, Destination Reading, (Riverdeep)

**Table 2**

*Integrating applications in the English/Language Arts classroom*

<b>Participant</b>	<b>How did you incorporate the applications in the English/Language Arts classroom?</b>
1	I used various iPads and computers during centers.
2	I-station is an online intervention program. In the intermediate grades, students are registered for the program if they did not score proficiently on the previous year's state assessments. During our independent/guided reading time, students are assigned times to get on the computers and complete a 30 minute session. They are tested at the beginning of every month, and depending on what tier they fall in, they are required to complete 30-90 minutes per week.
3	During guided reading as center activities, aligning assignments to student needs by analyzing assessment results. Psychosis time for silent reading and allowing computerized assessments.
4	I used the Teen Biz 3000 program weekly to provide text to which students had to provide written responses, including proper inclusion and citation of supporting information. There are also comprehension quizzes tied to each article and the grades earned impact the change in Lexile. There is a goal set for improvement that is tracked throughout the year.
5	Teen Biz was used for leveled reading and writing activities including close reads. Springboard was used for skills instruction as well as close reads.
6	Exit tickets, group work, projects, and formative assessments.
7	I used Read Aloud, Think Aloud almost every day to get started with difficult text.
8	The core reading series (Reading Street) serves as the basis for instruction within the school.

**Table 3***Experiences and advantages of digital applications*

<b>Participant</b>	<b>Describe your experiences using these applications. Which were most helpful and why?</b>
1	I only used these applications for 12 weeks, but they were extremely helpful. Students were so motivated to do their work and seemed more engaged than a paper and pencil.
2	The most helpful feature is that it records what students do each session. As the teacher, you can login to the website and view their progress. The program also suggests lessons that the teacher should give in a small group, and the lessons are scripted. The program also aligns to what the students are needing, so if a student is in fourth grade and doesn't know their vowel sounds it will drop down to the vowel sounds. It will also bump them up if it is needed as well.
3	Compass is useful because it is ready to set up assessments aligned with student needs. It also provides assessments and then automatically assigns appropriate lessons.
4	The essays are able to be graded online with the ability to provide corrective commentary directly to the student, who likewise can respond via the embedded e-mail system. There are also specific lessons available within the program to support particular areas for reading comprehension or writing skills.
5	Both programs (Teen Biz and Springboard) were excellent.
6	They were all used for different purposes (Padlet Socrative, Vocabulary workshop, iMovie, PowerPoint, Prezi, Powtoon).
7	I love Read Aloud/Think Aloud and so did all of my students.
8	Currently, I work closely with grade levels to help them.
9	I think Earobics is the best program because it starts with very basic phonemic awareness skills and builds upon those. The children also like it because it is child-friendly.

**Table 4***Limitations and concerns of digital applications*

<b>Participant</b>	<b>What were the limitations/concerns of the applications you discovered? Why?</b>
1	The only limitations I had was my students were kindergarteners so the preparation of them using the iPads took awhile and sometimes we ran out of time.
2	The students have to stay on 25-30 minutes at a time for the session to count. If they do a less amount of time, it will not record what they have done. At times, it is hard to get the students the amount of time they need. If a student does not master a lesson on the program, you can go into assignments and reassign them the same skill. However, the online lesson is the same thing again. In order to get a different lesson, you have to complete the teacher-directed lesson.
3	Students are not always motivated to use the programs.
4	Students often did not take an adequate time in planning for their responses, preferring to simply type a response. As a result, I modified instruction to include a handwritten pre-write so that the entry into the app more likely would have been edited. It was interesting to see that often students would still submit work with many spelling errors because they did not understand the importance of proofreading, and often did not even use the spell check function available to them.
5	Both were excellent when the teacher had choice as far as what to use and what not to.
6	Ease of use.
7	I wish kids would try a little bit more on their own. I wanted them to grapple a little more with the text and figure it out. But they are so afraid to fail.
8	Sometimes the amount of resources are overwhelming to teachers with limited experiences in curriculum planning and organizing. New teachers are conditioned to rely on programs and to teach cover to cover. This works for some students, but it often results in students feeling left behind.
9	I-Ready is a district mandated application. The results will be used to determine student growth. The problem is the program does not have a "pause" button, which makes it extremely difficult to give teacher-directed instruction when children are having trouble with a specific skill.

**Table 5**

*Literacy applications and student engagement*

<b>Participant</b>	<b>In what ways did the literacy applications influence your students' engagement?</b>
1	Like I said earlier, students love to use technology. Technology itself is super engaging than a paper and pencil. The types of applications are great, too, because they are more in game form so students don't even realize they are learning because they are having so much fun.
2	The program is online and very animated, which helps engage the students. It is also on their level, so for students who often struggle during reading can feel successful. Also, at some points throughout the program, they receive science content that most students are interested in.
3	Some of the lessons are structured to engage students by providing opportunities to earn the ability to play fun games if they complete assignments.
4	The students often prefer to use computer-based applications for learning and are more apt to be engaged in reading text online than on a paper-based alternative. Applications are also available within the program for enrichment or intervention, the use of which can improve engagement.
5	The resources include a variety of high interest texts, which capture students' attention. Teachers are even more successful in increasing student engagement when they incorporate Kagan and other activities that capture students' attention.
6	They were able to interact with the text more and understand. Complex text always stumped them, but having these strategies helped a lot.
7	Students enjoyed using technology to create projects and express themselves. They also liked apps that would help them practice weekly vocabulary.
8	Students were highly engaged in the text from Teen Biz and some of the sections from SpringBoard.
9	I'm not sure.

**Table 6**

*Aligning applications to district curriculum*

<b>Participant</b>	<b>What was your experience in aligning the applications to district curriculum?</b>
1	I thought it was pretty easy to align because the iPads and applications were district iPads, so the curriculum went along with them.
2	The program addresses broad skills, such as phonics, comprehension strategies, fluency, and vocabulary. Therefore, it serves as an intervention at any point in time.
3	Using the standards listed in the academic plan, I am able to choose assignments that align to the plan.
4	Each article is tied to a specific set of the Florida Standards, and so it is simple to identify the alignment.
5	The district did a great job of providing academic plans and guides to structure the progression of student learning.
6	It was easy. I am a reading teacher, so no matter what I taught, I felt these strategies were easily implemented. I even used them when I taught Biology.
7	No issues. They support skills related to various standards.
8	It was very easy to align with the standards.
9	This is done for us.

**Table 7***Experiences in learning how to use digital applications for instruction*

<b>Participant</b>	<b>How would you describe your experience in learning how to use the applications for instruction?</b>
1	I had a great experience learning how to use these applications for instruction. One of our in service days was most about the new applications, so I had the whole day to learn about the newest applications.
2	I have used it for several years and each year I learn how to use it better and more in depth. However the basic use of the program is very simple and easy to use for instruction.
3	The programs are not hard to learn to use, but training is necessary if teachers are to fully utilize the programs. This would have to be supported by administration, especially to insure new faculty makes use of the programs.
4	The site provides extensive resources through a learning center. In addition, there was a good deal of support from the reading specialist at the school.
5	Very limited training is provided to teachers. School site administrators and grade level teams have to work to develop what they want the instruction to look like in each classroom.
6	I learned through my reading endorsement. I modified these strategies to fit my style and students.
7	Time is limited to practice. Many times, trial-and-error is the only way to learn. Colleagues are always willing to share when time is available.
8	It was very rushed and last minute. Basically had to explore on my own to make full use of the programs.
9	I like using them for whole group instruction when the program lends itself to that, such as Earobics.

**Table 8***Experiences in training students to use digital applications*

<b>Participant</b>	<b>What was your experience like in training students to use the applications?</b>
1	It was really hard at first to train my students to use the iPads correctly. In the iPad center, we have rules set up that we went over before using as well. If students broke the rules once, they lost classroom Dojo points. If they did it a second time, they were asked to get off the iPads and work on a different center.
2	All students use this program in starting kindergarten. In fourth grade, it starts to be used as an intervention. Most students come to fourth grade already knowing how to use the program. However, it is very self-explanatory if they haven't used it. The biggest challenge is getting them to remain focused and not just click through the thing, so you get a true understanding of what they know.
3	The students use the programs from the early elementary grades and naturally progress through the grades without much training needed.
4	Students had used programs such as Renaissance's "Accelerated Reader" program and the transfer of their knowledge and computer savvy made it easy to train the students in accessing and using the program. Nonetheless, there are hurdles to be met to train students in using reading comprehension and writing skills that must be learned, whether applied to paper and pencil or computer instruction.
5	Students generally understand how to use the applications with little training. This is especially true in the upper grades.
6	Easy, once I had my procedures in place.
7	Students are not always patient, and they need to slow down. Sometimes they appear to be more tech savvy than they really are!
8	They caught on really easily.
9	It was fairly easy to train them, because the programs tell the children what to do.

**Table 9**

*Suggestions or recommendations for educators interested in using digital applications*

<b>Participant</b>	<b>What suggestions or recommendations would you offer to educators who are interested in using the applications for literacy instruction?</b>
1	Technology is growing and as educators, we need to grow with it! It is very important for teachers to incorporate technology into the classroom and this is a great way to do it! Students are so engaged to use an iPad I don't know what student doesn't like to use an iPad. Overall, I know in my future classroom I will always have an iPad center, because students learn in an engaging way and it suits many learning styles.
2	If you plan on using this program, it must be done with fidelity. The students need to be online for their required amount of time and the suggested teacher lessons need to be delivered at some point to make a difference.
3	Learn the applications thoroughly, so you can make the most appropriate use of them.
4	I would recommend teachers review all the available applications, lessons, etc., and make use of the tracking apps to measure Lexile improvement.
5	Response not provided
6	Don't give up on them and find the ones that fit your kids and their engagement. Ask students what they prefer. That always helps.
7	See if you can get temporary duty time to watch the pros. Focus on one app at a time until you feel comfortable with it. You must have strong classroom management skills before you venture into this arena.
8	Find coworkers who share your enthusiasm so that you can help each other.
9	Learn the programs before putting your students on them, or learn along with your students. This way, when a student has a question or is not doing well with a program, you are equipped to help. Also, monitor the students' progress. Don't take it for granted that they understand, or are doing well. Look at the results that the programs track.

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# A Critical Analysis of Alternative and Complementary Medicine in Relation to Happiness

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## ABSTRACT

Happiness and well-being are conditions that individuals seek to attain for a balanced life. Healthy living can begin as an internal choice, with positive emotions and thoughts bringing an individual greater happiness, enhanced creativity, improved health, and accelerated spiritual growth (Swigart, 2014). Mind-body exercises, including some alternative and complementary healing practices, function on the assumption that the physiological state of the body can shape attitudes, thoughts, and emotions (Monk-Turner & Turner, 2010). This study's objectives are two-fold: (1) to find out if there is a correlation between adults who use alternative and complementary medicine practices, which are considered energy healing therapies, and the general happiness of adults, and (2) to investigate the link between physical health and general happiness. Understanding that there are many variables influencing the happiness of individuals, and that we do not function in a controlled environment, this study will conduct several correlations that examine social class as well as physical and mental health in relation to happiness. The population under investigation includes adults who use alternative and complementary medicine practices involving energy healing therapies such as reiki, yoga, qigong, acupuncture, and hypnosis. We hypothesize, based on prior research (Danhauser et al., 2009; Ruyschaert, 2014; Steiner et al., 2013; Swigart, 2014), that the use of energy healing therapies correlates positively with happiness. We also hypothesize that physical health and happiness are positively correlated. Through correlations of secondary data, our results support the idea that happiness and physical health are positively correlated, but do not necessarily support the specific correlation of happiness and alternative medicine. Within social science research, it is difficult for the researcher to ultimately say that 'x' always causes 'y' when there are countless other variables involved which can affect the 'x' and 'y' relationship. Therefore, happiness does not necessarily always cause a positive physical health state, but the researcher can note that within this work there is a correlation between the two variables. This research makes suggestions for other robust studies using multiple regression and path analysis.

## INTRODUCTION/SIGNIFICANCE

Having a healthy life can begin as an internal choice, with positive emotions and thoughts bringing an individual greater happiness, enhanced creativity, improved health, and accelerated spiritual growth (Swigart, 2014). Healing oneself without the aid of a facilitator or doctor is powerful and possible, and teaching individuals how to heal themselves and be in harmony with their environment is an important aspect of alternative and complementary healing practices. Authors Aken and Taylor (2010) suggest, "Teaching people how to work with their own energy field with hands-on techniques and other strategies such as color and nature would be a step toward empowering the person to maintain biofield integrity. This could be a way of preventing further depressive episodes" (p. 135). Empowering the patient to self-heal through alternative medicine practices provides confidence and freedom, with the patient knowing that they are in control, not always having to seek medical advice from traditional Western doctors. The use of mind-body focused practices, like those of alternative and complementary medicine, can be useful strategies in managing emotions and improving the overall well-being of an individual. The guiding question leading this study is if

the use of alternative and complementary healing practices affects the general happiness of adults.

Complementary and alternative medicine practices do not have the same popularity in the United States that they do in more traditional and established eastern regions of the world, such as China and India. These cultures incorporate ancient practices of religion and medicine and see them as interconnected. By definition, complementary and alternative healing practices are not incorporated into conventional medicine due to the lack of proof that the treatment is working safely and effectively (CDC, 2008). A 2002 study by the National Interview Health Survey measuring adults in the U.S. found that one third of the population has used complementary and alternative healing practices (CDC, 2008). Many people who use alternative and complementary healing practices are seeking to improve health and well-being or reduce symptoms that are associated with chronic, terminal illnesses, as well as the side effects that conventional treatments bring (CDC, 2008).

Psychological distress is a health condition that affects many people; this refers to the array of psychological responses a person has in adapting to their environment (Fortin et al., 2007). Psychological distress is detrimental to

one's health and affects the physiology of the body; it may yield outcomes such as adverse health behaviors and poor health conditions, including premature mortality (Fortin et al., 2007). Chronic disease and psychological distress have a combined negative effect on vitality and functioning (Fortin et al., 2007). Psychological distress "affects patients' working capacity and family life, and complicates self-care and medical care by intensifying the perceived effects of coexisting illnesses" (Fortin et al., 2007, p. 1-9). Research supports the notion that psychological distress works adversely in managing diabetes by affecting health-related quality of life, reducing activity levels, limiting self-efficacy, and impairing communication with healthcare providers (Fortin et al., 2007). Multimorbidity, defined as the "co-occurrence of multiple chronic diseases and medical conditions within one person," is estimated to increase from the statistic of 60 million Americans in 2008 to 81 million Americans by the year 2020 (Fortin et al., 2007, p. 1-9).

The onset of psychological issues leaves patients with the question of how to manage psychological distress and routes of medicalization. Scientific communities in Western medical practices examine traditional medicines, such as Indian and Chinese, with extreme caution and stress concerns regarding the research process, the development, and the quality (Patwardhan, Warude, Pushpangadan, & Bhatt, 2005). Complementary and alternative healing practices are being utilized more for reasons such as "increased side effects, lack of curative treatment for several chronic diseases, high cost of new drugs, microbial resistance, and emerging diseases" (Patwardhan et al., 2005, p. 465-473). The growing population of alternative and complementary medicine users is shown through the rapid increase in licensed Chinese medicine providers in the United States (Patwardhan et al., 2005).

Although there is an increase in the population seeking alternative medicine treatment, the United States still relies heavily on Western medicine practices, many of which include pharmacology and prescription pills. According to the CDC, forty-six people die each day in America from an overdose of prescription painkillers (Center for Disease Control and Prevention [CDC], 2014). Although the intended use of prescription medication is altruistic in nature, the issue of misuse still plays a contributing role in the U.S.'s prescription phenomena. In the U.S., health care providers wrote 259 million prescriptions for painkillers in 2012, which is enough for every American adult to have their own bottle of pills (CDC, 2014). States vary on the amount of prescriptions written, but the ten highest prescribing states for painkillers are in the southern region of the U.S. (CDC, 2014). The United States has about 1 in 10 Americans over the age of 12 taking antidepressant medication, with non-Hispanic white individuals more likely to take antidepressant medication than those of other races (CDC, 2011). Over 60% of Americans taking antidepressants have taken them for two years or longer, with 14% having taken them for ten years or more (CDC, 2011). "Less than

one-third of Americans taking one antidepressant and less than one-half of those taking multiple antidepressants have seen a mental health provider in the past year" (CDC, 2011). Antidepressants were the third most commonly prescribed drug for Americans of all ages between 2005-2008, with 18-44 being the most frequently used age group (CDC, 2011). The trend noted from 1988-1994 through 2005-2008 was an almost 400% rate of increase in antidepressants in the U.S. (CDC, 2011). The popularity of prescription medication in the U.S. leaves individuals with questions as to why they are so popular, and if prescription medication is the only possible solution for treatment.

### **PURPOSE/OBJECTIVE**

The purpose of this study is to continue conversation on the topic of alternative and complementary healing practices in relation to an individual's mental health condition as a means of medicalization. Energy healing therapies will be examined to determine if there is a correlation between the use of alternative and complementary medicine practices and the happiness of adults. The researcher understands that there are many variables which influence happiness, and that the access one has to alternative medicine practices is not the only factor contributing to well-being. The researcher also understands that access to alternative medicine practices is not the same for all people, and social class may be a variable involved. These are the reasons why the researcher chose to conduct several statistical analyses prior to, as well as to support and strengthen, the correlation of alternative medicine practices in relation to happiness. This study will enrich the literature on the topic of alternative and complementary medicine with further data, and inform further research in this area with the intention for generalizability. The study also has an objective of providing policy guidelines and establishing why it may be necessary to create places for mindful, contemplative practices in the workplace and other institutions.

### **LIMITATIONS OF STUDY**

The nature of this project required the review of secondary data for better generalizability. The data utilized from the National Health Interview Survey: 2007 captures notable patterns of the use of alternative and complementary medicine practices better than a population of only 20 respondents. The variables chosen to operationalize social class, as well as physical and mental health, were restricted to those from the STATES and GSS dataset, in order for the researcher to conduct statistical analysis when comparing them to happiness. To operationalize social class, the researcher was limited to two statistics on the GSS dataset to compare to happiness: whether a respondent owns or rents their home, and if the respondent is satisfied with their financial situation. If other datasets were used, there may have been a better indicator of socioeconomic status to utilize and test. The researcher plans to conduct further models, such as multiple regression analysis, to test other

variables that may affect the relationship between using alternative and complementary medicine practices and the happiness of adults. In the future, the researcher would also like to conduct primary research on this topic by testing this relationship at a college level.

### **LITERATURE REVIEW**

Some researchers have examined ways of intervention for psychological distress; one study examined mindfulness-based cognitive therapy to help relieve psychological distress on a group of pregnant women. The participants were recruited from a large metropolitan Women's and Children's Hospital in Australia, were between 12 and 28 weeks gestation, and attended at least 7 of the 8 sessions of mindfulness-based cognitive therapy (MBCT) (Dunn et al., 2012). The experimental group had 10 participants in their eight-session program of MBCT, which was first developed by Segal et al. in 2002 (Dunn et al., 2012), with modifications made to better suit the pregnant female participants. The results from the pre- and post-tests indicate that three out of four treatment group participants experienced a decrease in stress symptoms. The authors noted that 67% of the treatment group experienced a positive change in their levels of stress and self-compassion, with half the participants reporting a positive change in their depression, as measured by the Edinburgh Postnatal depression scale (Dunn et al., 2012). The pregnant women who participated in the mindfulness-based cognitive therapy reported clinically reliable declines in depression, stress, and anxiety. These improvements lasted into the postnatal period, effects which the control group (who did not receive treatment) did not experience (Dunn et al., 2012). The findings suggest that there is support for the use of mindfulness training during the perinatal period to reduce negative affect and state anxiety (Dunn et al., 2012). Women that learn mindfulness during pregnancy are more likely to use those skills to manage stressful parts of pregnancy, childbirth, and parenting, reducing psychological distress and improving the experience for both parent and child (Dunn et al., 2012).

Researchers have examined specific alternative healing practices, such as yoga, as a method of treatment for chronic disease. This study examines the implementation of restorative yoga intervention for women diagnosed with breast cancer. Prior studies that have been conducted, and on which this research is based, look at various types of yoga; this study specifically examines the Integral Yoga tradition, which includes restorative yoga positions (Danahauer, Mihalko, Russell, Campbell, Felder, Daley, Levine, 2009, 361). The goals of this study were to examine the "feasibility" of incorporating restorative yoga therapy into the daily lives of women with breast cancer, as well as determine the participants' changes in "emotional, health-related quality of life, and symptom outcomes" (Danahauer et. al, 2009, p. 360-368). The participants included breast cancer patients, 34% of which were currently undergoing

cancer treatment, dividing the testable population into an experimental group that received treatment and a control group that did not (Danahauer et. al, 2009). The experimental group received 10 weekly 75-minute restorative yoga classes, and both groups (including the control group) completed questionnaires at the beginning of the study (week 0) and immediately after (week 10) (Danahauer et. al, 2009). The researchers found group differences that were positive for the experimental group. They showed improved mental health, lowered depression, positive affect, and increased spirituality when compared to the control group (Danahauer et. al, 2009). These findings suggest that the yoga implementation correlated positively with improvement in fatigue for women in the experimental group, with no significant differences or changes in the control group (Danahauer et. al, 2009). The researchers suggest opportunity for further research, noting that their limited sample size is not worthy for mass generalizability, but that their data suggests potential benefits of restorative yoga therapy for the emotional outcomes and fatigue in cancer patients (Danahauer et. al, 2009). The researchers also note the opportunity for program adoption or implementation.

Literature also exists that has studied the emotional and behavioral effects that alternative healing therapies can bring, such as the study titled "Yoga in an urban school for children with emotional and behavioral disorders: a feasibility study." This study, which took place at an urban elementary school, examined a population that had emotional and behavioral disorders with the intention to study the "feasibility" and possibility for positive effects from yoga sessions in a school setting for children with these disorders (Steiner, Sidhu, Pop, Frenette, Perrin, 2013). The students in the test pool included thirty-seven children with emotional and behavioral disorders; in small groups, of between seven to ten students, they participated in yoga implementation twice a week for three and a half months (Steiner et. al, 2013). The test subjects were underage; therefore, teachers, parents, and students were required to complete the pre- and post-intervention assessments, with the yoga teachers filling out an attendance and behavior checklist (Steiner et. al, 2013). 80% of the respondents reported being very satisfied with the yoga implementation, with teachers reporting "improved attention in class, adaptive skills, and reduced depressive symptoms, behavioral symptoms and internalizing symptoms" (Steiner et. al, 2013, p. 815-826). These findings suggest that if yoga were administered in small groups at an urban school setting, it would be a "feasible" intervention for children suffering from emotional and behavioral disorders, with the possibility of reducing symptoms (Steiner et. al, 2013). This research inspires our study of investigating the positive outcomes that can come from the implementation of energy healing therapies, such as yoga, and leaves room for the possibility of policy or program implementation.

Alternative medicine practices have been studied in their effects on mental health and depression. A separate study

measured healing touch in relation to moderate depression, and found that the most basic psychosocial problem was the process of emergence from depression and the strategies used to cope (Aken & Taylor, 2010). Hand-mediated energy therapies have been found to be effective in the area of general well-being and grief, but only one related study was directly associated with depression (Aken & Taylor, 2010). The authors suggest that healing techniques where one can heal oneself, without having to rely on a practitioner or healer, can be a way of preventing further depressive episodes (Aken & Taylor, 2010).

Researchers have also examined implementing alternative and complementary healing practices on individuals under severe stress, such as family caregivers. One study examined complementary and alternative medicine therapy for stress reduction in American Indian and Alaskan native family caregivers caring for family members that suffer with dementia. The purpose of this study was to examine polarity therapy, which is a touch therapy that uses gentle pressure on energy points and biofields to achieve physical relaxation on the patient or recipient (Korn et al., 2009). Polarity therapy was compared to an enhanced respite control condition (ERC), or short break for the caregivers, to reduce stress and depression; this included respite care for the person with dementia and a choice of activities for the caregiver (Korn et al., 2009). Forty-two American Indian caregivers were randomized and underwent an eight-session trial of either polarity therapy or enhanced respite control (Korn et al., 2009). This study's outcome was that polarity therapy participants improved more significantly than the patients that received ERC on stress, depression, bodily pain, vitality, and general health, and suggests that polarity therapy to treat American Indian dementia caregivers is feasible and might be an important approach to reducing stress, depression, and pain (Korn et al., 2009). Our study examines energy healing therapies like polarity therapy in improving health and increasing happiness.

Various practices in alternative and complementary healing have been measured in relation to happiness, the dependent variable of emotion in our group's working study. A study examined hypnosis in relation to the emotion; the author refers to Seligman's work on authentic happiness, which is a formula described as the addition of three variables: the set-point, circumstances, and variability (Ruysschaert, 2014). The work reviews literature and research on what it means to live a good, meaningful life, what determines happiness, and examples of how hypnosis might be used (Ruysschaert, 2014). What are referred to as "happy pathways" in the brain are strengthened from positive self-hypnosis focusing on positive images (Ruysschaert, 2014, p. 281). High hypnotizability improves the access to emotional states, negative or positive, and is useful for immersing oneself in reliving experiences of a full life, which can intensify the effect of certain cognitive processes, such as counting one's blessings (Ruysschaert, 2014). The author notes that through the practice of

hypnosis, "positive connections can be re-lived, intensified and nurtured" (Ruysschaert, 2014, p. 281). The author also presents the notion that emotions from the past, present, and future are able to change at any point (Ruysschaert, 2014).

"7 Colors of Happiness" provides an overview of how emotions are processed and the effects that negative and positive emotions have on the body. The author states that "negative emotions narrow your mind in order to limit your options to only those that will help you survive, and focus your attention on making it happen" (Swigart, 2014, p. 42-45). The mental state of an individual affects their physiological state, and this relationship is heightened during alternative and complementary healing practices. The author describes particular emotions vibrating at certain frequencies, comparing them to the colors of the chakra system within our bodies (Swigart, 2014). Ayurveda is the traditional medical system that has been practiced in India for over 5,000 years, consisting of a holistic and systematic approach to healthcare that is not frequently acknowledged in the Western region of the world (Mishra, Singh, Dagenais, 2001). The chakra system is often a focus in various Ayurvedic practices, and practitioners understand that the human body has vibrating energy fields, just as the universe does. These fields have a strong beginning within the body and extend to its surroundings (Greenwood, 2006). These various energies flowing in and around the body vibrate at different frequencies, with the variations vibrating in harmony at certain nodes, or points of location in the body (Greenwood, 2006). The point of many alternative medicine practices is to unblock the flow of energy at different points in the body where symptoms become physically and emotionally manifested through a blockage.

### THEORETICAL LENS

Critical theory will be used to examine the topic of alternative and complementary healing practices. Access to alternative and complementary healing practices can vary amongst individuals, posing the question of what conditions stand in the way or affect the accessibility some have when seeking alternative healing. The cost of alternative medicine practices ranges based on the type of practice or healing process, as well as the location the service is offered. Why might certain alternative and complementary healing practices be offered in some areas, rather than others? The controlling variable of income and socioeconomic status can dictate the type of treatment an individual seeks. Sometimes the only bill an individual can afford is their monthly health insurance, already placing them in the group of traditional western patients. The pricing of each different alternative and complementary practice is another controlling factor placed on individuals seeking energy healing treatment.

Some alternative and complementary healing practices, after repeated visitations and treatments, enable the patient to administer the healing on themselves, eliminating the need for an energy healer. This characteristic depletes the power from the controlling institution and redistributes it

to the patient without the need for a facilitator. Practices such as yoga enable an individual to learn and memorize various postures and positions to then practice on their own. A home practice often refers to an individual who practices yoga on their own time, has personal goals set, and does not require an instructor. When an individual feels comfortable enough to practice on their own, it can save them expenses such as gym memberships, yoga studio memberships, and the cost of commuting to classes. If the long-term health of an individual is improved by incorporating contemplative, healthy practices into their daily life, medical costs would also decrease by allowing patients to self-medicate and treat themselves through mindful routines and daily practices.

## **RESEARCH DESIGN**

We hypothesize, based on prior research, for the use of alternative medicine practices to correlate positively with the general happiness of adults. Happiness is a factor that can be affected and under constant variation among people; therefore, understanding that it is not wise to conclude that a single variable can be related to one's happiness, this study will measure happiness against a few other factors. The first variation examined is happiness in relation to one's social class. We will do a content analysis of secondary data, examining variables acquired from the GSS08 data set, STATES10 data set, and variables from the National Health Interview Survey 2007. The GSS08 (General Social Survey) consists of information on people at an individual level. The data was obtained through interviews in the year 2008, with responses that represent attitudes, behaviors, and beliefs of American men and women (Sweet & Grace-Martin, 2012). Questions that were posed during the interviews to obtain this data included queries on race, socioeconomic status, education, and gender (Sweet & Grace-Martin, 2012). The STATES10 data includes geographic information designated by state in the U.S.; information can include crime rates, alcohol sales, poverty, and other social issues occurring in society (Sweet & Grace-Martin, 2012). The purpose of this data set is to compare different states in the U.S. using the same or differing variables. The resources used to obtain this data include the U.S. Census, National Education Association, Department of Labor, the Internal Revenue Service, and the U.S. Department of Health and Human Services (Sweet & Grace-Martin, 2012).

Our variables will be operationalized using the general happiness statistic and the variable of owning a home or renting, acquired from the GSS08 data set, for a cross tabulation. This study will also conduct a cross tabulation of the variable of general happiness and the variable measuring if the respondent is satisfied with their financial status, also taken from the GSS08 data set. These two variables will serve as indicator of social class, a factor which the researcher feels may contribute towards an individual's happiness. Social class could be a possible variable that affects the methods of self-healing and medicalization that a person takes.

The next set of variables that will be measured in relation to happiness is the condition of health of individuals. How happy someone considers themselves can possibly vary depending on the physiological state of the body. Recalling one of our hypotheses, happiness can be contingent on other variables that influence a person; one's happiness may not just be related to the method of medical treatment used, in terms of access to alternative medicine practices. Happiness can be contingent on the physical state of the body; therefore, the researcher will carry out a cross tabulation of the health condition of adults in relation to their general happiness, using the happiness variable and rating of health variable, both acquired from the GSS08 data set. This relationship would show that health is related to personal happiness, and could play a role in the relationship between personal happiness and alternative medicine practices. While staying on the topic of health, the researcher will measure mental health in relation to one's physical health. This relationship is being measured to show the connection that mental and physical health have on individuals, which can influence their happiness. A bivariate correlation will be done measuring the variables of the percent of adults reporting serious psychological distress in 2007 with the percent of adults with high blood pressure in 2007, acquired from the STATES10 data set. These results will indicate that the psychological state of the body affects the physical state of the body, further concluding that there are factors contributing to happiness other than access to alternative medicine practices. The researcher will measure whether someone's mental health, particularly those under critical distress, affects their condition of health. This study will test this relationship by doing a bivariate correlation of the percent of adults reporting serious psychological distress in 2007 with the variable of the percent of adults rating their health as fair or poor in 2008, both on the same dataset for statistical comparison. This relationship indicates whether individuals are happy and how that relates to their physical health state. Based upon the data obtained from previous correlations and cross tabulations the results will indicate a possible pattern of whether someone that is suffering mentally considers their overall health as poor or not satisfactory. This relationship will be an indicator of the connection that may be present between the mental and physical health of individuals.

The final relationship this study will measure includes alternative and complementary healing practices with the general happiness of adults. This will be operationalized through the variable of whether an individual has seen a practitioner for energy healing therapy and the general happiness statistic. The cross tabulation of this relationship will indicate whether there is a connection between the use of alternative medicine practices, such as energy healing therapy, and the mental health of adults, specifically happiness.

The background support was acquired through the databases Web of Science, EBSCOhost, Diversity Studies

Collection, and Google Scholar, with searches for peer-reviewed journals and reviews on alternative medicine practices, happiness, and health. The researcher was also interested in further literature on the use of alternative medicine practices in relation to physical and mental health treatment, and included a wide variety of complementary healing practices to enrich this study.

### **METHODS/ANALYSIS**

The statistic measuring whether an individual has seen a practitioner for energy healing therapies is from the National Health Interview Survey taken in 2007. This was a national survey measuring the health practices of adults and children in the United States, with a separate data set designated purely for alternative and complementary medicine practices. The findings from this data set revealed that nearly 4 out of 10 adults have used complementary and alternative medicine in the previous year, with nonvitamin, nonmineral, natural products (17.7%) and deep breathing exercises (12.7%) as the highest or most popular categories of alternative medicine (CDC, 2008).

The researcher chose to operationalize socioeconomic status with the statistic of whether one owns or rents a home, and compare that to the happiness of adults. Financial stability is not completely determined by the ownership of a home, but those who do own a home tend to be more financially secure than those who are renting annually or month by month. A cross tabulation of a respondent owning or renting a home with the happiness of adults yielded a statistically significant result, with a chi-square value of 42, and a significance level of .000. This means that there is a 0% chance that the relationship between owning or renting a home and happiness is due to chance. Out of 887 respondents who reported to own their own home, 802 responded to be either very happy or pretty happy. Four hundred and thirteen responded as renting a home: out of those, only 94 reported being very happy and 232 said they were pretty happy. The population size of those owning a home is greater, but the percentage of respondents who reported being very happy or pretty happy totals to roughly 90%, compared to approximately 78% of respondents that are very happy or pretty happy home renters. The findings suggest that owning a home tends to bring greater happiness to individuals; however, it does not draw the generalizable conclusion that owning a home makes one happier than renting.

Further representing socioeconomic status, a statistic was used to operationalize a respondent's satisfaction with their financial situation. This was analyzed through a cross tabulation measuring satisfaction with financial situation with the happiness of adults, revealing that it is statistically significant with a 0% chance that their relationship is due to chance. The chi-square value is high at 225.3, indicating a strong relationship between the variables. Of the 571 who reported to be satisfied with their financial situation, 540 reported to be either very happy or pretty happy. Of

the 814 who responded that they are more or less satisfied with their financial situation, 712 confirmed they are very happy or pretty happy, with 102 stating that they are not too happy. The population that said they are not at all satisfied with their financial situation, 623, had few reporting being very happy (only 93 respondents); 530 responded to being either pretty happy or not too happy. Like the previous statistical analysis, this relationship indicates that financial satisfaction and happiness do have a notable relationship to consider. However, this test does not serve as the basis for generalizability to measure the social class of individuals and their happiness.

The next relationship tested was a cross tabulation of happiness and the condition of health of adults. The findings indicate that over 90% of those individuals reporting excellent health are either very happy or pretty happy, while over 45% of individuals with poor health reported to be not too happy. The findings suggest that happiness and a positive health condition are variables positively related to one another. The relationship is statistically significant, with a higher chi-square value of 121.67. This relationship provides a basis for the relationship between the use of alternative medicine practices and the happiness of adults.

A bivariate correlation was used to measure the percent of adults reporting serious psychological distress in 2007 and the percent of adults with high blood pressure. The findings indicate that there is a correlation between the physical health state of the body, operationalized through the statistic of the percent of adults with high blood pressure in 2007, and mental health condition, operationalized through the percentage of adults reporting serious psychological distress in 2007. The bivariate correlation results indicate that there is a positive relationship between those having psychological distress and having high blood pressure. These findings help support the argument that the psychological or mental state of the body affects the physical body's condition.

The next relationship tested consisted of a bivariate correlation between the percent of adults reporting serious psychological distress and the percent of adults rating their health as fair or poor. These findings indicate that there is a positive correlation between those individuals that report serious psychological distress and those who rate their health as fair or poor. This helps illustrate the connection that the psychological state has on the physical body and the perceptions of health. The correlation coefficient indicates a reliable relationship with a value of .32, while also being statistically significant.

The final test that was examined included a cross tabulation of whether individuals have ever seen a practitioner for energy healing therapy and general happiness. The statistics show that most people, at 1923, have not had energy healing therapy before, while only 37 actually have. These numbers indicate that the researcher cannot make generalizable conclusions from the statistical analysis due to the low population of adults who reported using energy healing therapy; however, the researcher

wanted to note that 83% of adults who have had energy healing therapy reported to be either very happy or pretty happy. This may not have been the best model to display the relationship between alternative medicine practices and the happiness of adults. Based on prior research and findings, we had hypothesized the relationship between energy healing therapies and general happiness to be positively correlated, with a strong significance.

## CONCLUSION & RECOMMENDATIONS

The findings indicate that there is a connection between general happiness and socioeconomic status of individuals, in that there is a variation of happiness depending on the financial status of an individual. Those who are satisfied with their financial status are more likely to be happier than those who are not satisfied with their financial status, indicating that socioeconomic status is a possible factor relating to happiness. There is a connection between happiness and positive health outcomes; the findings indicate that over 90% of those individuals reporting excellent health are either very happy or pretty happy. Given these findings, supplemented with the notion of alternative medicine showing to have a positive effect on health, the researcher can hypothesize that alternative and complementary medicine practices can play an indirect part in levels of happiness. Over 45% of individuals with poor health reported to be not too happy, and these findings suggest there is a connection between the physical body and the psychological state. This is reinforced through the correlation between adults reporting serious psychological distress and those reporting their health to be fair or poor. The cross tabulation of having used energy healing therapy and happiness does not support the hypothesis of energy healing therapies positively correlating with happiness, and lacks the statistical significance to make generalizable conclusions.

This may not have been the best model to display the relationship between alternative medicine practices and the happiness of adults. This literature suggests further research, to include conducting more robust correlations and multiple regression analysis to determine if there are other variables affecting the use of alternative medicine practices and positive well-being and health condition. Further research can examine individual complementary and alternative healing practices in relation to happiness and improved health, as some have begun to outline. Future studies can also examine variables such as race and social class in populations that use alternative and complementary medicine. The significance of this topic is inclusive of many; as the issues of psychological distress and medical costs present themselves, individuals must find ways to cope with these conditions and seek solutions to medicate. Alternative medicine practices have been shown to improve health and well-being and may be options for individuals to take as methods of healing. Once learned, some of these practices, such as yoga, qigong, or silent meditation, can be practiced without the aid of a practitioner, giving the power back to

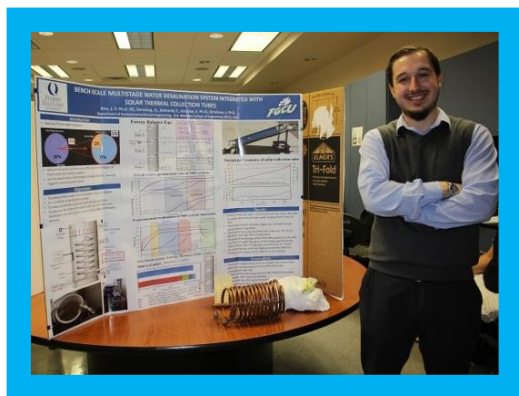
the patient and relieving them of the controlling nature of medical institutions.

Policy recommendations could include specialized vicinities to take part in alternative healing practices in the workplace, possibly even on main college campuses. A suggestion might be designated rooms or areas made for silence, to enjoy the present moment and disconnect from the many distractions and technologies that cloud our judgment, perhaps allowing people to cope with the stresses of their daily routines. Just as designated smoking stations are assigned to some organizations and institutions, and some cafeterias for ritualized eating, a specialized area to unplug and relax, for even just ten minutes, could improve overall well-being and mental health.

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## The Influences and Role of Pope Pius XI against Antisemitism

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### ABSTRACT

The role of Pope Pius XI in dealing with the spreading of Nazi racism is one that has been overshadowed by his controversial successor's actions during the Holocaust. This historical narrative fails to recognize the achievements of this relatively centrist pope in an era of extremes. In fact, Pope Pius XI played a crucial part in laying the foundation for Christian and Jewish resistance against Nazi racist ideologies and cruelty. Indeed, his actions are in part a makeup of his life's mission. Thus, by looking at the personal influences that shaped his perspective throughout his life, that shaped his political, racial, and religious beliefs, Pope Pius XI can be seen both as an opponent to racial antisemitism and a man attempting to keep the Church safe while caught in a world of rapid change due to the ideal of modernity and the spreading of Communism and Fascism.

**Keywords:** Pope, Nazi, racism, antisemitism, Communism, Holocaust, Bolshevism

Pope Pius XI was an early opponent of Nazism, and deserves a thorough and even-handed study of his life and role as supreme pontiff. The scholarship surrounding Pius XI generally displays him as either a friend to the Jews or an antisemite who showed little love for them, caring only about the well-being of the Church. Pius XI reigned as pope from 1922-1939; he published concordats with secular authorities to legally preserve Church sovereignty and ownership over religion, most notably with the Fascist states of Italy and Germany<sup>1</sup>. Throughout his papacy, Pius XI used politics, religious encyclicals, and speeches that preached against racial antisemitism to protect the Catholic Church from the spread of Nazi antisemitic ideologies. To understand Pius XI's role in attempting to stop Nazi antisemitism, his influences and religious life, both before and during his papacy, must be analyzed. Upon understanding his influences and what he held dear as a Catholic, an accurate representation of the pope can be revealed. It can thus be argued that Pope Pius XI's role as a resister of Nazi antisemitism was to find a balance between what he believed was morally right in halting Nazi racism and keeping the Church politically linked to the Fascist states to safeguard against the changes of the twentieth century, notably Bolshevism. This argument will be developed over the course of three sections: first an examination of Pius XI's personal life, second Pius XI's political dealings with Nazi Germany and Mussolini's Italy and finally how he dealt with religious and racial tension within the Vatican concerning antisemitism.

Pope Pius XI was born with the name Ambrose Damian Achille Ratti on May 31, 1857 in Desio, Italy, near Milan. His family was considered part of the peasantry, with strong ties to ecclesiastical officers<sup>2</sup>. During the summers, his uncle Don Damiano, who was a priest, fostered a love of reading in the young Ratti<sup>3</sup>. At an early age, Ratti had an inclination for education and the ways of the Church. Through his

uncle, he would come to know the local archbishop, and eventually after graduating from seminary school with a focus on humanities, in the 1880s, was inducted into the College of the Lombards in Rome<sup>4</sup>. Ratti went on to earn a triple doctorate in Philosophy, Theology, and Canon Law by 1882<sup>5</sup>. These early influences were important, as his education provided him a foundation for dealing with antisemitism with a scholarly mind, rather than a political mind, during his papacy.

During Ratti's education, he was introduced to the philosophy of St. Thomas Aquinas. To Ratti, Thomism suggested that the intent to do wrong made the act morally wrong; this is called Aquinas's principle of Double Effect<sup>6</sup>. The principle of Double Effect would cause Ratti to consider actions seen by others as wrong, such as dealing with Hitler, to be morally good because Ratti's intent was just and thus morally right. As pope, his grounding in Thomist principles, mainly that of Double Effect, influenced his non-engagement with the politics of the day and kept him out of the debates and intense arguments of the late nineteenth and early twentieth centuries<sup>7</sup>. This influence would prove to be crucial to how Pius XI would handle political situations in Germany and Italy, choosing a non-confrontational approach in order to not sever diplomatic ties with other powers of the day. Rather, along with his administration, he would choose to act diplomatically and within the legality of the Church's concordats in relation to the two states when faced with moral dilemmas, just as Aquinas' theories proposed.

After Ratti earned his doctoral degrees, he went on to teach at the seminary at Padua, Italy. He worked at the Ambrosian Library until 1911, and became a member of the Oblates of St. Charles (members were in charge of running the library and other educational institutions of the Church)<sup>8</sup>. During this time as an educational facilitator and historian, Ratti became influenced by his studies of St. Ignatius Loyola, the founder of the Society of Jesus (Jesuits) and the

writer of *Spiritual Exercises*. The future pope held *Spiritual Exercises* in high esteem because of its emphasis on retreats, which asked Catholics to go on a spiritual journey to become closer to God, and the teaching of fully succumbing to one's discipline as a way to become closer to one's own spirituality<sup>9</sup>. Due to this influence, those who later knew Ratti as pope admired his obedience, complete dedication, and simplicity, symbolizing the strong influence of the Ignatian Art<sup>10</sup>. Therefore, the religious teachings of the Jesuit founder played a major role in Pope Pius XI's pontificate because he would call on Jesuits to help him create an encyclical that denounced Nazi antisemitism, showing his complete dedication to the Church and the continuity of the Catholic faith.

Another influence that played a major role in forming Pope Pius XI's response to the spread of Nazism and their antisemitic teachings occurred during his time as Papal Visitor to Poland in 1918. In 1815 the Congress of Vienna had split Poland amongst Russia, Germany, and Austria for territorial gains. Before Poland regained its statehood, the Russians forbade the development of religious orders of men and the establishment of nuns within their section of Poland<sup>11</sup>. Over the course of World War I, Poland gained its independence and became a whole country again. The now Monsignor Ratti was chosen by Pope Benedict XV to be Papal Visitor because of his cultural upbringing, education within the faith, and the understanding of history he developed while working at the Ambrosian Library. Through his experiences as a professor and librarian, Ratti had the tempered mind of a scholar, but during his time in Poland, the country's environment subjected him to disgraceful situations that would eventually shape his papal policies and religious standings towards the Jewish people. This shift in political territory would cause Ratti to come face to face with the political ideologies of Bolshevism and Nationalism spreading across Europe. During his time in Warsaw, he saw to the people's religious needs, visited various religious shrines, and most importantly, exuded the Holy See's determination to denounce anti-Jewish pogroms. Ratti tried to treat the Polish Jews as he would any Christian<sup>12</sup>. After World War I, the bishops of Poland were finally able to communicate to the Holy See their thanks to Ratti for his dedication to ensuring Catholic survival in the new Poland.

However, the now Bolshevik Russian advance on Poland heavily influenced Ratti during his time in the country. The new Soviet Union created a regime based on the peasantry's dominance over the land, and these ideas rapidly spread into Poland. By 1919, Ratti was appointed nuncio in Poland and had to help guide the actions of the clergy when political change, such as land reform, threatened the Church's property<sup>13</sup>. These political changes brought about a religious shift away from individual expression and religion and toward atheistic ideology centered on state pride.

While in Poland, Ratti experienced these shifts in politico-religious affairs spreading in Eastern Europe first hand. More important was the concept that the Jews were

associated with the Bolshevik Revolution; this would later cause the Church under Pius XI to persist and impose anti-Judaic policies because of the anti-religious ideology that surrounded Jews and Bolsheviks<sup>14</sup>. To add to the hardships of the future pope, in 1920, as a papal delegate to the inter-allied plebiscite commission, he became the target of Polish nationalist resentment, leading to his expulsion from Poland in 1920<sup>15</sup>.

Ratti was able to learn all he could about Communism, Nationalism, and Socialism due to the Bolshevik advance on Warsaw, and he concluded that it would be hopeless for Catholics and Communists to coexist<sup>16</sup>. The political turbulence in Poland forced Ratti to believe that more than ever, the Church needed to be an independent entity to avoid political entanglements. Poland, therefore, profoundly influenced the future Pius XI's effective role in keeping a balanced approach between supporting Fascism to stop Communism and helping the Jewish people survive against Nazi antisemitism.

When analyzing Ratti's influences from childhood to his time in Poland, an understanding of his personal views on politics and Jews becomes apparent. Ratti was faced with many religious and political challenges during his time in Poland, and confronted them with the diplomatic mind of an educated man of faith. These issues shaped his ideas about Jews. Like many Europeans, Ratti began to equate Jews with Bolshevism; these prejudiced ideas did not, however, lead to future persecution based on race. Unlike the Nazis, who persecuted both Communists and Jews and racialized them, Ratti refused to do so. Ratti would be elected Pope Pius XI in 1922 and throughout his papacy, these influences shaped how he dealt with Fascism, racism, and antisemitism.

Pope Pius XI's papacy dealt with changing political factors such as coexistence with Fascist Italy, the rise of the Soviet Union, and the rise of Hitler's Germany. Initially, the new pope's primary concern was dealing with the now Fascist state of Italy under Benito Mussolini. During Pius XI's first year in office, he outlined a program that described democratic governments as susceptible to chaos, which some critics have interpreted as the pope's approval of Mussolini's Fascist government. For the new pope, however, Communism was a primary concern during the 1920s, and he believed that liberalism gave rise to socialism just like how Bolshevism spread in Poland<sup>17</sup>. To this end, the pope and Mussolini's government formed a political pact or concordat called the Lateran Pacts of 1929 which effectively created the Vatican State and made Catholicism the state religion in Fascist Italy.

The concordat with Italy provided the basis for the Vatican's future political endeavors with Germany. Article I of the Lateran Pacts states, "Italy, as per Article I of the Treaty, guarantees to the Catholic Church the free exercise of spiritual power, the free and public exercise of worship, and also of its jurisdiction on religious matters in conformity to the rules of this Concordat..."<sup>18</sup> The pacts gave jurisdiction pertaining to all matters religious to the Vatican in exchange

for excluding the clergy from party politics, which inevitably allowed Mussolini to grow his Fascist state around his own cult of personality<sup>19</sup>. The Lateran Pacts laid the groundwork for the Vatican's political dealings with Germany at the beginning of the 1930s. Pope Pius XI, along with his secretary of state Cardinal Eugenio Pacelli (Pope Pius XII), believed that a diplomatic approach would help quell the Fascist states and better act as a safeguard towards the great threat of Bolshevism. Inevitably, such a stance later pushed Pope Pius XI to take a more drastic stance against Nazi antisemitism and racial laws.

The situation in Italy should be considered because it further illustrates why Pope Pius XI acted the way he did politically when dealing with Nazi Germany. The concordat with Italy made the Catholic faith the state religion, and brought legality to Church organizations such as dioceses and parishes<sup>20</sup>. Mussolini knew that appeasing the Vatican, and its agreeing to stay out of political dealings, would allow him to solidify his hold on Italy. Therefore, after the concordat was signed, Mussolini decreed that "henceforth the citizen was a Catholic and the Catholic was a citizen."<sup>21</sup> This meant that for Jews, the political situation was still the position of resentment. From his time in Poland, Pius XI retained hostility toward granting religious equality to the Jews; however, when German Nazism began influencing Mussolini both politically and religiously, the pope and his administration began to fall back on the concordat to try and quell the nationalistic spread of racial antisemitism. In 1938 Mussolini decreed the Declaration of Race, which prohibited marriage between Italians and other races, defined Jewishness, and put restrictions on them. The situation concerning race and religion thus became a political battle involving the Vatican, Italy, and Germany<sup>22</sup>.

The political situation in Italy during the start of Pius XI's papacy was in a state of flux. Mussolini had taken power and Fascism became the political ideology of Italy, requiring a total adherence to the state's well-being over anything else. It was being able to deal with Italy through the Lateran Pacts that led the Vatican to believe it could handle Germany in the same way. Through diplomatic concordats, the Vatican believed that it would be able to curb Fascist policies against the Catholic Church and allow it to practice freely. In the end, Pius XI attempted to ensure the Church's political survival, but inevitably he had to deal with the racial and religious policies against Jewish people as well.

The politics that surrounded the Vatican and the Third Reich were based on usage and service. To Hitler, the Church provided a means to harness the Catholic population within Germany. Stopping Communism was the Church's primary endeavor, and it saw that totalitarian regimes, rather than democratic governments, were a better answer for dealing with Communism<sup>23</sup>. However, Pius XI was wary of dealing with the Nazis because of their anti-Catholic, pro-state rhetoric, such as "the common interest before the self-interest."<sup>24</sup> Being more academically inclined, Pius XI understood that dealing with this "devil" would be worth it

if it meant some good would come out of it for his people. Thus, out of the success of the Lateran Pact, Pius XI hoped that Hitler, as another totalitarian dictator, would provide a stable society for Christianity and a safeguard against the spread of Communism.

The Holy See and Hitler's new government signed a concordat on July of 1933<sup>25</sup>. Within this concordat, the most important piece for the Holy See was the right to educate children in the Catholic faith. Hitler promised to keep the church-related school system running in return for the elimination of the Catholic Center Party<sup>26</sup>. The Catholic Center Party held political sway within the Reichstag, and would have been able to block Hitler's legislation; it would also have been able to sway the Catholic population within Germany. Negotiations for the concordat were dramatic. During the initial meetings between Cardinal Pacelli and the German ambassador Franz von Papen, local Nazis in Munich broke up a meeting of Catholics because of the uniform they were wearing. Negotiations stopped, only to be restarted when the German government gave an ultimatum to either accept the concessions of staying out of politics or face the elimination of the Church in Germany<sup>27</sup>. This hostile political climate created the environment in which the Holy See and Germany signed the Reich Concordat of 1933, and it was soon after that Hitler began breaking the terms of the treaty.

To Hitler the concordat meant nothing. He continued his assault on the clergy with his racial and religious intolerance by attacking any clergy who spoke out against his nationalistic propaganda. Politically, Pope Pius XI was caught between keeping his Church intact and safe from Hitler's nationalism or staying loyal to the concordat. Many within his papacy, especially Cardinal Pacelli, aired the strategy of staying diplomatic and not acting out against Hitler. It was during this hostile political situation that Pius XI authorized the creation of an encyclical to condemn National Socialism and its encroachment on Catholic organizations. The ensuing encyclical that was issued on March 14, 1937 was entitled *Mit brennender Sorge* (With Burning Concern), and it protested the negation of the Church in Germany and the negation of principles of the division of humanity on a racial basis<sup>28</sup>. This racial-political encyclical marked Pius XI's initial resistance to Hitler's National Socialism, and it was through this encyclical that a shift in policy regarding the Jewish people could also be seen. Presumably it was Pius XI's anti-Judaism and conciliatory approach that allowed Nazi Germany to gain a foothold in politics, but that was only due to Pius XI wanting to stop the spread of Communism<sup>29</sup>. However, the issuing of the encyclical was meant to spark resistance against the ideologies of the Third Reich, and its racial views towards the Other.

Therefore, politically, when dealing with the politics of Italy and Germany the papacy of Pius XI was one that held true to the influences of the pope's life. When faced with the Church's ability to continue to practice its faith,

he used diplomacy just as he had done in his dealings with Italy. In this regard, he showed that a balance was needed in order to gain an independent Vatican city-state and solve the Roman Question plaguing Italy at the time. When dealing with Germany, he, along with his secretary of state, believed that a balancing act was needed to appease Hitler so that the members of the Church would be safe. However, due to Hitler having more diabolical plans, the political situation deteriorated between the Third Reich and the Holy See. It was out of this politico-religious situation that *Mit brennender Sorge* was written to contain the nationalist ideology of the state over all else<sup>30</sup>.

A better understanding of Pope Pius XI's dealings with the Jewish people can be gained by looking at the politics that surrounded his papacy. In article XVI of *Mit brennender Sorge*, Pius XI spoke about the banishment of the Old Testament, and that whoever banished the Old Testament blasphemes the name of God<sup>31</sup>. This theme showed a shift in feelings about the Jewish people, moving away from a religious hatred and towards saving the people themselves. The encyclical had its critics, however, who said that rather than temper the Nazis, it would only anger them and cause Catholic repression within Germany<sup>32</sup>.

With Pius XI's personal and political influences laying the foundation for his responses to Fascist Germany, the reasoning behind why he acted the way he did when dealing with the racial and religious injustices that faced both his Catholic people and the Jewish people can be qualified. In 1928, the Holy Office struck out against antisemitism by suppressing the Friends of Israel organization. This organization was founded for the reconciliation of Jews and condemned long-standing antisemitic stances among Catholics. Critics of the suppression believed that the Church did not want a reconciliation with the Jews; however, the reasoning behind the suppression also condemned antisemitism, stating that the Holy See had always protected the Jews from racism, and reproved the hatred given to God's people<sup>33</sup>. What this early stance against racial antisemitism says about Pius XI is that he was willing to strike out against his own Church-led organizations if it meant stopping racist machinations against anyone, especially the Jews. Therefore, it can be seen that Pius XI, though anti-Judaic because of Jewish association with Communism, was not an antisemite in terms of racial hatred. This early stance against antisemitism within the Church would show what kind of role Pius XI had in regards to the Nuremberg Laws.

Pius XI, when faced with Germany's attacks against the Jews, was relatively quiet in regards to the racial discriminations the Jews faced. Pius XI and Cardinal Pacelli tried to keep the concordat with Germany intact because of the drastic implications associated with the Holy See breaching the concordat. However, Pius XI was a man of his time, holding anti-Jewish sentiments in the form of identifying religious-politico interconnections between Judaism and Communism. Hence, it was not until the

encyclical *Mit brennender Sorge* was published that the pope took a stand against the racial and religious components held against the Jews by Nazi Germany<sup>34</sup>.

Publishing the encyclical *Mit brennender Sorge* attacked the racist principles centered on antisemitism and the dominance of what the Nazis conceived as a German "race." It was a turning point as well because it was a sign that towards the end of his papacy, Pius XI was considering a harder stance against Fascism. A six-member committee wrote the encyclical: Cardinals Pacelli, Faulhaber of Munich, Freising, Schulte of Cologne, and Bishops Galen and Preysing. One member, Bishop Konrad von Preysing, is worth mentioning as he was vocal in his disagreement regarding the Nazis, appealing that the Church and Nazism could not coexist<sup>35</sup>. Preysing's views of Nazism characterized the encyclical's tone of resistance against Nazi ideologies. The Vatican's main focus was to keep to the concordat, and thus the negative side of the encyclical was the fact that it had lost much of its moral and doctrinal stand against antisemitism<sup>36</sup>. The balance between staying true to the concordat and being confrontational with Germany plagued Pius XI's papacy, and it was the publication of *Mit brennender Sorge* that set the tone of confrontation between Pius XI and Hitler. The confrontation focused primarily on the accusation that the Nazis did not believe in God, and that those who followed Nazi ideology did not follow the Catholic plan; in turn, they did not stay true to contemporary humanitarian ideals<sup>37</sup>.

Pius XI believed that the Nazis were valuable as defenders against liberalism, Communism, and modernity, but his Vatican refused to coincide with the Nazi's racial beliefs. The papacy believed that religiosity, not race, defined one's Jewishness, and it was this divide that sparked the antisemitic stance of the Church as well as the force that led the Nazis to condemn Catholics after *Mit brennender Sorge*<sup>38</sup>. The Nazis criticized the encyclical by branding it a battle call against the Reich, and vowed revenge on the Church; thus, the persecution of the Church began wholesale. This did not stop Pius XI, who sanctioned a series of articles in the *Civiltà Cattolica* telling the Catholic people to destroy antisemitism<sup>39</sup>.

This was, however, in the same journal that Pius XI had previously allowed anti-Jewish articles to be published. In 1934 *Civiltà Cattolica* published an article detailing the evil of Jewish beliefs and the idea that Jews should be segregated and identified because of their dangers to society<sup>40</sup>. These anti-Jewish articles allow for an interesting division between being anti-Jewish and antisemitic. The contrast is intriguing, because while the Vatican was filled with members who were anti-Judaic in their writings, Pope Pius XI tried to stand against racial antisemitism because of the belief that it was morally wrong and against the teachings of the Church. In sum, the pope dealt with the Nazis up to a certain point, but when a certain line was crossed (namely the Nazi racialization of Jews), he had no intention of dealing with Germany, thus showing the intention to harm Jews was

never part of Pope Pius XI's platform.

By his final years in office (1938-1939), there were two instances that provided the culmination of the stance Pius XI held when dealing with racism and religious persecution: his speech to the Belgium Catholic Radio Agency, on September 6, 1938, and the racial denunciation of the Nazis in the encyclical *Humani Generis Unitas*, which was never published due to his death. These two pieces of evidence provide an important view into Pope Pius XI's overall feelings towards the Jews at the end of his reign.

The speech, made September 6, 1938, bore great significance for Pius XI as a pope who fought for the Jews. He attempted to build a bridge between Christians and Jews by stating that they were all children of Abraham, which for Catholics made antisemitism anti-Catholic<sup>41</sup>. The most important piece of the speech was the ending, when Pius XI said, "Spiritually we are all Semites." The speech provided a link between the Church and the Jews, implying any crime against the Jews was a crime against the Church. During the course of the speech, however, the pope never mentioned the word "Jew," and the speech was never made public in Italy or Germany because of the Vatican's need to keep the balance of its concordats<sup>42</sup>. Another portion of the speech that caused some criticism was where Pius XI stated that he recognized that anyone had the right to defend themselves, but antisemitism was inadmissible. This has been taken as his saying that any Christian nation has a right to defend themselves against the Jews<sup>43</sup>. It was this balancing act that showed Pius XI as a man of his time. He rightly denounced antisemitism to be against Catholic teachings, but at the same time, he was a man who in the eyes of the Church, still considered the religious aspect of the Jewish people wrong. In this sense, Pope Pius XI's policies and speeches hold the subtle, anti-Fascist condemnation that an attack on the Jews was an attack on religion itself.

The second piece of evidence is the plan for the publication of the encyclical *Humani Generis Unitas*. In 1938 Pius XI commissioned three Jesuit priests, John Lafarge, Gustav Desbuquois, and Gustav Gundlach, to produce a draft for the encyclical<sup>44</sup>. John Lafarge was an American Jesuit who was chosen because of his dealings with racial equality and activism for African-American rights in the United States<sup>45</sup>. Gundlach warrants a deeper understanding because of his work, *Anti-Semitism*, published in 1930. In this article, Gundlach divided antisemitism into two types, one national and politico-racial, the other politico-governmental. He differentiated the two as the first being non-Christian, and the second only legal when it combats a moral and legal means of Jewish influence. He ended his article by stating that the Church rejected modern antisemitism based on false theories of man and the role of the Jewish people as the chosen people<sup>46</sup>. Once again, Pius XI's choice of authors shows a balance between resisting the racial policies of the Nazis, while at the same time staying within the religious doctrine of Church superiority over the Jews.

*Humani Generis Unitas* begins its foray into the moral inequities against the Jewish people in Section V paragraph 132, "Jews and anti-Semitism (religious separation)," lamenting the denial of legal protections against Jews based off of the values of nationalism, and calling it a "flagrant denial of human rights," causing the Jews to have nowhere to call a home for themselves<sup>47</sup>. Paragraph 133 goes on to state that it is not a question of race but of religion; there is a call for a social separation of the Jews based off of a religious character, but it is not a matter of race or nationalistic views<sup>48</sup>. These two points presented the crux of the argument of the encyclical. The Church indeed was taking a stand against the racism of the Nazis, but at the same time, from a religious point of view, it still held anti-Judaic groundings. Unfortunately, Pope Pius XI died before the encyclical could be published and his successor, Pope Pius XII, decided against its publication. A major reason as to why Pius XII decided against publication was his need to be diplomatic. Before he became the pontiff, Cardinal Pacelli, being secretary of state, wanted to be a great diplomat. It can thus be assumed that publishing an encyclical designed to condemn Hitler's actions would have destroyed the concordat and any hope of diplomatic solutions.

Pope Pius XI was a pope faced with many transitional problems in modern society including the spreading of atheistic Bolshevism, right wing nationalist Fascism in Italy and Germany, and the religious ideologies of the Church pertaining to anti-Judaism. The effectiveness of the pope's role as defender of the Jews can only be measured by his role in defending the Catholic faith against Italy and Germany. Initially, he believed that Communism was the most important enemy to deal with, hence his dealings with Germany and Italy in the first place. It was only when they both began to attack the Catholic people and promulgate laws against race that Pius XI took a stand against Hitler and Fascism. The influence of St. Ignatius in being wholeheartedly dedicated to one's profession was the driving force behind Pius XI's role in helping the Jews. Therefore, while facing adversity within his Church and the political adversities of the Fascist regimes, Pope Pius XI's role in helping the Jews was one of laying the foundation for resistance that would interconnect Christians and Jews during the ensuing Holocaust and beyond.

#### NOTES

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## Plague and the Conception of the “Self” in Early Modern England

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### ABSTRACT

It is the goal of this paper to examine the impact of illness in early modern England in order to illustrate how the idea and conception of the Self continues to change. By using Elizabeth I’s “Plague Orders: Orders Thought Meet…” and The Church of England’s “Plague Prayers: A Form to be Used in Common Prayer,” policies and plague remedies can be examined through the treatment of the sick and how healthy individuals are required to care for and watch the sick. In John Donne’s *Elegy on Mistress Bulstrode* and *An Elegy upon the Death of Mistress Bulstrode*, and W. Bullein’s *A Dialogue Both Pleasant and Pietyful*, the sick individuals are reimagined and given a voice after their death. Readers gain insight into the sick individual’s inner thoughts and feelings through an examination of Thomas Clark’s “Meditations in my Confinement.” It is in these three literary texts that the effects of death during plague time can be seen and felt by readers. The imagery in Donne’s *Elegy on Mistress Bulstrode*, *An Elegy upon the Death of Mistress Bulstrode*, Bullein’s *A Dialogue Both Pleasant and Pietyful*, and Clark’s “Meditations in my Confinement” are representative of the search for ways to recover an uncorrupted image of the physically destroyed bodies of those that were lost to plague. Thomas Clark’s “Meditations in my Confinement” also illustrates the impact that illness and subsequent quarantine had on individuals’ perception of the Self. The idea of the Self will be examined using the author’s variation on Nancy Selleck’s interpersonal idiom, or Self, especially with consideration for how the Self was constructed in the early modern period and its special application during plague time. The implications for the construction and expression of the Self during plague time will further allow readers to assess the influence of the disease in specific early modern plague policies and literature.

**Keywords:** Early modern, England, Plague, Self, Selfhood, Quarantine, Death, Illness, Disease, Identity

### INTRODUCTION

During early modern English life under the reign of Queen Elizabeth I and her successor King James I, plague outbreaks came and went regularly. Hence, it is important to consider the impact that plague had on individuals living and working near areas where there were outbreaks. These outbreaks brought the population into contact with experiences that would shape the way they thought about living and dying. As a result of these thoughts and fears, the threat of infection and contamination is present in much plague writing.

In order to understand and analyze the plague writing of the early modern period, readers need to be aware of some key factors that affect those who are ill. When examining illness, there are several important aspects to consider: the sick individual, the family or friends, and the way that each of these individuals involved with illness are affected, whether psychologically or physically. By analyzing John Donne’s *Elegy on Mistress Bulstrode* and *An Elegy upon the Death of Mistress Bulstrode*, William Bullein’s *A Dialogue Both Pleasant and Pietyful*, and Thomas Clark’s “Meditations in my Confinement” and the way that illness is treated in each, readers gain insight not only into the impact that the fear of death has on a character’s Self, but also of how this is depicted in varying ways by different authors. This essay will examine the impacts of plague in early modern England and the way plague shaped the idea and conception of the Self. The images and texts created during

the early modern time are also representative of the search for ways to reconcile being alive while living close to illness and possible death. An examination of the interpersonal idiom, or Self, as it was constructed in the early modern period, its special application during plague time, and the implications for its construction and expression will give readers an understanding of how the identities of early modern individuals were impacted by their encounter(s) with plague. Through a review of the literature and policies of the early modern period, readers will get a glimpse of what life was like during plague time in England.

The early modern conception of the Self differs from what readers of the twenty-first century might generally think of today. Nancy Selleck is a key scholar who defined and examined the concept of the interpersonal idiom in her book, *The Interpersonal Idiom in Shakespeare, Donne, and Early Modern Culture*. Some of Selleck’s argument deals with feminist readings of certain early modern texts; however, this essay will incorporate her conception of the Self relating to familial relationships, not just the relationship between male and female. Selleck notes that instead of a Self that identifies with specific individual aspects of a personality or identity, early modern individuals tended to “refer to the body more than the mind,” but did acknowledge “fundamentally social dimensions. Instead of honing an individual, freestanding identity, they seem to have an opposite aim – to tie the self to its world” (21). Thus, the early modern conception of Self seems to be

tied to a world perception of how they relate to the things around them. Selleck further describes the concept of the Self when she says that “[m]oving beyond a Self/Other dichotomy means conceptualizing others with the same ontological status as the self – others with whom the self can be interchanged, who can penetrate and alter the self, whose perspectives can shape and constitute the self” (3). This definition of the way that early modern individuals conceptualized the Self is crucial to this paper as it allows analysis of how others are able to “penetrate” and “alter” their perspectives in specific early modern texts. It is the goal of this essay to examine the aforementioned primary sources in order to analyze the many ways that individuals interacted with and changed each other, especially as part of a response to the threat of general illness and plague during the time period.

### **EARLY MODERN TEXTS AND THEIR HISTORICAL RESPONSES TO THE PLAGUE**

The context of how plague and other illnesses were treated in early modern England is an important factor to consider in order to understand the ways that sick individuals constructed and expressed themselves. Therefore, one of the most important texts that shaped the way that individuals in the early modern period thought of and reacted to the threat of plague was the “Plague Orders: Orders Thought Meet...” Elizabeth I’s “Plague Orders” may help shed light on who was involved with the sick individuals, despite their being “closed up on all parts during the time of restraint.” The “Plague Orders” describe Elizabeth I’s policies regarding the treatment of individuals infected with plague. They also detail specific civil positions that were needed to care for and contain those individuals that were either sick or thought to have plague. The “Plague Orders” specifically contain “the practices of quarantining homes, collecting taxes to assist the poor, recording and assessing local and national strategies [to remove the plague], and making the positions of plague Watcher, Searcher, and Examiner nationally recognized” (Totaro 180). When these orders are examined in relation to other sources, they may be able to describe the thoughts and feelings that resulted from direct encounters with plague. Another example of the fear that overshadows the writing occurring during this time of plague is the primary document titled “By the Queene. Forasmuch as it can not be but dangerous to the Queenes most excellent maiestie, and her court nowe residing in the castel of Windsor, yf any common resort should be suffred from or to the Citie of London, or the suburbs of the same, where (by Gods sufferaunce) many places are infected with the plague...” This document, written in 1569, shows the continued fear of the contagious nature of plague. It was also very important that Elizabeth I created this document to ensure that businesses would continue to flourish in spite of the quarantine laws during this time. By examining the context of the governmental response to plague, readers can gain an understanding of the importance English society placed on not being ill,

whether from plague or not. Early modern England’s fear of becoming ill directly relates to its people’s communal approach to living. The importance of the body, especially the monarch’s, and its purity from illness is also a significant factor for the national construction of the Self.

The way that individuals in the early modern period constructed and conceived of the Self can be directly linked to the constructed Self of the monarchy ruling England at the time. Richelle Munkhoff’s article, “Plague and the Impenetrable Nation after the Death of Elizabeth,” examines the connection between illness and the body politic through analysis of Elizabeth I’s death. Munkhoff states that the population was accustomed to “associating the queen’s physical impenetrability with national security” (97). Therefore, when the queen became ill, “the blatant fact of her corporeal frailty produce[d] apprehensions about threats to the realm, both internal and external” (97). Queen Elizabeth I’s illness caused the people of London to fear the changes her death might bring. This is especially important because although Elizabeth I did not die of plague, her illness and consequent death evokes imagery of the “ill” body. The fact that Elizabeth I, the queen, was able to contract a general illness and die from it must have produced an emotional connection with the threat of plague overwhelming the nation. This more than likely caused the fear of death to climb higher than it normally might have if the queen had died without the presence of plague throughout England. Thus, the queen’s illness and subsequent death might have caused individuals to question their place and Self in an England that already seemed destabilized by the impact of plague. Munkhoff further emphasizes the effects of Elizabeth I’s death by stating that:

Elizabeth’s body—no matter how virginal—could not remain inviolate; it had bec[ome] permeable to disease, subject to decay within, and thus figured as both a potential source of contagion and as a site of treason. In effect, the queen’s body betrayed itself and, by extension, the realm it had come to represent (98).

Munkhoff thus correlates Elizabeth I’s physical body with England as a nation. She specifically uses language that portrays the physical reality of death, such as “permeable,” “decay,” and the “contag[ious]” nature of her body. These all seek to highlight the connection between plague outbreaks that individuals would see in their own community, and the uncertain nature of the body. By focusing on the way that Elizabeth I’s body was examined in early modern England, readers can gain a sense of the individual’s crisis upon hearing that their Queen had died of illness. It may have heightened a feeling of hopelessness for ordinary people. With the queen dead from a general illness that was not related to plague, the notion that an ordinary individual could die from an unexpected general illness, as well as plague, was heightened and might have caused citizens to reevaluate their lives, especially with regard to their Self. Munkhoff evaluates three texts--Thomas Dekker’s The

Wonderful Year (1603), Elizabeth Southwell's narrative of Queen Elizabeth's death, and Thomas Heywood's *If You Know Not Me You Know Nobody* (1605-6)--in order to show the increased attention that early modern authors placed on the changes that were occurring after the death of the queen and the continued toll of the plague. Although this paper does not deal with these texts directly, their existence in the wake of the queen's death points to the way early modern authors and readers used a variety of texts to navigate their lives as they were being impacted by plague. Munkoff goes on to say that after Elizabeth I's death, there "were the deaths of over 25,000 Londoners" (98). This shows that the deaths occurring in London were large scale, and would have a sizeable impact on any sense of Self that an individual might have because of the communal way that early modern individuals constructed that Self. The article also stresses the importance of literature and its power to depict the "cultural need to rewrite the devastation caused by plague [through the] reconstruct[ion of] the disintegrated body politic" (105). Munkoff examines three separate texts from the early modern period to prove this point. Therefore, the textual "reconstruct[ion of] the body" is representative of the way texts allow individuals to regain their sense of the actual individual lost.

### **RECONSTRUCTING BODIES AFTER THE PLAGUE**

John Donne also uses his texts to reconstruct the bodies of those lost in order to help other individuals cope with death. Through his writings, he shows how affected he was by the deaths he saw around him. By using his writing to express his emotional response to the scenes around him, Donne might have been able to channel his experiences in a way that distances them from himself. For Donne, writing was more than likely one of the only outlets for this kind of emotional toll. He seems to have used writing as a coping mechanism to talk about the deceased in a way that specifically reflects positive aspects of the individual in a relationship with others, in comparison to the negative image of their death. It is also crucial to recognize, as Selleck reminds us, that "early modern writers not only live in the humoral body, they are also frequently fascinated by its implications for selfhood – particularly the ways it conflates self and world" (58). Writers during this time period, such as Donne, created their texts in such a way that the interrelatedness of the various aspects of the early modern life are visible to readers. This is probably why Donne used writing to allow the dead individuals to "live" outside of their loved ones' memories. Although this change in motive is outwardly seen in his writing, the motivation itself is less visible. It is likely that he was commissioned to write some of the texts by other individuals who had lost a loved one. This shows that there was a need for people to reconstruct the way that their loved one was perceived after death. It seems to combat the images of the dead loved ones, whether they died of plague or another illness. This is suggestive of the method in which the families were able to remember and

keep the images of their loved one(s) in a positive way.

Another aspect that allows writers, especially John Donne, to help families reconstruct their loved ones' images in more positive ways is the shift of representing death as the foe in opposition to the pure loved one. Donne specifically wrote in a way that would allow dead individuals to regain their voice. By reconstructing the body of the individual, he is able to help the surviving family members regain hope and continue to live out their lives. In *An Elegy on Mistress Bulstrode*, the speaker personifies Death: he declares that: "Th' earth's face is but thy table; there are set / Plants, cattle, men, dishes for Death to eat" (Donne 183). The aforementioned line implies that not only is Death like a "hungry person" but that he only eats things that are living. This distinction is important because it is tied into the emotional impact that the actual death of Mistress Bulstrode might have had on Donne at the time he was writing this elegy. His focus is not on the loss of inanimate objects, but on the individuals who can (and will) lose their lives. This is why his emphasis on "Plants, cattle, men" is crucial to examine. He goes on to say that "In a rude hunger now he millions draws / Into his bloody, or plaguey, or starving jaws" (183). These two lines further enhance the imagery of Death as a being that is set on the destruction and demise of whole populations. The loss of life eulogized in this poem may be a way for Donne to cope with grief and the way it affects his Self. In contrast to the imagery of *Death in Elegy on Mistress Bulstrode*, his portrayal of Mistress Bulstrode in the poem *An Elegy upon the Death of Mistress Bulstrode* depicts her as being innocent and taken too soon. He goes on to say, "there, and looked out at her eyes, / All had adored thee that now from thee flies, / For they let out more light, than they took in" (184). The depiction of Mistress Bulstrode continues throughout the poem, and it is striking that in the first poem, the depiction of death is more prevalent, while in the second poem, the lament of Mistress Bulstrode is much more of a subject. Selleck argues in her second chapter, "Persons in Play: Donne's body and the Humoral Actor," that Donne focuses on the humoral aspect of bodies. She states that:

[t]he humoral subject is also necessarily an object, and its inherent objectification implicates this subject in a wider frame of reference than that of individual subjective experience. But even within subjective experience, the humoral body is socially inflected, as the medium of psychological impact and influence as well (57).

Selleck clarifies the way Donne writes the bodies in his work through the emphasis on their "referenc[ing]" more than just the "individual subjective experience." This complicates the ideal of the way the bodies could be considered in several of Donne's works.

Similarly, Michael Neill explores the significance of death and its equalizing effect on class structure to early modern individuals by trying to understand the way death is perceived during the time period. He states that "the horror of death's power to degrade its victims—a degradation so

absolute that (especially when compounded by the fearful confusions of epidemic disease) it seemed to threaten the very basis upon which the hierarchic order of society was founded" (14). Neill's exploration of the "degradation" individuals encounter when facing impending death provides the reader with a reason why writers like Donne might incorporate imagery that seems provocative and grotesque, such as the scene where "Th' earth's face is but thy table; there are set / Plants, cattle, men, dishes for Death to eat." This describes a scene where "Th' earth's face" is Death's "table," suggesting that Death is merely eating. However, this is still a disturbing depiction for both early modern and contemporary readers. Neill suggests the graphic and disturbing quality of writings similar to *Mistress Bestrode* was in an effort to depict the equally intense horror of plague. He specifically states:

When contemplating early modern representations of death it is easy to be seduced by their surface grotesquerie into diagnosing a morbid sensationalism indulged in for its own sake, when what the artists were struggling to express was the almost inconceivable horror of death's undifferentiating blankness (14).

Neill thus gives readers multiple reasons why early modern writers might have used such imagery. His cautioning correctly examines the vast impact that illness, especially plague, had on the way that writers and other early modern individuals coped with loss in relation to themselves.

Donne also grapples with the virtue or sin of the individual in the poem. By using writing to examine other individuals, Donne may inadvertently and naturally be creating his own Self. An example can be seen in the lines "Set to keep it was grace, that kept out sin; / She had no more than let in death, for we" (Donne 186). In these lines, Donne defends the virtue of *Mistress Bulstrode* by explaining that she had only "let in death," but had "kept out sin." This illustrates early modern thoughts regarding the porous nature of the body. By describing her body as defending against the plague, he may be consoling himself with the assurance that she did not die because of her own moral failings, but because of the frailty of her physical body. These lines may be in response to The Church of England's "Plague Prayers," which directly insinuated that "Plague was always construed as a divinely instituted punishment for sin, and the favorable 'cures' were prayer and fasting" (Totaro 17). This examination of the body of the deceased *Mistress Bulstrode* can also be seen as a way for Donne to recover and absolve her body of the physical effects of illness, even after her death. As described earlier, by writing and recovering her body, Donne is able to show both himself and his readers that there may be meaning to life if individuals continue to retain the unscathed image of their loved ones in their memory.

One of the strongest examples of the way early modern individuals were able to construct their Self through

their surrounding outside world is in William Bullein's *A Dialogue Both Pleasant and Pietyful*. One of the characters, Antonius, has a dream in which he questions his own Self. When he describes his dream to the other characters, he says "conscience hath accused me, and hell devoured me" (78). In this moment, his dream functions as a direct vision for readers of the ways that illness can make a person question themselves and their life choices. By describing the end result of his illness as being "devoured" by "hell," readers during the early modern period might have associated Antonius' contraction of plague as heavenly retribution for his earthly sins. This is reinforced by his initial phrasing "conscience hath accused me." If plague is indeed a direct result of earthly sin, then Antonius' "conscience" makes the connection before he dies, and he is damned because he did not absolve his sin. Another character, Crispine, is also affected by hearing Antonius' dream and says, "Me think he doeth wound my conscience. Also, I will home and cast away a great number of rotten drugs wherewith I have gotten much money in deceiving the people. God forgive me" (Totaro 79). Crispine's constructed Self, which had previously found nothing wrong in giving "rotten drugs" for "money," has thus been influenced and changed by the words of the sick Antonius. The term Self in this context does not convey the same meaning as it does for readers today. Selleck argues that early modern culture instead thought of Self in terms of "exchange, permeation, borrowing, [and] anticipation." Thus, the Self is constructed by "other-oriented actions" (1). Crispine no longer wishes to sell "rotten drugs" to sick individuals because his Self has been affected by the words of the dying man. This scene is a very striking instance in the text of how an early modern individual's Self is shaped by these "other-oriented actions." Once Crispine hears that Antonius' soul may be damned and going to "hell" for his sins, Crispine's "conscience" also determines that he should no longer sell his "rotten drugs" to make a profit. To both of these characters, sickness becomes a vehicle for changes in the way that their Selves are shaped: Antonius by his impending death and Crispine by Antonius' words and fear of death. Clearly, shifts in the conception of the Self in this text are directly influenced by interrelationships among characters and thus directly brought about by fear of death and damnation to "hell."

Although twenty-first century medicine is far more advanced than that of the early modern period, illness is still a fearful and sinister force that individuals must come to terms with when sick. In Susan Sontag's *Illness as Metaphor*, she suggests that "With the patient's body considered to be under attack ("invasion"), the only treatment is counterattack." This might be one of the reasons why Donne chose to portray Death as a being opposite to humans. He calls Death "strong and long-lived," and thus sets up a parallel between human lives and their foe, Death, who does not die but "shalt see dead, before thou diest." Poets like Donne may have used their craft as a way to recover the bodies of those lost to death, in a sense providing the

“counterattack” that the sick individuals were unable to accomplish because of lack of a feasible cure for the plague.

### **THOMAS CLARK AND HIS INTIMATE PORTRAIT OF PLAGUE VICTIMS AND THEIR SEPARATED RELATIONS**

A crucial aspect of being ill, especially terminally ill, is the isolation individuals face when separated from their loved ones. Illness can thus affect the friends and family as well. The sick individual feels the physical symptoms, as well as possible isolation from these sources of comfort. Thomas Clark’s “Meditations in my Confinement” describes the isolation that can occur because of illnesses, especially plague, in the point of view of the sick individual. In the section titled “The Uncomfortableness of this Distemper in Debarring the Visits of Relations and Kindred,” he describes his view of why family or friends may not visit. He states that:

Relations’ care and kindness doth not quite  
Consist in outward visits and in sight  
Of their Allies, nor doth it argue lack  
Of Love in them, whom danger thus keeps back.  
This showeth only Fear’s predomination” (10).

In this quotation, Clark defends the “relations” that might not be able to “visit” or be “in sight” of the sick individual. This means that although the “relations” are unable to be in close proximity, it is not because they have a “lack” of care or feelings. Instead, it shows that “Fear” is a strong motivator that keeps them from coming close to “danger.” It is especially poignant that an individual such as Clark, who is isolated because of illness in his own family, would be willing to make this claim. By describing his relationship to friends and family in this way, it can be inferred that Clark still takes comfort in knowing that he does have these associations, even if he cannot see them in person. This also shows that for Clark, the Self is still connected to an outer world. It is significant that Clark comforts himself by writing a defense of other individuals. In spite of the fact that he is alone, his conception of himself is changed because as the early modern Self is constructed through relationships and connections with other individuals, in Clark’s case, he is without friends and family. He is thus cut off from the early modern Self. This shows that early modern individuals suffered changes in the way that they viewed themselves when separated from their outside community. Clark again laments the loss of friendship in a later section titled “The Uncomfortableness of this Distemper, Dissolving for the present the bands of Friendship.” In this section, the reader is given a clear idea of how Clark regards friendship, especially in the following lines:

A friend is more a brother.  
Affection is so grafted each in other,”  
And sure this is the strongest tie that can  
Here in this world be to link man to man. For how,  
by counsils sweet and Courtesy,

Doth one friend strive another to outvie?  
And search the heart, if grief do lie hid there,  
To vent it thence, that each their share may bear?  
And through thick and thin, mount high, low dive,  
That they each other’s spirits may revive. When  
good news is, these do congratulate.  
When sorrowful, or bad, commiserate (11).

Clark starts with a quote that relates a friend as “more than a brother.” Friendship is a bond that Clark does not take lightly. He almost shows an admonishing tone in the lines that ask if a friend will “outvie” another. It may be that in this sense, he is showing readers of the time period that although this may happen, it is not what he would consider true friendship. Instead, he provides a model of how friendship should work by describing that if a person is dealing with “grief,” they should “vent” and thus “share” their burden. He also mentions that friendship should “congratulate” and “commiserate” when events that are either happy or sad happen in each other’s lives. This is an important section because Clark is still able to make this distinction when he cannot be close to his friends and family because he has quarantined himself. The way that Clark describes how friends should act also impresses on the reader that his Self is constructed and sustained by memory. This allows his continued connection to familial relations despite physical separation.

### **CONCLUSION**

Illness can alter the way that individuals comprehend their own Self and the Selves of those around them. The reason it is crucial to comprehend the overall impact of an illness is because the symptoms of the illness itself are not the only aspects an individual will be faced with. By examining Elizabeth I’s “Plague Orders,” The Church of England’s “Plague Prayers,” John Donne’s poetry, especially *Elegy on Mistress Bulstrode*, W. Bullein’s *A Dialogue Both Pleasant and Pietyful*, and Thomas Clark’s “Meditations in my Confinement” readers are able to explore the various ways the early modern individual had to change their own conception of Self in order to live during the time of the plague. Therefore, Nancy Selleck’s conception of the way the Self is constructed in early modern culture is viable and important to consider, although more scholars should focus on texts that are marginalized because of their lack of inclusion in mainstream literary studies. Doing so would allow readers to encounter a wider range of authors and their experiences, as well as gain a broader understanding of the way that individuals actually lived during plague time. It is the belief of the author that the study of early modern plague provides an understanding of the effects that contagious disease has on a society. This is important to consider, especially in terms of the Self and identity in the twenty-first century, because it provides a starting point for research into the overall effects of large-scale diseases and the psychology of illness. Further analysis of similar cases in different time periods and locations would allow a much more cohesive

examination and understanding of the multitude of ways that the Self can be altered.

## NOTES

- 1 The impact that living in a plague-infected country had on the lives of individuals is very important to consider. William Kerwin also looks at this concept, especially concerning literature, when he states that “at the same time they [literature] offered up different experiences of what it meant to live, and in many cases die, in a plague-infected country” (37).
- 2 Selleck is a current associate professor at UMass Lowell who has written several works, including the aforementioned one, on early modern culture and literature.
- 3 Here I am specifically referring to one of her earlier arguments about the Self in *The Interpersonal Idiom in Shakespeare, Donne, and Early Modern Culture*.
- 4 The concept of the body politic is also examined in Rebecca Totaro’s introduction, which states that “bubonic plague threatened literally individual bodies, but it also threatened the body politic in which those individual bodies were becoming increasingly politicized and governed” (13). The increasing politicization of the early modern individuals’ bodies thus increases readers’ awareness of the humoral nature of early modern lives.
- 5 This is an important point in reference to an individual’s ability to continue to live their own life. It is also essential to include the purpose of the “essential political struggle [which is] to maintain order [and thus continue] the natural cycles of life, birth and death, the struggle to maintain life, to feed infants, to survive pestilence” (Callaghan 33-4).
- 6 It is also important to consider Nicole DeWall’s speculation about “how deeply fears of the plague permeated early modern culture not just during but between outbreaks” (135). Therefore, the death of Elizabeth I would have only heightened this fear, especially considering the continued death toll during the coronation of the new king, James.
- 7 Rebecca Totaro emphasizes this point in her introduction by stating that “In plague time, men and women salvaged what they could from the suffering that they experienced or about which they heard, recycling it in multiple forms, literary among them. Re-presenting the plague was sometimes a symptom of trauma, the obsessive repetition that is a sign of illness; it was as often a sign of recovery, recuperating the experiences ultimately to move beyond them” (16). This analysis, especially in regard to John Donne, shows the possible rationale that allowed Donne to process the mass death that was occurring around him. Although not all of his poems are about plague specifically, illness in any form ultimately leads to death, and this seems to be what Donne focuses on in several of his poems, *Mistress Bulstrode* included.
- 8 The idea of death’s indifference is further compounded by the way that it can “destroy the meaningfulness of life”

(Whitney 209). Therefore, the image of death represents the total loss of Self because, for individuals in the early modern period, there did not seem to be a way to stop the plague outbreaks. This may have led to even more demoralization, especially when the upper class, who might have been able to help, were escaping to the country side and leaving others to die.

- 9 Interestingly, in an article titled “What Quarantine Feels Like” by Michele Lent Hirsche, the concept of punishment is still continued today. Sarit Golub, professor of psychology at Hunter College, who is also a specialist of patients with infectious diseases, says that “intellectually, we know that ‘the person is not the disease,’ emotionally, we still make that connection” and that “there is a strong pull toward believing that catching a contagious illness is in some way a moral failing” (4).
- 10 The aspect of “counter attack” is also examined in “What Quarantine Feels Like.” In the article, Hirsche describes her own illness: cancer. The treatment that she is required to take is radioactive and forces her to be quarantined in a hospital. She describes the impact this has on her identity, specifically mentioning that the “experience of being perceived as (and treated as) a potential vector of disease can rob individuals of their sense of self or self-worth and reduce them to their illness” (3).

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## Propaganda on the Big Screen: Film in the Soviet Union from 1925 to 1936

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### ABSTRACT

This paper analyzes propaganda found in Soviet films during the 1920s and 1930s in order to push Bolshevik and Communist ideology onto the mass Soviet population. This paper examines the use of propaganda in five films produced from 1925 to 1936. Soviet officials and filmmakers focused a great deal on past revolutions as a way to encourage the people to continue the fight in order to make Russia a competing power against Western society. The paper also analyzes the hardships that the people faced as well as the film industry. By examining the hardship a connection between film and reality is created.

**Keywords:** Russian, History, Propaganda, Film

Propaganda has had many uses in the era of the nation state. Not only have governments used propaganda as a way to affirm and justify their authority, they have also used propaganda to make a lasting impact on ideologies accepted or rejected by the populace. In Russia, revolutionaries promoted Marxist ideology through film in order to educate the masses and glorify the years 1905 (which led to Constitutional Reform) and 1917 (which led to the dismantlement of the Tsarist autocracy). The 1905 and 1917 revolutions in Russia created a transition away from the Tsarist regime to a new form of government, which later led to the rise of the Soviet Union under Communism. Vladimir Lenin called 1905 the ‘dress rehearsal’ for 1917, making both 1905 and 1917 important components to Communist history.<sup>1</sup> The films used in this paper were produced from 1925 to 1936 and represent the idea of a lasting revolution. These films sent a nationalistic message to the masses during a period of peace between the two world wars by praising the Russian people who fought for the end of the Tsarist regime. The films were produced in a period filled with hardship and struggle that ultimately affected the film industry. This paper analyzes the different elements found in Soviet film that acts as propaganda. Specifically, it will pay close attention to character representation, symbols, the use of language, and the appeals to emotion. This paper will use five films to gather a conceptual understanding of Russian propaganda from 1925 to 1936. By taking a conceptual approach, the paper hopes to capture a broader understanding of the uses and meanings of propaganda in relation to the continuance of the revolutions.

Propaganda is concerned “with the transmission of ideas and or values from one person, or group of persons, to another.”<sup>2</sup> Historically, the spread of these particular ideas tends to have a bias perspective in order to influence the audience to believe in a certain cause or message. For Russia, Stalin and other officials used propaganda as a way to promote the continuation of revolution set out by Lenin.

With film, the transmission of ideas comes from a superior entity to a mass audience, generally the average person, by way of motion pictures. Cinema, the production of movies as an art or industry, is crucial due to being able to attract people from all classes, social groups, and locations. This creates the possibility of strengthening a nation and making a political movement more cohesive and unified.<sup>3</sup> In promoting the idea of continuing the revolution, the Russian government focused a great deal on highlighting the negative aspects of the Tsarist regime.

For the communist government in Russia, cinematic propaganda became a logical medium to promote the revolutionary ideology since it had been the dominant form of urban, working-class entertainment since 1914. According to scholar Nicholas Reeves, this use of propaganda to connect to the masses “derives from ideology to which the Bolsheviks were committed, for at the heart of Marxism was the proposition that the revolution transformation of capitalism into socialism would create a society in which, for the first time, human beings would break free from alienation and thus achieve their true humanity.”<sup>4</sup> For Russia, propagandist film promoted a visual ‘Us versus Them’ mentality that even those seen as illiterate could understand.<sup>5</sup> When creating films, three targeted audiences were kept in mind; soldiers, workers, and peasants. The soldiers were the easiest to influence by way of film due to the lack of entertainment available. By the end of the 1920s, the average soldier saw three times as many films as other Soviet citizens.<sup>6</sup> Soviet officials, because of propagandist films, had the means to educate the people on issues that mattered the most while they found joy and entertainment at the movies.

The goal of the propagandist is to persuade others to accept the creator’s assertions and act on them. In order to do this, the propagandist makes broad and positive statements in a simple and familiar language that is familiar to the audience. In the case of Soviet film, the words of Lenin, a communist leader who died in 1924, is an example

of the use of familiar language and statements. Quotes taken from speeches given by Lenin became a focal point in films to promote his intentions for a revolutionary movement. Using these quotes demonstrated the fact that those involved in creating propaganda films did not hide the revolutionary ideas being pushed on to the people. At the beginning of *Battleship Potemkin* (1925), a portion taken from a speech given by Lenin in 1905 stated, "Revolution is war. Of all the wars known in history it is the only lawful, rightful, just, and truly great war... In Russia this war has been declared and begun."<sup>7</sup> The words presented on the screen were simple and very understandable, even to those who did not have a strong educational background. From the beginning of the film Sergei Eisenstein, a famous Soviet film director, had the purpose of not only highlighting the twentieth anniversary of 1905 but to present the ideology of revolution; the use of this quote helped fulfill that goal. The film *Mother* (1926), began with the quote, "We must see to it – there will be none but us to see to it – that the people learn of those days that were so alive, so eventful, so significant and of such great consequences much more thoroughly in greater detail..."<sup>8</sup> The quote demonstrated the great importance of knowing the past in order to create a better future. In order to create this better future, the people of 1926 Russia needed to have the same passion of those involved in the past revolutions. Again, the language is easy for the audience to understand and connect with, thus making the film successful. In *October: Ten Days that Shook the World* (1928), a memorable quote by Lenin appeared at the beginning of the film. This quote stated, "We have the right to be proud that to us fell the good fortune of beginning the building of the Soviet State and, by doing so, opening a new chapter in the history of the world."<sup>9</sup> This is a powerful statement meant to connect with the younger generations of Soviet people. Similar to the other quotes, there is great importance in remembering the past revolutionary actions that created the current state of the nation. The three quotes provided are all excellent examples of how the use of language can be a significant tool for promoting propaganda.

Another method used in creating propagandist messages is subtle suggestion. The propagandist will make hints expressing a more overall message, but will not always be direct about it; for example, the subtle hints that are shown through character representations. The film *Mother* depicts a woman struggling against the Tsarist rule during the 1905 Revolution. *Mother* showed a representation of Russian society through the three main characters that audiences would have realized: the mother, the father, and the son. The mother, Pelageya Nilovna Vlasova, finds herself in the middle of a conflict between her husband Vlasov and their son Pavel who are on opposing sides of a worker's strike. Father and son each represented a generation of Soviet people; Vlasov represented the old Tsarist regime that was brutal, while Pavel represented the revolutionary movement. Throughout the film Pelageya finds herself contributing to both sides of the workers' strike, but in the end, dies along

with her son fighting for the revolutionaries.<sup>10</sup>

Characters also represented a positive role model and hero for mass audiences to identify with and aspire to become, especially if they were children. In Soviet film, the hero personified the revolution while the enemy became a symbol of the Tsarist regime. Russian filmmakers did not hide from the chance to help what they perceived as a greater cause by adapting their creative talents to the needs of the Party.<sup>11</sup> With the heroes who were being created as propaganda tools, it was very easy to use the 'Us versus Them' conception, where the 'us' is the hero and the 'them' is usually a representation of the Tsarist regime. The eagerness to make propaganda films created the perfect opportunity to rewrite Soviet history in favor of revolution. The film *Seven Brave Men* (1936) presented the adventures of polar explorers, heroes, and defenders of the Soviet people. The film displayed the struggles the men faced during their exploration of the cold terrain. The explorers faced harsh conditions that forced them to become lost.<sup>12</sup> The film helped to promote the real polar explorers of the time, making them local heroes and celebrities amongst the people. *Seven Brave Men* helped promote the idea that Russia could become a great power by encouraging men to pursue similar careers. The hard work of aviators, explorers, soldiers, and potentially the average person would be a great contribution in helping with the continuation of the revolution.

The subtle message that is presented through propaganda is meant to influence the people to join the cause. For the Soviets, the message was to trust in the government and to follow the tenets of communism since that would lead to a great and powerful country. The messages in the films had to be able to influence the audience's emotions, sense of community, and sense of reason in order to be successful. Soviet propagandist films utilized the rhetorical devices of pathos (an appeal to emotion), ethos (an appeal to ethics), and logos (an appeal to logic) to promote specific ideological messages to audiences. The device of pathos creates a scene in which the audience will emotionally connect to the 'hero' of the film. This can be seen in *Battleship Potemkin* when the 'hero' Vakulinchuck dies shortly after rallying the other sailors to take action against their superiors. In doing this, Vakulinchuck became a revolutionary hero; one who fights and dies on the behalf of others in order for the revolution to continue.<sup>13</sup> Eisenstein thought that it was essential to kill the hero at the point the audience began to connect with him. This death has two roles outside of the film: one, to play on the emotion that the viewers will feel upon seeing his death; and two, to promote the propagandist idea of the revolutionary movement that expresses the notion that the community is more important than the individual. The film was commissioned to celebrate the twentieth anniversary of the 1905 Revolution, an important event for Bolshevik and Communist history. Eisenstein wanted to encapsulate the essence of the revolutionary events in 1905. According to Reeves, "The film's revolutionary ideology sets it apart,

but it was its form that demonstrated the extent to which the new avant-garde Soviet film-makers were breaking away from what they saw as the bourgeois shackles of capitalistic film-making.<sup>14</sup> Not only did Eisenstein want to recollect what happened in 1905, but he also wanted to highlight the ideologies of the main branches of the Bolshevik Party, namely the Branch allied with Stalin.

Symbols are an essential component of propagandist messages because they convince audiences to believe in a certain cause. The symbols found in film can create both favorable and unfavorable attitudes depending on the situation presented. In *Battleship Potemkin*, sailors were forced to eat bad meat for their meals. This meat symbolized the way the Russian people were treated deceitfully under the government of the Tsar. The use of bad meat subtly emphasized the tipping point of the sailors after unfair treatment due to their lower status. Eisenstein created Tsarist soldiers who looked down upon those lower than them; a common idea under the Tsar's rule. This can be seen when the sailors in trouble try to make an escape through the Admiral's hatch. When stopped, the commanding officer yelled, "This is not a place for the likes of you,"<sup>15</sup> symbolizing the Tsarist officer as a cold individual who did not care for those below him. This cold and careless officer represented the Tsar and his government who did not care for the people in the early twentieth century.

Most of the Soviet propagandist films focused on the idea of the Tsarist regime as the evil enemy. At the time *Battleship Potemkin*, as well as every film discussed in the paper, was produced and released, the Tsar was no longer in power, but in the film, that does not mean his regime should be overlooked in regards to the present revolutionary cause; after all his actions are what led to the revolution. By showcasing the brutality, forcefulness, and oppression of the old regime, Eisenstein pointed out that the people of Russia cannot and must not forget 1905. Forgetting the events of 1905 is forgetting a portion of the history of the Revolution, forgetting the actions of this year damages the revolutionary movement. The audience needs to be reminded of what happened and continue what these men began. This idea of remembering the Revolution's past was continually touched on in films throughout the 1920s and 1930s.

Through films, the Bolshevik Party pushed the people to remember that life under the Tsar was an awful period that should never be repeated. By portraying this attitude, Stalin and his followers declared that their ideology and form of government was going to be the key to the country's success. Although they claimed this, during the 1930s life was not the best. In the discussed films, the Tsarist regime is represented as violent in nature, but under Stalin's leadership Soviet people faced the same worries. The films portrayed the Tsarist regime as immoral and evil while also stating that the people should never let the country as a whole take a step backwards towards that way of life again. Soviet officials promoted this ideology to the masses through film in order to continue the revolution that began in 1905 and Lenin's plans

for the country, and eventually the rest of Europe, that took shape with the revolution in 1917. While the Party tried to push their ideological views onto the citizens, these people were having a difficult time trying to survive each day. The ideas for the future conflicted with what was taking place in the present.

The purpose of the films were to show the people that Russia was becoming a rising power, and that as long as the revolution set out by Lenin continued the country would become a great power that rivaled Western society (for example, the United States and Great Britain). Stalin, a paranoid and vengeful person, pushed the country into a very violent period; a period that created paranoia for both government officials and the average person. Any person who was thought to be part of an anti-revolution movement could be charged with imprisonment or even death. The people were taught how to distinguish if a person was against the Bolshevik Party. The films could help the people to become more aware of what an anti-revolution movement looked like and what it involved. This helped to identify what individuals needed to be cautious of when it came to neighbors or strangers on the streets. Films were able to even reach the countryside, which was an attempt to convert the peasants to a communist society in order to avoid any sort of revolt.<sup>16</sup> If the Bolshevik Party was able to spread film to rural areas, there was the possibility of having the peasantry equate the Party and communism with an evolution of technological means and progress.<sup>17</sup>

Life in Russia was filled with hardships, which transferred to the film industry. At times the industry lacked equipment and raw materials needed to produce the films because of a deficiency of funding. The lack of funds created a shortage in lighting and only one chance to successfully capture the perfect take for each scene. Trying to complete every scene in only one take added an enormous amount of pressure to all working on the film. Once filming was complete the directors and others also had a difficult time obtaining good quality chemicals needed to develop what had been recorded. The shortage of equipment was inevitable due to the tough times the country faced.

Before filming began the industry struggled to discover scripts that the Bolshevik leaders would approve. If the Party did not believe the film was educational enough or put out their revolutionary ideology the script would not be approved. This strict procedure created a shortage of available scripts. In 1935, only forty-three of the one hundred and twenty-two films planned for release were viewed by the public. In 1937, only twenty-four films were released for screening.<sup>18</sup> In order to have a firm grasp of the film content being produced, the Party had to have control of the image of the Soviet individual being shown to its own people and the rest of the world. In order to create these images, the government had to be very careful with the plot and propaganda metaphors of the films. This control is one of the reasons that the average film took fourteen months to produce.<sup>19</sup> At the time, the Party was very extreme in

handling the shortages of films being released. This is not surprising for the times, for example, in 1938 filmmaker Boris Shumyatsky was arrested due to his lack of producing films, he was later shot.<sup>20</sup>

Russia in the 1920s and 1930s strived to become a great and powerful country, but the living conditions were not as great as what was needed. Residential housing construction was neglected while a family was usually living in a single room, in dormitories, or barracks. Often times the waiting lists for housing were long with the authorities making it very difficult to move up on the list without any sort of aid from people with higher influence.<sup>21</sup> In *Circus*, the city appears to be very nice with the people moving on about their days. As the scene zooms into an apartment where two individuals live, the audience sees a magnificent place that is decorated extravagantly with a piano and even a maid.<sup>22</sup> The way the apartment was displayed was not an accurate depiction, unless the occupants were high officials with a great deal of influence. Most apartments had multiple families living cohesively together, or at least trying. Every person in an apartment had very little space of their own. One example of this is a Moscow family of six who lived in a windowless cubbyhole under a staircase. The total space was only six square meters, this meant that each individual occupied one square meter. This was a common occurrence in the larger cities of Russia.<sup>23</sup> The films depicted Soviet life a certain way while in reality life looked completely different. The Party wanted to portray Soviet life in a certain way in order for the people to commit to the revolutionary movement in order to obtain the lifestyle shown on the screen.

Between the years 1925 to 1936, cinema became a tool by the Soviet government to show the nostalgic ideals of the revolutionary movement in 1905 and 1917 to retain authority and appeal to the masses' emotions in a time of social and economic struggle. These films offered viewers specific symbols that endorsed the Marxist ideologies adhered to by the State. Soviet officials were able to create characters that became role models to the people, which in turn fashioned an urge for a stronger sense of nationalism amongst the Russian people. By linking this bond amongst the people, Stalin and his government strived to make Russia into a world power by trying to expand communism to the rest of Europe like Lenin planned before his death. Despite the idealism presented in propagandist films, the government did not completely eliminate the hardships the people faced. In fact, under the leadership of Stalin, the Soviet people suffered a great deal, from famines to purges, and even economic depression. These films offered audiences an idea of a united front in the name of revolution that continued during the Second World War until the collapse of communist Russia. During this decade, film became an important tool for the Soviet government since it was the easiest way to reach the greater Soviet population, but film could not shroud reality. This paper focuses on only a small portion of Stalin's push for a continuance of the revolution.

To some scholars, such as Orlando Figes, the idea of revolution did not end with 1917 or the death of Lenin, but continued until the collapse of the Union of Soviet Socialist Republic. Analyzing the propaganda found in a handful of films from the 1920s and 1930s demonstrates how Stalin and his followers strongly believed in the idea of a continuous revolution.

## NOTES

- 1 Orlando Figes, *Revolutionary Russia 1891-1991: A History* (New York: Picador, 2014), 38.
- 2 Richard Taylor, *Film Propaganda: Soviet Russia and Nazi Germany* (London: Croom Helm Ltd., 1979), 19.
- 3 *Ibid.*, 30.
- 4 Nicholas Reeves, *The Power of Film Propaganda: Myth or Reality?* (New York, Cassell, 1999), 43.
- 5 Taylor, *Film Propaganda: Soviet Russia and Nazi Germany*, 29.
- 6 Peter Kenez, *Cinema and Soviet Society: From the Revolution to the Death of Stalin* (New York: I.B. Tauris Publishers, 2001), 73.
- 7 *Battleship Potemkin*, directed by Sergei Eisenstein (1925; Moscow, U.S.S.R.: Mosfilm, 2004), DVD.
- 8 *Mother*, directed by Vsevolod Pudovkin (1926; Moscow, U.S.S.R.: Mezhrabpomfilm, 2006), DVD.
- 9 *October: Ten Days that Shook the World*, directed by Sergei Eisenstein and Grigori Aleksandrov (1928; U.S.S.R.: Amkino Corporation, 1998), DVD.
- 10 *Mother*.
- 11 Graham Roberts, *Forward Soviet! History and Non-fiction Film in the USSR* (New York: St. Martin's Press, 1999), 4.
- 12 *Seven Brave Men*, directed by Sergei Gerasimov (1936; St. Petersburg, U.S.S.R.: Lenfilm, 2004), DVD.
- 13 *Battleship Potemkin*.
- 14 Reeves, *The Power of Film Propaganda: Myth or Reality?*, 71.
- 15 *Battleship Potemkin*.
- 16 Orlando Figes, *Revolutionary Russia 1891-1991: A History*, 151.
- 17 Taylor, *Film Propaganda: Soviet Russian and Nazi Germany*, 55.
- 18 Kenez, *Cinema and Soviet Society: From the Revolution to the Death of Stalin*, 69-70.
- 19 Taylor, *Film Propaganda: Soviet Russia and Nazi Germany*, 65, 70.
- 20 Stites, *Russian Popular Culture: Entertainment and Society since 1900*, 69.
- 21 Fitzpatrick, *Everyday Stalinism: Ordinary Life in Extraordinary Times: Soviet Russia in the 1930s*, 46, 59.
- 22 *Circus*, directed by Grigori Aleksandrov and Isidor Simkov (1936; Moscow, U.S.S.R.: Mosfilm, 2011), DVD.
- 23 Fitzpatrick, *Everyday Stalinism: Ordinary Life in Extraordinary Times: Soviet Russia in the 1930s*, 47.

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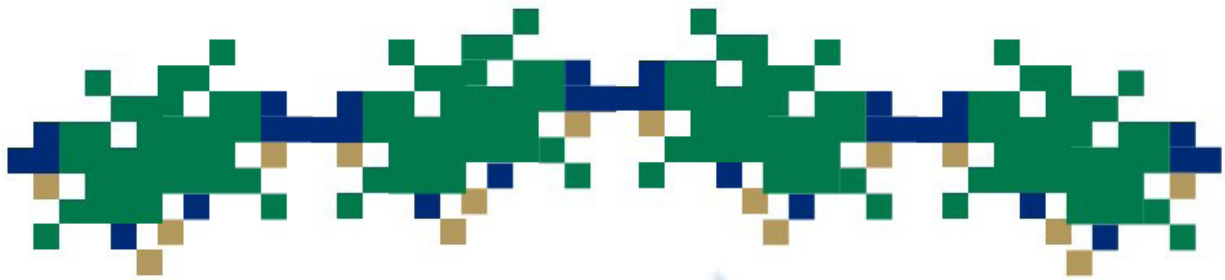
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## Effect of Knee Brace Use on Healthy Gait

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### ABSTRACT

The aim of this study was to determine the effect of three different knee braces on the normal gait of the participants. The study was focused specifically on observation of the angle of the knee, hip, and ankle during a normal gait cycle. Both the dominant and non-dominant legs were observed; ideally, a brace should not change the non-braced leg's kinematics but should selectively minimize the range of motion in the braced leg's kinematics. A recent study has shown that knee braces are not effective for individuals with normally aligned knees [1]. Using the results obtained from the present study, it was found that the use of a prophylactic knee brace sustained normal gait with minimal effects on the contralateral knee compared to the other braces studied. The order from highest to lowest efficacy was found to be the prophylactic brace, the neoprene sleeve, and then the unloader brace.

### INTRODUCTION

This project focuses on knee brace efficacy to determine if the knee brace appropriately sustains normal gait without altering any aspects of the gait. This will allow for a better understanding of the effects of a knee brace on a damaged knee by analyzing how it affects gait on healthy participants.

Knee pain can be acute or chronic depending on the cause and severity; it can be caused by genetics, injury, or normal wear and tear [2]. Some risk factors leading to knee pain are sports, osteoarthritis, excessive weight, flexibility, and strength. Participating in sports increases the risk of knee injury by introducing the body to movements that are unnatural, and it can also be harmful to the tendons and ligaments of the knee. Excessive weight can also increase risk of knee injury due to the increased force that the knee will experience. Last of all, poor flexibility, as well as poor strength, can increase the risk of knee injury because the tendons and ligaments can be stiff, which will cause failure when strong displacement loads are exerted on the knee [3]. The knee injuries that can result from these risk factors include ACL tears, meniscus tears, inflammation of the bursae, patellar tendinitis, and many forms of arthritis [3]. Two publications were found that disclose different kinds of knee braces and on what type of injuries they are best used [4, 5]. Since there are multiple types of knee braces, all suited for different injuries, the ones that were analyzed include a prophylactic brace, an unloader brace, and a neoprene sleeve brace. All can be seen in Figure 1.



*Figure 1. The three types of knee braces used in this study: the prophylactic knee brace (left), the unloader knee brace (middle), and the neoprene sleeve knee brace (right).*

The prophylactic brace is used to protect or decrease injury to the outside ligaments of the knee from impact and forces that could be applied. The prophylactic brace is composed of composite bars designed to limit hyperextension and hinges with non-elastic straps. The use of a prophylactic brace can be helpful in increasing the stability of the injured knee by reducing the amount of abduction and adduction in the joint while providing minimal impact to flexion and extension of the knee [6]. An assessment of this type of brace that focused on athletic performance showed that players who used the prophylactic knee brace had a lower chance of repeated knee injury [7]. It has been shown that prophylactic braces affect proximal and distal joints on the braced limb at the midstance phase

in the gait cycle [8]. This effect is seen as a straighter lower extremity, which can elicit compensations by the other joints in the braced limb, but it has not been determined if other effects were seen in the non-braced limb during the gait cycle. This knowledge will be used to investigate if this brace type affects the other leg during gait.

Unloader braces are used to relieve forces and pain from osteoarthritis of the knee. The brace can be made of plastic, metal, or combined plastic and metal hinges. Unloader braces are primarily used for reducing pressure in a degenerative area by redirecting forces to other areas of the knee. The effectiveness of unloader knee braces for preventing the progression of diseases is disputed [9].

The most common brace is a knee sleeve; it is used to provide compression, retain heat, and enhance balance. Typically, they are made of a soft elastic material, such as neoprene, specifically shaped to help support the knee. Knee sleeves have been shown to be effective in treating patellofemoral joint conditions [10].

The effects of an unloader brace in normally aligned knees has been researched. In addition to the unloader knee brace, this study will be looking at the effects of neoprene sleeve and prophylactic knee braces in normally aligned knees [12]. The goal was to compare the normal gait of each participant using the three different knee braces by examining the hip angle, knee angle, ankle angle, and ground reaction forces (GRFs) while walking, which is similar to methods used in previous studies [14]. Unlike other studies, this study also compared the effects of the brace on the non-braced leg's kinematics. The research questions of this study are as follows:

- If the leg is braced at the knee, then does the other leg experience a significant change in kinematics at the ankle, knee, and hip?
- If the leg is braced at the knee, then are there significant changes in knee flexion angle during gait?
- If the leg is braced at the knee, then does the brace significantly affect the kinematics of the ankle and hip of that same leg?
- If the leg is braced at the knee, then does the ground reaction force change significantly?

## METHODS

### Participant Preparation

The sample size was determined by using a sample size calculator for a two-sampled one-tailed t-test, using means for the two samples from the literature review for knee flexion angles with and without brace during cadence. Normal knee flexion during a standard gait cycle ranges from 15 degrees to 60 degrees [11]. The mean reported for knee flexion without brace is 65 degrees and the mean flexion angle with brace is 50 degrees, both with a standard deviation of 10 degrees [13]. A sampling ratio of 1 was used with a Type 1 error rate of 5% and a power of 0.80. From this, a sample size of at least six participants was calculated.

All study procedures were reviewed and approved by the

Florida Gulf Coast University Institutional Review Board, and all participants gave their informed consent prior to participating. Participants were required to be between the age of 18 and 65 years old, must not have had any knee procedures, injuries, or surgeries, and must not have been using any type of brace in their daily routine at the time of the study. Additionally, only participants who were able to fit into a medium brace were recruited for the study because of funding limitations.

Potential participants were instructed to meet at the Qualisys Track Manager (QTM) recording room for the measurements to be taken. The QTM system uses infrared (IR) cameras to track the position and movement of reflective markers placed on anatomical landmarks. Reflective markers were then placed bilaterally on the anterior and posterior iliac spine, greater trochanter, medial and lateral epicondyles of the femur, medial and lateral malleoli of the ankle, the second metatarsal head, and on the calcaneus at the same height as the toe markers.

### Data Collection

Participants were then instructed to walk across two calibrated force plates three times to determine each participant's joint angles and GRFs in gait without any bracing. After the participant had completed his/her walk, they were instructed to run across the force plates three times to determine the same parameters assessed in the walking trial. Three trials for walking and three trials for running were taken for each condition in order to take the average joint angles during gait.

The participant was then assisted in putting on the first brace, selected at random (using an excel sheet) out of the brace groups that were being tested. The braces tested were the patellar tracking orthosis (PTO) by Breg Bracing (the prophylactic knee brace), the Irom Donjoy (unloader knee brace), and the McDavid sleeve (knee sleeve brace). The braces were to be tested only on the participant's right leg. For each brace, some markers had to be removed and replaced externally on the brace over the appropriate anatomical landmarks. The braces were all adjusted according to manufacturer recommendations and to maximize the participants' comfort. Participants were asked to walk around the testing room for up to five minutes until they felt comfortable wearing the brace. The participant then repeated the three walking and running trials. The brace was then removed and the participants were allowed to rest prior to fitting the next brace. The braces were sanitized after each trial with a 70% Ethanol spray and allowed to dry. This was repeated until each participant completed the trials with all three knee braces.

### Angle Calculations

Angles used for statistical analysis were calculated through the use of the Matlab software and the QTM system. The angles used to describe kinematics of the braced and non-braced legs were flexion of the hip, knee, and ankle for



both legs. Each running and walking trial was processed to output the middle step for gait comparison to allow for the most normal gait cycle. If a trial did not include at least three steps, it was not used to calculate the average gait cycle; this disqualified the gait cycle for some of the running trials' data because of limitations of the size of the room used for data collection in the study. Therefore, that is why some of the running trials have smaller sample sizes.

**Hip Angle**

To calculate the angle of the hip, markers were placed on each leg on the greater trochanter (GT), posterior superior iliac spine (PSIS), anterior superior iliac spine (ASIS), and the lateral knee (KNE). From the QTM system, the positions of the markers were transferred to a .mat file for data processing. In MatLab, the back vector was defined as the cross product of the vector from the LASIS to the RASIS and the vector from LASIS to the LPSIS; the thigh vector was defined as the vector from the GT to the KNE. Using the law of cosines, the angle between the two vectors was then obtained, as shown below in equation (1). These angles were then compared to a percent of gait cycle from heel strike to heel strike to obtain an average and standard deviation of the trial conditions.

$$Hip\ Angle = \cos^{-1} ([Thigh] \cdot [Back]) / (|[Thigh]| \cdot |[Back]|)$$

The method used to calculate the hip angle was the same used by a study in sports medicine [14]. With the brace having an effect on the hip angle, the reflex with the hip flexed is shown to be inhibited, which is the cause of the change in the actions of the leg muscles [15]. However, it is unclear if this has any adverse effects if the hip angle is changed for long periods of time, as that was not shown in the study. The basis of this outcome was shown previously, where hip angle changes were observed in the contralateral hip joint of the braced limb [16].

**Knee Angle**

To obtain the knee angle, the law of cosines was used with the thigh vector, as defined above, and a shank vector defined by the vector from the KNE to the later malleolus (ANK) markers, as shown in equation (2).

$$Knee\ Angle = \cos^{-1} ([Shank] \cdot [Thigh]) / (|[Thigh]| \cdot |[Shank]|)$$

In the field of sports medicine, knee brace efficacy has long been disputed. Studies have shown that certain braces are less effective or even non-effective [2, 10]. From previous literature it is known that normal knee flexion during a standard gait cycle ranges from 15 degrees to 60 degrees [12].

**Ankle Angle**

The ankle angle was calculated using the shank vector, as defined above, and a foot vector defined by the vector from

the calcaneus (HEE) to the second metatarsal head (TOE) markers as shown below in equation (3).

$$Ankle\ Angle = \cos^{-1} ([Shank] \cdot [Foot]) / (|[Foot]| \cdot |[Shank]|)$$

This angle was measured because it has not been researched extensively to assess the effects knee braces have on neighboring joint stability.

**RESULTS AND DISCUSSION**

Ten participants were recruited and completed the study. The youngest participant was 18, the oldest participant was 34, and the average participant age was 25.

**Hip Angle**

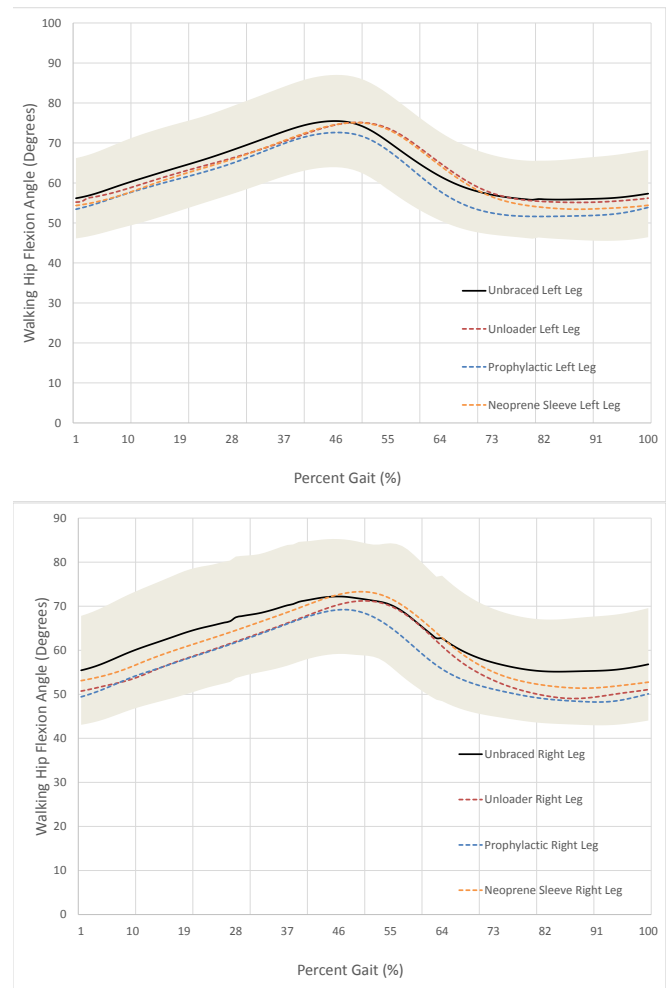


Figure 2a (upper) & 2b (lower): Average hip flexion angles of the left (contralateral) and right (braced) legs during the walking trials respectively. Sample sizes are as follows: Unbraced n=27, Prophylactic Brace n=25, Neoprene Sleeve Brace n=25, and Unloader Brace n=26. Grey area represents 95% Confidence Interval of the unbraced leg trials.

Figure 2 (upper) shows the left leg hip flexion angles, which was the limb contralateral to the braced limb. The figure

shows that there were no significant differences in the braced conditions when compared to the unbraced walking trials. Also shown in Figure 2 (lower): the right leg hip flexion angles were similar to when the participants were not wearing a brace.

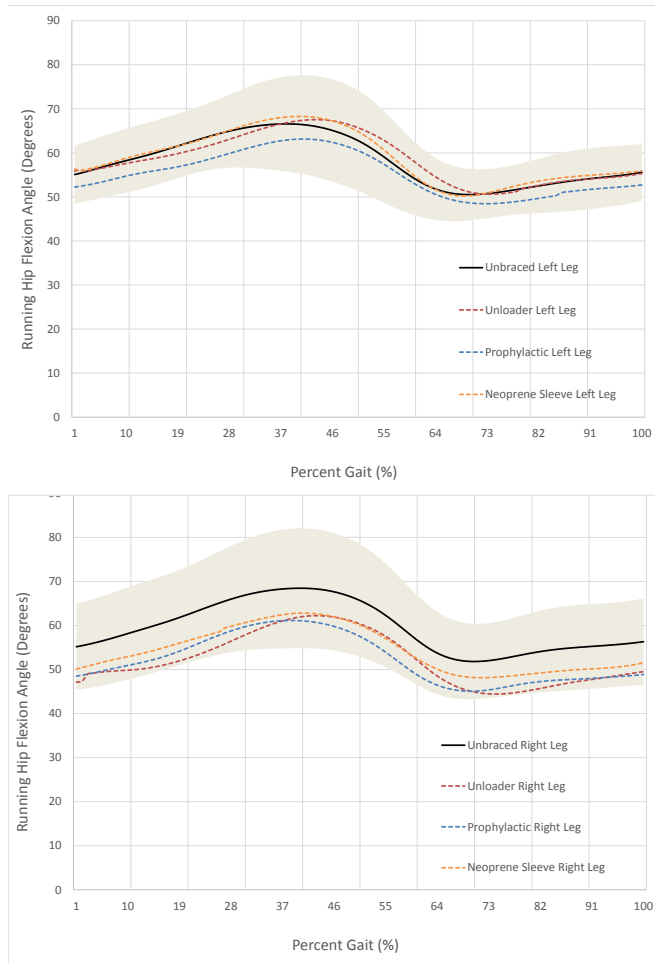


Figure 3a (upper) & 3b (lower). Average hip flexion angles of the left (contralateral) & right (braced) leg during running trials. Sample sizes are as follows: Unbraced  $n=20$ , Prophylactic Brace  $n=15$ , Neoprene Sleeve Brace  $n=17$ , and Unloader Brace  $n=17$ . Grey area represents 95% Confidence Interval of the unbraced leg trials.

For the running trials, there was a decreased hip flexion angle relative to the walking trials. As shown in Figure 3, there were no statistically significant differences in hip flexion between the braced and unbraced conditions during the running trials; however, for the right leg, there was a decreased hip flexion angle of about 5 degrees throughout the gait cycle for the braced conditions. Additionally, no significant differences were found for the range of motion of the hip for running or walking.

### Knee Angle

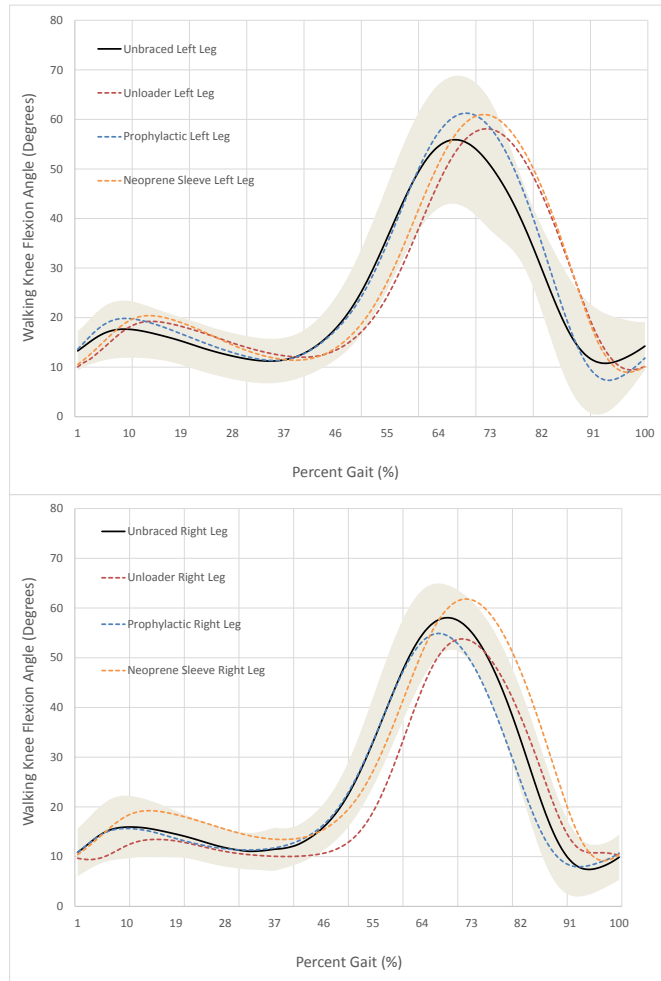


Figure 4a (upper) & 4b (lower). Average knee flexion angles of the left (contralateral) & right (braced) leg during walking. Sample sizes are as follows: Unbraced  $n=27$ , Prophylactic Brace  $n=25$ , Neoprene Sleeve Brace  $n=25$ , and Unloader Brace  $n=26$ . Grey area represents 95% Confidence Interval of the unbraced leg trials.

The knee flexion angles for the left leg during the walking trials are shown above in Figure 4a. Since the knee flexion angle for the unloader brace fell out of the grey zone around 45-60% of the gait cycle during the end of midstance and the beginning of midswing, there is a significant difference in the left leg's knee flexion angle during that phase of gait for the unloader brace. The data also shows that the neoprene sleeve and the unloader knee flexion angles fell out of the grey area from about 75-90% during midswing; this indicates that there is a significant difference in the left leg's knee flexion angle during that phase of gait for the neoprene sleeve and the unloader knee brace. The RoM of the left leg's knee can also be seen increasing for all three of the braces analyzed in this study; a shift to the right can also be seen in the RoM for the neoprene sleeve, as well as the unloader brace.

Also shown above in Figure 4b, the knee flexion angle for the unloader brace fell out of the grey zone around 45-70% of the gait cycle during the end of midstance and the beginning of midswing; there is a significant difference in the right leg's knee flexion angle during that phase of gait for the unloader brace. The data also shows that the neoprene sleeve knee flexion angle fell out of the grey area from about 73-90% during midswing; this indicates that there is a significant difference in the right leg's knee flexion angle during that phase of gait for the neoprene sleeve. The RoM of the right leg's knee can also be seen decreasing for the unloader and prophylactic brace, while increasing, as well as shifting right, for the neoprene sleeve.

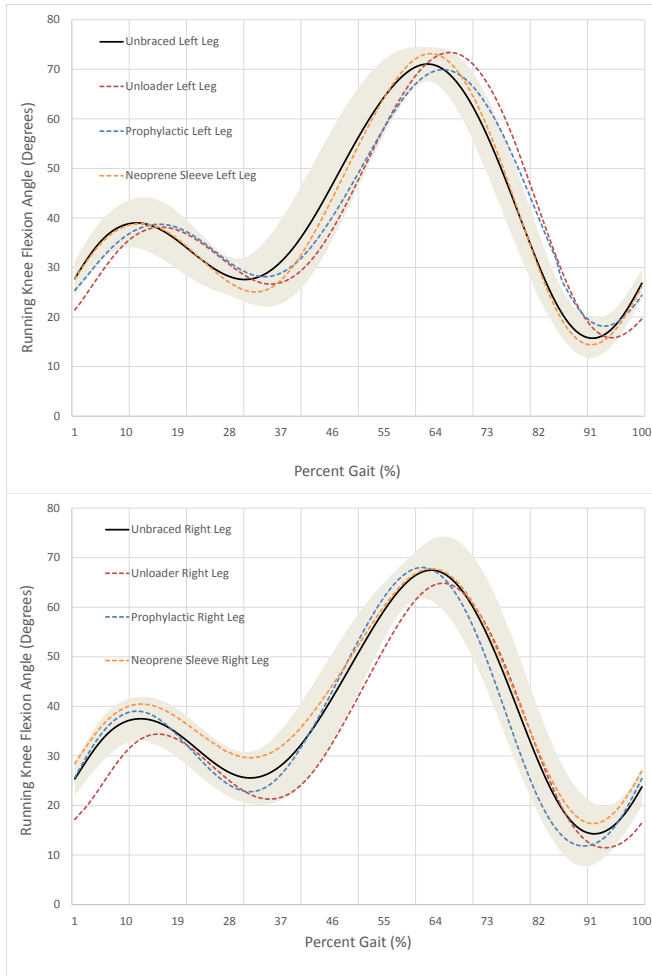


Figure 5a (upper) & 5b (lower). Average knee flexion angles of the left (contralateral) & right (braced) leg during running. Sample sizes are as follows: Unbraced  $n=20$ , Prophylactic Brace  $n=15$ , Neoprene Sleeve Brace  $n=17$ , and Unloader Brace  $n=17$ . Grey area represents 95% Confidence Interval of the unbraced leg trials.

The knee flexion angles for the left leg during the running trials are shown above in Figure 5a. Since the knee flexion angle for the unloader and the prophylactic brace fell out of the grey zone around 1-10% and 70-90% of the gait cycle during heel strike as well as midswing,

there is a significant difference in the left leg's knee flexion angle during that phase of gait for the unloader and the prophylactic brace. The trends seen for the RoM of the neoprene sleeve and the unloader brace include an increase in the RoM; the RoM of the right leg's knee also has a shift to the right for the unloader brace, as well as a smaller shift to the right for the prophylactic brace.

Also shown above in Figure 5b for the right leg: the knee flexion angle for the unloader brace fell out of the grey zone around 1-10%, 45-60%, and 95-100% of the gait cycle during heel strike as well as midstance, and there is a significant difference in the right leg's knee flexion angle during that phase of gait for the unloader brace. The RoM of the right leg's knee has a shift to the right for the unloader brace.

There were no significant differences in RoM of the knee for either walking or running. Although no significant differences were found, some trends were observed. For walking, the RoM for the right leg's knee was reduced by all brace types analyzed by this study. The unloader brace caused the greatest reduction in RoM, followed by the prophylactic brace, and finally the neoprene sleeve. The left leg's knee had a greater range of motion for both the prophylactic brace and the neoprene sleeve, while the unloader brace was relatively unaffected. For running, the neoprene sleeve caused a decrease in RoM for the right leg, while the prophylactic brace caused a slight increase. As for the left leg's knee, the RoM was decreased by the neoprene sleeve, while the prophylactic brace showed an increasing trend (although a larger sample would be needed to confirm this). For both legs, the unloader brace had the smallest effect on RoM.

### Ankle Angle

The ankle flexion angles for the left leg during the walking trials are shown in Figure 6a. Since none of the braced conditions for the ankle flexion angle during the walking trials are outside of the grey area, there is not a significant difference in the left leg's ankle flexion angle during gait for the three braces analyzed by this study. A trend can be seen around 50-90% of the gait cycle, starting before the midswing phase and ending just before heel strike, in which the neoprene sleeve and the unloader brace have a shift to the right in the position of gait phases. The prophylactic brace only experiences this shift from 70-90% of the gait cycle around midswing.

The ankle flexion angles for the right leg during the walking trials are also shown above in Figure 6b. Since none of the braced conditions for the ankle flexion angle during the walking trials are outside of the grey area, there is not a significant difference in the right leg's ankle flexion angle during gait for the three braces analyzed by this study. A trend can be seen around 70% of the gait cycle during the midswing phase in which the neoprene sleeve and the unloader brace deviate with decreases in the RoM, but the prophylactic brace does not.

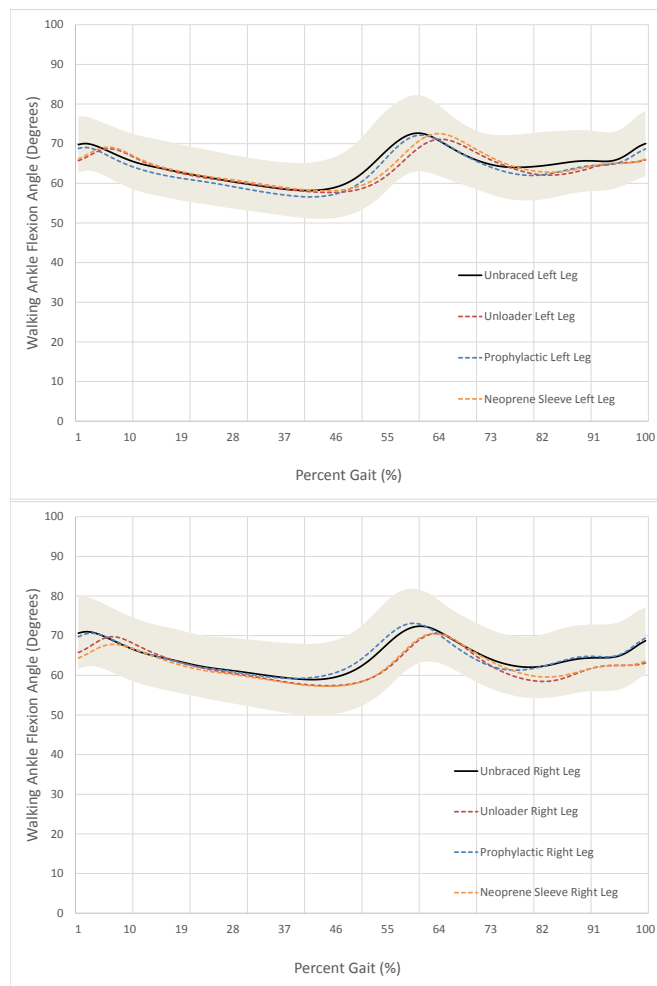


Figure 6a (upper) & 6b (lower). Average ankle flexion angles of the left (contralateral) & right (braced) leg during walking. Sample sizes are as follows: Unbraced  $n=27$ , Prophylactic Brace  $n=25$ , Neoprene Sleeve Brace  $n=25$ , and Unloader Brace  $n=26$ . Grey area represents 95% Confidence Interval of the unbraced leg trials.

The ankle flexion angles for the left leg during the running trials are shown in Figure 7a. Since none of the braced conditions for the ankle flexion angle during the running trials are outside of the grey area, there is not a significant difference in the left leg's ankle flexion angle during gait for the three braces analyzed by this study. A trend can be seen throughout the whole gait in which the neoprene sleeve, the unloader brace, and the prophylactic brace shift right in the position of the gait phases; it can also be seen that the neoprene sleeve experiences a decrease in the RoM.

The ankle flexion angles for the right leg during the running trials are also shown in Figure 7b. Since none of the braced conditions for the ankle flexion angle during the running trials are outside of the grey area, there is not a significant difference in the right leg's ankle flexion angle during gait for the three braces analyzed by this study. A trend can be seen throughout the whole gait in which the neoprene sleeve, the unloader brace, and the prophylactic

brace shift down in the RoM; it can be seen that the unloader brace experiences the least downward shift in the RoM. However, there were no significant differences in either of the legs' ankle RoM during gait for the three braces analyzed by this study.

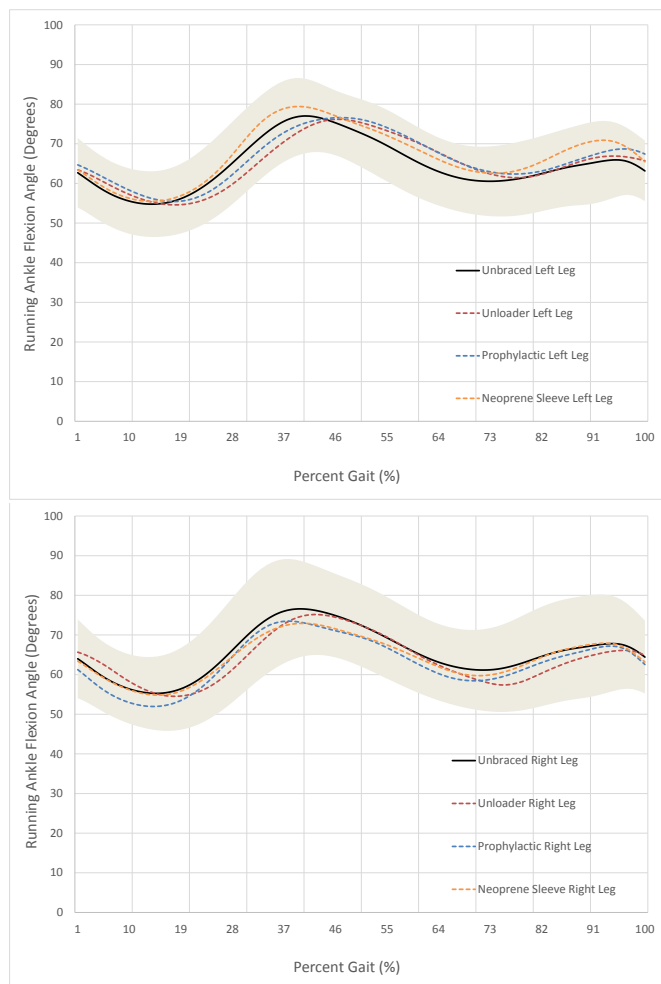


Figure 7a (upper) & 7b (lower). Average ankle flexion angles of the left (contralateral) & right (braced) leg during running. Sample sizes are as follows: Unbraced  $n=20$ , Prophylactic Brace  $n=15$ , Neoprene Sleeve Brace  $n=17$ , and Unloader Brace  $n=17$ . Grey area represents 95% Confidence Interval of the unbraced leg trials.

## CONCLUSION

As shown by the results, this study found that the contralateral leg did experience a significant change in angle of flexion as well as RoM at the knee, but the hip and ankle failed to show a significant change in angle of flexion or RoM. The unloader brace had a significant difference in the left (contralateral) leg's knee for the walking and running trials, the neoprene sleeve had a significant difference for just the walking trials, and the prophylactic brace had a significant difference for the running trials only. This suggests that the knee is likely to have a difference in range of motion if the applied brace is more restrictive while

running. The data also showed that the knee flexion angle for the right or braced leg was significantly different for the unloader brace during the walking and running trials, and the neoprene sleeve was significantly different for the walking trial. The prophylactic brace did not show a significant difference for the walking or running trial on the right leg. It was also concluded that the flexion angles of the hip and ankle of the right leg were not significantly affected by any of the braces analyzed. The results of the study suggest that the knee brace with the most efficacy is the prophylactic knee brace, which can provide benefit to the gait while altering the participant's normal gait the least. The neoprene sleeve showed to be the next in order of efficacy; this type of brace, however, should not be used by people with knee injuries, but as a preventative measure to reduce the risk of knee injury. Last, while the unloader knee brace proved to be the knee brace with the least efficacy, it plays an important role in the rehabilitation of people who have undergone knee surgeries because of its ability to lower the RoM significantly.

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**The Marieb College congratulates all of the students  
for their outstanding scholarship, hard work, and  
dedication to *Aquila*!!**

# Environmental Surface Sampling for Methicillin Resistant *Staphylococcus aureus* (MRSA)

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## ABSTRACT

*Staphylococcus aureus* (SA) is a gram-positive bacteria considered part of the normal skin microflora, yet pathogenic under certain conditions. Most strains of SA are now becoming increasingly resistant to the antibiotic penicillin. Methicillin-resistant strains of SA, better known as simply MRSA, are common in hospitals. The main goal of this study was to examine the sensitivity and specificity of HardyCHROM™ MRSA agar in recovering and identifying MRSA from various environmental surfaces in the community educational setting of Florida Gulf Coast University (FGCU). We sampled thirty various environmental surfaces around campus and interpreted them for growth of microorganisms, specifically looking for MRSA. We sampled three main locations based on where human hands or bodies have the most direct contact: the campus recreation center, the library, and the academic building Marieb Hall. All samples grew a variety of bacteria on the HardyCHROM™ MRSA agar plates, not showing us the specificity for MRSA that the manufacturer claimed. One sampling location, a women's restroom countertop, grew probable MRSA; therefore, it was determined that the HardyCHROM™ MRSA agar plates were sensitive for MRSA. The second part of the study focused on cellphones; twenty-eight various cellular devices belonging to individuals on the FGCU campus were sampled and interpreted in the same way as the countertop locations. The HardyCHROM™ MRSA agar plates again grew a variety of organisms, but none of the plates detected MRSA. In conclusion, this study did find the HardyCHROM™ MRSA agar to be sensitive, but not specific. We determined that the majority of environmental surfaces sampled on the FGCU campus did not serve as sources of MRSA, and particularly, that cell phones did not show evidence of MRSA contamination. The FGCU campus community can feel safe in knowing that individuals have a low risk of potentially acquiring MRSA via environmental transmission.

## INTRODUCTION

*Staphylococcus aureus* (SA) is a gram-positive bacteria that can be part of the normal skin microflora, yet can also be pathogenic. Methicillin resistant *Staphylococcus aureus* (MRSA) has proven to be a resilient strain of *Staphylococcus aureus* that is nearly impossible to combat with the current arsenal of available antibiotics (Filice et al., 2010). Infection with MRSA can be severe and deadly. MRSA can cause both minor and severe skin infections, surgical wound infections, blood stream infections, and pneumonia (Roberts et al., 2011). Treatment must be immediate and effective. If not kept clean, MRSA can often live for weeks or months on surfaces (Roberts et al., 2011). Methods of transmission of MRSA include direct person-to-person skin contact or contact with contaminated environmental surfaces (Roberts et al., 2011). Inanimate objects can carry microorganisms originating from the surrounding environment, and these attached microorganisms pose a biotransfer potential on the human body (Verran, 2012). According to the Center for Disease Control and Prevention, 2 in 100 people carry MRSA (US Center for Disease Control and Prevention, 2016).

During the past 10 years, MRSA has become a major nosocomial pathogen for patients in hospitals and nursing homes (Hardy et al., 2006; Boyce, 2007; Chambers and DeLeo, 2009; Kallen et al., 2010). Moreover, community-acquired MRSA infections are on the rise; the transmission of MRSA from the community, beyond acute care hospital environments, is receiving more attention in public health

literature (Saybold et al., 2006; Miller and Diep, 2008; Cooke and Brown, 2010). There is growing evidence that contact with contaminated environmental surfaces is a significant transmission factor (Hartmann et al., 2003; Bhalla et al., 2004; Kassem et al., 2007; Scott et al., 2009; Otter & French, 2009; Otter et al., 2011).

Various environmental surfaces harbor microorganisms; these include bars of soap that have been in contact with humans, laboratory countertops, and cotton washcloths, to name a few (Hogan et al., 2015). Direct transmission of MRSA occurs when one person is a carrier. For example, working and interacting with MRSA positive patients can cause the hands of healthcare workers to become contaminated, and the workers can then spread the MRSA to other susceptible patients (Hunt, 2013). This is also true for members of the non-healthcare workforce. Most of the general public and healthcare workers now carry mobile communication devices, and bacteria that cause disease can contaminate mobile devices (Brady et al., 2006). Methicillin-resistant *Staphylococcus aureus*' ability to be easily transmitted and grow anywhere makes it an extremely significant strain of bacteria.

There are a variety of agar media manufactured for the growth and identification of MRSA: Spectra MRSA agar manufactured by Remel Inc. demonstrates rapid and accurate identification of MRSA, as well as CHROMagar MRSA by BD Diagnostics and MRSASelect by Bio-Rad Laboratories (Peterson et al., 2010; Truant, 2016). Many studies for detection of MRSA have used HardyCHROM™

MRSA agar (Truant, 2016), and in a study, Denys et al., (2012), showed HardyCHROM™ MRSA agar was more specific than Spectra MRSA and MRSASelect agars. The study concluded that HardyCHROM™ MRSA agar displayed less false-positive results and stronger color intensity than the other agars tested. The principle of the HardyCHROM™ MRSA agar is that MRSA strains grown in the presence of chromogenic substrates produce deep pink to magenta colonies (Figure 1). The addition of specific inhibitory agents allows for the growth of MRSA strains while preventing growth of other organisms, and to increase sensitivity and specificity of the medium, other selective agents inhibit gram-negative organisms, yeast, and some gram-positive cocci. Bacteria other than MRSA may utilize additional chromogenic substrates present in the medium and produce blue or green colonies (Hardy Diagnostics, 2016).

## METHODS

This study was divided into two main parts: various environmental surface sampling around FGCU campus and specific cell phone sampling of students, faculty members, and staff. First, HardyCHROM™ MRSA contact plates were applied to various environmental surfaces around the FGCU campus; locations included the library, campus recreation center, and Health Science building (Marieb Hall). Second, plates were applied to the cell phones of students, faculty, and staff present in Marieb Hall on the testing day. The first area sampled on campus was the FGCU recreation center, where we chose to isolate samples from high traffic areas. The HardyCHROM™ MRSA agar was applied to gym mats, barbells, other exercise apparatus, and in the gym restroom. The second sampling area was the FGCU library. At random, we examined various surfaces, targeting surfaces that would be exposed to human hands the most, including computer keyboards, elevator buttons, and desks. The third area examined surfaces in Marieb Hall. Like the previous collections, we targeted high traffic areas, specifically those where human hands may have made contact, including toilet paper dispensers, elevator buttons, chairs, and a faculty lunch table. Cell phones sampled were from faculty, staff and students in the health professions (nursing, clinical lab science, occupational therapy, physical therapy).

The HardyCHROM™ MRSA agar contact plate is a small 15 x 60 mm agar plate. It is applied by gently pressing the agar side of the plate on an environmental surface; this enables any organisms present on the environmental surface to transfer and grow. After each collection, the HardyCHROM™ MRSA agar was incubated aerobically for two days in a CO2 incubator at 35 degrees centigrade and examined. Using adequate light, the plates were observed for characteristic colonial morphology and color. The number of colonies were counted and the findings recorded. As stated before in the introduction, MRSA strains grow on the agar in the presence of chromogenic substrates



Figure 1. Right: Methicillin-resistant *Staphylococcus aureus* (ATCC® 43300) growing on HardyCHROM™ MRSA showing deep pink colonies. Top left: Same strain of Methicillin-resistant *Staphylococcus aureus* growing on 5% sheep blood agar (BAP). Bottom left: Methicillin-sensitive *Staphylococcus aureus* (ATCC® 29213) growing on BAP. Notice that on both BAP plates the two strains are indistinguishable. Picture from author's work.

and produce deep pink to magenta colonies. The addition of specific inhibitory agents allows for the growth of MRSA strains while preventing growth of non-MRSA. Additional selective agents have been added to the agar to increase sensitivity and specificity of the medium by inhibiting gram-negative organisms, yeast, and some other gram-positive cocci; bacteria present other than MRSA may utilize additional chromogenic substrates present in the medium and produce blue or green colonies (Hardy Diagnostics, 2016). Since the agar allows different bacteria to grow

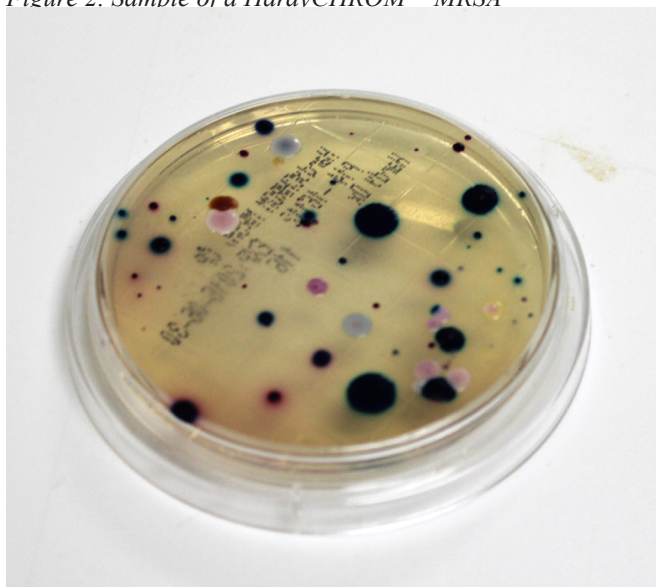


in different colors, we categorized each culture based on colony sizes and color. We also inoculated each different colored bacteria on to a BAP (blood agar plate) to determine typical colony morphology. After two more days of the same incubation conditions, the colonies on the BAP were gram stained and examined under a microscope.

## RESULTS AND DISCUSSION

In the first part of the study, we interpreted thirty plates. Growth on HardyCHROM™ MRSA agar consisted of many bacterial colony sizes and colors (Figure 2).

Figure 2. Sample of a HardyCHROM™ MRSA



*environmental contact plate showing growth of various bacterial colony sizes and colors. Picture from author's work.*

Gram stain determined that white colonies were gram-positive cocci. Two shades of teal colonies were gram-negative cocci and gram-positive diphtheroids. Yellow colonies were gram-positive cocci. Pink/magenta colonies were gram-positive rods in some cases, and gram-positive cocci in others. Purple colonies were gram-positive rods.

Restreaking colonies from the HardyCHROM™ MRSA agar to BAP helped to better identify the bacteria by typical colonial morphologies, especially when looking at hemolysis. *Staphylococcus aureus*, including MRSA, are typically beta-hemolytic. The white colonies from the HardyCHROM™ MRSA agar demonstrated creamy, white, beta hemolytic growth on BAP. This would equate to a probable *Staphylococcus aureus*, not MRSA. Teal colonies demonstrated large, flat, ground-glass appearing growth characteristics on BAP. This would equate to probable *Neisseria* species. Dark teal colonies demonstrated gray, wet, mucoid characteristics on BAP. This equated to probable *Corynebacterium* species. Yellow colonies demonstrated small, yellow, non-hemolytic colonies on BAP. This would equate to probable *Micrococcus* species. Purple colonies

demonstrated spready, flat, yellow-green, ground-glass appearing growth on BAP. This would equate to *Bacillus* species. Some magenta colonies were tiny, white, alpha-hemolytic on BAP, most probably *Corynebacterium* species, while the other magenta colonies were creamy, large, white, beta-hemolytic colonies on BAP. This equates with a *Staphylococcus aureus*, and an indication of a MRSA. Experienced microbiologists can make these presumptive determinations based on the BAP colony morphology and gram stain results (Table 1).

We were looking for MRSA specifically, so we wanted colonies that were pink/magenta on HardyCHROM™ MRSA agar and showed the typical growth characteristics on BAP of white/yellow, creamy, beta-hemolytic colonies. Other bacteria that grew on the plates were other members of normal skin inhabitants from the genres *Staphylococcus*, *Neisseria*, *Corynebacterium*, and *Bacillus*, and some magenta colonies on HardyCHROM™ MRSA agar were gram-positive rods instead of gram-positive cocci. For this reason, we did not consider that the agar met the manufacturer's stated sensitivity for MRSA. One location, the women's restroom, actually grew magenta colonies that were gram-positive cocci and probably MRSA.

In the second part of the study on cell phones, the HardyCHROM™ MRSA agar isolated colonies of the same colors as in part one of the study. Of 28 phones tested, on both front and back surfaces, only three phones were suspicious of containing possible MRSA. Phone 14B (backside) demonstrated suspicious pink colonies that were beta-hemolytic, white, pleomorphic gram-positive rods on BAP; we concluded this to be a *Corynebacterium* species (diphtheroid). On Phone 18B (backside) suspicious pink colonies demonstrated tiny, white, non-hemolytic growth, and gram stain indicated pleomorphic gram-positive rods (diphtheroids) as well. On Phone 26B (backside) suspicious pink colonies demonstrated creamy, yellow, non-hemolytic growth on BAP; gram stain revealed tiny gram-positive coccobacilli-diphtheroid organisms. We did not detect MRSA on any of the cell phones (Table 2).

From our study, the specificity of the HardyCHROM™ MRSA agar plates did not prove to be acceptable, as we grew magenta colonies that did not prove to be MRSA. We did find the sensitivity of the agar to be acceptable, as we did isolate one probable MRSA, and were able to grow the control strain of the organism easily.

We did not find any studies in the literature conducted specifically in academic settings, which made it difficult to compare our results. Our study tested fifty-eight surfaces for MRSA. Out of all the samples examined, one demonstrated strong evidence to be MRSA; this is a level of 1.7%. Published reports in the literature show hospital surfaces ranging from 1% to 27% on regular hospital wards, and up to 64% in burn units (Boyce, 2007). Published reports from community settings such as locker rooms and weight rooms report from 10% to 31% (Oller et al., 2010), and other studies done in fire stations report 8% to 42%

(Roberts et al., 2011). We can therefore state that FGCU is a safe environment concerning the presence of MRSA, and recognize the effectiveness of sanitation and disinfection procedures utilized in its facilities as satisfactory.

### CONCLUSION

HardyCHROM™ MRSA agar is useful in the detection for MRSA. This study did find the HardyCHROM™ MRSA agar to be sensitive, but not specific. A very low level of MRSA was detected on the FGCU campus, but students, employees, and visitors should feel comfortable that they are not likely to encounter MRSA in the FGCU campus environment.

Table 1. Environmental Surface Contamination

Sample	Location	Number of colonies	Restreaks	Colony description on BAP	Gram stain
1	gym front desk	2 pinpoint white			
2	benchpress	8 white, 6 large with magenta center, 2 tiny magenta, 2 teal, 1 large teal	white magenta	white, creamy, beta-hemolytic	+ cocci
3	seat	1 pinpoint magenta, 1 small magenta with teal center			
4	bar	12 white, 15 teal, 1 yellow large, 8 tiny magenta, 1 large white magenta	large white magenta	creamy, white, beta-hemolytic	+ cocci
			small white	creamy, white, beta-hemolytic	+ cocci
			diffuse teal	large, flat ground glass appearance	- cocci
			yellow	small, yellow, non-hemolytic	+ micrococcus
5	free weight handle	11 clear pinpoint			
6	mats	3 dark purple, 14 teal large, 3 white large, 2 white tiny, 2 magenta, 5 tiny magenta	dark purple	spready, flat, yellow-green, ground glass	+ bacillus
			dark teal	gray, wet, mucoid	+ diphtheroid
			teal	tiny, orange, creamy	+ diphtheroid
			magenta	tiny, white, alpha-hemolytic	+ cocci
			white	white, creamy, beta-hemolytic	+ cocci
			yellow	small, yellow, non-hemolytic	+ micrococcus
7	running machine	2 dark purple, 4 white	magenta	large, flat, spready, greenish yellow, beta-hemolytic	+ bacillus
8	yoga ball	4 teal, 7 white (2L,5S) 1 purple small			
9	bathroom counter	6 magenta, 2 large white purple center, 2 large white magenta, 15 pinpoint magenta, 2 pinpoint magenta			
10	toilet paper dispenser	3 white, 3 pinpoint dark purple, 2 pinpoint magenta	magenta	tiny, white, alpha-hemolytic	+ bacillus, diphtheroid
11	mouse at printing station	1 tiny purple(dark)			

Sample	Location	Number of colonies	Restreaks	Colony description on BAP	Gram stain
12	mouse at computer desk	1 white			
13	elevator button	no growth			
14	elevator button	no growth			
15	desktop in front	1 large teal			
16	table in main lobby	no growth			
17	bathroom counter	no growth			
18	bathroom toilet paper dispenser	3 dark purple, 12 teal, 10 white, 2 magenta			
19	couch in main lobby	3 pinpoint white			
20	couch in second floor	1 teal, 9 white			
21	classroom (room A 3rd floor)	no growth			
22	classroom (simulation room)	1 purple			
23	bedrail in simulation room	no growth			
24	restroom (men)	5 white, 3 magenta	magenta	tiny, white, alpha-hemolytic	+ bacillus, diphtheroid
25	restroom (women)	1 white, 2 teal/white, 3 magenta	magenta #1	tiny, alpha-hemolytic	+ bacillus, diphtheroid
			magenta #2	white, beta-hemolytic, large creamy	+ tiny cocci (MRSA)
26	elevator button	no growth			
27	bench by elevator	1 white with teal center	1 white with teal center	white, beta-hemolytic, creamy	+ cocci
28	lobby table	2 white			
29	couch arm rest	1 tiny teal			
30	faculty lunch table (4th floor)	1 white, 1 teal			

Table 2. Cellphone Contamination

Sample	Front Surface Colony Count	Back Surface Colony Count	Colony Description on BAP from magenta colonies only	Gram Stain
1	1 large white, 4 purple, 1 yellow, 5 tiny pink	2 pinpoint white, 24 tiny purple, 4 large off white		
2	1 purple, 20 tiny white	2 purple, 23 tiny white and purple		
3	1 off-white	15 off-white, 3 purple, 22 tiny white purple		
4	1 teal, 2 dark purple	no growth		
5	1 purple, 1 off-white, 1 tiny white	5 dark purple, 2 mucoid purple		
6	no growth	no growth		
7	no growth	1 purple, 50 tiny white		

Sample	Front Surface Colony Count	Back Surface Colony Count	Colony Description on BAP from magenta colonies only	Gram Stain
8	3 teal, 4 purple, 1 white	16 purple, 18 tiny teal, 42 purple		
9	2 large purple, 5 teal, 30 tiny white	no growth		
10	no growth	1 purple, 1 dark purple		
11	3 dark purple	14 dark purple, 8 teal, 1 tiny magenta		
12	no growth	no growth		
13	1 magenta, 8 tiny teal	1 large teal, 10 tiny teal		
14	2 tiny white	8 magenta, 24 white teal, 1 tiny teal	beta-hemolytic , creamy white	+ pleomorphic rod (diphtheroid)
15	2 purple, 4 large white	5 large white		
16	no growth	no growth		
17	3 large white	2 large white		
18	3 tiny magenta	5 tiny magenta	tiny white, no hemolysis	+ pleomorphic rod (diphtheroid)
19	no growth	1 large white, 1 tiny white		
20	no growth	no growth		
21	1 large white, 30 tiny white	5 large white, 30 tiny white		
22	1 tiny magenta	1 tiny white		
23	no growth	no growth		
24	2 white, 6 tiny teal, 2 tiny purple	4 tiny white, 1 tiny magenta, 1 tiny teal		
25	no growth	1 large white		
26	no growth	2 tiny magenta, 1 tiny teal	creamy yellow, no hemolysis	tiny + coccobacilli (diphtheroid)
27	no growth	3 teal, 8 magenta, 30 tiny white		
28	no growth	no growth		

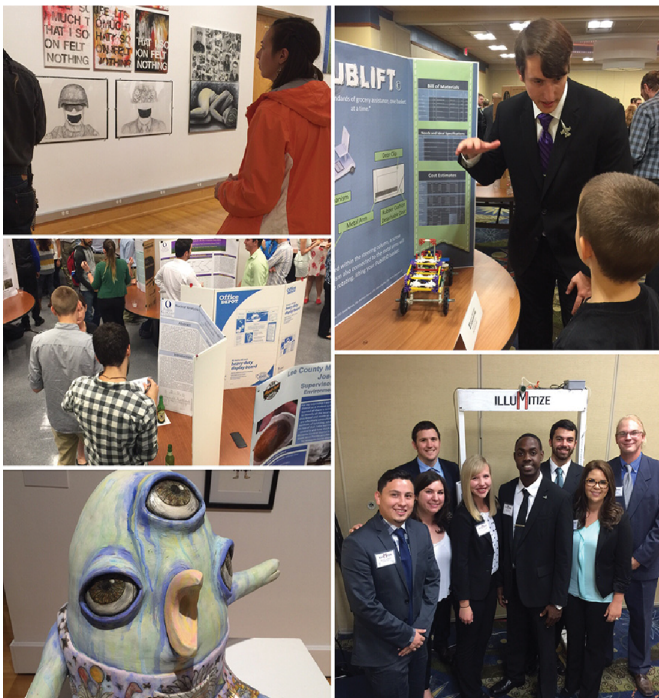
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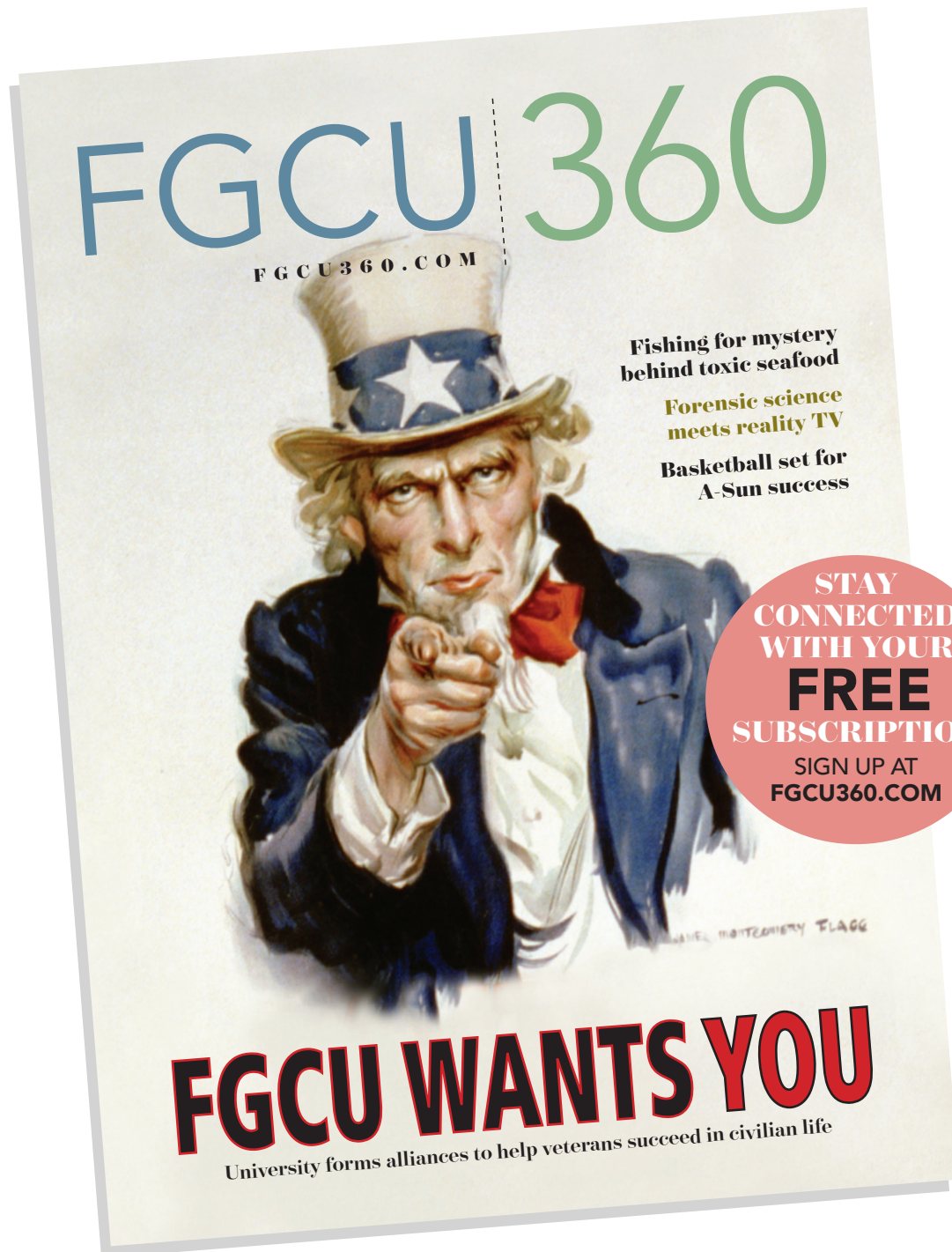
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