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Spring 2019 Edition

Dear Readers,

Welcome to the first, standard issue of the *Journal of Student Research at Indiana University East (JSRIUE)*. As Co-Editors, we are thrilled with the quality of articles this initial issue provides. The research, scholarly, and creative projects represented in this issue demonstrate IU East students' accomplishments. The variety and depth of topics our students examine provide keen insights and solid synthesis of ideas and findings. The production of these articles exhibits evidence of the impact research and creativity have on learning, our students, and our faculty. We hope you enjoy this high-quality issue that is informative and scholarly. We recognize and thank the *JSRIUE* editors and authors who worked together to deliver this first publication.

The journey to this point began as an idea in 2014 to archive undergraduate scholarly work and continues with this long-awaited publication of the first issue. The long process provided an opportunity to develop quality standards and editorial practices to support the future of this journal. Many individuals from the IU East community provided response and support for this project.

Good Reading,

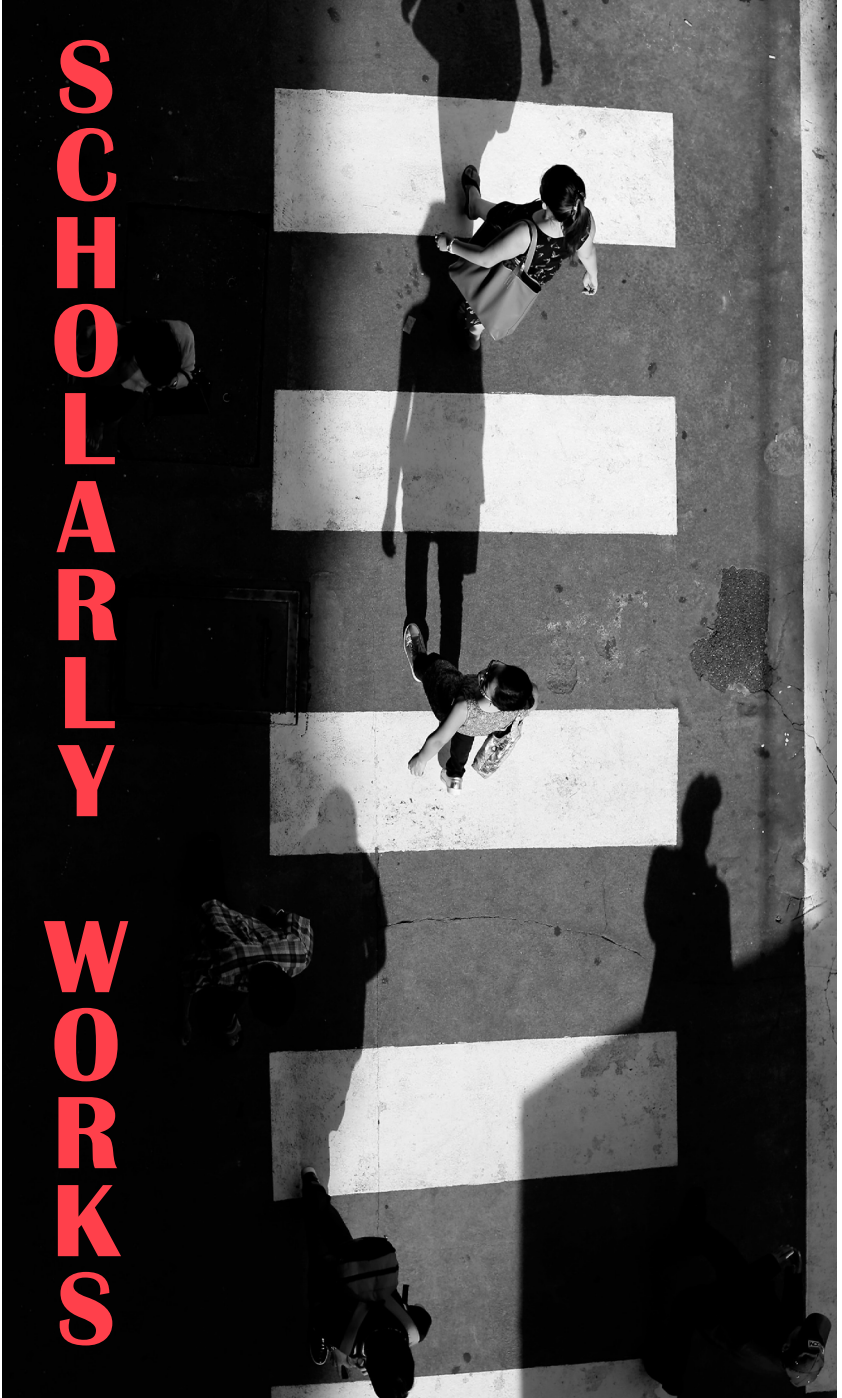
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Deconstructing Representations of Race and Gender in Amazon's *Alexa Loses Her Voice*

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Faculty Mentor: Justin Combs, Ph. D.

Abstract

The purpose of this research is to investigate the Super Bowl LII's most popular advertisement *Alexa Loses Her Voice*. The advertisement shows many white or light-skinned actors voicing Alexa. This advertisement plays into sexualization in media, beauty ideals, social identities, and it fits and promotes many stereotypes that have been portrayed in the media for years. In order to explore these issues, the investigator employed rhetorical analysis techniques guided by critical theory lenses including critical race theory and feminism. Among the author's findings are evidence of women being sexualized in the advertisement, a false idea of beauty being portrayed, and the presence of common race-related stereotypes.

Keywords

marketing, sexualization, social identities, stereotypes, sexualization in media, race-related stereotypes, false idea of beauty

Considering the hours of media attention and the tens of millions of online views they generate, it's safe to say that many people are just as interested in the advertisements as they are in the actual game. Among the many media organizations that rate the relative popularity and/or creative quality of Super Bowl ads is *USA Today*, which has published scores from its Ad Meter—a survey the publication has described as “the foremost tracker of public opinion on Super Bowl ads”—for 30 years (Siegel, 2018, para. 1). The Ad Meter's highest-scoring advertisement for 2018's Super Bowl LII was *Alexa Loses Her Voice*, a 90-second spot for Amazon created by its advertising agency Lucky Generals. In this advertisement, Alexa—Amazon's in-home, online voice assistant appliance—“loses her voice,” which prompts the

company to hire a number of celebrities to voice Alexa, resulting in comedic responses to user queries.

Although advertisements such as this one are the most pervasive forms of mass communication, critical study of the connotative messages they contain remain understudied (Brooks & Hébert, 2006). This commercial's popularity, coupled with the Super Bowl's audience size and millions of online views of the ad, further justify the need for studies such as this one. Accordingly, this research aims to interrogate how ideas of gender and race were constructed in *Alexa Loses Her Voice* by employing a rhetorical analysis that is informed by both the feminist and critical race perspectives.

This work focuses primarily on how the featured celebrities—Cardi B., Gordon Ramsay, Rebel Wilson, and Anthony Hopkins—convey standards of appearance and behavior that represent gendered and racial stereotypes. As subsequent discussion details, stereotypes of oversexualization, false beauty ideals, aggression, and whiteness were used in order to communicate ideas of both race and gender.

Media Representation

Our social identities are shaped by the media. According to Brooks and Hébert (2006), “[h]ow individuals construct their social identities, how they come to understand what it means to be male, female, black, white, Asian, Latino, Native American—even rural or urban—is shaped by commodified texts produced by media for audiences that are increasingly segmented by the social constructions of race and gender” (p. 297). By depicting a number of individuals in a variety of situations, *Alexa Loses Her Voice* communicates ideas about what it means to be male or female, white or dark skinned, and how people from each of these groups are expected to look and act.

Constructing Race

Racial stereotypes—the “automatic and exaggerated mental pictures that we hold about all members of a particular racial group” (Overcoming Racial Stereotypes, 2018, para. 1).

Belcalis Almanzar (known professionally as Cardi B.), a rapper and Internet celebrity of Dominican and Caribbean heritage who identifies as black (Gaynor, 2018), is the celebrity most prominently featured throughout the commercial. Brooks and Hébert (2006) remarked that light skin is seen as a standard of beauty. This may help explain why Almanzar—whose beauty is a bedrock of her fame—was selected to appear in the ad. The other celebrities in the ad are not widely considered beautiful and do not need to rely as heavily on appearance for their success, in part, because they are white.

Brooks and Hébert (2006) also noted that “Some theorists (Gurrero, 1993; Iverem, 1997; Manatu, 2003) contend that black women are portrayed only as sexual beings” (p. 300). In the ad Cardi B. is shown in sexually revealing clothes. Her dress is very short and very low cut. Also, in her lyrics when she says, “Look, I don’t dance now I make money moves say I don’t gotta dance I make money moves,” she is referring to when she was a stripper, which further sexualizes her.

Further, media representations of minorities often portray them as irresponsible (Horton, Price, & Brown, 1999, para. 2). In *Alexa Loses Her Voice*, Almanzar is depicted in a palatial bedroom with a shoe closet that appears to contain hundreds of pairs of shoes and seems to be staffed by a male assistant. This kind of conspicuous spending is widely considered irresponsible and unwise. Thus, depictions like this, which show minorities spending instead of saving, rely on racist stereotypes and contribute to issues of how minorities are perceived.

“Black English” is different, and many times a consonant is substituted, replaced, or deleted (History of African American English in the U.S.). In the ad Cardi B. says, “Dis guy wanna go to Mars. For wha? Dere’s not even oxygen dere!” There are multiple instances/examples of Cardi B. using “Black English”.

Conversely, Ramsay and Hopkins are constructed using cues of whiteness. Whiteness concerns “the privileges/power that people who appear ‘white’ receive, because they are not subjected to the racism faced by people of color and Indigenous people” (Mattimore, 2017, para. 1). Ramsay is criticizing a man for not knowing how to make a grilled cheese, and that makes him

seem to have power, it may also seem that he has a privilege because he finds it unbelievable that a man does not know how to make a grilled cheese. Hopkins is in a place of power at the end when he is asked to call Brandon, he says that Brandon is “a bit tied up”, but speaks in a powerful manner

Constructing Gender

Kilbourne (n.d.) posited that advertisements portray women “almost exclusively as housewives or sex objects” (para. 6). To be female, then, is frequently construed as being sexual and sexually available, according to Madison Avenue.

In the ad, both Rebel Wilson and Belcalis Almanzar are depicted as overtly sexual. When an Alexa user asks the appliance to “set the mood” Wilson, who is sitting in a bathtub, says, “Now setting the mood,” and goes on to talk about the user being in the bush and he is “so dirty. And so sweaty, because it’s hot in the bush.” As mentioned before Cardi B. is in sexually revealing clothing throughout the commercial.

In the ad, masculinity is depicted by communicating wealth, power, strength, and control. Both Ramsay and Hopkins are shown outside their respective homes, where they are able to survey all that they own, as opposed to Almanzar and Wilson, who are shown inside. Further, both homes are large and somewhat pretentious, projecting a sense of wealth.

Ramsay and Hopkins are fully clothed whereas Wilson is presumably naked and Almanzar wears only a short robe. This attire, or lack thereof, puts the women in a vulnerable, less powerful position than the male celebrities.

Ramsay uses aggressive language when asked for a recipe for a grilled cheese. He responds with, “Pathetic! You’re 32 years of age, and you don’t know how to make a grilled cheese sandwich. Its name is the recipe, you dumb f***!” This aggressive language communicates power. He is also exercising which shows strength. When Hopkins is asked to call Brandon he responds with, “I’m afraid Brandon is a little tied up.” This is in reference to his Hannibal Lecter character who kidnapped, killed, and cannibalized male victims showing dominance and control.

Discussion

Bandura (2001) remarked that “[T]elevised representations of social realities reflect ideological bents in their portrayal of human nature, social relations, and the norms and structure of society. Heavy exposure to this symbolic world may eventually make the televised images appear to be the authentic state of human affairs” (p. 281). What emerges from an analysis of *Alexa Loses Her Voice* is a symbolic world that reinforces negative, narrow stereotypes of both race and gender. And because an average American is exposed to thousands of ads each day, the cumulative effects of that barrage of stereotypes is potentially harmful when individuals perceive them as authentic.

On the issue of representing race, this ad reaffirms that black women can be beautiful, so long as they have light skin, which has long been the standard for beauty. Cardi B., a light skinned black woman who embodies other ideals of beauty—including thinness and having straight hair—was chosen to represent minorities in this ad because she more closely resembles standards of whiteness than blackness. Swinson (2011) noted that such idealized images can be harmful and that they have “permeated every level of our visual culture” (para. 6). By failing to be more inclusive and choosing to promote existing stereotypes, the Alexa advertisement is no different.

Another potentially problematic set of media representations concerns the sexualization of women. Women are continually sexualized in advertisements, and they have been sexualized in the mass media since the inception of the printing press. Richards (2017) reported that “[b]etween 2006 and 2016 women were shown in sexually revealing clothing six times more than men. In 2017 that dropped from six times to five times, but the number of female characters shown in sexual revealing clothing overall remained the same (one in 10) (para. 9).” Even if it is slightly better now for women in media, it does not seem that sexualization of women in media will go away any time soon. In this advertisement when Rebel Wilson is having a sexual conversation while naked in a bathtub and Cardi B. is shown in revealing clothing, both of them are being sexualized.

With regard to sexualization of women in the media, Petter (2017) wrote that “Anything goes...Look at any of the top 10 Instagrammers-all you see is sexualized unattainable photoshopped images of sultry pouting teenagers with heaving cleavages and bare bottoms (para. 10). Cardi B. seems to perfectly fit this criticism, and though she should not be shamed for the way she looks, it is incredibly problematic that women rarely see other body types in ads. Most troubling, perhaps, is a media system that tells girls and women that the way they look is what matters most while simultaneously showing images of unattainable beauty.

Gender stereotypes are pervasive throughout the mass media, and especially in advertisements. As discussed, *Alexa Loses Her Voice* relied heavily on the women as sex objects stereotype. The sex object stereotype is, “the ultimate in one-dimensional desirability” (Kemp, 2017, para. 8), which portrays women as objects to be acted upon instead of as human beings with individual needs, feelings, and agency. Sexual assault and sexual harassment have been happening more often. As the media keeps portraying women as objects to be acted upon, it encourages gender equality. It also communicates that it is okay to sexually assault and harass women.

Earp and Katz (1999) argued that “Mainstream media representations play a role in reinforcing ideas about what it means to be a ‘real’ man in our society. In most media portrayals, male characters are rewarded for self-control and the control of others, aggression and violence, financial independence, and physical desirability.” By portraying successful men as verbally abusive, wealthy, and controlling, *Alexa Loses Her Voice* contributes to what some scholars now refer to as “toxic masculinity,” a destructive set of attitudes and behaviors that chastises men for appearing weak, emotional, or caring.

Even though this ad featured an equal number of female and male characters who received equal screen time, this ad should not be commended for equality. Indeed, the male characters were shown fully clothed while the female characters were in various degrees of undress. Further, the female celebrities were both shown inside of their homes, with audiences entering

private spaces—a bedroom and a bathroom—effectively giving the viewing audience the power of voyeurism over them. The act of selecting a celebrity of color and using the same number of female and male main characters, then, was little more than overt tokenism from a company that should be leading instead of perpetuating, especially considering how much spending power women control in its industry.

Conclusion

Alexa Loses Her Voice was the most popular advertisement for Super Bowl LLI. Though entertaining, the commercial relied heavily on a number of pervasive, potentially harmful stereotypes to represent both race and gender. A rhetorical analysis of the ad found evidence of whiteness as a standard for beauty, the sexualization of women, and toxic masculinity, among other tropes.

Advertisers continue to employ these damaging stereotypes because doing so makes it easier to communicate sales messages and audiences continue to reward them for doing so by favoriting their ads and purchasing their products. As minority and traditionally disadvantaged population segments continue to grow and gain more social and economic power, one can only hope that these outmoded representations are finally cast aside for more realistic, inclusive, and constructive ones.

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Letters to Hannah Webster Foster: Defined by Virtue

Robin Alsoffi

Faculty Mentors: Justin Carroll, Ph. D., Tanya Perkins, MFA

Abstract

It is 1787. Less than a decade has passed since the formation of the new American Republic and women are eager to assert their voice in public life. Unlike their male counterparts, they are limited by society's mores and must adhere to strict moral codes. Additionally, patriarchal elements impact the work female authors produce. By using research from other literary critics and text analysis, this paper demonstrates the one-sided attitude author Hannah Webster Foster uses in her epistolary novel, *The Coquette*, and explores how her protagonist Eliza Wharton and her untimely death becomes a lesson in virtue for her readers. Subsequently, the book became a best seller and achieved two objectives: first, it solidified the importance of virtue for women and second, it encouraged them to add meaning to their voice through education. Foster portrays her protagonist as a simpleton and flirt whose achievements and resolution to defend herself are swept aside to focus only on her virtue or the lack thereof. Further, the critique opens a pathway to evaluate the current state of women's role in America which finds equitable laws but still, 230 years later, many challenges remain for women to experience true equality.

Keywords

Epistolary, feminism, Victorian literature

Introduction

Recognizing social issues vis-à-vis early American fiction can provide a litmus test for how far our nation has progressed and the weaknesses which still remain. Hannah Webster Foster's novel, *The Coquette*, published in 1797, provided a compelling body of work to examine in order to ascertain why virtue is linked to women, while men appear to suffer little consequence over mores assigned to morality. I chose the epistolic form to critique Foster's

work for two reasons. First, it felt appropriate as the novel itself is epistolary and second, I wanted to add some creativity to honor my vision of Eliza Wharton, the protagonist of the historical fiction, as she might strive for justice within an unjust world. Eliza, a woman determined to enjoy life before being trapped by the constraints of marriage, suffers a great tragedy after one of her suitors, Major Haly, plots to ensnare her for his own means. Addressing the author, her motivations, and the numerous hardships 18th century women faced offered solace for me as a writer interested in causes related to women, but also highlighted the same challenges women still face.

April 3, 2018

Brighton, Massachusetts.

My esteemed and dear Mrs. Foster:

As I rest comfortably in my berth on the night train from Vienna to Istanbul, having just absorbed the parting words of your novel *The Coquette*, I could not help but take out my stationary box, gather my senses, and share some items of concern. Please forgive flaws in my penmanship as we are about to ascend through the Carpathian Mountains near Belgrade. Your story feels like the rain hitting against my cabin window; it starts out gentle, then pounds mercilessly.

I found it dreadful to read of Eliza's death in childbirth; she all alone, along with the loss of her infant, and in all places to die none other than a room above a pub in Boston. However, the question which lingers with me upon this discovery was why must Eliza die alone in utter disgrace? Your point of view illuminates the unfair and hypocritical mores of 18th century America, which places moral responsibility on women while their male counterparts emerge unscathed. This perspective is evident throughout the novel, as Eliza is portrayed as a flirtatious simpleton searching for nothing but freedom from responsibility, as expressed when Eliza writes in her letter to Lucy Freeman: "A melancholy event has lately extricated me from those shackles which parental authority had imposed on my mind. Let me, then, enjoy that freedom which I so highly prize" (Foster, 1994, p. 597). Eliza expresses

nothing but the joys of opportunity which await her as she is rescued from a lifetime marriage to Mr. Haly, who she neither loved nor wished to love but, thankfully, his untimely death offers her hope for a more satisfying union in the future. The response from her friend Lucy Freeman is a lecture on morals and accuses Eliza Wharton of being a coquette.

With that, critic Donna Bontatibus argues essential facts have been left out of the novel with various modifications made to the timeline of your protagonists' real-life story. Further, Bontatibus (2000) effectively reinforces her theory that you were aware of an eight-year gap between the dissolution of Wharton's engagement to the minister and the birth of her stillborn child but ignored it to produce a novel on what happens to women with loose moral values (p. 189). Further, your protagonist was 37 when she died, although her letters lead the reader to believe they are witnessing the musings of a much younger, inexperienced woman. Eliza writes to Lucy Freeman, "I believe I shall never again resume those airs which you term coquettish, but which I think deserve a softer appellation, as they proceed from an innocent heart, and are the effusions of a youthful and cheerful mind" (Foster, 1994, p. 593). The sentimental narration reads more like a study in crime and punishment but, of course, only for Eliza.

In the meantime, your story of seduction allows Major Sanford, the antagonist, to discreetly slip away into oblivion. I appreciate how you define Sanford as a rake, but it seems this licentious character was able to abscond from responsibility and should have been held accountable after hatching a successful plot to take Eliza as his mistress. Indeed, with the utmost respect for your authorial authority, of course, I found your novel to be gender-biased and mostly used as a platform to teach young 18th century readers lessons on patriarchal-based mores in morality. Let me share an example. Major Sanford writes to Mr. Charles Deighton, "But I fancy this young lady is a coquette; and if so, I shall avenge my sex by retaliating the mischiefs she meditates against us" (Foster, 1994, p. 599). Where is Eliza's rebuttal to this attack? Eliza's reputation as a coquette is established for the reader, her attributes and abilities ignored. Moreover, literary critic Bryan Waterman (2011) describes the real Elizabeth Whitman, your husband's distant cousin on whom your story of Eliza Wharton is based, as a poet and reader of great literature (p. 544). Would then Eliza still be seen as a woman without virtue if

she was equal or superior in intellect to the men and women, including Lucy Freeman, who advised and accused her? I am eager to hear your response and hope you welcome the conversation.

The time is now late, and the steward has just removed my tea tray. I bid you *adieu*.

Duchess Robin Freeman

April 4, 2018

Brighton, Massachusetts.

My esteemed and dear Mrs. Foster:

This morning, as the train passes Sofia, Bulgaria, the views from the dining car are spectacular. The sun, so magnificently radiant, lightly touches the golden domes of St. Sofia's Church, turning them into perfectly set soufflés. Sadly, the empty cemetery east of the cathedral brings to mind how alone and unloved Eliza was at the end. To return to our previous discourse on *The Coquette* and your point of view in the novel, it appears literary critic Daniel Diez-Couch (2014) believes the heavy-handed tactics used by Eliza Wharton's so-called friends was to share a lesson with women of the period (p. 683-684). These tactics included the inscription on her tombstone which read:

This humble stone, in memory of ELIZABETH WHITMAN,
Is inscribed by her weeping friends,
To whom she endeared herself
By uncommon tenderness and affection.
Endowed with superior genius and accomplishments,
She was still more distinguished by humility and benevolence.
Let Candor throw a veil over her frailties,
For great was her charity to others.
She lived an example of calm resignation,
And sustained the last painful scene,
Far from every friend.
Her departure was on the 25th of July, A.D. 1788.

In the 37th year of her age;
'The tears of strangers watered her grave. (as cited in Diez-Couch, 2014, p. 683)

He argues, and I agree, that Eliza did not have a political or feminist agenda. Instead, she presents an elusive identity who failed to conform to the rhetorical vision of her peers (Diez-Couch, 2014, p. 683). When, in fact, we must ask ourselves if one could find a similar inscription, begging the reader to forget the sins of the deceased, on the headstone of a man?

Additionally, the moral high-ground has been established as you use Lucy Freeman's responses to verify your stance on Eliza's relaxed and flirtatious attitude towards life, a stance which helped solidify trust between you and your readers. Can you explain the interaction between your text and the reader as you pursue meaning? Further, I realize that to preserve your presentation of a female writer in the late 1700s, you had to assure your readers of your character. Critic Jennifer Harris (2009) argues the fine line you would have been forced to follow in the portrayal of the protagonist Eliza Wharton, when writing about virtue (364). She explains that in 18th century America, a female writer's reputation might be damaged if she had enough knowledge of sexual liaisons and inappropriate behaviors to write about them. Readers would question how the writer learned of these indecent habits (Harris, 2009, p. 365).

My breakfast has arrived, and the fresh cream used to top my raisin scone has accidentally dripped over onto the paper. Please excuse my folly. Adieu.

Duchess Robin Freeman

April 13, 2018
Brighton, Massachusetts.

My esteemed and dear Mrs. Foster:

The Grand Bazaar of Istanbul is bustling with activity; its endless maze of narrow stone paths filled with hawkers spiritedly peddling goods as captivating

aromas of Turkish delight invade the senses. As I meandered my way out of the bazaar, the servile attitude of the street vendors once again reminds me of Eliza. Luckily, I happened upon a quaint street café for respite and a moment to return to the discussion at hand.

In essence, as literary critic Dorothy Baker (1996) points out, Eliza's primary role was to please, not to be pleased (p. 59). This notable statement from Baker coincides with my perception as a reader that women of the 18th century were only defined by their virtue. Lucy Freeman offers an example of this: "[L]ay aside those coquettish airs which you sometimes put on; and remember that you are not dealing with a fop, who will take advantage of every concession, but with a man of sense and honor, who will properly estimate your condescension and frankness" (Foster, 1994, p. 20). Morality ruled lives, most especially the lives of republican women. However, men were not held to the same rigid standards and this becomes evident according to the point of view in your novel.

I feel strongly that you have left out essential information from Eliza Wharton's life, followed patriarchal elements in conveying meaning to your readers, and used the behavior and eventual early death of Eliza to frighten young 18th century women readers on the consequences of seeking sexual pleasure before marriage. Could you have been swept up in the religious fervor of the time period? I understand democracy is new and still unsettled in late 1700s America. Puritan ideologies will be challenged and should be, so Eliza and other women do not die alone and unloved.

Last, we both know attitudes towards women have changed. We can now vote and are legally equal to our male counterparts in the eyes of the law. In reality however, 230 years since your novel appeared, women still face battles. They are still compartmentalized, sexualized, and have not yet gained enough trust from the American people to be elected president. In time, let us hope women will experience true legitimacy in and outside of literature.

I pray you consider what I found disagreeable in your novel. My return train to Vienna awaits me. I bid you *adieu*.

Duchess Robin Freeman

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Is Beer Beauty in the Eye of the Beholder? Ratings of Professionals and Nonprofessionals

Grace Allred, Nina Filippini, and Duane Lundy

Faculty Mentor: Duane Lundy, Ph. D.

Abstract

This archival study investigated appraisers of beer aesthetic quality. In total, over 700 beers were randomly selected from beer critic books that contained quantitative ratings, and critics' ratings were analyzed in terms of histograms and related statistics. We compared beers from professional beer critics' books, professional websites and nonprofessional consumer websites (N = 2,200 ratings). It was predicted that professionals would have positive correlations in their ratings, with ratings showing mound-shaped distributions of ratings approaching normality. Nonprofessionals, in contrast, were predicted to be less positively correlated with each other and to show less normalized distributions. Support for the hypotheses was mixed.

Keywords

aesthetic consensus, aesthetic merit, aesthetic quality, rating distributions, statistical analysis of beer judgments

This study is about the aesthetics of beer. Aesthetics is the branch of philosophy concerned specifically with taste. Aesthetics has been defined as “[t]he study of the feelings, concepts, and judgments arising from our appreciation of the arts or of the wider class of objects considered moving, beautiful, or sublime” (Blackburn, 1996, p. 8). Different areas of aesthetics can be studied using parallel methodologies. Some aesthetics studies in the past have shown: 1) positive correlations in ratings among professional music and film critics, suggesting they agree more than disagree about quality (Boor, 1990; Lundy, 2010; Simonton, 2011), and 2) a mound-shaped distribution of ratings, approaching normality, implying that most works are near neutral in quality and extremes of quality are rare (Lundy, 2013; Lundy, Crowe &

Turner, 2016; Simonton, 2011). Can the same things be said of beer critics? We applied a procedure previously used to study the music and film critics to this third area of aesthetics, that is, perceptions of beer quality.

Our archival study investigated appraisers of a wide variety of beers from all over the world, looking at over 700 beers in total. We predicted that, like previous studies of aesthetics in film and music, professional beer critics (experts) would tend to show positive correlations in their ratings (Hypothesis 1). Similarly, it was also predicted that beer critics would follow mound-shaped distribution patterns, approaching normality (Hypothesis 2). We also predicted that nonprofessionals (nonexperts) would in contrast show lower positive correlations than professional critics, and show less mound-shaped distributions (Hypothesis 3). Such findings have already occurred in a recent music study (Lundy & Smith, in press).

Method

We randomly selected over 700 beers from all existing beer critic books and websites that contained quantitative ratings. We then analyzed professionals' and nonprofessionals' ratings ($N = 2,200$ ratings). Professionals' ratings came from four books and one website (Campbell & Goldstein, 2010; Klein, 2000; Levinson, 1999; Robinson, 1996; BeerAdvocates Brothers on www.beeradvocate.com, 2017). Nonprofessional sources all came from websites, and were found on www.beeradvocate.com, www.ratebeer.com, and www.untappd.com. Potential quantitative markers of rating refinement were tested by analyzing frequency distributions of beer ratings. Hypothesis 1 will be compared to Lundy (2013) results for music. Hypothesis 2 will be compared to results for music (Lundy & Smith in press) and film critics (Lundy et al., 2016).

Results

Hypothesis 1 was partially supported. The majority of professionals showed significant positive correlations in their ratings (average $r = +.29$, 6 of 7 p 's $< .05$), implying some agreement about beer quality, but overall agreement was lower for beer ratings compared to previous studies of music (+.49) and film (+.60) ratings by professionals (Lundy, 2013).

Hypothesis 2 was also partially supported. Critics' overall beer rating distribution was mound-shaped and approached normality, but it showed larger skewness (-.60) and larger kurtosis (-.37) compared to music (-.23 skewness and -.17 kurtosis; Lundy & Smith, in press), or film critics (-.40 skewness and +.02 kurtosis; Lundy et al., 2016).

Hypothesis 3 was partially supported as well. Professionals did show a rating distribution closer to normality, but were not higher in interrater reliability ($r = +.27$) compared to nonprofessionals ($r = +.71$)--in fact, the opposite was true. Overall, these findings extend research on questions of interrater reliability and rating distributions within aesthetics to a new aesthetic domain, namely beer quality appraisal.

Discussion

Similar to findings with music and film critics, we found that 1) beer critic pairs showed some consensus in their ratings, although this consensus was considerably lower than it was for music and film; and 2) that critics' overall beer rating distribution was mound-shaped and approached normality, although skewness and kurtosis were larger compared to music and film critics. The findings paralleled rating distribution characteristics wherein the majority of works were perceived by many raters to be moderate in quality, and greater and greater extremes of quality were perceived as less and less common. These findings do not fit with a strong "beauty is in the eye of beholder" stance, which would predict zero or even negative correlations of ratings.

Nonprofessionals surprisingly showed higher interrater reliability in comparison to professional critics. This may be because of nonindependent ratings: the nonprofessional ratings were all websites, whereas four of the five professional sources were books. There is the possibility of website consumers seeing and being influenced by each other's ratings, and is more likely for nonprofessionals. This would be a form of social influence or "conformity bias" (see Lundy, 2016).

Study Limitations and Future Research

One possible reason for lower correlations in this study could be that the beers compared were not identical because their exact nature could vary from year to year. Such a problem would be even greater if one attempted to do a parallel study of wine ratings. This issue is not the case in both the music and film industries wherein exact copies of works are available. There are still other areas of aesthetics to explore with respect to both agreement and the shape of rating distributions, such as visual art and literature, although quantitative ratings may be much more difficult to locate for these other areas of aesthetics.

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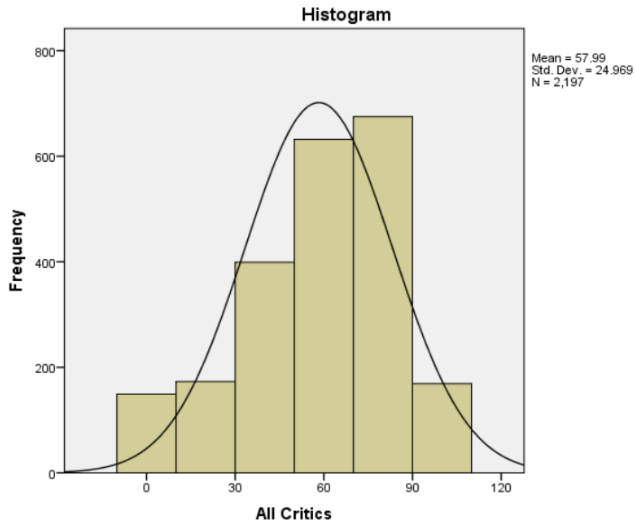


Figure 1: Normalized rating distribution of professional beer critics.

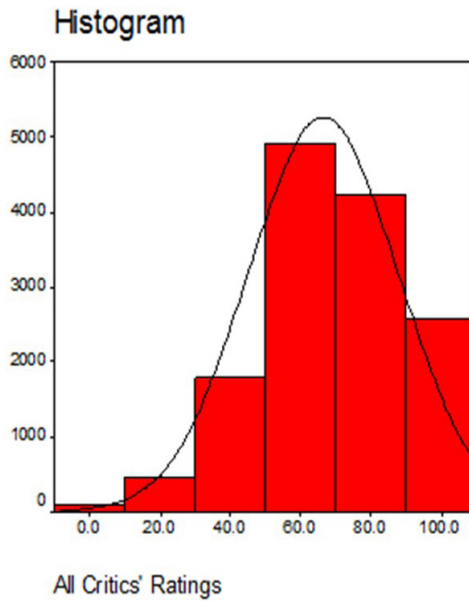


Figure 2: Normalized distribution example from previous aesthetics study from music critics (Lundy, 2013).

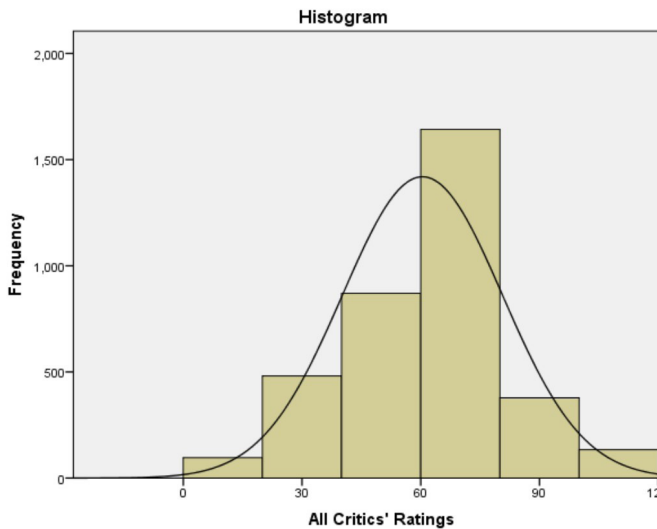


Figure 3: Another example of normalized distributions of ratings in aesthetics, from film critics (Lundy, Crowe, & Turner, 2016).

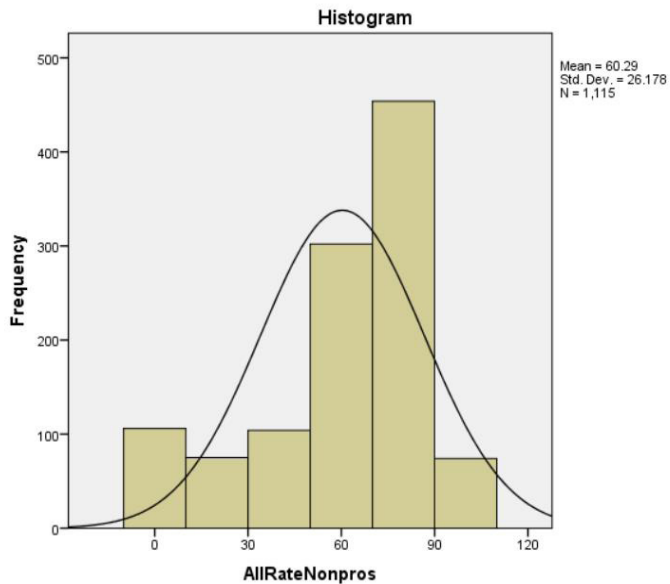


Figure 4: Nonprofessionals' rating distribution.

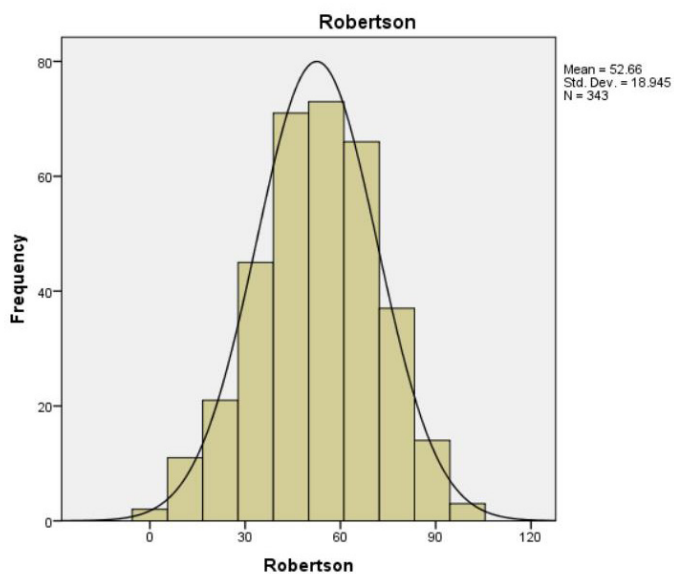


Figure 5: Normalized rating distribution of ratings from Robinson (1996).

Length and Robusticity of Metacarpals and Metatarsals to Estimate Physiological Sex from Ancient Maya Skeletal Remains in Northern Belize

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Faculty mentor: Dr. Katherine A. Miller Wolf

Abstract

For bioarchaeologists, biological sex estimation based on skeletal indicators is a crucial element when creating a biological profile for human remains. While there are several ways for estimating sex, primarily involving examining cranial and pelvic morphology, one useful method that remains underutilized is metric analysis of bones from the hands and feet. Since males and females are sexually dimorphic, the ability to discriminate biological sex from hand and foot bones is possible and is shown to be valid. Skeletal metric data drawn from the hands and feet have successfully discriminated between male and female (bio)archaeological remains in Europe and throughout North America. The results of osteometric data for a Maya population from Nojol Nah in the Blue Creek region of Belize are presented to demonstrate the utility of such metrics in estimating sex. These data are useful to archaeologists or bioarchaeologists working with fragmentary or isolated remains in the field or lab.

Key Words

osteometrics (sexual dimorphism), sexing methods, ancient Maya

Introduction and Review of Literature

When assessing biological sex on human remains, the primary method(s) of determination often involve analyzing the morphology of the pelvis and the skull due to their sexually dimorphic features. However, in some instances, these components may have undergone damaging taphonomic processes and cannot be analyzed, or they may be completely absent causing a complication in sex estimation. In this case, distinguishing physiological sex must rely on other features such as osteometric data from other elements of the skeleton. Through analyzing this data from metacarpals and metatarsals, biological sex can be estimated on adult and theoretically subadult skeletons. In conjunction with the following assertion, these noted differences are population specific and vary. Not only does this paper prove in favor of the validity of this method, but literature does as well.

Agnihotri, Shukla, and Purwar (2006) sought to examine the osteometric differences in the overall feet between males and females. After assessing overall foot length and breadth. Agnihotri and colleagues found that

Males had an average foot length about 3cm greater than the females' foot length. The foot breadth was about 1cm greater in males as compared to females. In all age groups, the foot index in females was found to be more than 37, and in males, it was less than 37. Therefore, this value i.e. 37 can be used as deviation point for the determination of sex. Thus the present study indicates a positive correlation between an individual's foot measurements and gender. (Agnihotri et al., 2006, p. 2)

While the application of metacarpal and metatarsal osteometric data collection is an underused methodological approach, these findings demonstrate that the usage of this method yields accurate and applicable results.

Harris and Case (2012) further this study and collected osteometric data from independent tarsal bones to observe if physiological sex can be discriminated (295-305). From their findings, they state, "It is clear from the results of this study that the tarsals show sufficient sexual dimorphism in modern European-Americans for use in metric sex determination"

(Harris & Case, 2012, p. 303). To further this claim, they assert that, “The individual measurements of the tarsals exhibit a range of percent sexual dimorphism as a group (9.8–14.0%) that is higher than the range exhibited by long bone lengths in many other populations” (p. 303). Whereas Agnihotri and colleagues found overall differences in foot size, Harris and Case help illustrate how even osteometric data from the tarsals can too yield viable results.

Not only can data from the overall foot as well as specific measurements of tarsal bones yield viable results, but Case and Ross (2007) found osteometric data from the metatarsal and metacarpals from a European population consisting of 371 adult female and males can be an indicator of physiological sex. In their findings, they elaborate that, “There would appear to be ample justification for favoring length measures over robusticity measures when developing forensic sexing methods. However, the best way to assess the relative value of the length versus robusticity measurements used in past research is to examine studies in which such measurements have been used in combination to study different populations” (Case & Ross, 2007, p. 268). For the research presented in this paper, the sample was derived from the population of ancient Maya from the site of Nojol Nah which dates range from 400 BCE-800 CE (Hammond, 2016, p.3). Therefore, Case and Ross stress the importance of how this methodology is encouraged, valid, and useful.

In conjunction with this source on the concept of population sampling, Wilbur (1998) utilizes osteometrics from the hands of feet from a Native American population sample of 410 adult male and female skeletons. From her research and findings, Wilbur concludes

The results of the sex determination component of this study indicate that sex determination via the bones of the hands and feet can be accomplished for Native Americans with accuracy comparable to that for metric techniques on other skeletal elements and for other populations. (p. 188)

Based on Wilbur’s investigation, there is certain plausibility in the validity of metacarpal and metatarsal osteometric sexing. Beyond this, her findings show

how this methodology is valid in other populations beyond Caucasian and African-Americans.

Another piece of literature which promotes this methodology is Stojanowski (1999). For his data collection, he sampled approximately 200 different skeletons, consisting of adult male and female Europeans as well as African-Americans. For his sample, he employed six different measurements to obtain osteometric data. They “included: midline interarticular length, maximum midshaft diameter, medio-lateral and antero-posterior head breadths, and medio-lateral and anteroposterior base breadths.” From his findings, he concludes that, “With the growing literature on sex estimation and stature estimation, [from] using metacarpal dimensions, it is clear that these elements make an important contribution to forensic identification” (p. 251). For this research, similar measurements were employed. In sum, many different pieces of literature help establish the validity of using osteometrics from the hands and feet as way to discriminate biological sex. Along with this, they also convey the importance of gathering data from different populations.

Methods

All data was collected from skeletal remains housed in the bone collection from the Maya Research Project in Blue Creek, Belize. Sample remains ranged from the early to late Classic period (250-800 BCE). For this research, data came from the remains of 92 individuals excavated from the site of Nojol Nah (see Figure 1). Of these, 46 (Male=23, Female=23) were adults and therefore included in this study. For metacarpal data, osteometric data were gathered from nine females and five males (n=14). For metatarsal data, three females and 4 males were measured (n=7). Sample sizes were smaller than originally expected due to both taphonomy and poor preservation.

Figure 1: Map of site Nojol Nah. Marc Wolf, (2015).

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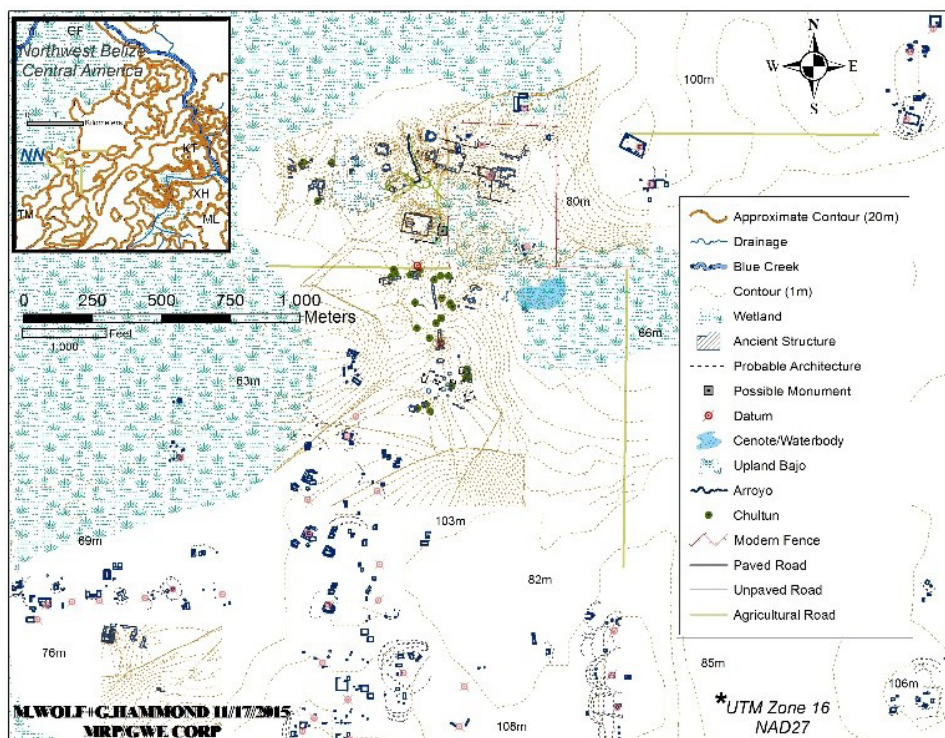


Figure 1: Map of site Nojol Nah. Marc Wolf, (2015). (Reused with permission of Marc Wolf, 10/2018)

Measurements were collected using Mitutoyo Digital Calipers from both the left and right extremities to maximize sample size and consisted of all five metacarpals and metatarsals.

Four measurements were employed for data collection. Samples were measured in overall length, width at both the proximal and distal ends, as well as width of the metacarpal/tarsal diaphysis.



Figure 2: Overall length as well as width at the proximal, distal and midline were collected on metatarsals. Illustration (Case & Ross, 2007: 265 Figure 1).

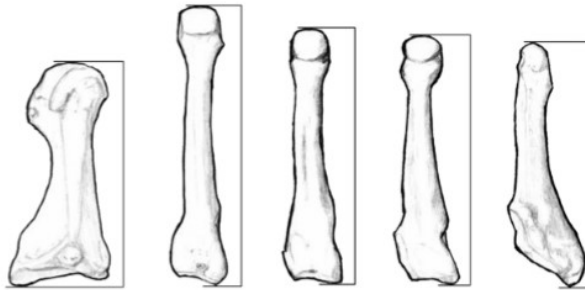


Figure 3: Measurements for the metacarpals consisted of the same in figure 1. Illustration (Case & Ross, 2007: 265 Figure 2).

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Data was recorded and analyzed. Averages and standard deviations were calculated for each sample as well as a t-test was conducted to determine statistical significance.

Results

Despite a small sample size, t-test results on both metatarsal and metacarpal osteometric data show that the original hypothesis for this project was indeed correct; physiological sex could be discriminated based on this data. Statistical significance was determined by a t-test between male and female metrics, $p < 0.05$. In both metatarsal and metacarpal data, female and male ranges were quite distinguishable. In conjunction with this, it appears data from the length was best at displaying this range difference. Tables 1 and 2 illustrate usable data gathered.

Measurement	Sex	N	Mean, sd (mm)	Range (mm)	t-test, M to F, p=
RMC1-Length	M	4	47.685±2.36	45.32-50.04	0.021
	F	6	43.18±2.12	41.05-45.30	
RMC1-Prox. Width	M	4	15.56±0.89	14.67-16.46	0.031
	F	6	13.90±0.19	13.70-14.10	
RMC1-Distal Width	M	4	16.01±0.51	15.49-16.53	0.012
	F	6	14.69±0.78	13.91-15.48	
RMC2-Length	M	3	71.91±0.79	71.17-72.70	0.001
	F	5	61.88±3.07	58.80-64.95	
RMC2-Prox. Width	M	3	19.06±0.61	18.44-19.67	0.002
	F	5	15.85±0.53	15.32-16.38	
LMC2-Length	M	2	72.35±0.62	71.72-72.97	0.0008
	F	4	62.89±1.86	61.02-64.75	
LMC2-Distal Width	M	2	15.52±0.05	15.46-15.57	0.028
	F	4	13.48±1.02	12.45-14.51	
RMC3-Length	M	3	70.10±1.73	68.37-71.83	0.005
	F	6	60.60±5.12	55.47-65.73	
RMC3-Distal Width	M	3	14.68±0.75	13.92-15.44	0.023
	F	6	12.62±0.52	12.09-13.15	
RMC4-Length	M	3	60.92±1.51	59.41-62.44	0.002
	F	6	54.20±2.88	51.32-57.08	
RMC4-Distal Width	M	3	12.95±0.45	12.50-13.41	0.001
	F	6	10.88±0.55	10.33-11.43	

Measurement	Sex	N	Mean, sd (mm)	Range (mm)	t-test, M to F, p=
RMC5-Length	M	2	55.24±1.31	53.92-56.55	0.016
	F	4	48.85±1.88	46.97-50.73	
RMC5-Distal Width	M	3	14.36±0.93	13.42-15.30	0.049
	F	5	12.19±1.55	10.64-13.75	

Table 1: Usable data from metacarpal osteometrics (MT).

Measurement	Sex	N	Mean, sd (mm)	Range (mm)	t-test, M to F, p=
RMT1-Length	M	3	64.61±0.86	63.75-65.47	0.025
	F	3	56.24±0.86	53.49-58.98	
RMT1-Prox. Width	M	2	21.21±0.67	20.54-21.89	0.027
	F	3	18.24±0.65	17.58-18.89	
RMT1-Distal Width	M	3	23.70±0.42	23.27-24.12	0.008
	F	3	21.03±0.06	20.34-21.72	
RMT1-Width at midpoint	M	3	15.45±0.66	14.78-16.11	0.019
	F	3	12.33±1.08	11.24-13.41	
LMT1-Distal Width	M	2	23.72±1.11	22.60-24.83	0.043
	F	2	18.79±0.91	17.87-19.70	
RMT2-Length	M	3	80.17±0.28	79.89-80.45	0.032
	F	2	68.86±1.56	67.29-70.42	
RMT4-Distal Width	M	3	15.52±0.05	13.11-13.42	0.026
	F	2	11.44±0.33	11.11-11.77	
RMT3-Length	M	2	77.85±2.91	74.93-80.76	0.046
	F	2	64.99±1.95	63.03-66.95	
RMT3-Distal Width	M	2	23.81±0.71	23.10-24.52	0.037
	F	2	15.59±0.06	15.53-15.65	

Table 2: Usable data from metatarsal osteometrics (MT).

Discussion and Conclusions

Results from the data analysis clearly show that osteometric data of MC and MT data is valid in discriminating physiological sex. As previously mentioned, the best measurement observed in helping to distinguish sex appeared to be the overall length. Case and Ross also made a similar observation upon their research. They found that the length of the hands and feet bones are less affected than other aspects of the bone over lifetime activity, therefore, length is a more reliable osteometric data point (Case & Ross, 2007). In many instances, the data show a clear difference in the measurements between male and females. For example, among females, the range of the right third metacarpal was 55.47-65.73mm. For males, this range was 68.37-71.83mm. This can also be observed in measurements from the metatarsals. For example, the length for the right first metatarsals show the male range extended from 63.75 to 65.47mm and the female range was 53.49 to 58.98mm. Both of these instances help illustrate how the length of both metacarpals and metatarsals can show a clear discrimination between male and females.

While length was a primary indicator of skeletal sex estimation, robusticity also appeared to show promising results in regards to discriminating between male and female remains. For instance, the averages for proximal and distal width of the right first metacarpal varied between the sexes. The average proximal width for males was 15.56mm versus the female average of 13.90mm. This pattern is also present in the distal width measurement of first right metatarsal. Female ranges extended from 20.32mm to 21.72mm, versus the male range of 23.27mm to 24.14mm.

Although sample sizes were small, the results of this study clearly demonstrate how sexual dimorphism manifests in the human skeleton, and yield positive results with population specific data. The data gathered from these samples support that metatarsal and metacarpal osteometric measurements in adults can assist in estimating the biological sex of skeletal remains. Not only do the results support this hypothesis, but previous literature has tested this methodology as well and help confirm its validity. For future work, collecting more data from a larger sample size would be of interest. Along with this, applying this data to help produce a continuum of metatarsal and metacarpal osteometrics would further assist in the estimation of sex.

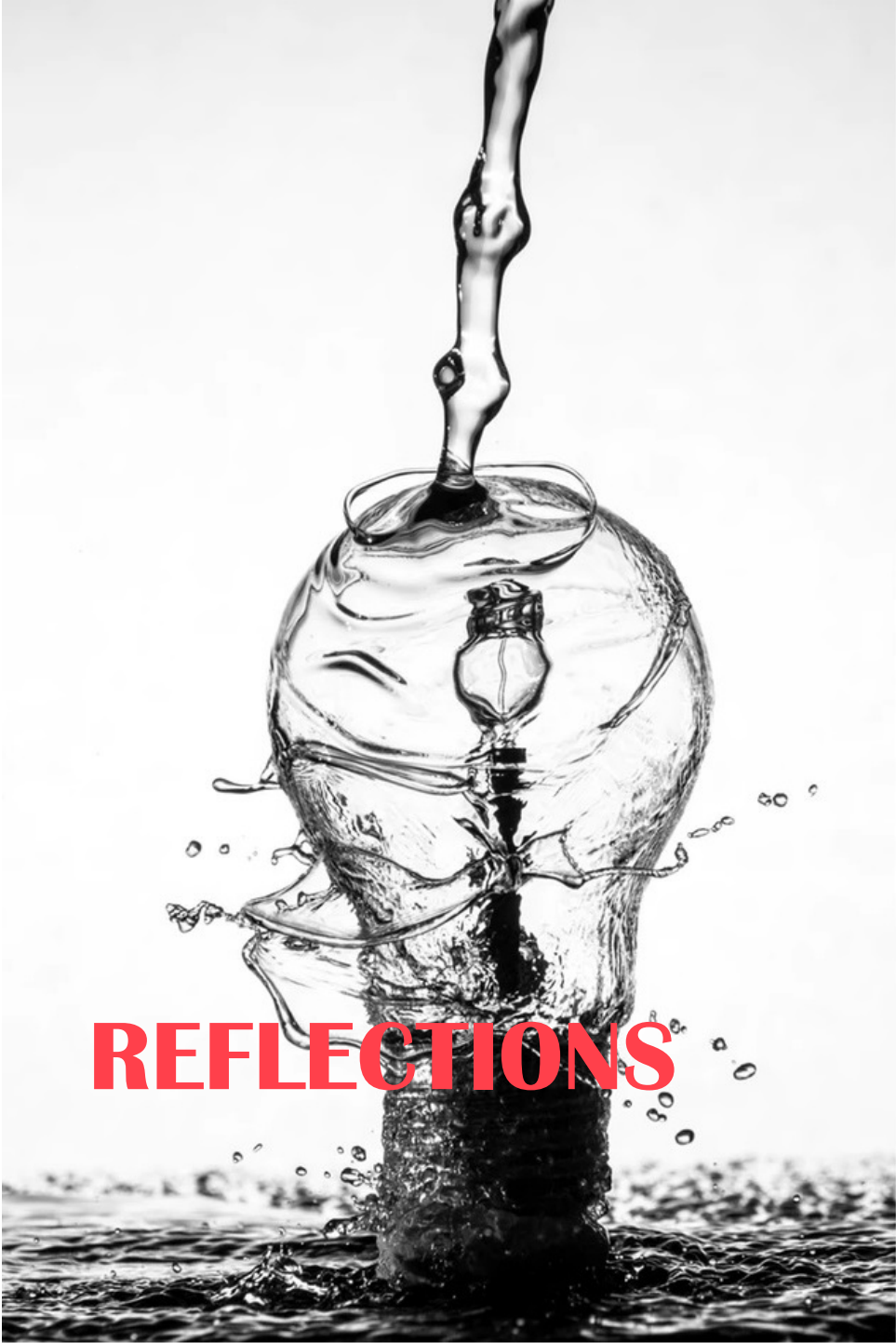
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Mad Scientist Behind the Scenes: A Reflection on the Art of Science Writing

by Elizabeth Miller

I enjoy reading blogs and had always thought about how cool it would be to write a blog, but nowadays there are so many mommy-bloggers that I had never been able to come up with an original blog idea of my own. But after writing a post that tied together my love for science and quirky writing, I knew I had finally discovered my IU East Honors Capstone Project; the perfect bookend for my college career (“About,” 2016).

Writing for *Simple Science* was not an easy feat. I would say the hardest part was deciding on a current scientific event and figuring out a way to give it an original spin, all while sticking to the original goal of translating scientific breakthroughs into layman’s terms for the average reader--because we can’t all be mad scientists! After I would decide on a topic, then I would spend five or more hours fully researching the topic and writing up a post ranging from 400-1000 words. My favorite part of this whole process was completing a post—not just because it was one more task I could cross off my to-do list, but because of the immense high I would get from finishing a worthwhile and original piece after so much hard work. Although it’s hard to pick a favorite post, check out this memorable piece where I include a personal video of my dog to demonstrate new research on how dogs compute information from humans (Miller. E., 2016).

Through this project I’ve learned that writing original works is not an easy task and is often something that takes a lot more time than I expected. Writing isn’t like solving a math problem where there’s one way to solve the problem and one answer. Instead, it takes a lot of determination and desire, and for me, it’s about finding just the right time and mindset to do my best work. At this point, I’m just happy to have completed my blog, and I don’t have a current intention to continue my posts. With that said, I can still definitely see myself jumping at the chance to write a post about a crazy scientific advancement in the future just because, so be sure to check out all my posts (“Simple Science,” 2016). I really do enjoy writing when I have a

set goal and purpose so I hope it's something I can keep doing in the future, even just for fun. I'm not sure where I'm off to after graduation, but I know that this project has helped prepare me for a career that involves writing, no matter what my job title might be.

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