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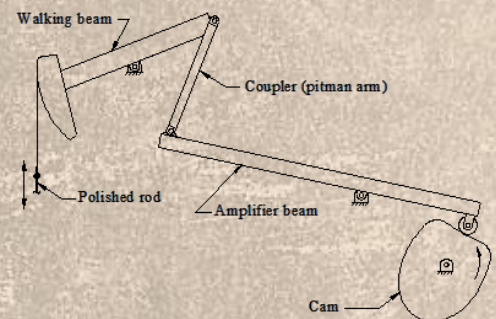
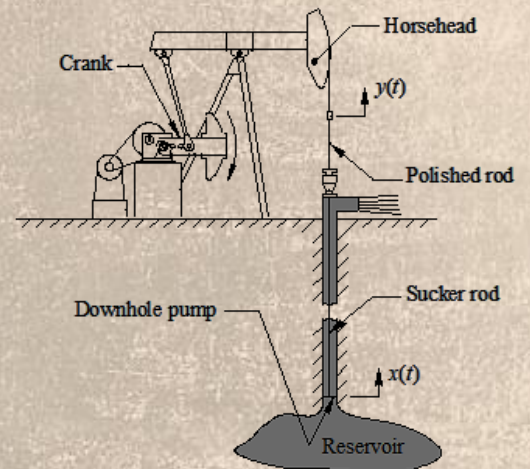
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Typical versus cam-driven oil field pumping units. Courtesy of Ngun Ceu and Forrest Flocker, Department of Mechanical Engineering, UT-Permian Basin.

The Effects of Nonverbal Communication in Self-Contained Special Education Classrooms

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Abstract

Special education classrooms consist of difficult learning scenarios for both instructors and students. Educators need to be highly aware of how they present themselves to students to achieve maximum success, especially in self-contained special education classrooms. This paper examines how haptics and proxemics affect elementary level students in self-contained classrooms, as well as guidance for future research projects involving this matter.

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Introduction

Nonverbal communication is an integral part of human interaction, and much meaning can be derived from a simple look, hand gesture, or even how close people stand to each other. In the classroom, teachers face challenges when teaching students at all ages and levels, as societal standards have shifted toward a more hands-off approach to learning. However, in non-inclusive special needs classrooms, instructors must remain flexible in their teaching methods, as these classrooms house children with profound intellectual and behavioral impairments that often require unconventional educational strategies. This paper will examine the effects of nonverbal behaviors inside self-contained classrooms at the elementary (kindergarten through fifth) grade levels and focus on how haptics, proxemics, and Expectancy Violation Theory affect student learning, while later providing research proposals to increase understanding of nonverbal communication in special education.

When I began my new career in education as a special education paraprofessional in 2014, I did not receive any

training for my new position. I went from a long-time coffee house employee to a non-inclusive special education classroom with no idea what was expected of me from both the faculty and the students. As such, I had no understanding of how my nonverbal behaviors affected the especially sensitive students in the room. The one instance that is seared into my memory involves a fourth-grade student named Adam (*name changed to protect privacy*). Adam was diagnosed with autism (AU), a learning disability (LD), and profound behavioral issues, including oppositional defiance disorder (ODD). Adam often refused to stay at his desk, so I modeled the tactics of the two classroom teachers, and stayed very close by Adam, hovering over him to ensure he was on task and working. In addition to staying close to Adam, I would lean over and touch his arm to refocus his attention. Unfortunately, Adam's behavior deteriorated further until he experienced a full-scale meltdown, and it was only after he calmed down that we understood my practice of hovering over Adam constantly made him uncomfortable and anxious. This incident is why I chose to study nonverbal communication, specifically haptics

and proxemics in the special education environment, as I hope to glean more insight into how to increase comfort and learning in stressful learning environments for both students and teachers.

Literature Review

Defining Haptics and Proxemics

The two nonverbal communication behaviors examined in this paper are haptics and proxemics. According to Burgoon et al. (2010), haptics is “the perception and use of touch in communication”(p. 145). Therefore, haptics could include both positive and negative touch behaviors. Positive touch may consist of a high five or a pat on the shoulder, which studies have indicated increase student on-task behavior and decrease poor conduct (Cascio et al., 2018). Using this logic, negative touch, such as grabbing the arm of a student or restraint, would create the opposite outcomes, including off-task behavior and an increase in disruptive or harmful acts from the student. An instructor's awareness of how they use haptics while interacting with especially sensitive pupils is integral to successful learning.

Proxemics, as defined by Griffin et al. (2015), is “people’s use of space as a special elaboration of culture” (p. 82). To elaborate on this definition, communication scholar Judee Burgoon (1978) discussed the concept of personal space, describing it as “the invisible, variable volume of space surrounding an individual that defines that individual’s preferred distance from others” (pp. 129-142). In a non-inclusive special education classroom, students and teachers work in much closer quarters than in a traditional classroom, so personal space boundaries may differ and be violated more frequently. The teachers must be aware of how their proximity to the students may affect their learning and comfort.

Expectancy Violations Theory

Judee Burgoon’s Expectancy Violations Theory (EVT) arose from her development of the nonverbal expectancy model, which examined how the violation of societal “norms” of nonverbal behavior affects

interpersonal relations and communication, and if intentionally breaking those “norms” creates positive or negative outcomes (Burgoon & Hale, 1988, p. 58). Burgoon explained how perceived violation of personal space boundaries increases an individual’s threat threshold, which Griffin et al. (2015) describe as an uninvited invasion of a person’s invisible personal space threshold that does not occur in a “fight or flight” circumstance (p .84). With EVT, Burgoon explored not only spatial violations, but a large range of nonverbal violations, including touch, eye contact, and proxemics (Griffin et al., 2015, p. 85).

Burgoon et al. (1979) identified three elements that demonstrated how the violations affected the interpersonal relationships between people as a punishment/reward valence in regards to nonverbal cues, the “degree or magnitude” of the violation(s) in question, and the positive and negative impacts (formerly directionality) of the violation(s) (p. 153). These elements, when combined with EVT’s main components of expectancy, violation valence, and communicator reward, are the crux of the theory.

Expectancy, as explained by Griffin et al. (2015), involves what an individual predicts will occur, not necessarily what they want (p. 86). Further, expectations arise and are affected by many things, such as context, relationships, culture, societal customs and behaviors, and personal wants and needs (Gregory, 2013, p. 2). In other words, there is a multitude of factors that may affect how a person expects a communicative act to unfold. Therefore, there are many ways a perceived violation can be interpreted. For example, if during an initial encounter with a new supervisor the employee avoids eye contact and seems disinterested in the meeting, the supervisor would most likely feel their expectations of a favorable interdiction were violated.

Violation valence, as described by Griffin et al. (2015), discusses either positive or negative values people put on an occurrence of an unexpected behavior (p. 87). Culture appears to play a large role in how nonverbal expectancy violations are gauged. For example, in the United States, shaking hands is the commonly accepted

form of formal greeting. However, in France, it is a cultural norm to greet people with either air kisses on the cheeks or actual light kisses on the cheeks. Americans would find the cheek kissing a massive violation of cultural expectations (not to mention a personal space violation), and therefore would assign the interaction a negative valence, marking it as a negative communicative event.

Communicator reward takes the sum of the positive and negative violation valences and combines them to create an overall impression of a communicative event or person along with consideration of future punishment/reward scenarios in the future (Griffin et al., 2015, p. 88). In other words, people mentally track positive and negative expectancy violations and form opinions about people and situations based on these tallies. To explain further, if a person continually felt uncomfortable in a classroom because of an instructor continually hovering over them during class, the student may develop a dislike for their teacher and anxiety in the classroom. However, if the teacher actively monitors all of the students instead of singling one out, the student will feel more relaxed and trust the teacher more.

Overall, Burgoon's Expectancy Violations Theory helps to explain how and why people react when their expectations of a person or communicative act are violated. In any classroom, many factors can combine to create both positive and negative interactions between teachers and students, and the outcomes of these interactions could affect the classroom environment and student learning. Understanding EVT and how the theory relates to instructional environments is key to creating successful student/teacher relationships.

Nonverbal behaviors between teachers and students

In modern inclusive and self-contained classrooms, interactions between teachers and students are crucial to developing a positive instructional environment. Not only does what an instructor says influence the students, but also how they communicate nonverbally. In special education settings, teachers tend to control most interactions using speech vocalizations, singing, and

haptics to communicate with pupils (Bunning et al., 2013, pp. 39–40). Depending on the severity level of intellectual and/or cognitive abilities in students, they tended to communicate by talking, making non-language vocalizations, and gesturing (Bunning et al., 2013, p. 40). Also, past research demonstrated that directional and sensitive communication, as opposed to vague or harsh communication, leads to more successful interactions between students and teachers (Bunning et al., 2013, p. 41).

A study by Bunning et al. (2013) examined how children with profound intellectual disabilities communicated with their teachers and other instructional staff (p. 39). Using video observation of children ranging in age from eleven to fourteen years old over six months, the researchers sought to answer two major questions: what were the essential features of the interactions and how did the staff and students create meaning within their communication (Bunning et al., 2013, pp. 41–42). The results of the study detailed how no matter the level of communicative skills of the students, they were still able to respond to their instructors (Bunning et al., 2013, p. 47). Meaning was constructed and shared between students and teachers through mainly nonverbal gestures such as smiling, laughing, and head-nodding (Bunning et al., 2013, p. 48). The study concluded that in special needs classrooms, communicative interactions between instructional staff and students is dominated by the teachers, while students relied on nonverbal responses.

Another notable research article focused on the benefits of haptics and students with profound learning disabilities. Dave Hewett (2007) explored the concept of "Intensive Interaction," where students are taught how to communicate by learning how to recognize nonverbal interactions, such as taking turns, eye contact, the notion of personal space, and utilizing and understanding physical contact to facilitate socially acceptable communication skills (p. 2) Hewett (2007) recognizes that the teacher is "the main resource" for their students, as they depend on their instructor's "face, body language, personality, and sense of presence" to

communicate and learn successfully (p. 3). Hewett (2007) also gave examples of how students and staff interact via haptics as part of a routine day, including physical prompting, reassurance (hand on back or shoulder), playing, reward and redirection (p. 7).

Hewett (2007) brought up an interesting point in regards to touch/physical contact with students. He recognized that students could spend their lives “untouched” because of their essential equipment, like wheelchairs, present a barrier to instructional proxemics (p. 3). Also, children with special needs may be viewed as more fragile or physically awkward than their peers (Hewett, 2007, p. 3). Additionally, Hewett (2007) noted that students may receive less meaningful touch (pats on the back or high-fives) since they are frequently physically assisted and manipulated (functional touch) to perform tasks and for caretaking (p. 3).

It is important to note that the information involving nonverbal behaviors, specifically haptics and proxemics, is limited where self-contained classrooms are concerned. Most literature and research focused on speech and vocalization interactions between special needs students and normally developing students in inclusive classrooms. The differences in dynamics between self-contained and inclusive classrooms must also be noted, as student abilities may range from limited functioning nonverbal pupils to high functioning children with behavioral issues. A possible barrier to studying touch and personal space expectancy violations may exist in societal and cultural perceptions and precautions surrounding the issues of teacher/student physical contact interactions and regulations to prevent physical and sexual abuse. Therefore, more research is needed to explore the effects of teacher/student reactions to haptics and proxemics in educational settings.

Directions for Future Research

Although extensive studies glean insight into the effects of nonverbal behavior of teachers on traditional students in traditional classrooms, my research found several areas lacking in information regarding the special education population. Proxemics and personal space

(along with other expectancy violation) issues were not covered extensively, especially in non-collegiate level education. Also, most studies involving haptics focused on tactile learning, such as Braille and using touch screen technology, such as iPads, in the classroom.

The first course of research I would recommend involves a phenomenological study of a self-contained elementary-level special education classroom over the course of a standard school year. The phenomenological tradition studies the experiences of daily life from the perspectives of those living through the experiences to understand their points of view (Griffin et al., 2015, p. 45). The researcher would interview the students (when possible) and instructors/aides to discover how proxemics and haptics affect their daily experiences. The questions could include inquiries about, “How did you feel when your teacher stood too close to you?” “Why did you feel bad when your instructor touched your arm?” and “Did you (the instructor) realize that you were violating (student name) personal space during that exercise?” The interviews would occur according to a quarterly schedule, similar to that of the educational institution being studied. The data, upon analysis, will shed light on how touch and proximity behaviors affect student well-being in an already higher stress environment, and how educators can lessen the anxiety felt by students by altering their practices.

The second research study I propose involves observational research. There are different methods to approach observational research—either as a passive or an active observer. A passive observer may sit in an out-of-the-way area of the classroom and watch the student and teacher interactions and take notes, whereas an active observer may participate in the interaction (Miller & Norman, 1975, p. 1146). Each approach has pros and cons. For example, students and teachers may alter their behavior(s) either to please the observer or improve their character impressions on the observer, a phenomenon known as The Hawthorne Effect (McCambridge et al., 2014, p. 267). Both passive and active observers benefit from in-classroom observation. The observers receive real-time, live-action information

and can interpret actions and behaviors in a raw, unedited environment. Active observers may participate in the observational study by acting like a teacher's aide, and their field notes could indicate student responses to expectancy violations. However, as self-contained classrooms are often susceptible to emotional and physical outbursts from students, having an unfamiliar face in the room may further distract or upset the students, so the observers may opt for video observation instead.

Another method I prescribe offers an ethnographic approach to study the effects of haptics and proxemics in self-contained classrooms. According to Griffin et al. (2015), an ethnography involves "participant observation" to aid a researcher in better understanding and experiencing the culture's realities (p. 33). The role of the ethnographer is passive—their purpose is to immerse themselves into the culture of their subjects and make impartial observations of what they see, therefore not passing judgments on what is occurring. For a self-contained classroom, the ethnographer could perhaps blend in by posing as an aide or another member of the educational staff of the school and would take notice of how instructors and students interacted, specifically within nonverbal contexts. The ethnographer would document what happened between the two groups, be it positive reactions to different touch behaviors (like a fist-bump) or negative reactions to personal space violations (hovering over a student excessively). These reactions make up the overall culture of a classroom, and ethnography can help differentiate between healthy and toxic classroom cultures, and how students are affected.

Observational studies are critical to truly understand what occurs inside of a classroom. Whether the researchers are active or passive, their analysis can provide data to educators, therapists, and parents to improve the quality of education for their pupils. While interviews are important for gathering data, they cannot stand alone in providing an in-depth analysis of nontraditional classroom behavior. Perhaps a future research project could become a hybrid of sorts—a

chronological study using both observation and interviews to gather data to ascertain how self-contained classrooms could be improved if educators understood the consequences of their nonverbal behaviors on special education students.

Research Limitations

When researching individuals, especially children and those in sensitive groups, like those with physical or mental disabilities, the researcher must take care to ensure the study adheres to all applicable legal and ethical standards. That being said, one limitation of future research could involve a lack of willing participants due to parental or educational institutional refusal of participation. Also, researchers may find it difficult to study one consistent group of students over an extensive period of time, possibly as a result of financial constraints or personal obligations. Another limitation involves how the researcher could track student-perceived expectancy violations, as they may not be able to obtain accurate data from the students. Finally, the data may be difficult to gather depending on the student population of the non-inclusive classroom, as many self-contained programs serve children of varying levels of behavioral, emotional, mental, and physical abilities. For example, the non-inclusive classroom in which I worked housed children between the ages of five and eleven years old, all boys, and all of the children demonstrated a high level of disruptive negative behaviors. In addition to the behavioral aspects, two of the children struggled with verbal communication, so interview techniques may not produce useful data.

Conclusion

Teachers are vital role models in the lives of children, and their behavior, both verbal and nonverbal, impacts a child's well-being and education for the rest of their lives. Most people can remember their favorite teachers, and many more still recall the teachers they did not like. However, children with special needs depend on their teachers not just to learn but to survive physically and

emotionally. As many students in self-contained classrooms struggle to communicate verbally, nonverbal communication is integral for interactions with others. Educators must be consciously aware of how they respect the physical and personal space of their students to ensure they maintain a safe, pleasant working environment for their children. I still reflect on my experience with Adam and wish I had more knowledge of how my nonverbal mistakes with haptics and proxemics caused him anxiety and affected his learning. Perhaps, through further research, educators will have more access to training to raise their awareness of how their nonverbal behaviors affect their students. Until then, I hope to strive forward with my newfound knowledge to help more students like Adam succeed.

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Sexual Assault in Television Feeds into Rape Culture

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Abstract

Rape culture is a significant topic for television plotlines, which continues to perpetuate gender stereotypes in society. Several theories have attempted to account for the perpetuation of unjust gendered stereotypes, with Cultivation Theory and Muted Group Theory being at the forefront. Cultivation theory facilitates the idea that television is one of the most subtly influential mechanisms that promote personal feelings about the topic of sexual assault. Similarly, Muted Group Theory focuses on how television has manipulated the voices of victims in real-time through gender expectations. Researchers have investigated these theories individually; however, there is little research on how rape culture in television stimulates toxic gender stereotypes through the lens of Cultivation Theory and Muted Group Theory together. Thus, the present study aimed to examine how rape is viewed differently by men and women within society through the acceptance of rape myths. Both gender stereotypes and examples of sexual assault in television, spanning decades, were examined in order to address the idea that the portrayal of sexual assault in media is a contributing component to rape culture. The results of this study revealed that social movements have been affected by rape culture viewed on television. These findings suggest the depiction of sexual assault in popular culture continues to promote biased gender portrayals of rape victims. Furthermore, these findings lay the groundwork for understanding how mainstream television has affected societal movements, such as the #MeToo movement. Future research should focus on creating healthier perceptions of rape myths, rape culture, and gender expectations in the television in order to help break down the walls of rape culture and gender inequality.

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Introduction

Sexual assault is ubiquitous in media of all types. According to a 2018 study, 88% of sexually explicit content in media showed aggression towards women (Seabrook et al., 2019). The University of Washington provided a study about the statistics of how often sex appears in television shows. According to the study, every two out of three television shows depict sex in some way. Sexual content is more likely to appear in prime-time air time. In a given week, teenagers and young adults are likely to watch about 20 hours of television. The result of constant exposure is that

children and teens said they were likely to mimic behaviors seen on a television show because it made it seem normal (University of Washington). Mainstream television shows portray sexual assault in polarizing ways. Unfortunately, society has become so desensitized to talking about the frequent occurrence of sexual assault because of the constant exposure to it through multiple mainstream television shows, including it in their plotlines (Vanstone, 2017).

Society subtly contributes to rape culture through the acceptance of rape myths. Common rape myths include,

but are not limited to, blaming the victim for their assault based on what they were wearing, if they were under the influence, if they had consented at an earlier time, if the assault was not violent, or if the victim did not say no. Unfortunately, television shows prey on the insecurities of women and the expectation of the power of men by illustrating hypersexualization by having women and girls dressed in revealing ways, wearing makeup to make them appear to be more beautiful or older, showing seductive body posture and facial expressions, and an having an attitude to be always sexually ready (Swift & Gould, 2020). The stereotypes affect men as well by showing them that their success and attractiveness is dependent on how they act on their dominance, power, and aggression (Swift & Gould, 2020). Research on cultivation theory, muted group theory, and the depiction of rape culture in television has shown that the representation of sexual assault stimulates patterns about stereotypical gender expectations. This analysis should provide insight into how men and women are both affected by rape culture shown on television through the understanding of these communication theories.

It is imperative to understand what cultivation theory and muted group theory are before diving into the dangers of rape culture. Individuals are influenced by the media that surrounds them because it plays into gender expectations. Once both theories are discussed and understood, it will bring the dangers of rape culture into the light.

Cultivation Theory

Cultivation theory is a highly influential social-scientific theory that focuses on how media consumption fosters opinions and judgment about the world that is influenced by personal experience and knowledge (Ellithorpe et al., 2016). George Gerber initially developed the theory. However, Larry Gross expanded on it later. Gerbner considered four or more hours a day of media consumption to be heavy usage. The theory attempts to prove that heavy viewing of television has long-term effects that gradually affect the audience over

an extended period. Those who are heavy viewers of television are more likely to believe in the validity of whatever media messages they are watching. Over time, cultivation theory has become more flexible to accommodate content guided factors such as television genres, target audience, and overall goals of television programs (Ellithorpe et al., 2016). Different programs have different effects on their target audiences. Sports programs are a perfect example of men continuously being under the subliminal influence of toxic masculinity. There are continuous patterns that support the behaviors of sexism, which shape a man's expectations for his societal outlook (Custers & McNallie, 2016). Women are more likely to watch reality television programs and other content that they can relate to. This has led to polarizing feelings about the frightening number of mainstream shows that attempt to depict rape in their plotlines. It is a behavioral pattern that is continuously portraying the acceptance of rape myths. However, continuous exposure has given society a chance to have conversations to become better (Bryne & Taddeo, 2019).

To summarize why cultivation theory is crucial to the perception of rape culture in television, it comes down to constant patterns reflecting a set of themes for individuals to relate to (Scharrer & Blackburn, 2017). Cultivation theory helps identify the epidemic of the acceptance of rape myths in television by looking at the reaction differences between men and women based on the societal roles that they feel obligated to follow. Muted Group Theory continues to describe the communication differences between men and women.

Muted Group Theory

Muted group theory (MGT) was developed in the 1970s by Edwin and Shirley Ardener and expanded upon by Kramarae in 1981. It focuses on the dynamic of power and communication between dominant and subdominant groups (Barkman, 2018). This analysis will focus on communication divergence between men and women. However, it applies to many different dynamics. Muted group theory analyzes subtle and overt power

struggles that happen between men and women in different settings and mediums. This analysis will focus on television. The reason why this theory is significant is because of the focus it has on male-dominated language and its effects on society. Evidence of living in a male-dominated society starts with the objectification of women through media, which attempts to continuously eliminate the value of women by convincing them that their value is in their sex appeal. Women are continually scrutinized for their appearance, and media outlets prey on every possible insecurity to silence their voices (Maes et al., 2019). Because of this, women's voices are considered dispensable because men are seen as invaluable through characteristics such as assertiveness, power, and dominance. Kramarae stated that because "men have constructed language practices to express their experiences, women have become muted" (Barkman, 2018). The dominant group has more influence when it comes to language and social norms. This is evident in television through the fact that programs are continuing to push toxic gender roles on both men and women, which cultivation theory helped examine.

Muted group theory helps explain the toxic cycle of rape myth acceptance, which continues to contribute to active rape culture in society. When combined with cultivation theory, one can understand how rape myths are still being accepted. Most media still caters to male expectations. In the last 40 years, there has been a significant evolution of this theory, especially when it comes to finding more equality in the voices of men and women in media. The most prominent example of the development of this through the #MeToo movement. It is vital to understand the progress made with this theory.

On one hand, the perpetual dialogues of rape in so many shows have raised awareness about sexual assault, which has paved the way for victims to speak up about their own experiences (Bryne & Taddeo, 2019). Although women and victims are collectively using their voices to make a change, rape myth acceptance is still immanent by the backlash of the #MeToo movement from politicians, opinion makers, and columnists (Maes et al.,

2019). Most of the backlash is coming from men in powerful positions that feel threatened by the countless stories coming from this movement. The pushback shows that even in 2020, there is still a long way to go in finding equality. Women continue to be silent out of fear of repercussions.

Defining Rape Culture

Violence on television has been a hot topic for researchers for quite some time. There have been many debates about how media has impacted how women are viewed and treated in society today. Women are underrepresented in most television shows because their presence is still mostly stereotypical roles (Daalmans et al., 2017). Rape culture is defined as an environment in which rape is prevalent and in which sexual violence against women is normalized and excused in the media and popular culture. Rape culture is perpetuated through the use of misogynistic language, the objectification of women's bodies, and the glamorization of sexual violence, thereby creating a society that disregards women's rights and safety (Marshall University, n.d).

Rape myths are a significant contributor to the severity of rape culture because these forms of victim-blaming have made it easy for society to shift attention to the victim instead of the perpetrator. The acceptance of rape myths is one of the effects that are studied continuously as a result of seeing constant mediated sexual violence (Lee et al., 2010, p. 30). An overexposure to sexual abuse has proven to have mental effects, such as becoming desensitized to rape (Lee et al., 2010: p. 30).

Relationship between Cultivation Theory, Muted Group Theory, and Rape Culture

There is a direct relationship between cultivation theory, muted group theory, and rape culture when it comes to sexual violence in television. Heavy viewers of television are more than likely going to develop perceptions about topics that are always put in front of them, primarily

when it benefits them. Viewers have had distinct gender roles perpetually projected on them. Women have traditionally always been viewed as homemakers, while men were leaders with high incomes. Sales geared towards men include using women's sexuality as a selling point. Even now, it is interesting to observe the difference between male and female characters in popular shows and how sexuality and explicit content targets the audience in different ways. Top-paid actresses are highly attractive. Research has shown that the belief about existing traditional gender stereotypes is directly associated with how sexual violence is viewed, especially when it comes to rape myth acceptance (Lee et al., 2010, p. 30). With this knowledge, the association can offer insight into the relationship between the theories and rape culture.

In media, rape is a theme used to punish, to manipulate women into accepting unlikable characteristics of men, to put women in their place, and to silence their voices of femininity (Simon, 2019). Because of the constant exposure to toxic gender stereotypes, it is entirely fair to connect the theories to rape culture and rape myth acceptance because the media portrays it as normal. Cultivation theory states that heavy viewers are likely to conduct beliefs based on what benefits them. Men profit by being told that they are expected to be authoritative, dominant, and successful. MGT can be used to analyze how television represents women. Let us look at examples of toxic gender roles and sexual assault on TELEVISION through different genres and eras.

Television in the 90s

Examples of the relationship between cultivation theory, muted group theory, and rape culture are unambiguous in generations of television shows. A period of television that stands out in regards to the contribution of rape culture is the 90s. Think about the popular 90s family sitcom *Home Improvement*. Marketed as a family show that everyone could enjoy; however, the tool girl was a stereotypical "stupid" hot blonde. Most of her lines included highly sexual innuendos about the tools she held (Roberts, 2019). Her role emitted a terrifying

message to women that they were more of a prop than a person. It was subtle but dangerous because the show demonstrated the ideas of muted group theory through the jokes and communication that was geared towards men, even in a family-marketed sitcom.

Another example from the 90s was the show *Friends* when Phoebe dated a man who viciously stalked her sister. This storyline was accepted because she was an odd character who was not considered attractive by society; it was acceptable for her standards for men to be lower than a more appealing character, such as Rachel.

Adult cartoons, such as *Beavis and Butthead* are another prime example of the objectification of women through the endless lewd jokes and themes of sex through the show. What is scary about *Beavis and Butthead* is that it directly reached a demographic of men who had no respect for women in general. MGT was evident through the ideas on this show that a woman's worth depended on her sexuality.

Married with Children is yet another sitcom that is notorious for the over-sexualization of women. What is shocking about this show was the lengths that it went to sexualize the teenage daughter. There were many jokes through the series about her being promiscuous and having sex for money. Many scenes involving multiple women were to show the sexual fantasies of male characters. Women that were deemed unattractive had stereotypical roles that reflected the personality that society expected out of them. The way the women dressed in this show is a direct example of how television has instilled into women's brains how they should dress to be attractive to men.

All of these are examples of top-rated television shows in the 90s. Take a moment to reflect on the demographic of people who watched these shows. The behaviors illustrated in these shows have continuously been manifested within older adults. Everyone can think of an older man who is notorious for being inappropriate to younger women, especially if they find the woman attractive. These predetermined values have continued

to be the foundation for how men treat women in society because these shows have continuously confirmed their expectations. Muted group theory focuses on how the media focuses on the needs and ideas of men. The media have taught women from decades ago that their role is to be pretty, submissive, and non-vocal about their beliefs.

Rape Culture in Teen Drama Shows

Sexual abuse is prevalent in almost every demographic of television. The most alarming demographic that shows clear themes of sexual assault is teen drama shows. Mainstream television teaches girls from a young age that there is an expectation to submit to a man's dominance. An example is the TELEVISION show *Gossip Girl*. The show flaunts a highly abusive relationship between the two main characters through the entire series. There was a specific scene where the male protagonist attempts to force himself onto an underage girl. Later in the show, that same girl ends up losing her virginity to this man. Because he was wealthy and powerful, the girls he hurt did not speak out because of his role in their community. His wealth and known womanizer behavior gave him a free pass from his inappropriate behavior. The subtle themes of abuse and sexual assault were well embedded in the show because it was a dramatic series that focused on twisted romance and messy friendships. As an adult, this show is disgusting to watch because the signs of toxic gender roles are much more apparent.

Other favorite teen shows such as *Vampire Diaries* and *Pretty Little Liars* showcase plots of true love even though rape and violence are involved. These shows included storylines of underage characters having intimate relationships with much older adults, including a teacher. These are couples that teen girls looked up to and wanted to imitate.

Themes of sexual abuse and rape culture are especially dangerous in teen shows because they target hormonal teenaged audiences. The producers of these shows use drama that is centered around relationships, sex, and

gender roles (Ackley, 2017). They focus on "the binaries foisted upon us growing up—men are passionate and assertive, and women are loving and loyal" (Ackley, 2017). Media teaches young girls in their prime vulnerability that assault is part of an exciting plot. All of these men in these shows were able to redeem themselves, and no one had to deal with repercussions of raping women or being violent. That is precisely how cultivation theory works. It is subtly changing society's views on issues based on how the media represents them. Teen girls were trained through these shows to accept rape myths, which pushes the truth of muted group theory.

Rape Culture in Current Television

One more important era of television that is important to analyze is what is airing right now. Current TELEVISION is in an interesting time because there is very mixed representation of sexual assault, which is changing the response to victims. The past couple of years have been huge years for women in regards to the #MeToo movement. Massive television stars are being outed for the abuse committed against women. The #MeToo movement is an example of how muted group theory is still prevalent in society. Many men have made remarks about how this movement has made them afraid to even talk to women. Women have used this movement to become unified together to have a more inclusive voice against men and sexual assault. However, media is still showing explicit themes of sexual abuse towards women. *Game of Thrones* is a current television show that has controversy surrounding it. The show is known for being a gory and over-sexualized show that has themes of sexuality, human impacts on the environment, cross-cultural conflicts, and the idea of being a moral compass (Simon, 2019). It is expected to see numerous sex scenes, including rape and torture. There is an episode that aired titled "Breaking the Chains" that showed the most graphic case of sexual assault (Gay, 2014). It is frustrating that this episode took a consensual sex scene from the book and turned it into a sensationalized rape scene in the show. They

inappropriately used rape for a narrative vice multiple times throughout the series. *Game of Thrones* uses its remarkable character development to push the idea that "brutality seems gratuitous, unremarkable and, at least within this fictional world, inevitable" (Gay, 2014). Every single woman on the show was subjected to being treated like an object or violated sexually and violently.

There is plenty of proof of cultivation theory and muted group theory directly relating how rape culture is viewed in media by men and women. Some shows are working hard to beat the stigma. Shonda Rhimes, the creator of *Grey's Anatomy*, comes to mind. Earlier last year, an empowering episode aired called "Silent All These Years." The episode was empowering for rape victims because it went through the emotions of denying she was assaulted out of fear, to reluctantly telling her story, to getting a rape kit done. The episode touched on the hot topic that she and her rapist were drinking and that she would be blamed for drinking, and he would be off the hook for drinking (Fitzpatrick, 2019). Her story was inspired by Christine Blasey Ford's testimony last year about her encounter with Supreme Court Justice Brett Kavanaugh. It was vital to Rhimes to use her platform to make a difference in media. They worked with RAINN (Rape, Abuse, & Incest National Network) to make the episode as accurate as possible (Fitzpatrick, 2019). It is an immense improvement to see push back against the acceptance of rape myths in television. There is a long way to go. However, these small victories are so important to celebrate.

One more aspect that is important to analyze is the effects of crime shows, such as *Law and Order: Special Victims Unit*. This is a show committed to solving sexual-based crimes. Scholars have often asked the question that if shows like this are helpful because the attitude towards victims of sexual assault is usually much better. In other words, does the way victims are portrayed have an impact on how the viewer sees a sexual assault in reality? SVU has very open content about the importance of consent and breaking rape myths, which challenges the standard storylines of other prime-time dramas (Lee et al., 2010, p. 27). Although there is not enough

evidence to prove it, it is entirely possible that exposure to shows such as SVU can be linked to positive attitudes about sexual assault prevention (Lee et al., 2010, p. 29). There is much debate about how crime-based television shows relate to cultivation theory. What makes sexual abuse hard to measure when it comes to cultivation theory is the fact that different sources measure it differently. For example, some people do not count sexual scenes involving drugs and alcohol as nonconsensual. These are various elements that weaken the argument of cultivation theory directly relating to rape culture happening in current society.

Statistics of Rape Scenes in Television

There are countless examples of sexual assault displayed in television shows of every demographic. A lot of feminist scholars believe that the reason why rape culture has become such a normal part of society is because of social influence over time, including television. It has become common for people to believe myths about rape, such as only promiscuous women get raped, clothing leads to assault, and alcohol consumption is a contributing factor. Most myths about rape equate to victim-blaming. Research has shown that sex-relation crimes account for 10% of all dialogue on television (Kahlor and Eastin, 2011, p. 217). Around 80% of this dialogue is found in movies and drama series. Statistics show that 42% of storylines give the idea that the victim wanted to be assaulted, 38% suggests victims lie about rape, and 46% show victim-blaming (Kahlor and Eastin, 2011, p. 217). Because men and women view sexual assault very differently, the effects of television will be different between the two genders. Constant exhibition of rape myths has subtly been contributing to how victims of sexual abuse are viewed in reality. Even in 2020, victims are still questioned about what they were wearing and if they were drinking. However, if a man was drinking, society sees his actions towards the victim as a forgivable mistake. These are imperative aspects to remember when looking at rape culture through cultivation theory and muted group theory.

There are a lot of different elements that alter how different people are affected. For example, if a man has a close relationship with someone who was assaulted, he is more inclined to have a stronger negative sentiment about seeing rape myths on television. If a woman was assaulted, she is more likely to be triggered by what she sees on TELEVISION. This may lead to women feeling even more afraid of the world. Although television shows continue demonstrating the truth about sexual assault, there is still a long way to go to find a balance in sensitivity and awareness.

Weaknesses of Cultivation Theory and Muted Group Theory

Like any other theory, cultivation theory has weaknesses. One of the major downfalls is the lack of research on the connection of sex in the media and the ongoing epidemic of rape. The reason why there is a seemingly lack of research is that men and women are affected uniquely. Every person is affected individually based on their life experiences. As a society, it seems fair to say that the decades of sexualization and violence against women have had long-term effects on viewers. Research should continue to evaluate the factors that affect a heavy viewer's opinion on sexual assault.

Weaknesses of Muted group theory in regards to this analysis include the lack of diversity in voices. This study was limited to looking at men and women in a broad sense. Research could further this idea to include race, environment, and the study of other social movements that the media reflects.

Conclusion

It is alarming and shocking to see evidence of sexual assault themes in decades of beloved television shows. Statistics show that rape is present in most prime time television shows. Cultivation theory suggests that ideas seen in media change the viewer's perception of reality based on what they see on television. Muted group

theory discusses the dangers of the power and communication failures between men and women. Because MGT states that dominant and subdominant groups see the world differently, it makes sense why rape culture is viewed differently between men and women. Most of the content about rape on television pushes the idea of rape myths being acceptable forms of viewing rape, which continues to attempt to silence women. These findings suggest the depiction of sexual assault in popular culture continues to promote biased gender portrayals of rape victims. Furthermore, these findings lay the groundwork for understanding how mainstream television has affected societal movements, such as the #MeToo movement. Future research should focus on creating healthier perceptions of rape myths, rape culture, and gender expectations in the television to help break down the walls of rape culture and gender inequality.

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Evaluations of Trace Elements in Black Goji Berries (*Lycium ruthenicum*)

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Abstract

The objective of this experiment was to evaluate six important trace metals of the black goji berries (copper, zinc, manganese, iron, molybdenum, cobalt) from four different regions in China: Qinghai Caidamu, Ningxia Zhongning, Gansu Huining, and Xingjiang Kuerlar using energy dispersive X-ray microanalysis with scanning electron microscopy (SEM-EDX), atomic absorption spectroscopy (AAS), and inductively coupled plasma mass spectroscopy (ICP-MS). The dry samples have been prepared in sunlight, freeze dryer, and vacuum oven. These samples preparation and analytical methods were used to analyze goji berries to determine the amount of trace metals in different accuracies.

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The Synthesis of Designed Xanthine Oxidase Inhibitors (FYX051) by Mannich Reaction and Stetter Reaction

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Abstract

Gout is a form of arthritis that involves an increase in uric acid levels in the blood, and whenever uric acid is crystallized, it accumulates in joints. Xanthine oxidase is an enzyme that can catalyze the oxidize hypoxanthine to xanthine, and further continues to catalyze into uric acid. Because of this, we designed the derivatives of xanthine oxidase inhibitors (FYX051) via three major organic synthetic reactions to test to see if they can successfully inhibit xanthine oxidase after the completeness of the three synthetic reactions. The three synthetic reactions included the modification of Mannich Reaction, Paal–Knorr Synthesis, and Stetter Reaction. To confirm whether the products were correct, we used Nuclear magnetic resonance (NMR) after each reaction was completed. By using Nuclear magnetic resonance (NMR), we were able to identify the peaks with the corresponding group of hydrogen and able to determine if the reaction works. Based on using the technique, we could predict the success of the synthesis of the three combined reactions and further evaluate the inhibition of designed xanthine oxidase inhibitors (FYX051).

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Peer-Led Team Learning Pilot in the Permian Basin

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Abstract

Peer-Led Team Learning is a project that began Spring 2019 as a requirement for General Chemistry CHEM 1311 section. The purpose of this endeavor is to improve student performance in notoriously difficult core science classes. Based on findings from other universities throughout the United States, UTPB is anticipating successful results. Students are required to attend two hour-long study sessions per week throughout the semester in addition to their regular scheduled class hours. During these meetings labeled as workshop, students participate in previously created activities relevant to the chapter they are learning in lecture. Students also participate in multiple hands-on explorations that pertain to the topics. Students are required to purchase the General Chemistry I Workshop Workbook and turn in assignments weekly. The peer leader helps the student complete the activities and explorations; however, most of the weight falls on the student. The peer leader facilitates peer to peer tutoring and motivates students to be self-initiating with their learning. The ultimate purpose of this project is for students to develop proper and effective study skills that they will be able to use effectively throughout the rest of their college career. Due to the novelty of this pilot program, several issues have arisen throughout the semester. It is a still developing initiative and thus is not immune to unforeseen circumstances. Several of the key areas to improve include time management during the sessions, better organization of PLTL session course materials, and student motivational tactics. If proven successful, UTPB plans on expanding the PLTL program into other disciplines.

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Mathematical Modeling of a Conventional Solar Still and Methods to Improve Solar Still Performance

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Abstract

Treating produced water is one of the key focuses in the Permian Basin region—one of the largest oil producing basins. A solar still can be used to produce exceptionally clean water out of produced/flow back water by using readily available solar thermal energy. A theoretical mathematical model is developed to find the productivity and efficiency of a single slope single basin (conventional) solar still using values obtained from Midland, Texas in the year of 2019. The solar intensity values on the first of every month in the year of 2019 are found using the SOLPOS Calculator from the National Renewable Energy Laboratory with coordinates of the Midland International Airport 31°56'33"N/102°12'6"W. External heat losses occur at the top, bottom, and sides of the solar still. The convective heat loss for the top of the still takes wind velocity into consideration. An empirical equation is used to find the temperature of the water, glass, and basin liner. The radiative, convective, and evaporative heat transfer coefficients are calculated using correlations due to Dunkle. Monthly productivity and efficiency values of the solar still are calculated and compared. Recommendations for improving the performance of the solar still through adaptations are also reviewed.

Developing Sensors with Arduinos to Measure Impulse Curves of Model Rocket Engines

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Abstract

The purpose of this study is to measure the impulse curves of model rocket engines with Arduino. Custom sensors were developed using open-source micro-controllers using Arduino. The developed sensors were normalized by a calibration curved by measuring the difference in electrical resistance based on changes of known masses. That electrical signal was captured by an Arduino and interpreted by a Python program. These sensors would allow for the measurement of the change in force over time of static launches. A static launch is where the engine is placed in a 3D-printed holder which does not allow the engine to move except against the sensor. This data could be compared against data collected in dynamic launches where engines are fired in a traditional scenario.

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Fabrication of a Capacitive Deionizer

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Abstract

Capacitive Deionization (CDI) is a method of purifying water using capacitors and a source of low voltage. The goal of this project is to measure the conductance drop in a salt-water solution after having it flow through an electrical field generated by the capacitor. The electric field removes the salt ions leaving only the water. Arduinos are used to measure both the flow rate and the conductance of the salt-water solution as it flows into and out of the capacitor. The flow sensor has been calibrated to measure the rate at which water was flowing through the CDI tank capacitor and the total amount of water. The flow rate is accurate to an approximate 3% error. Calibration curves for the conductance probes have been obtained based on the conductivity of solutions of a known salt concentration. The next stage in this project is to put the conductance probes together with the CDI tank capacitor and measure the change in conductivity of the salt-water solution due to the removal of salt from the water.

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Alternative Modular Computer Input System

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Abstract

Many modern digital design programs are currently difficult to access by those with physical disabilities. Systems which would allow people of any level of disability to use these programs would be a helpful step towards creative individualism. Devices exist to allow for greater computer usage and creative freedom for those with physical disabilities. These devices can cost from \$500 to \$15,000, be invasive on the body, and be highly specialized on one task. This makes it necessary in many cases to get several devices all running on different programs to grant independence on a computer to a person with disabilities. For this project, I produced a modular set of controls and inputs which can be changed to meet as many needs as possible that is both easy to set up and cost under \$400 to complete. Many programs operate on the 80/20 rule, that is, roughly 80% of the work can be done by some 20% of the functions. So, when designing modules, the criteria were making simple devices for those 20% of functions. With a modular system of 3D printed interlocking blocks, personalized units can be put together to suit individual needs. We have developed block modules for joystick control of a mouse usable by the head or any limb allowing for those with varying dexterity to choose what is best for them. Programmable buttons of varying sizes and colors for different applications have also been designed. There are allowances built into the system for new modules to be developed and implemented at any point. These technologies are not new; however, combining them on a simple and affordable set of microcontrollers with freedom to program is. Testing of the button and joystick modules as well as experimental modules using frequencies from harmonica or whistling to control computer software from SOLIDWORKS to basic internet browsing have yielded favorable results. The adjustable programming was effective in changing cursor speed and adjusting the variable buttons from a circle command to COPY PASTE to adjusting zoom. The prototypes of the modules and required control circuitry cost just under \$60 each, vastly separating from the pack in affordability.

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Comparison of Polished Rod Motion for Conventional and Cam-Driven Pumping Units

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Abstract

Conventional oil field pumping units use a fourbar crank-rocker mechanism to lift production fluids to the surface (Figure 1). The mechanism is simple and robust yet offers little opportunity to optimize the motion at the wellhead. In this work we investigate driving the mechanism with a plate cam. Cams are renowned for their ability to produce precise periodic motion in production machinery; therefore, a properly shaped plate cam may be able to improve the motion characteristics of a pumping unit. The conventional unit produces periodic linear motion at the wellhead. Shown in Figure 2 is a cam-driven unit that also produces the required periodic linear motion at the wellhead; however, the motion characteristics, specifically velocity and acceleration, are different due to the cam. In this work, we compare the velocity and acceleration produced by the conventional unit with that of a cam-driven unit.

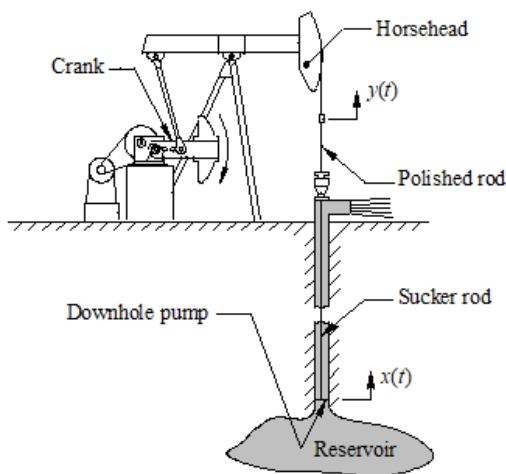


Figure 1. A typical oil field pumping unit. Shown is an API conventional unit.

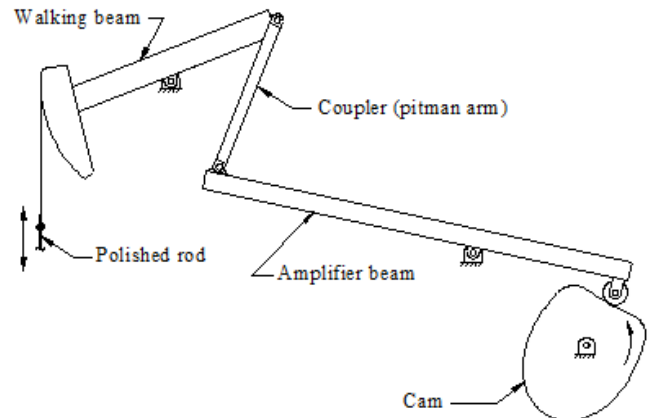


Figure 2. Schematic of a cam-driven pumping unit.

Maximum Power Point Tracking in Photovoltaic Systems

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Abstract

Renewable energy resources such as photovoltaics (solar panels) have gained increased interest due to concerns for the depletion of fossil fuels and environmental effects caused by conventional energy resources. The power output of photovoltaic panels is dependent upon the ambient temperature and solar irradiance. Such variations of the output power by a photovoltaic panel are defined under given ambient temperature and irradiance conditions. The maximum power point is the point where a photovoltaic panel produces the most power under a set of specific variables, such as voltage, temperature, and irradiance. The technique which automatically tracks such a point is called the maximum power point tracker (MPPT). The purpose of MPPT is to extract maximum available power from a photovoltaic panel under variable conditions. This work considers some MPPT techniques and compares their performance using a simulated photovoltaic system.

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Assessments of Groundwater Resources and Availability with Total Dissolved Solids (TDS) in the Delaware Basin, Texas

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Abstract

The Delaware Basin is one of the primary underground water suppliers within the Permian Basin, Texas. Advances in oil and gas recovery techniques as well as expansion of drilling operations have increased the demand on groundwater resources and availability over the recent years. Oil and gas companies have begun to mine brackish aquifers for hydraulic fracturing in an effort to preserve the potable water supplies within an arid environment. Texas Water Development Board (TWDB) updated the previous groundwater resource and availability of the Delaware Basin, Texas. The study area focused on waters of around 5,000 mg/L total dissolved solids (TDS) which is unacceptable—fresh water generally has a TDS below 1,000 mg/L; brackish water has a TDS between 1,000 and 10,000 mg/L; saline water has a TDS between 10,000 and 100,000 mg/L; brine water has a TDS higher than 100,000 mg/L. Proper understanding of the Delaware Basin is important in ensuring the longevity of its resources. Significant depletion would have long term negative impacts on the entire groundwater system within the Delaware Basin. This study provided a more detailed understanding of the potential impacts and negative outcomes of the Delaware Basin in Texas.

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Attenuating the Development of *Candida* Species in Vaginal Flora by *Lactobacillus* Biofilm Products

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Abstract

The objective of this study is to determine if the biofilm produced by *Lactobacillus crispatus* can successfully inhibit the growth of *Candida albicans*. *Candida albicans* is known to be the causative organism resulting in vaginal candidiasis or the common yeast infection – product of an imbalance of the microbiota residing within the vaginal community containing both *L. crispatus* and *C. albicans* species. To determine the nature of their relationship, susceptibility tests were conducted by means of the disk diffusion method on De Man, Rogosa and Sharpe (MRS) agar plates followed by an incubation period of 72 hours at 37°C on five plates. Following the incubation period, the plates presented varying zones of inhibition with a mean value of 6.6mm, a standard deviation of 9.37, and value of 87.8 for the uncertainty principle of our samples. These values are too varying to determine if *L. crispatus*'s biofilm inhibits *C. albicans* and further assessment of their relationship needs to be made. Understanding the relationship in which these species function may provide for more effective and innovative methods for treating Candidiasis not exclusive to that of the vaginal flora.

Proliferation of Smooth Muscle Cells and the Effects of Lysophosphatidic Acid (LPA) on Cyr61 protein Expression and Smooth Muscle Cell Migration

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Abstract

Atherosclerosis is one of the common forms of cardiovascular disease and is a leading cause of death in the U.S. Major contributors to this disease are smooth muscle cell migration and proliferation, which cause lesion formation in early development of atherosclerosis. In our lab, we observed smooth muscle cell proliferation in response to growth factors, or different serums. We tested smooth muscle cell migration in response to lysophosphatidic acid (LPA), a lipid component of oxidized low-density lipoprotein, using a Boyden chamber migration assay. We also observed if LPA affects the expression of Cyr61 protein, a matricellular protein, which is a potent mediator of smooth muscle cell migration. Our Western blot showed that LPA induces Cyr61 expression. Our data implied that LPA was a likely contributor to the development of atherosclerosis via induction of Cyr61, which causes smooth muscle cell migration.

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Traffic and Security Analysis on Tello Drones

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Abstract

Drones have become an increasingly vital part of society, and it is necessary to have an understanding of not only the benefits they can provide, but their risk of use. This study evaluated the Tello drone network communication and security. While many drones rely only instruction from their controller, Tello drones can have their flight programmed using the Scratch and Python programming languages. This allows for capture and translation of packets sent between the drone and its controller. Additionally, the Kali Linux operating system will be used to make security attacks against the drone. This study examined various attacks to either disrupt or disable the drone, use the drone bridge to attack the host controller, or extract information from the drone.

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Motion Detection in Autonomous Vehicles

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Abstract

Analyzing and building communication between the software of coding and the hardware of circuits in a model vehicle to control functionality, engage movement, as well as provide for sensor readings, allows for communication in autonomous vehicles. Autonomous vehicle research still requires experimentations directly focusing on localization, detection, motion planning, mission planning, programming, and using state-of-the-art algorithms. This study is applied and experimental and has analyzed the current research on autonomous vehicles that developed an effective algorithm in Java. Programming the sensors and reading in data input is vital for allowing the vehicles system to understand its surroundings, and the Arduino hardware allows control of axels functionality creating this autonomous movement in its surroundings. The research project was limited by the Arduino programable circuits limitations with their ability in functionality for high powered applications. The implications of this study will be to continue to develop an effective algorithm and apply software to the designed and created hardware of the model vehicle that will allow the vehicle to be effective with obstacle avoidance in an environment.

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Effects of Design on the E-commerce Community

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Abstract

Graphic Design influences our daily lives more than we think. From the street signs on your daily commute to art and the clothing that we wear. It can serve a purpose as art and for advertising. However, it raises the question: does one hold more influence over the other? In today's era where social media runs rampant and many marketing companies are using the platform to sell their product, is there a formula that works best? It is widely said that "sex sells", but where would a creative and artistic approach land? I believe it is the aspect of design that holds greater influence over the consumer. Consumers will look for the aesthetically pleasing products, e-commerce campaigns and services over Freudian implications and influences. Drawing on the theoretical approach related to design that is eye catching and has a luxurious yet modern composition, anything can be sold. To test this theory, I will create a series of advertising for a nonsense product with a strong design approach, use social media and a website to drive the products to the public that shows the importance of an aesthetic design through surveys. The consensus will be most consumers will prefer the design aspect over a provocative approach.

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