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Introduction

Welcome to the eighth edition of *Knighted: An Interdisciplinary Journal of Undergraduate Research*! This year's issue showcases eleven outstanding papers by Middle Georgia State University undergraduates whose work spans disciplines including psychology, literature, business, education, history, social welfare, and information technology. These scholars have investigated timely and enduring questions about human behavior, cultural change, technological influence, and systemic inequity—fulfilling the Council for Undergraduate Research's call for "an original intellectual or creative contribution" to the disciplines in which they are working. Several of these authors explore the intersections of digital culture and human development, including studies on the psychological toll of dating apps, the mental health effects of social media on adolescents, and the cognitive role of subvocalization in reading. Social structures and their consequences are also a major theme, from the behavioral outcomes of children in single-parent families to the challenges youth soccer referees face in environments where abuse and lack of institutional support hinder retention. In the humanities, readers will find a decidedly global approach, as students analyze Dostoevsky's *Crime and Punishment*, Lu Xun's "Diary of a Madman," and how disease shaped the early colonial Caribbean. Together, these essays illuminate the creativity, curiosity, and scholarly rigor of MGA's student researchers. We invite you to explore their contributions and be inspired by their work.

Clay Morton, Professor of English
Managing Editor

Mission

Knighted: An Interdisciplinary Journal of Undergraduate Research seeks to highlight the diverse array of fine undergraduate work being done across a wide variety of disciplines at Middle Georgia State University. The University's mission statement calls attention to "lifelong learners whose scholarship and careers enhance the region," and we believe that *Knighted* does precisely that by providing a public venue for students to demonstrate their research skills. By going through the process of submission and peer review, students get an in-depth feel for the craft of scholarly research.

Submission Guidelines

Students may submit original work that was completed as an undergraduate at Middle Georgia State University. Original research projects, including those developed in collaboration with faculty mentors, are welcome from all departments and disciplines. Faculty in the appropriate discipline will review all submissions. Typed manuscripts should be submitted as MSWord files to knighted@mga.edu. They should be double-spaced, with one-inch margins, and in 12 point, Times New Roman font. Illustrations, tables, and figure legends should be embedded within the text at the locations preferred by the authors. Citations should be formatted in the most recent editions of the citation style appropriate to their academic disciplines, e.g., MLA, Chicago, APA, etc. The chosen format must be used consistently throughout the manuscript. Each submission to the journal requires a faculty endorsement. Have the sponsoring faculty member email the editorial board at knighted@mga.edu.

The Dark Side of Digital Romance: How the Swipe Generation and Dating Apps Are Reshaping Relationships, Intimacy, and Society

Reema Bhaskar

Abstract

Dating apps have transformed modern relationships, with over 61.78 million Americans using them in 2025 (Statista). The impact they have on relationships, mental health, and societal norms remains deeply controversial. This research examines the increasingly troubling landscape of online dating apps and their impact on psychological, sociological, and statistical implications, through the analysis of case studies, user data, and academic research. Findings suggest that while dating apps increase accessibility to potential partners and romance, they contribute to issues like the commodification of relationships, increased loneliness, and superficiality. From the psychological impact and burnout of constant rejection to the intentional manipulation built into the application design, the modern era's digital daters face astounding and unprecedented challenges in their quest for authentic connections and intimacy. Behind the trendy, colorful interfaces and the questionable promise of algorithmic compatibility lies a system that is fundamentally altering and ultimately damaging how we experience love, intimacy, connection, and self-worth.

Keywords: dating apps, online dating, relationships, mental health, technology, social behavior.

Introduction

Picture this: It is a warm summer night in New York City, as a young woman sits in her studio apartment, alone, bathed in the digital blue light of the smartphone she has been glued to for hours, mindlessly swiping through hundreds of faces she has never seen before. After an hour of this modern-day ritual, she is disappointed, as she has not received a single match, despite swiping countless profiles. She lays back, places her phone down against her chest, and lets out a stress-signaling sigh, feeling an all too familiar hollowness. In one of the most populated cities in the world, bustling crowds, and city life are just outside the window of her walk-up apartment. Yet she cannot find a single individual who displays any reciprocal interest. The depths of her loneliness and isolation begin to set in. Her child-like dreams of a fairy-tale romance are as devoid as a barren desert landscape. Is this the romantic future we all envisioned?

What started as a niche market has now exploded into a multi-billion-dollar industry, with global revenues projected to reach $9.2 billion by 2026 (Grand View Research, 2022) as United States revenues total 1.35 billion dollars (Statista, 2024). The convenience and accessibility of swiping through dating pools, and democratized access to potential partners have popularized dating apps. Beneath this optimistic narrative lurks a disturbing reality: dating apps are transforming intimacy in ways that undermine our genuine connections, mental health, and ability to recognize compatible partners. Critics argue that dating apps perpetuate a "shopping mentality," reducing individuals to their profiles and adopting a culture of easily disposable relationships. Through evaluation of cultural trends and recent studies, this paper explores how dating apps may cause more harm than good as digital daters face astounding and unprecedented challenges in their quest for authentic connections and intimacy.

Literature Review

  The overwhelming rise of dating apps was supplemented by a surge of interest within the academic community. Dating apps have democratized access to romance, particularly for marginalized demographics such as LGBTQ+ individuals (Rosenfeld et al., 2019). A study by the Pew Research Center (2020) found that 57% of LGBTQ+ adults have used dating apps, compared to 28% of heterosexual adults. The most popular dating apps have adjusted their user interfaces and algorithms to provide additional support to users of gender minorities. Many report feeling safe approaching potential partners in offline settings due to the high risk of rejection and prejudice (Human Rights Campaign 2019).

  For non-marginalized demographics, dating apps permit access to a database of individuals they may never come across in real life. The percentage of heterosexual couples who have met online rose 22% from 1995 to 2009 (Rosenfeld et al., 2019). This leads to the theory that face-to-face contact may have limited the growth of online dating (S. Turkle, 2015). Increased reliance on smartphones is a contributing factor correlated with couples meeting online. Unfortunately, studies have linked dating app usage to increased rates of anxiety, depression, and low self-esteem (Strubel & Petrie, 2017). The gamification of dating has been criticized for fostering trivial qualities such as superficiality and reduction in the concept of relationships to transactional interactions (Toma & Hancock, 2010). The paradox of choice, where users often find themselves overwhelmed by the sheer quantity of options, has been proven to decrease levels of satisfaction and commitment (Finkel et al., 2012).

  There is a controversial debate among researchers that the design of these dating apps facilitates behavioral addiction and the presence of affordances for the commodification of social interactions (Klincewicz, M., Frank, L. E., & Jane, E., 2022). A typical dating app has a system of recommendations and feedback built into the user interface. On Tinder, users are presented with an array of photos, filtered by antecedent criteria the user has specified in their settings. Most dating apps carry similar user interfaces where three significant mechanisms can be discerned. Like slot machines, we can call them the reel, the bet, and the payout. The reel is the steady infinite stream of user-profiles and pictures. The bet is the button that records a form of interest by what is presented in the reel, known as the swipe mechanism, where users swipe left for rejection and right for affection. This process may take 300 milliseconds (Taubert, Van der Burg, & Alais 2016). The payout represents the consequence of the successful bet, meaning the individual you approved of by swiping right, reciprocated interest, establishing the platform as a back-and-forth interactive messaging interface.

  Betting and retrieving payouts can be addictive (Young 1998, Dow Schüll 2012). Like gambling, excessive betting can be characterized as behavioral addiction (Goodman 1996), which is a compulsion one engages in that leads to rewards. Evidence of behavioral addictions often integrates neurophysiological processes like substance addictions, and increased dopamine synthesis as well as mis-regulation of opioid receptors (Majuri et al. 2013; van Holst et al. 2018; Wise and Myke 2020). Playing slot machines activates the same neural reward mechanisms that are active in behavioral addictions. These applications have been designed intentionally, utilizing slot machine architecture (Klincewicz, M., Frank, L. E., & Jane, E., 2022).

  Dating apps function as a digital singles marketplace, where users engage in a game of probability and social capital. Social capital, the network of mutual trust and support extends to virtual spaces through

likes and retweets (Blanchard & Horan, 1998). Like social media, dating apps facilitate personal branding, shaping interactions through strategic engagement. Tom Roach (2015) argues that online dating commodifies intimacy, fostering hyper-individualism, competition, and self-promotion while exploiting user data for profit.

One primary method in which social capital on dating apps is exchanged indirectly is through the algorithms that manage this reel of matches. User behavior, bets and payouts are repaid to the algorithm that determines which profiles appear available for each user. Users bet on or select certain profiles, making those with fewer bets less likely to appear in others' reels. This fosters a culture of virtual ranking based on attractiveness, known as the ranking algorithm (Klincewicz, M., Frank, L. E., & Jane, E., 2022). This social capital is exchanged through encounters, resulting in an ecosystem that harbors consequential payouts or penalties. In addition, the apps often offer an exchange of social capital for monetary gain, using a pay-to-post feature, to advertise individuals, businesses, or products (Froelich, 2014)

Be it for benefit or loss, an ecosystem that consists of social capital and transactions will impact social norms that regulate how individuals are perceived and their experiences based on romantic encounters, potential partners, and their place in the social order of intimacy. Dating apps are for-profit businesses that must find methods to keep consumers returning, growing, and engaged. Success in many dating apps' business models depends on a covert failure that must not openly be declared or acknowledged (Wilken, Burgess, & Albury 2019).

Case Study 1: Tinder and the Commodification of Relationships

Tinder, the most popularly utilized dating app globally, has been a primary point within this realm of research. At the University of North Texas, a 2021 study discovered that 72% of Tinder users reported feeling "burned out" by the app's infinite swiping components (Smith et al., 2021). This widespread user burnout is credited to its design, which prioritizes quantity over quality. Users often testify feeling like they are "shopping" for partners, in the same manner that we shop for products on Amazon, leading to feelings of depersonalization and an overall dehumanizing experience. When we scroll through profiles, are we looking for genuine connections or shopping for humans on a marketplace? According to sociologist Eva Illouz (2009), dating apps have transformed potential romantic interests into what she calls "romantic commodities: or packaged products to be evaluated, compared and discarded based on surface level interactions and shallow features." This commodification of human experience extends far beyond the user interface.

Tinder's parent company, Match Group, has been suspected of prioritizing profit over user well-being. Match Group, which has monopolized the industry and acquired over 45 dating apps including Tinder, Hinge, and OkCupid, has been condemned for using manipulative algorithms across their user bases to keep users addicted. For instance, Tinder's algorithm was developed for the primary purpose of showing users their most attractive matches first, creating a cycle of hope, followed by despair (Ward, 2021). This phenomenon is known as the "slot machine effect" as it keeps users highly engaged while constantly swiping in search of the next potential partner, although it is eroding their self-esteem and increasing levels of anxiety and depression.

Case Study 2: Bumble and Gender Dynamics

Bumble is a dating application that was designed to give women power and, unlike the other dating apps, requires women to make the first move. For this singular feature, it has been celebrated for challenging traditional gender roles and not conforming to societal norms. Alternatively, in 2022, a University of California discovered that 65% of female users felt pressured to initiate conversations, leading to increased stress and anxiety (Johnson et al., 2022). Although Bumble was created with the intention of empowering women, it has ultimately reinforced the expectation that women must take on additional emotional labor when dating.

Bumble's algorithm has also been criticized by many and has come under significant scrutiny. Unlike Tinder and other similar dating apps, which prioritize physical attractiveness based on an algorithm integrated by the developers, Bumble claims to focus on "meaningful connections." Conversely, a 2023 investigation by The Verge revealed that Bumble's algorithm still drastically relies on factors like activity level and geographical proximity, leading to a similar "hot or not" dynamic (Vincent, 2023). This raises questions and concerns regarding the marketing and intention of the application. It brings up the question, is Bumble truly revolutionizing the landscape of digital dating or simply repackaging the same superficiality in a feminist wrapper to consumers?

Case Study 3: Hinge and the Illusion of Authenticity

Hinge markets itself as the app "designed to be deleted" and the "relationship app," highlighting deeper connections as opposed to casual encounters. However, a 2023 study by the University of Chicago discovered that 58% of Hinge users still prioritize physical appearance over personality traits when swiping (Lee et al., 2023). This suggests that even applications designed and marketed to foster genuine connections may never truly be immune to the superficiality that plagues the industry.

Like most other dating apps that once had independent developers, Hinge's acquisition by Match Group in 2019 has further complicated its mission. While Hinge advertises prioritizing user integrity and satisfaction over profit margins, its integration into Match Group's monopolized portfolio has raised many concerns and questions regarding its independence. Critics and experts have made claims that Hinge's algorithm, like Tinder's, is designed to maximize user engagement rather than facilitate genuine connections (Ward, 2021). This longstanding tension between profit margins and purpose emphasizes the broader ethical dilemmas facing the dating app industry.

Recommendations: The Path Forward

Despite the critical assessment, it would be injudicious to promote a narrative that abandons all digital tools that promote dating connections as impractical. Instead, we need a revolutionary reimagining of how these platforms and applications function, and how users engage with them.

1. **For Users:** Limiting screentime and daily usage of these applications can assist in mitigating burnout by adjusting the user's attitude through the prioritization of interactions. Remaining informed and reflective of the psychological effects is in the user's best interests. Users can reclaim their own agency by

setting strict time limits, prioritizing meaningful interactions and remembering that rejection reflects the flawed dynamics of these platforms, not their self-worth.

2**. For Developers:** Developers can design the application's algorithms, user interface, and system architecture to encourage meaningful and genuine connections. Limiting daily swipes or integrating more detailed profiles could assist with this outcome. Developers can also create a blended approach option, supplementing these digital connections that lead to community involvement, spontaneous interactions, and interest groups.

3. **For Policymakers:** Policymakers can implement regulations that prioritize the integrity of user privacy and data. They can advocate for ethical regulations, such as warnings and information about the dangers of the applications, within the terms and conditions and user agreements. By demanding ethical design, users can support platforms that prioritize ethical standards and meaningful connections over engagement metrics. Through informed consent, the user can gravitate towards platforms that develop features promoting depth as opposed to endless choice.

Conclusion

We now stand at a crossroads in how humans are exposed to various options for establishing and forming romantic connections in the 21st century. In navigating down the current path uncritically, humanity runs the risk of fundamentally hindering and altering its ability to form deep, genuine, and resilient bonds with each other. The technological innovations that once promised strong societal connections, instead, may be teaching an entire generation to view potential romantic partners as commodified and interchangeable products as opposed to complex individuals with depth, worthy of patience and long-term investment.

Dating apps have unquestionably changed the dating landscape by creating alternatives to how relationships are formed, and, as such, they offer both opportunities and challenges. While they may provide unlimited and unprecedented accessibility to potential connections and experiences, they also contribute to issues such as commodification, superficiality, and mental health struggles. It is only through addressing these challenges through ethical design and informed usage that we can harness the benefits of dating apps, while mitigating consequential risks and drawbacks.

As a result, the stakes could not be higher. These dating applications should not simply be reduced to just dating platforms, but rather, relationship education systems that could teach millions of individuals how to approach intimacy, measure compatibility and handle conflict. For a better future, society must learn to demand better, not just from preexisting technology but from itself as it engages within these systems. The future of all human connections depends heavily on it.

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The Mental Health Impact of Social Media on Adolescents
Micaela Blackwell

O ver the last decade, social media's influence has been pivotal in transforming the adolescent community's interactions and perception of themselves in society. Well-known platforms like Snapchat, Instagram, Facebook, and TikTok have redefined social interaction, opening doors for connection and self-expression. Paralleling Newton's Third Law, for every up there is a down. While social media offers many benefits, there are just as many concerns about its impact on young people's mental health.

The rise of smartphones and constant internet access has altered the adolescent experience in a way that hinders their ability to distinguish between online and offline identities. The relationship between social media and adolescent mental health is a complex and multifaceted one with various predisposing factors influencing the extent and nature of its impact. While social media provides an opportunity for socialization and engagement with their peers, it also introduces unique challenges and risks. Adolescence, as defined by the World Health Organization, is any age between 10-19 years old and is a critical developmental period marked by significant changes in identity, social relationships, and emotional regulation. In a systematic review by Keles, McCrae, and Grealish (Keles et al., 2019) the correlation between adolescence and mental health was outlined as such:

> Adolescence is the period of personal and social identity formation and much of this development is now reliant on social media. Due to their limited capacity for self-regulation and their vulnerability to peer pressure, adolescents may not evade the potentially adverse effects of social media use. Consequently, they are at greater risk of developing mental disorders.

The increase in potential adverse effects has become an increasing concern amongst healthcare professionals citing things such as the heightened levels of anxiety, depression, and feelings of inadequacy noted among adolescents. This literature review will explore the relationship between social media use and mental health outcomes among adolescents, identify gaps in current research, and propose a study of how this relationship can be better understood.

Many studies have established a link between social media use and increased levels of anxiety and depression. According to a review published by Keles, McCrae, and Grealish (2019), 10-20% of children and adolescents worldwide struggle with mental health issues. In a comparative study done on the epidemiology of major depressive episodes, it was concluded that depression accounts for more disability-adjusted life years than all other mental disorders (Andrade et al., 2003). Evidence cited in the systematic review supports the claim that overuse, cyberbullying, and negative online interactions are key contributors to the issue.

Cyberbullying refers to bullying that takes place over digital devices like smartphones, computers, and tablets (*What is cyberbullying?*). It can occur through text messages, email, apps, social media, or gaming platforms. It often involves sending, posting, or sharing negative, harmful, or false content about someone else or exposing someone's private details. Cyberbullying is more prevalent now with social

media use and more difficult to escape, unlike traditional bullying, which took place in a face-to-face setting. Studies indicate that a considerable proportion of young people experience it in some form. The impact of cyberbullying on adolescent mental health can be severe and long-lasting with victims experiencing a range of emotional, psychological, and behavioral issues. These can vary from increased levels of anxiety and depression to suicidal ideation (Schneider et al., 2012).

Social media platforms have become central to the lives of many, especially adolescents, and have shaped their perceptions of self-worth and body image. Repeated exposure to filtered images and idealized lifestyles can foster feelings of inadequacy, prompting adolescents to constantly compare their lives, appearances, and achievements to the idealized portrayals of peers and celebrities. The tendency to evaluate themselves based on others' activities serves as a way for adolescents to gauge their own progress in life, even if the comparisons are unrealistic. In a study titled *Social Comparisons on Social Media: The Impact of Facebook on Young Women's Body Image Concerns and Mood (2015),* it was found that comparison can lead to emotional distress, as some perceive themselves as falling short of these often-unattainable standards. With the upload of each picture or video, the quest for likes, comments, and followers can make adolescents' self-worth contingent on social media feedback (Burrow & Rainone, 2017). According to Burrow and Rainone (2017), positive feedback was found to have temporarily boosted self-esteem, but negative or absent feedback led to feelings of rejection and low self-worth.

With the rise of TikTok and Instagram came the amplification of body image concerns as they are inundated with images that emphasize sometimes unhealthy or unattainable standards of beauty. Self-objectification is a psychological internalization of seeing oneself as an observer would. Repeated exposure to these images along with self-objectification encourages a culture of body surveillance, where adolescents feel compelled to monitor and critique their bodies (Perloff, 2014). According to Perloff, this self-surveillance can heighten body dissatisfaction and increase the risk of developing eating disorders. Social media influencers emphasizing certain body ideals can also impact adolescents' body image. Adolescents may aspire to look like these influencers and adopt unhealthy behaviors to achieve a similar appearance (Cohen et al., 2020).

Aside from body image and social comparison, anxiety and depression remain two of the biggest concerns tied to the use of social media; a study by Keles, McCrae, and Grealish (2019) found that excessive use is directly linked to both. The study highlighted that the negative effects are particularly pronounced in adolescents who engage in heavy social media use. Social media creates an environment where adolescents are continually exposed to the activities and experiences of others. This can lead to something referred to as *FOMO*, or the Ffear of missing out, which can be characterized by the anxiety that others are having a more rewarding experience (Gupta & Sharma, 2021). The fear of missing something better can contribute to feelings of exclusion and loneliness (Liu et al., 2023). Another study by Twenge and Campbell (2018) observed a sharp increase in depressive symptoms and suicide rates among adolescents coinciding with the proliferation of smartphones and social media. They argue that screen time, particularly time spent on social media, replaces other activities essential for mental well-being, such as face-to-face interactions, exercise, and sleep (Twenge & Campbell, 2018).

Several sources reinforce these patterns. A cross-sectional study by Vannucci, Flannery, and Ohannessian (2017) surveyed 563 adolescents and the participants self-reported how much time they spend on social media and completed questionnaires related to anxiety. The study found that higher social media use was associated with increased anxiety symptoms (Vannucci, Flannery, & Ohannessian, 2017). A population-based study conducted by Twenge and Campbell (2018) examined a national random sample of 40,337 2–17-year-old children and adolescents and included comprehensive measures of screen time and an array of psychological well-being measures. The study concluded that increased screen and social media time led to a higher display of poor emotional regulation, an inability to finish tasks, lower curiosity, and more difficulty making friends. In addition, high-screen users were twice as likely to have received diagnoses of depression or anxiety or needed treatment for mental or behavioral health conditions (Twenge & Campbell, 2018). In a study conducted in Spring 2007, 2,000 middle and high school students were surveyed to determine if their experience with cyberbullying was correlated with suicidal ideation or attempts. The study found that 20% of the sample reported experiencing cyberbullying. Those who experienced cyberbullying were at a significantly higher risk of suicidal ideation. Specifically, victims of cyberbullying were 1.9 times more likely to consider suicide compared to those who had not been cyberbullied (Hinduja & Patchin, 2010). On the other end of the scope, Orben and Przybylski (2019) conducted a comprehensive analysis on the association between adolescent well-being and digital technology use. It was found that the relationship between social media use and mental health varied more than previously thought. They suggested that while there is a small negative association, the overall impact is relatively minor compared to other factors such as family and school environment (Orben & Przybylski, 2019).

The findings across studies consistently indicate that excessive social media use is associated with negative mental health outcomes in adolescents. However, the extent of the impact varies, and some studies suggest that moderate use might have neutral or even positive effects, such as increased social support and opportunities for self-expression (Best, Manktelow, & Taylor, 2014). Social media platforms facilitate connections and provide spaces for them to maintain relationships, especially for those who may feel isolated in their offline lives. Easy access to mental health resources can also be seen as a plus as it serves as a tool for spreading information about mental health and reducing the stigma surrounding it. Empathy development and creativity can also be a byproduct of social media usage. Platforms like YouTube and Instagram allow adolescents to highlight and grow in their artistic skills while helping them to gain recognition and validation. However, the drawbacks can be more detrimental with the possibility of addiction, disrupted sleep patterns, and security concerns that come with exposure on social media.

Overall, this growing body of research shows the need for a more thoughtful approach to adolescent mental health. Healthcare providers should be aware of the potential mental health risks associated with social media use and screen for these during routine check-ups with adolescents. Interventions should focus on promoting healthy social media habits and encouraging activities that support mental well-being, such as physical exercise and face-to-face social interactions. Future research should focus on longitudinal studies that follow participants over time to better understand the causal relationship between social media use and mental health. Additionally, qualitative studies that seek to answer questions like "why?" and

"how?" could provide deeper insights into how diverse types of social media activities impact adolescents differently. Educational programs should be developed for parents, teachers, and adolescents to raise awareness about the potential risks of excessive social media use and provide strategies for managing screen time effectively. Schools should incorporate digital literacy into their curricula, and educators and parents should prioritize teaching critical thinking skills, resilience, and emotional intelligence to navigate social media safely.

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Setting the Foundation for Success:
Why Early ADHD Diagnosis Matters in Elementary Students
Michaela Dixon and Jasmine Lopez

As classrooms become more inclusive and diverse, elementary school teachers are increasingly encountering students who exhibit challenges associated with attention-deficit/hyperactivity disorder (ADHD). ADHD is a developmental disorder marked by persistent symptoms of inattention and/or hyperactivity and impulsivity that interfere with functioning or development (National Institute of Mental Health [NIMH], 2024b). ADHD is one of the most common mental health conditions affecting children today (Elmaghraby & Garayalde, 2022). These challenges can range from difficulty staying focused during lessons to struggling with classroom behavior, making it critical for educators to recognize the early signs. Identifying ADHD early ensures children receive the necessary support to thrive in all aspects of their lives.

ADHD is often first recognized in elementary school, where teachers notice consistent behaviors that fall into two categories. The first includes inattentive symptoms, such as getting distracted or forgetting things. The second includes hyperactive and impulsive symptoms, such as running around the room or shouting out answers in class (Miller, 2023). Early recognition of these signs opens the door to early intervention and targeted support, which can significantly impact a child's academic performance, social development, and self-esteem. A systematic review found that children with ADHD often face significant struggles beyond school, including difficulty developing social skills and coping with emotional challenges (Athanasiadou et al., 2019). For example, during an observation of a kindergarten student conducted by Jasmine Lopez, the second author, several behaviors suggested underlying attention and self-regulation challenges. While participating in a web-based math program, the student exhibited fidgety behavior and required sensory tools, such as blocks and a sensory book, to remain seated and somewhat engaged. Although his participation was limited compared to peers, he demonstrated increased focus when given opportunities for movement and social interaction. Later, when the student struggled with following directions and exhibited emotional outbursts, strategies such as hallway walks and sensory room breaks effectively helped him regain composure. These observations highlight how sensory input and structured breaks can be crucial interventions for students displaying ADHD-related behaviors.

Impact on Academic and Social Development

ADHD affects children in several key areas crucial for school success, including focus, organization, and task completion. Research suggests that "more emphasis on classroom intervention, rather than just parent training, might improve outcomes" (Feil et al., 2016). Teachers play a vital role in helping these students by implementing strategies such as breaking tasks into smaller steps, providing extra time, and using checklists for organization. Hands-on learning and regular breaks can also help students stay

engaged and focused. Early diagnosis allows teachers to provide consistent feedback and adjust strategies as needed, fostering confidence and capability in the classroom.

Beyond academic challenges, children with ADHD often struggle with social and emotional difficulties. Impulsivity and trouble focusing can make it hard for them to navigate social interactions, leading to frustration, isolation, and low self-esteem. A study of 1,500 children found that "emotional problems had a greater impact than hyperactivity and inattention on well-being and self-esteem" (Riley et al., 2024, p. 5). Another study revealed that individuals with ADHD and emotion dysregulation were significantly more impaired in peer relationships, family life, and academic performance than those with ADHD alone (Shaw et al., 2014). Early diagnosis enables interventions such as counseling, social skills training, and behavioral therapy, helping children develop emotional regulation and stronger social relationships.

Role of Schools and Teachers in ADHD Support

Schools play a crucial role in supporting students with ADHD through tailored accommodations provided by an Individualized Education Plan (IEP) or a 504 Plan. "A 504 Plan is developed for students who have a disability that does not require special education services, whereas an IEP provides a program of specialized instruction and support to access and progress in the curriculum" (Schultz, 2022, p. 2). These plans ensure that students receive necessary adjustments to meet their learning needs, such as extended time on tests, seating arrangements that minimize distractions, and regular movement breaks. These accommodations do not lower expectations but create an environment where students can perform to the best of their abilities. Early identification and implementation of these plans significantly enhance students' confidence and academic success.

Teachers are instrumental in the potential diagnosis of ADHD, as they observe students in a structured environment where attention and interaction are essential. When a teacher notices behaviors that might indicate ADHD, they should begin documenting patterns and implementing minor interventions, such as adjusting seating arrangements or using verbal reinforcements. If little improvement is seen, teachers should communicate with parents to determine if similar behaviors occur at home. "The initial evaluation must be conducted within 60 days of receiving parental consent for the evaluation or, if the State establishes a timeframe, within that timeframe" (United States Department of Education, 2006, p. 4). If concerns persist, the school may recommend professional screening.

A primary care provider typically conducts a physical examination, reviews medical history, and gathers further information using standardized ADHD symptom checklists (MedlinePlus, 2023). Once diagnosed, the IEP or 504 Plan team—including teachers, parents, and school personnel—meets to develop a tailored plan. "Children with special educational needs are provided with an alternative route that includes quality programs tailored to their individual needs" (Casa of Terrebonne, Incorporated, 2024). These plans are reviewed at least annually to ensure they remain relevant to the student's evolving needs (Georgia Department of Education, 2024). IEPs for students with ADHD focus on strategies that help them stay focused, manage impulses, and stay organized. Accommodations may include extra time on tests, frequent breaks, quieter seating arrangements, or tools like fidget devices. Behavioral strategies, such as reward

systems and clear step-by-step instructions, reinforce positive behaviors. The ultimate goal of an IEP is to provide structured and consistent support, promoting academic, social, and emotional success.

For example, Michaela Dixon, the first author, had the opportunity to hear a student share his experiences with an IEP and its transformative impact on his academic journey. Initially, his school did not adequately address his disabilities, causing him to fall behind. However, after transferring to a school that recognized his needs, he received an effective IEP, which significantly boosted his confidence and academic performance. Now dual-enrolled at a local college, he credits his IEP with shaping his positive outlook on education and life. He emphasized that his school saw him as "a person with a disability, not a disabled person." His story underscores the profound impact of early diagnosis and appropriate support systems in fostering student success.

Teachers can implement two main strategies to support students with ADHD: behavioral classroom management and organizational training (Centers for Disease Control and Prevention [CDC], 2024). Behavioral strategies encourage positive behaviors through reward systems, daily report cards, and positive reinforcement. Brain breaks and calming corners provide students with opportunities to manage their energy and emotions effectively. Organizational training helps students maintain structured routines, such as highlighting key text in reading assignments, breaking large projects into smaller tasks, and posting clear schedules. Classroom layout modifications, such as strategic seating placements, further aid in minimizing distractions. These strategies not only benefit students with ADHD but also create a supportive learning environment for all students.

Conclusion

Early diagnosis of ADHD has a profound impact on a child's long-term success, influencing academic achievement, career opportunities, and overall well-being. Studies indicate that untreated ADHD can shorten life expectancy by up to thirteen years (Barkley, 2024). Early intervention provides children with essential support in organization, study skills, and emotional regulation, preventing frustration and academic disengagement.

Conversely, the absence of an early ADHD diagnosis can lead to significant lifelong challenges. "Untreated ADHD can cause problems throughout life, making it harder to succeed in school, work, relationships, and other aspects of life" (Fields, 2024, p. 7). Early identification and intervention help children build confidence, improve academic performance, and develop essential life skills, setting them up for long-term success. By recognizing the signs early and taking proactive steps, educators and parents can create an inclusive learning environment where all children have the opportunity to reach their full potential.

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The Impact of Abusive Behavior on
Soccer Referee Recruitment and Retention
Aidan Kliethermes

Abstract

Referees play a critical role in soccer, yet abusive behavior from players, coaches, and spectators has created significant challenges in recruitment and retention, particularly in USSF-governed youth soccer and NFHS-governed high school soccer. This study examines how verbal and physical abuse, role conflict, and limited organizational support contribute to referee attrition. Using survey data collected from soccer officials in the Heart of Georgia Sports Officials Association, the research applies Social Exchange Theory, Role Theory, and Organizational Commitment Theory to analyze underlying factors influencing retention rates. Participants completed a structured questionnaire distributed via text messaging to maximize response rates. Findings indicate that referee turnover is highest within the first 3-10 years, with younger referees (18-25) being particularly underrepresented. Social Exchange Theory reveals that frequent abuse raises the perceived costs of officiating, leading to early departures, with 77% of respondents reporting diminished professional satisfaction due to inappropriate conduct. Role Theory highlights the difficulty referees face in managing conflicting stakeholder demands, particularly in high school settings where expectations from coaches, players, and spectators often clash, with 62% of officials reporting significant pressure from competing expectations. Organizational Commitment Theory demonstrates that inadequate institutional support discourages long-term officiating, with 19% of respondents reporting insufficient organizational backing. Moreover, 75% of referees surveyed believe that additional resources would improve retention. Unlike USSF, NFHS lacks a structured Referee Abuse Prevention (RAP) program, making high school referees more susceptible to hostile environments. This research underscores the urgent need for policy reforms, including the implementation of referee protection programs, enhanced stakeholder education, and mental resilience training.

Keywords: Referee abuse, soccer referees, referee recruitment, referee retention, role conflict, referee organizational support, Social Exchange Theory, Role Theory, Organizational Commitment Theory, Referee Abuse Prevention (RAP) program.

1.0 Introduction

Soccer referees play a pivotal role in ensuring competitive fairness and sportsmanship, and matches are played within established rules. Their duties extend beyond simply enforcing regulations; they also manage player interactions, de-escalate conflicts, and make quick decisions while plays are unfolding. In high school play, only a two-man or dual referee system is typically used because of referee shortages and limited school budgets (Yannie, n.d.; Vogt, 2012). It is not unusual for high schools to request a three-man crew to help maintain authority in highly charged environments where verbal, physical, and psychological abuse from players, coaches, and spectators can escalate quickly (HS Soccer, 2012; National Intercollegiate Soccer Officials Association, 2016). In contrast, USSF guidelines require a three-man crew for officiating age groups U12 (under 12 years old) and above (US Youth Soccer, n.d.).

Referee abuse is not just an isolated issue; it is a systemic problem that threatens an already limited pool of officials at all levels. Reports from governing bodies such as U.S. Soccer (USSF) and the National Federation of State High School Associations (NFHS) indicate that over 50% of referees quit within their first three years, citing hostile environments as a primary reason. The average age of referees in the U.S. is 57 (National Association of Sports Officials, 2023), highlighting an alarming trend: fewer young officials are entering the field, while seasoned referees are retiring at a faster rate.

The author, a referee with firsthand experience officiating both USSF-Governed Youth Soccer and NFHS-Governed High School Soccer, has witnessed how abusive behavior can take various forms—ranging from verbal insults and sideline intimidation to threats of physical violence. To help combat these threats, high school administrators are on site to respond to disruptive behavior. Over time, constant exposure to hostility leads to burnout, emotional exhaustion, and referees quitting the game they love. Without intervention, soccer organizations risk losing competent, experienced officials passionate about the sport they officiate (Dosseville, Rioult, & Laborde, 2013).

This study aims to explore two critical research questions:

1. How does abusive behavior impact referee recruitment, retention, and job satisfaction across different governing bodies, including USSF and NFHS?
2. What strategies and interventions can governing bodies implement to mitigate abuse and enhance referee well-being, ensuring long-term retention?

Understanding the scope and consequences of referee abuse is essential for developing effective policy interventions. To address these concerns, this research applies three key theoretical frameworks to analyze the underlying factors influencing referee attrition:

- H1: Social Exchange Theory – Abusive behavior increases the perceived costs of officiating, leading to higher attrition rates.
- H2: Role Theory – Referees in NFHS-governed high School Soccer experience heightened role conflict due to conflicting stakeholder expectations, increasing stress, and burnout.
- H3: Organizational Commitment Theory – Insufficient organizational support contributes to lower referee commitment and retention, particularly in NFHS-Governed High School Soccer.

2.0 Literature Review

Understanding the long-term effects of abuse on soccer referees requires a multidimensional approach. This section explores three theoretical frameworks that provide critical insights into the challenges referees face and offer potential solutions for improving retention, job satisfaction, and long-term commitment to officiating.

2.1 Social Exchange Theory: Balancing Costs and Rewards in Officiating

Social Exchange Theory (SET) suggests that individuals evaluate relationships based on a cost-benefit analysis (Blau, 1964). For referees, the perceived rewards of officiating—such as professional development, financial compensation, and personal satisfaction—must outweigh the perceived costs, including verbal abuse, threats, and emotional distress (Duvinage & Jost, 2019).

Referees frequently engage in high-pressure decision-making, where coaches, parents, and players often scrutinize calls. Research by Johnson and Smith (2021) found that referees make nearly 200 decisions per match, exposing them to continuous feedback and potential backlash. If these interactions are predominantly negative, referees may reconsider their commitment to the profession. This is especially true for younger referees working in youth games sanctioned by the USSF, who often quit after one or two seasons (Pruitt & Davis, 2024).

Key Influences on Social Exchange Theory in Officiating:

- **Cultural Expectations**: In high-power-distance cultures, referees may experience increased pressure to conform to team expectations, reducing their autonomy (Simmons, 2009).
- **Technology Integration**: The introduction of Video Assistant Referee (VAR) has transformed referee-stakeholder interactions, altering perceived fairness in officiating (Samuel et al., 2020).
- **Knowledge Sharing & Peer Support**: Limited mentorship and peer collaboration can intensify feelings of professional isolation, exacerbating attrition rates. USSF and state soccer organizations like the Georgia Referee Program occasionally offer tactical education webinars (Georgia Referee Program, 2025).

2.2 Role Theory: Navigating Conflicting Expectations in High-Stress Environments

Role Theory suggests that individuals must balance multiple and often conflicting expectations when occupying a professional role (Goffman, 1959). Referees experience role strain as they must simultaneously mediate disputes, enforce rules, and manage emotional responses from players, coaches, and spectators (Anderson & Lee, 2020).

One of the primary stressors in refereeing is the constant negotiation of authority. Unlike many professions where expectations are clear-cut, referees must navigate the unpredictable emotional responses of multiple stakeholders. This stress is heightened in NFHS-Governed High School Soccer, where referees frequently encounter emotionally invested parents and school administrators. To help alleviate these stressors, officials are told to explain a foul to the coach, particularly if a yellow or red card is shown to a player (Joseph, 2015).

Key Role Conflict Factors in Soccer Officiating:

- **Stakeholder Expectations**: Coaches prioritize team success, while players seek fairness. Spectators often interpret calls through team bias, creating heightened scrutiny for referees.
- **Physical & Psychological Demands**: Research by Aragão e Pina et al. (2018) found that referees cover an average of 6-8 miles per match, often operating at 85-90% of their maximum heart rate.
- **Training & Role Mastery**: While structured training programs can mitigate stress, many referees report insufficient psychological preparation (Castagna et al., 2012).

2.3 Organizational Commitment Theory: Retaining Referees through Institutional Support

Meyer and Allen's (2021) Organizational Commitment Theory explains how institutional support influences long-term retention and job satisfaction. The theory categorizes commitment into three components:

2.3.1 Affective Commitment: Emotional Connection to Officiating

Referees who develop an emotional attachment to the profession exhibit higher resilience against adversity (Leonov et al., 2024). Key factors influencing affective commitment include:

- **Confidence in Decision-Making**: Officials who gain confidence through proper training and organizational backing typically enjoy their work more.
- **Coping with Confrontation**: Effective handling of disputes improves mental resilience, reducing stress from hostile encounters (Aragão e Pina et al., 2018).

2.3.2 Normative Commitment: Sense of Obligation to Continue Officiating

- **Investment in Referee Training:** Organizations that fund training programs foster a sense of duty among officials, increasing retention rates (Castagna et al., 2012).
- **Mentorship Programs & Peer Engagement:** Structured guidance significantly reduces early-career referee turnover (Simmons, 2009).
- **Supportive Organizational Policies:** Governing bodies must enforce clear disciplinary measures against referee abuse to maintain commitment levels (Samuel et al., 2020).

2.3.3 Continuance Commitment: Weighing the Costs of Leaving

Referees often evaluate whether the costs of quitting outweigh the benefits of staying (Duvinage & Jost, 2019). Factors influencing this decision include:

- **Financial & Certification Investment**: High investment in referee training, certifications, and ongoing education often deters referees from leaving (Webb, 2022).
- **Sunk Cost Effect**: The longer a referee has invested in their career, the more likely they are to remain despite adversities.
- **Social Support Networks**: Strong referee communities help buffer against the negative effects of abuse, increasing job satisfaction (Anderson & Lee, 2020).

2.3.4 Training Programs and Mentorship Impact

Training programs are essential for developing referees' technical expertise, psychological resilience, and long-term commitment to officiating. Unlike traditional job roles, referees often begin their careers with minimal preparation for high-stakes decision-making and confrontational environments.

- **Development Pathways**: Initiatives such as the U.S. Soccer Federation's (2020) Innovate to Grow Fund highlight the role of structured training in fostering long-term officiating careers.
- **Skill Progression & Tactical Awareness**: Leonov et al. (2024) found that referees who undergo regular simulation-based training and match analysis sessions demonstrate higher confidence and faster decision-making abilities.
- **Mentorship Benefits**: Webb (2022) found that early-career referees who receive mentorship are 50% more likely to remain in officiating beyond five years compared to those who do not.
- **Emotional and Practical Support**: Besides on-field performance feedback, mentorship provides psychological reinforcement for new referees who experience verbal abuse or confrontational behavior.

3.0 Methodology

This study employs a survey-based research design to analyze the experiences of soccer referees regarding abusive behavior, role conflict, organizational support, and retention factors. By utilizing quantitative descriptive analysis, this approach provides a clear overview of referee experiences while ensuring accessibility and rapid data collection.

3.1 Research Design and Rationale

A structured online questionnaire was developed and administered using Qualtrics. Invitations were distributed via text messages instead of traditional email outreach to maximize response rates and reach

referees more efficiently. This decision was based on findings that many referees do not check emails regularly, whereas text notifications lead to faster response times.

The questionnaire was structured into four key sections, each designed to measure constructs related to referee experiences. The demographic section captured respondents' backgrounds, including officiating experience, licensure, and level of competition. Perceived abuse and role conflict were assessed using items grounded in Social Exchange Theory (H1) and Role Theory (H2), evaluating how external pressures affect referees' decision-making and stress levels. The organizational support and job satisfaction section aligned with Organizational Commitment Theory (H3) to examine how governing bodies influence referees' sense of security and long-term engagement. Finally, retention intentions were measured to determine whether abusive behavior and support systems impact referees' likelihood of continuing officiating.

To ensure content validity, the survey underwent pilot testing with a handful of experienced referees from the Heart of Georgia Sports Officials Association (HGSOA) before fully releasing it.

3.2 Sampling Strategy

The study sample consists of referees aged 18 and older with varied levels of officiating experience and licensure. Participants were recruited through HGSOA, ensuring a balanced representation of officials from different competitive levels. Including youth and high school referees allows for comparative insights into how governance structures shape officiating experiences.

Inclusion Criteria:

- **Age and Activity Status**: Currently active referees in USSF Youth Leagues or NFHS High School Soccer.
- **Experience Requirement**: A minimum of one full season of officiating experience.
- **Age Restriction**: Age 18 years or older to comply with research ethics guidelines.
  Exclusion Criteria:
- **Inactive Officials**: Former referees who have retired or left officiating more than five years ago.
- **Non-Affiliated Leagues**: Officials who exclusively referee in non-USSF or NFHS-affiliated leagues.

  A stratified random sampling approach was used to ensure diversity in age, experience, and officiating level. This method mitigates selection bias and provides a more representative dataset.

3.3 Data Collection and Analysis

The survey was administered via Qualtrics and distributed via text message invitations to ensure timely participation. The survey remained open for three weeks, with reminders provided via text or when seen in-person at local matches.

Since the data collected did not support inferential statistics, only descriptive statistical methods were applied, including frequencies and percentages, means and standard deviations, and cross-tabulation analyses to compare responses between officiating levels and experience groups.

4.0. Results

4.1 Demographic Profile

The demographic profile of HGSOA referees reveals important patterns relevant to understanding retention challenges. Age distribution analysis shows a concerning underrepresentation of younger officials, with just 14% of respondents falling in the 18-25 age bracket. The largest age groups were 36-45 (27%) and 46-55 (26%), creating a significant generational imbalance in the officiating workforce. This age disparity suggests serious challenges in attracting and retaining younger referees, who are particularly vulnerable to negative experiences such as abuse.

Table 1: Demographic Characteristics of HGSOA Referees

Characteristic	Category	Percentage
Age Group	18-25 years	14%
	26-35 years	18%
	36-45 years	27%
	46-55 years	26%
	56+ years	15%
Officiating Experience	1-3 years	22%
	3-10 years	48%
	10+ years	30%
Certification Level	Grassroots	71%
	Regional	23%
	National	6%
Highest Level Officiated	Youth	35%
	High School	48%
	College	14%
	Adult/Professional	3%

Source: HGSOA Referee Survey, 2025

The experience distribution shows a critical pattern: nearly half (48%) of referees have 3-10 years of officiating experience, while only 22% are in the early career phase (1-3 years) and 30% have remained for 10+ years. This bimodal distribution points to a retention challenge during the early-to-mid career phase, as many officials with 1-3 years of experience struggle with handling abusive behavior and officiating stress, leading to early attrition.

Certification analysis reveals that 71% of respondents hold only Grassroots-level certification, meaning they officiate primarily at youth and high school levels where they face intense pressures from

sideline abuse. This overrepresentation of Grassroots-certified referees suggests many officials work at the upper limits of their certification, potentially increasing stress levels and vulnerability to abuse. Only 23% have achieved regional certification, with just 6% reaching National level.

When examining the highest competitive level officiated, the data shows concentration at the high school level (48%), with significantly fewer referees working college (14%) or professional matches (3%). This disparity suggests many referees either leave before advancing to higher tiers or encounter structural barriers that hinder career advancement. Officiating college matches requires meeting specific benchmarks—referees must oversee competitive matches in various environments while mentors assess their readiness for advancement.

The findings suggest progression from Grassroots to higher-level officiating might protect against abuse-related attrition. Referees advancing through certification ranks typically gain more experience and authority, potentially equipping them to manage abusive behavior more effectively. The data reveals an hourglass-shaped distribution of age and experience, with concentrations in both newer and highly experienced officials, but fewer in the middle range—suggesting a potential "survival effect" where only the most resilient officials continue long-term.

4.2 Social Exchange Theory

The survey data strongly supports the Social Exchange Theory hypothesis that abusive behavior increases the perceived costs of officiating. When asked about the impact of inappropriate conduct on professional satisfaction, a substantial majority of referees (77% total) acknowledged this correlation, with 59% somewhat agreeing and 18% strongly agreeing. Only 8% of respondents disagreed with the statement, while 15% remained neutral, indicating broad consensus among officials about abuse's negative impact on job satisfaction.

The detrimental effects of disrespectful behavior on referees' ability to manage matches effectively are well-documented. Such conduct undermines match control and diminishes overall job satisfaction, contributing to referee attrition. These findings reinforce the prevalence of this issue and highlight the need for soccer governing bodies to implement stronger policies addressing referee abuse.

When examining how persistent challenging behavior influences referees' decisions to continue officiating, 72% of respondents indicated agreement (52% somewhat agree, 20% strongly agree). This suggests that while challenging behavior creates substantial pressure, it does not necessarily cause immediate departure from officiating for most officials. However, the significant percentage of strong agreement reinforces concerns that continued confrontational interactions could ultimately drive officials away. Only 16% disagreed with the statement, with 12% remaining neutral.

The data reveals an apparent correlation between officiating experience and resilience to challenging behavior. Officials remaining in the profession for extended periods appear more likely to have developed resilience to persistent, challenging behavior. This creates a referee pool increasingly dominated by individuals who have either accepted the inherent pressures of officiating or developed adequate coping mechanisms.

4.3 Role Theory

Survey results strongly support the Role Theory hypothesis regarding conflicting stakeholder expectations. When asked about balancing demands from multiple stakeholders, 62% of referees agreed that this creates significant pressure (58% somewhat agreed, 4% strongly agreed). This confirms role conflict as a widespread issue affecting officiating effectiveness across competition levels.

Interestingly, responses showed some diversity in this area, with 13% disagreeing to some extent and 25% remaining neutral. This suggests that while many referees struggle with role conflict, some have developed effective coping mechanisms to manage competing expectations. Those disagreeing or maintaining neutrality may have developed strategies through mentorship, experience, or training that help navigate stakeholder pressures effectively.

Table 2: Referee Perceptions of Role Conflict and Abuse

Statement	Strongly Disagree	Somewhat Disagree	Neutral	Somewhat Agree	Strongly Agree
"Inappropriate conduct from match participants diminishes my professional satisfaction"	3%	5%	15%	59%	18%
"Persistent challenging behavior from participants influences my decision to continue officiating"	6%	10%	12%	52%	20%
"Balancing demands from multiple stakeholders creates significant pressure during matches"	5%	8%	25%	58%	4%
"Conflicting stakeholder expectations increase my stress levels during officiating"	7%	10%	21%	47%	15%
"My governing body provides sufficient resources to manage abusive behavior"	7%	11%	19%	42%	21%
"Additional organizational resources would encourage me to continue officiating"	6%	0%	19%	31%	44%

Source: HGSOA Referee Survey, 2025

When specifically asked about stress levels resulting from stakeholder expectations, 62% of officials agreed (47% somewhat agreed, 15% strongly agreed) that these pressures heighten emotional strain. A smaller proportion of officials (17% total) either somewhat (10%) or strongly (7%) disagreed,

with 21% remaining neutral. This variation indicates individual differences in stress resilience, possibly attributable to factors such as experience levels, previous exposure to high-stakes officiating, or access to mentorship support.

These results emphasize the need for referee development programs focusing on mental preparedness, conflict de-escalation, and communication training. Officials better equipped to manage stakeholder expectations will likely perform more consistently, maintain composure under pressure, and remain in the profession longer.

4.4 Organizational Commitment Theory

The survey data provides critical insights into referee perceptions of organizational support, directly connecting to Organizational Commitment Theory. When asked about governing body resources, 63% of respondents agreed (42% somewhat, 21% strongly) that their organization provides sufficient resources to manage abusive behavior and officiating challenges. This suggests many referees feel supported by governing organizations, potentially enhancing affective commitment to officiating.

However, 19% of referees responded neutrally, suggesting some officials either have inconsistent support experiences or remain uncertain about available assistance. More concerning, approximately 18% of respondents expressed dissatisfaction (11% somewhat disagreeing, 7% strongly disagreeing) that their governing body provides adequate support. When officials lack confidence in their governing body's protection, they are more likely to disengage or leave entirely.

Data also provides compelling evidence that increasing organizational resources would directly impact retention rates. A significant positive trend was observed, with 44% of respondents strongly agreeing and 31% somewhat agreeing (75% total agreement) that additional resources would encourage continued officiating. This highlights the critical role of structured support systems in retention efforts. Negative responses remained notably low, with only 6% selecting "Strongly disagree" and no respondents choosing "Somewhat disagree." This pattern suggests minimal opposition to additional organizational resources, with most referees perceiving such support as beneficial to their continued participation in officiating.

These findings align with Organizational Commitment Theory, emphasizing institutional support's role in fostering long-term commitment. Anticipated backing from governing bodies directly influences referees' decisions to remain, reinforcing the need for organizations such as HGSOA in Middle Georgia to develop comprehensive support strategies.

5.0 Discussion

This study investigates soccer referees' experiences within the Heart of Georgia Sports Officials Association (HGSOA) in Middle Georgia, applying social exchange theory, role theory, and organizational commitment theory to analyze factors influencing referee recruitment, retention, and job satisfaction. The findings reveal important challenges faced by officials, particularly in NFHS-Governed High School Soccer, where abusive behavior, role conflict, and limited organizational support adversely impact referee well-being and long-term engagement.

5.1 Social Exchange Theory and Referee Satisfaction (H1)

These findings confirm that abusive behavior increases the perceived costs of officiating, leading to higher attrition rates. Blau's (1964) social exchange theory suggests individuals engage in relationships expecting balanced reciprocity. Referees anticipate that their time, expertise, and emotional labor will be met with fair treatment, respect, and adequate compensation. However, the survey results indicate an imbalance in this exchange. Specifically, 77% of respondents reported that abuse from match participants lowered their professional satisfaction.

A key trend observed shows the relationship between officiating tenure and the ability to manage challenging behavior. Officials who remain officiating appear to develop coping strategies for handling negative interactions. The bimodal distribution of officiating experience, where referees either exit within the first 3-10 years or remain long-term, is revealing. It highlights the need for structured mentorship programs to support officials during the critical early-career phase (Warner, Tingle & Kellett, 2013).

The recruitment gap among younger referees (ages 18-25) suggests high perceived officiating costs discourage new entrants. This issue appears particularly prevalent in NFHS-Governed High School Soccer, where referees face greater exposure to verbal abuse from multiple parties. The resulting self-selection process creates a referee pool dominated by individuals with higher adversity tolerance, reinforcing the ongoing retention crisis.

5.2 Role Theory and Stakeholder Expectations (H2)

The second hypothesis—that referees in NFHS-governed High School Soccer experience heightened role conflict, increasing stress and burnout—receives strong support from the data. Role theory suggests individuals perform within predefined social roles carrying specific expectations and responsibilities. When these expectations conflict, role strain emerges. The data demonstrates that 62% of referees struggle with managing competing stakeholder demands, resulting in increased stress levels.

High school referees often navigate pressure from multiple sources—coaches, players, spectators, and administrators—each with distinct and sometimes contradictory expectations. Many referees hold only Grassroots-level certification, meaning they officiate in high-stress environments without advanced training to prepare them for role conflict. The assignor of games at HGSOA strategically avoids placing referees with fewer years of experience at advanced-level Varsity matches, instead having them work at lower-level games like middle school and junior varsity (Baldwin & Vallance, 2016).

The concept of inter-sender conflict, where officials must juggle contradictory expectations from different groups, aligns with Pandey and Kumar's (1997) framework of role strain. These findings carry significant implications. Unlike traditional workplaces where role conflict can be minimized through structured organizational intervention, high school refereeing inherently involves competing interests. This reinforces the necessity for enhanced stakeholder education programs and referee training incorporating conflict resolution techniques and psychological resilience strategies.

5.3 Organizational Commitment Theory and Support Mechanisms (H3)

The third hypothesis—that insufficient organizational support contributes to lower commitment and higher attrition rates—also finds validation in the data. Meyer and Allen's (2021) three-component

model of commitment highlights the roles of affective, continuance, and normative commitment in influencing long-term engagement within organizations.

Survey data reveals that while 63% of referees perceive HGSOA provides adequate support, 18% disagree, identifying a vulnerable subgroup at risk for attrition. Additionally, 75% of respondents agreed that enhanced organizational resources would increase their officiating longevity, reinforcing the concept of continuance commitment, where perceived benefits influence decisions to remain in a profession (Roome II, 2016).

The connection between organizational support and referee retention suggests implementing mentorship programs, standardized abuse-reporting systems, and mental health resources would likely reduce referee turnover rates (Warner, Tingle & Kellett, 2013). Moreover, the study extends organizational commitment theory by demonstrating that in non-traditional, part-time professions like high school officiating, emotional attachment to the role often outweighs financial incentives.

5.4 Theoretical Integration and Practical Interventions

This study integrates social exchange theory, role theory, and organizational commitment theory to provide a comprehensive understanding of referee retention challenges. The findings suggest abusive behavior increases officiating costs, role conflict heightens stress, and inadequate organizational support accelerates attrition. However, these effects can be mitigated by strengthening organizational commitment mechanisms, which enhance job satisfaction and referee longevity (Kim, 2017).

A particularly relevant intervention is the Referee Abuse Prevention (RAP) program, recently implemented by U.S. Soccer for youth leagues. Given that NFHS-Governed High School Soccer lacks similar protections, the findings suggest NFHS should adopt comparable policies. Key RAP components that align with this study's recommendations include:

- **Zero-Tolerance Policies** -- Enforcing strict disciplinary measures for abusive behavior.
- **Standardized Reporting Mechanisms** -- Establishing clear, structured methods for reporting and responding to abuse.
- **Stakeholder Education Programs** -- Requiring training for coaches, players, and spectators to prevent misconduct.

Beyond RAP, additional interventions include mentorship programs, conflict resolution and resilience training, and clear abuse-reporting protocols. For HGSOA, addressing concerns from the 18% of referees who perceive inadequate support while expanding resources for the majority seeking additional backing will be essential for improving retention rates.

6.0 Conclusion

This study examined the challenges faced by soccer referees in Middle Georgia, focusing on how governance structures impact referee experiences, retention, and job satisfaction. By applying social exchange theory, role theory, and organizational commitment theory to compare USSF-Governed Youth Soccer and NFHS-Governed High School Soccer, several significant findings emerged.

Referee abuse represents not merely an isolated problem but a systemic issue threatening the sustainability of soccer officiating. The concerning demographic patterns—particularly the

underrepresentation of referees aged 18-25 (only 14% of the sample) and the bimodal distribution of officiating experience—point to critical weaknesses in both recruitment and retention strategies. Many officials leave the profession during their early career (1-3 years), while those who overcome initial challenges often remain long-term, creating the "survivor effect" observed in the data.

The research confirmed all three theoretical hypotheses. First, abusive behavior significantly increases the perceived costs of officiating, leading to diminished job satisfaction and higher attrition rates, particularly among newer officials, with 77% of referees reporting that abuse diminished their professional satisfaction. Second, referees in NFHS-Governed High School Soccer experience heightened role conflict due to competing stakeholder expectations, which increases stress and contributes to burnout, with 62% of officials reporting significant pressure from competing expectations. Third, insufficient organizational support undermines referee commitment, with 18% of surveyed officials reporting inadequate backing from governing bodies.

Perhaps most telling, 75% of referees indicated that enhanced resources would encourage them to continue officiating, highlighting a clear path forward for addressing the shortage crisis. Practical interventions must address the specific challenges identified by this research. Governing bodies should implement structured mentorship programs targeting early-career officials, develop comprehensive abuse prevention policies similar to the Referee Abuse Prevention (RAP) program, and enhance psychological preparation for managing role conflict.

The disparity between USSF and NFHS governance structures presents both challenges and opportunities. While NFHS-Governed High School Soccer appears more vulnerable to certain pressures, cross-organizational learning could leverage strengths from both systems to create more sustainable officiating environments.

Without meaningful intervention, the soccer community faces a worsening referee shortage that threatens competitive integrity at all levels. However, by addressing the social exchange imbalances, role conflicts, and organizational support gaps identified in this study, governing bodies can create environments where qualified officials not only survive but thrive. The future of soccer depends not just on developing skilled players and coaches, but on nurturing and retaining the referees who ensure the game's fairness and protect its spirit.

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Tarnished Brass: Orthodox Elements in Dostoevsky's *Crime and Punishment*
Kylie Ledbetter

*C*rime and Punishment was written by Fyodor Dostoevsky, a member of the Russian Orthodox Church. Infused throughout with subtle and beautiful Orthodox imagery, the novel is vulnerable to misinterpretation by modern Western readers who do not share Dostoevsky's Orthodox background. This essay seeks to provide Western readers with an overview of the Orthodox Church and an understanding of its various symbols and practices that pertain to *Crime and Punishment*, such as bells, icons, and crosses. Also significant in understanding the novel is the Orthodox concept of the *nous*, the pure and spiritual element of the human soul. Raskolnikov's *nous* and childhood history in Orthodoxy torment him throughout the novel, symbolized by the pawnbroker and her apartment. It is only through the sacrificial love of Sonya, combined with his suffering, symbolized by crosses, that Raskolnikov's *nous* is finally restored at the end of the novel.

The Orthodox church can be roughly defined as the predominant Christian tradition in the East, as opposed to the Catholic church prevalent in the West. Just as, at the risk of oversimplification, Eastern philosophy focuses more on intuition and emotions and Western philosophy leans toward rationality and logic, similar differences can be found in church tradition. Many Orthodox Church fathers had a deep understanding of the Greek term *nous*. Mary Naumenko explores how the idea of the *nous* affected Dostoevsky in her book *Restoring the Inner Heart: The Nous in Dostoevsky's Ridiculous Man*. She defines *nous* as "a God-given organ implanted deeply within each of us that is very receptive to the true reality of things" (8). Plato describes it as the highest level of thinking that is instinctual and prelogical and makes all forms of rationalization possible (21-2). The *nous* is the capacity through which humans can perceive the divine, and an understanding of this concept will appear throughout *Crime and Punishment*.

Christianity adopted the term *nous* to emphasize the innate spiritual intuition within every human. Through Christ's incarnation, as God became man, the human race could have the hope of restoring and purifying their spiritual instincts. In Luke 24:45, Jesus demonstrates to his disciples how the Hebrew Scriptures point to him. In other words, he "opened their minds [*nous*] to understand the Scriptures" (ESV). This understanding he imparts to them is inherently spiritual. In Romans, Paul tells Christians to "be transformed by the renewal of your mind [*nous*] that . . . you may discern what is the will of God, what is good and acceptable and perfect" (Rom. 12.2). The implication is that the *nous* is an ever-present part of the human being that can either be corrupted or restored.

The *nous*, sharing attributes of both the mind and the heart, is superior to mere logic. Naumenko describes it as a uniting force that brings the soul to divine peace and unity, a unity that is disrupted by hyper-rationalization (47). Throughout *Crime and Punishment*, Raskolnikov struggles to overcome his hyper-rational mind to live by this uniting force. Although *nous* is not explicitly used in every circle of Orthodox thought, the idea that it represents is prevalent throughout Orthodoxy. A normal Orthodox service involves various practices that are tangible, involving visual, olfactory, and tactile stimuli that go beyond

rational thought. These practices are designed to help restore and awaken the *nous* in a way that mere logic cannot. One of these practices is the veneration of icons.

Icons are images painted on wood of Christ, saints, or Biblical stories. Few, if any, Russian Orthodox churches are without icons. Icons cover the walls of an Orthodox church in a systematic way. When one enters an Orthodox church, they are to venerate an icon found on a table at the entrance of the church. Margaret E. Kenna states that veneration is respect not to be confused with worship, in which one will kiss the icon, "make the sign of the cross, and. . . light a candle" (363). Similar practices can be found in homes in which smaller icons are placed on eastern-facing walls and used during prayer. For those who grow up within the Orthodox tradition, their imaginations would have been formed by the habit of kissing icons and praying in front of icons. At the minimum, they would have seen icons at every church service and as they walked about their home. While the church services include readings from the Scriptures, they also include practices such as icon veneration that allow the *nous* to wander beyond the bounds of logic. As will be seen, icons play a prominent role in the restoration of Raskolnikov's *nous* and his rescue from the iron chains of logic.

Raskolnikov's author, Dostoevsky, was immersed in Orthodoxy during his upbringing and in his later life. David J. Leigh in his article, "The Philosophy and Theology of Fyodor Dostoevsky," outlines the author's life and experience with the Orthodox church. He states that Dostoevsky's mother was a "devout" Christian who "raised him within the Russian Orthodox Church but who died when Fyodor was seventeen" (85). After his mother's death in around 1838, Dostoevsky oscillated between faith and nihilism. In 1867, his second wife, Anna Grigorevna, helped him return to the Orthodox faith and regain a structure of participating in church services. Among the elements of the Orthodox faith that shaped Dostoevsky, Leigh lists his "attendance at Mass and other services. . . [and] a devotion to icons of Christ" (86). This habitual exposure to icons, in his personal devotion and his attendance of churches that were covered with icons, Dostoevsky would have had time, starting in childhood, to reflect on the significance of these images, which portray humans as half terrestrial and half celestial and involve instinct more than rationality.

Crime and Punishment was published in 1866, the year before Dostoevsky married Anna Grigorevna. In his notebooks, as he is fleshing out the idea of what he wants the novel to be, his first point is, "1. Orthodox View. What Orthodoxy is" (474). It is evident from the first few pages of the novel that, if one of the key elements of Orthodoxy is the *nous*, or spiritual intuition, the protagonist's *nous* is desperately corrupted. He has isolated himself from everyone, lives in a cramped room, and has been "lying in a corner for days on end, thinking" (Coulson translation 2). He has become a walking disembodiment, consumed by thoughts and fear. He even convinces himself that fear is what prevents people from murdering others to obtain power, having stripped all sense of love and morality from his worldview.

As he first meets the pawnbroker, it is evident that this mindset puts a grim filter on his perceptions of reality. He notices the suspicious look the pawnbroker gives him, along with her wrinkled face, "malicious little eyes," and sickly cough (4). He ponders, "Perhaps . . . she was always like this, only I didn't notice it before." Having had little to eat for the past few days, no social contact, and murderous ideas gnawing away at him is a recipe for Raskolnikov receiving a different impression from the

pawnbroker than he had before. All of these elements work to disembody the mind and tarnish the faculty of the *nous* which allows one to see the innate value within another human being.

Unbeknownst to Raskolnikov in his deplorable state, however, is that another mode of perception is hidden beneath the surface, warring with his bleaker perceptions, subconsciously placing a golden filter on his reality. According to the first *Norton Critical Edition* of the novel, Raskolnikov's name means "schism" (ix). A schism is, according to *The Oxford English Dictionary*, "A breach of the unity of the visible Church; the division, either of the whole Church or of some portion of it, into separate and mutually hostile organizations" ("schism"). For instance, the greatest schism in the church was between the Roman Catholic and Eastern Orthodox churches, but any individual who will not submit to a particular ecclesiastical authority falls under this category. It is important to note that schisms take place *within* the church, not outside of it. Often, both sides of the debate are Christians. Dostoevsky seems to imply that Raskolnikov is not outside religion altogether but has only deviated from the organized Orthodox church. This theory aligns with the idea that the *nous* never leaves a human soul, but rather its seeming absence is only its slumber. By submitting to his nihilistic hyper-rationality, Raskolnikov has not moved into another category of being, just as a tarnished piece of brass has not stopped being brass.

Through dreams and flashbacks in the first part of the novel, the reader, and Raskolnikov himself, catch glimpses of Raskolnikov's childhood, when his *nous* was pure and he was deeply embedded in the Orthodox faith. Just after receiving the letter from his mother and helping a woman on the street, Raskolnikov has a dream about his childhood. It seems that the slow restoration of human contact in his life is allowing his former purity to haunt him. In his dream, he wanders about the old church and cemetery of his childhood, where he and his family would visit to remember relatives who had passed away. They would make a rice dish with raisins decorating the top in the shape of a cross. He reflects, "He loved this church with its ancient icons, most of them without frames, and the old priest with his trembling head" (Coulson translation 53). Everything is raw and simple in this scene. Death is associated with somber sweetness, the icons, though without frames, are precious, and even the feebleness of the priest, something Raskolnikov loathes in the pawnbroker, partakes in the dewy dream. In this childhood version of Raskolnikov, the *nous* is untainted. People and life are seen as inherently valuable, and young Raskolnikov operates from a place of instinct rather than hyper-rationalization.

The height of the instinctual side of the *nous* is seen in the second part of the story, in which a peasant beats a horse because he has a rational argument with which to do so, namely, that he owns the horse and has the right to do whatever he wants with it. While the peasant has a perfect argument, for young Raskolnikov, the value of life cannot be erased by mere logic. The little boy "pushed his way, shrieking, through the crowd to the mare, put his arms round the dead muzzle dabbled with blood and kissed the poor eyes and mouth. . ." (50). While a kiss is a general sign of affection, it could also hearken back to a veneration of an icon. If so, the kiss takes on the significance of validating the inherent value of the life of the mare that others disregard. Also, and most importantly, a kiss is inherently outside the realm of logic and is a selfless act of admiration for a being other than oneself. It is the emblem of a pure *nous*. It is no wonder that a tormented Raskolnikov would wake up from this dream profoundly disturbed, for it is not

only eerily similar to his murderous plans for the pawnbroker, but it also reminds him of his pure and innocent past that is so distant from his current morbid state.

This disturbing dream makes present-day Raskolnikov realize that he has driven himself to madness because of pure logic without any feeling or intuition to stifle it. Once he is opened again to the world of the *nous*, the spiritual and instinctual world within himself, he breaks free of the strains of heartless logic and feels alive again. He even prays, saying, "Lord! . . . [S]how me the way, that I may renounce this accursed . . . fantasy of mine!" (51). While free from what he calls "sorcery and fascination," Raskolnikov is not entirely free of superstition. He soon overhears a conversation in which people state that the pawnbroker will be alone the next evening. Then, the cloak of the night suffocates the ember of Raskolnikov's returning *nous*.

This haunting dream provides context for Raskolnikov's childhood, which makes his earlier perceptions of the pawnbroker's apartment take on a new significance. According to Aidan Hart in his book, *Techniques of Icon and Wall Painting*, one of the most blatant contrasts between icons and Renaissance art is the non-realistic depiction of proportion ("Designing Icons"). In icons, the most important person will be larger than the others, even if the iconographer must break the laws of realism. In other words, the value structure of the painter, and, presumably, the value structure of the viewer, determine the icon's proportions.

As time passes in the first few days of the story, as the slumbering *nous* within Raskolnikov awakens, objects change size. The increase in size reflects the intensifying conflict within Raskolnikov between his *nous* and his nihilistic self. His visits to the pawnbroker's apartment provide the clearest example of this evolution. During Raskolnikov's first visit, Dostoevsky lavishly employs Orthodox imagery to depict the pawnbroker's room.

First, after leaving his apartment to visit the pawnbroker, Raskolnikov is awakened from his reverie by ringing the pawnbroker's bell. Its faint ringing creates a pause in the tense narrative, as it "brought something back to [Raskolnikov's] memory with great clearness" (Coulson translation 4). According to the article, "On Bells and Their Ringing" by Holy Trinity Orthodox Cathedral, bells are a crucial part of Orthodox practice. Among several other roles, the bell is rung before every service to gather people into the church. They serve as an auditory cue to prepare one's heart and soul for the upcoming service. As the article states:

> The mighty peal of bells has an effect on our interior sensibilities, awakening our souls from spiritual sleep. . . . The ringing of bells summons up a feeling of uneasiness and spiritual anguish in the heart of the unrepentant sinner, while in the heart of the believer. . . the ringing of church bells gives rise to a . . . bright mood. One may thus determine the status of his soul by the sound of ringing church bells.

In other words, the church bells not only awaken the *nous* of the hearer but also bring to light the current state of that *nous*. Raskolnikov feels a similar uneasiness as he rings the pawnbroker's bell and begins to examine his soul. Unfortunately, instead of recognizing the bells as a recollection of his Orthodox past, he instead assumes his uneasiness comes from weakness, and brushes it off. He is unaware that the bell is inviting him to the beginning of a pseudo-church service, ironically in the soon-to-be crime scene.

The bell is only the beginning of the awakening of Raskolnikov's *nous*. Everything in the pawnbroker's room is unreasonably golden yellow. The pawnbroker herself has "fair hair, just beginning to go grey," although she is described as almost sixty years of age, the age at which no color should be left in her hair (Coulson translation 4). Similarly, the room is "bright with the rays of the setting sun," all the furniture is made of "painted yellow wood," and there are "two or three cheap pictures in yellow frames" (4-5). In Michael R. Katz's translation, even the wallpaper in the room is yellow. The time of the setting sun is known as golden hour because it makes everything around it gleam with a golden hue. In a room in which everything is yellow, this golden effect would make the entire room glow. Perhaps this glow explains why Raskolnikov thinks that the pawnbroker still has blonde streaks in her hair even at her age: her gray hair reflects the golden gleam around her.

Gold is found on almost every icon. One of the earliest icons from Russia is *The Virgin of Vladimir*, painted in about the 12th century (Sullivan, Fig. 1). It embodies the most defining characteristics of iconography. According to Margaret E. Kenna in her journal article "Icons in Theory and Practice: An Orthodox Christian Example," icons, like *The Virgin of Vladimir,* are hand-painted on wood with naturally derived pigments. Often valuable materials such as gold are placed "over the area of a halo, or over the whole icon, leaving only the painted faces and hands visible" (347). In *The Virgin of Vladimir*, Mary and Christ are surrounded by gold. The gold represents, as Kenna states, "the presence and power of God, the uncreated and incorruptible light, spaceless and timeless" (352). The golden background or haloes of an icon are its focal point, and it is the part of the icon that changes the most based on the nature and angle of the light around it. Much like the *nous*, the gold represents a part of God Himself, just as Plato understood the *nous* to be related to the intelligence behind the ordered cosmos. The gold is the shiniest part of the icon, just as the *nous* is the illuminating force that opened the eyes of the disciples to understand the spiritual essence of the Scriptures.

Fig. 1. *The Virgin of Vladimir Icon*.

Another important aspect of iconography that Raskolnikov encounters is the motif of roundness. Not only do many icons have round haloes around divine subjects, but the Orthodox church building itself is built around a circular dome in the ceiling. Even in *The Virgin of Vladimir*, one notices the soft, rounded silhouette of Mary. As Raskolnikov surveys the pawnbroker's room, the only shapes he notices are round.

He notices "a sofa with a high curved wooden back, an oval table in front of it, a toilet table with a small mirror" (5). The gleaming golden room has also conformed itself to a round silhouette, bending itself into the shape of liturgy. There are also "some chairs against the wall," but their shape is not mentioned, likely because they have square silhouettes that do not fit with the round objects elsewhere. Therefore, they are extraneous.

It is as if Raskolnikov's *nous*, though suppressed, is deeply entrenched in his subconscious. Although he is unaware of it, it is filtering every sensory experience that he has with the world outside of his cramped apartment. But again, the only significance Raskolnikov gleans from this experience is that the sun will be setting when he murders the pawnbroker. What he is surrounded by has not yet come to his conscious awareness.

A few sentences further down, Orthodoxy finally emerges into Raskolnikov's consciousness. The passage says, "In a corner a lamp was burning before a small icon" (5). Here, the gleaming fire of the sun condenses into a flickering flame, and the golden roundness of the room finds its miniature in the small icon. The small moments of conversation with the pawnbroker also awaken in his heart a sense of community and companionship, which, by the definition of his name, he has been separated from. She calls him "my friend" seven times, as if rhythmically summoning him out of his delusions.

The pawnbroker, indeed, acts as the subject of an icon herself, not only because of her golden surroundings. According to Margaret E. Kenna, subjects of icons appear to be constantly gazing at the viewer (356). Each saint has a specific meaning attached to their gaze, which can range from judgmental to encouraging. As Kenna states, "[T]he saint's side of the dialogue, so to speak, is known, and it is the onlooker's response that is uncertain" (357). Therefore, the gaze draws the viewer in to participate in the icon and the truth that is depicted in it. One cannot view an icon properly and remain a passive onlooker. The pawnbroker has "malicious little eyes," or so they appear to Raskolnikov's tainted perception. Perhaps they are meant to be piercingly judgmental to awaken Raskolnikov's *nous*. She talks with Raskolnikov "without taking her eyes from his face" (Coulson translation 4). It is only after noticing the peculiarity of her stare, and her invitation to enter her apartment, that Raskolnikov surveys the room behind her, the room that has shaped itself into an icon. Perhaps her gaze draws him in from the beginning, and he, with his tarnished perception, is unaware of it and blames this effect on her uncanny mistrust.

The greatest hurdle to classifying the pawnbroker as an iconographic figure is the grotesqueness of her appearance and even her demeanor. She is described as having greasy hair, wrinkled skin, and a constant cough. She dominates her sister's, Lizaveta's, life, and even beats her (52). It seems as if the world would be a better place without the pawnbroker in it. Raskolnikov is not the only one who reached this conclusion. Earlier, another student at a tavern said he could "kill that damned old woman and rob her, without a single twinge of conscience" (55). His argument, much like Raskolnikov's, is that killing her, selling her possessions, and giving the proceeds to the poor would be more beneficial than preserving her life. This idea, at least, is the outer shell of the argument, while the true desire of Raskolnikov and the student is to see the Nietzschean "great man" overpower all weakness and morals (56). Perhaps this underlying motive is why the pawnbroker's gaze is so penetrating to Raskolnikov. It is as if in this pseudo-church service in her apartment (bells begin services), his *nous* responds in the same way that the student responds when the

officer asks whether he would actually murder the woman he so despises: "Of course not! . . . This is not a question of me at all!" His rant is glass that shattered when placed beside his conscience.

In the same way, the pawnbroker continues to call Raskolnikov "my friend" and gives him an icon-like stare, forcing him out of his thoughts and into participation with reality. Even though Raskolnikov, at first, only interprets everything from his nihilistic perspective, as he leaves the pawnbroker's house, he exclaims out of nowhere, "How could such a horrible idea enter my mind? What vileness my heart seems capable of!" (6). He suffers from intense agony, presumably from his conscience, and finds himself longing to connect with people and end his isolation in the next chapter. There is a momentary healing of the *nous* that occurs as if it has been dusted off to be made as immaculate as the pawnbroker's gleaming apartment. The healing stems from a reconnection with community and Orthodoxy, a brief pause in the schism. It reawakens his conscience, his *nous*, so that it can clearly see the divinity and inherent value, symbolized by gold, in every person, including those who he sees as disposable. His dreams are haunted by this concept seen through the lens of his childhood, as described above. However, this respite is brief, for the next day, Raskolnikov carries out the murder.

Up to the point of the murder itself, Raskolnikov continues to reason with himself, making a perfectly logical argument for committing the murder. However, it seems that an irrational impulse is at the heart of his quest. The narrator states, "It was as if a part of his clothing had been caught in a wheel of a machine and he was being dragged into it" (60). Raskolnikov even goes as far as being so determined to follow through with the crime that he would be willing to complete it with the help of the devil. Even if he is rebelling against the instinct of his *nous*, he has not escaped from spiritual and irrational realities, just as his nihilism does not break him fully from Orthodoxy.

As he approaches the apartment to enact the murder, the Orthodox imagery is still prominent, if altered in significant ways. He has to ring the bell more than once before the pawnbroker answers, and, when he sees her, he notices her wrinkled skin, bare head, and greasy hair that is "just turning grey" (65-6). It is all the same imagery as before, just vapid without any reference to yellow or gold. Even when the pawnbroker's eyes seem to see into his soul and his schemes, Raskolnikov has soaked all the golden, ethereal elements out of the room with his axe.

After the murder, Raskolnikov steps into the pawnbroker's bedroom, and "it was a very small room; on one wall was an enormous case of icons" (66). The walls seem to close in on the murderer, but yet, the icons have grown in size. Whereas at his first visit, he notices one small icon, here, there are multiple icons that seem to overtake the room. He simply cannot get rid of them entirely. Even as he uses the keys to unlock the chest of drawers, the jingling of the metal almost makes him bolt out of the room, as if he cannot rid himself of the ringing of the bells, either. As he returns to the pawnbroker's corpse and cuts the cord from her neck, he finds a purse and two objects that begin the next phase of the awakening of his *nous*: two crosses.

The brass and cypress crosses Raskolnikov finds around the pawnbroker's neck initiate the second phase of Raskolnikov's spiritual journey. After Dostoevsky mentioned in his notebooks that the chief aim of *Crime and Punishment* would be to explain the essentials of Orthodoxy, his second aim was to demonstrate that "There is no happiness in comfort. Happiness is produced by suffering" ("Dostoevsky's

Notebooks" 474). For this purpose, Dostoevsky creates Sonya. She has the purity of the pawnbroker's sister, Lizaveta, combined with the strength of the pawnbroker herself. If the pawnbroker makes the divine grotesque with her appearance and treatment of Lizaveta, Sonya makes the grotesque divine in the way that she turns herself into a prostitute to keep her family afloat.

In the Constance Garnett translation, Sonya is described as having "fair hair," even without being in a room with gleaming wallpaper (40). It seems as if she simply radiates the gold of an icon, no matter the room she is in. Dostoevsky specifically mentions that Sonya "had to carry a prostitute's yellow card" (Coulson translation 15). In perhaps the greatest paradox of the novel, this yellow card is the reason why Sonya lives in a disgraceful position, separated from her family, and, yet, it is the evidence that she sacrificed her own body to keep her family afloat in the face of her father's alcoholism. If the gold of icons can represent the *nous*, Sonya's total selflessness with regards to her family, and later to Raskolnikov, means she takes the grotesqueness of the yellow card and turns it into gold. In this way, she is the opposite of the pawnbroker, who made the divine grotesque with her unseemly actions and appearances. Sonya turns the grotesque into the divine.

The pawnbroker brings death and sacrifice into the plot unwittingly by her death, with no discussion of resurrection. Sonya lives in the liminal space between death and resurrection and helps Raskolnikov realize that it is only through death that one can experience resurrection. Both Sonya's parents die. After her mother, Katerina Ivanovna's, death, Raskolnikov attends the mass of the dead for the first time in years. Other than the priest's reading, the service is silent. Sonya remains in prayer. And, as in the pawnbroker's room, "The room was bright with sunlight" (372). Dostoevsky does not specify the time of day in which this mass occurs, but he does say Svidgarylov ordered for it to be performed twice a day. From the phrasing used in this passage, it is plausible that this service is happening in the morning or early afternoon, as opposed to the late evenings in which Raskolnikov visits the pawnbroker's room. If so, this sunrise service encapsulates both death and resurrection and perhaps that is why it torments Raskolnikov's *nous*. After the service, Sonya, with the most selfless and untainted conscience perhaps in all of literature, "grasped both [Raskolnikov's] hands and leaned her head on his shoulder for a moment" (372). This gesture takes place after Raskolnikov confesses to murdering the pawnbroker and Sonya's friend, Lizaveta, and yet she is not repulsed by him because she sees the inner kernel of goodness within his soul. Raskolnikov took the lives of the two women out of pure rationality that denied the inherent value of their lives. Here, Sonya does the opposite, irrationally insisting on Raskolnikov's value as a human being in spite of all the logic that suggests the contrary. Earlier in the novel, Sonya read the story of Jesus raising Lazarus from the dead to Raskolnikov (275). It is because of her unwavering commitment to him, symbolized by the intertwining of death and resurrection in the mass for the dead, that Raskolnikov has a chance of restoring his *nous*, of becoming a sort of Lazarus.

When Raskolnikov confesses to Sonya, she asks him if he wears a cross. She wishes to give him a cypress cross as she keeps her brass cross. She received the brass cross from Lizaveta, to whom she gave her icon in exchange (356). Sonya's icon is either the small icon that Raskolnikov first saw in the pawnbroker's room, or it is in the pawnbroker's "enormous" case of icons. Either way, its penetrating gaze witnessed the murder. Sonya keeps the brass cross, which is made of material similar to gold in the way it

reflects light. The wooden cross is reserved for Raskolnikov, which more closely resembles Christ's cross, made of wood. The material also comes from the death of a once-living cypress tree, which ironically ties it back to the murders. Sonya believes that if she and Raskolnikov both wear crosses, they will be able to distribute Raskolnikov's suffering which is necessary for his resurrection between them.

Sonya tells Raskolnikov, "Go at once, this instant, stand at the cross-roads, first bow down and kiss the earth you have desecrated, then . . . say aloud to all the world: 'I have done murder." Then God will send you life again" (355). He must, in other words, venerate the world as an icon. He must see the inherent divinity within every part of the world, even the dirt on the ground. Then, he must confess his actions. However, Sonya does not tell him to say that he is a murderer, but rather, that he has "done murder," thereby separating Raskolnikov's identity from his past actions.

Although a considerable amount of time elapses before Raskolnikov actually confesses, and the result of his trial means he is sent to Siberia, it seems that God does indeed give him the life Sonya said he would through his suffering. Sonya journeys with him to Siberia, and, after he is tormented with existential questions of the meaning of life in the midst of his terrible suffering, he finally, wordlessly confesses his love for Sonya. In his weeping in front of Sonya, the final tarnished spots of his *nous* are restored:

> They were both pale and thin, but in their white sick faces there glowed the dawn of a new future, a perfect resurrection into a new life. Love had raised them from the dead, and the heart of each held endless springs of life for the heart of the other. . . . he was not consciously reasoning at all, he could only feel. Life had taken the place of logic and something quite different must be worked out in his mind (463-4).

Love, the visceral awareness of the golden, ethereal goodness within another human being that takes the mind off itself and intertwines the heart with another heart, finally finds its way into Raskolnikov's soul. Just as young Raskolnikov, when he sees the mare being beaten to death, runs to it and weeps out of concern for the innocent horse, here, grown-up Raskolnikov allows himself to feel a similar, non-rational love for another being. His name, "schism," is less like a label and more like a memorial of a distant time, for the schism in which Raskolnikov found himself at the beginning of the novel, full of hatred and fear, has now ended. Sonya is the ultimate icon whose selfless gaze invites Raskolnikov to return to the golden Orthodoxy of his childhood. In the end, Raskolnikov finds fulfillment through his suffering, just as Dostoevsky intended. And, just as Dostoevsky's second wife, Anna Grigorevna, brought him back to Orthodoxy after his schism and Siberian exile, perhaps Raskolnikov is his memoir, and Sonya his love letter to the Sonya in his own life, who resurrected him.

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One Foot in Both Worlds:
Lu Xun and Western Influences During Chinese Modernization
Caleb McKinney

Straddling the line between two different worlds is not easy, but this is the life Chinese author Lu Xun lived. His unique experiences were the outcome of growing up at the verge of Chinese Modernization, in a period of change when the country grappled with how to utilize Western influences and re-examined traditional Chinese culture. Lu Xun's childhood was marred by his father's poor health. As such, much of his time was spent procuring bizarre medicines recommended by a traditional doctor. The ingredients for these recipes included items such as aloe root dug up in the winter and sugar cane that had endured three years of frost (Xun et al. 19). The remedies were based in traditional Chinese medicine, but they were of no help to his father, and his death had a life-altering impact on Lu Xun. Afterwards, he became determined to go into medicine, abandoning traditional Chinese teachings to learn Western medical practices in Japan. His time in Japan was brief, however, after he encountered a photograph of Chinese people he had once known watching a public execution for entertainment. This caused him to end his medical career, realizing that "citizens of an ignorant and weak nation, no matter how healthy and sturdy their bodies, can serve as nothing more than subject matter for or spectators of meaningless public displays" (Xun et. al. 19). In his return to China, he would begin writing short stories which utilized both his Western and traditional knowledge to promote social change in China. One of his earliest pieces, "Diary of a Madman," has been interpreted in multiple ways, including in support of classic Chinese culture and in favor of Western modernization. But perhaps Lu Xun acknowledges the dangers and benefits of both worldviews in this short story. A better interpretation may lie in support of taking beneficial parts of Western culture while not abandoning traditional Chinese teachings, reflected in Lu Xun's life experiences and his tendency for complex writing.

This work began his pursuit of social change in China via his writing. His time in Japan had familiarized him with Western teachings, but his early life in China was based solely on Chinese tradition. His writings attempt to make sense of these two distinct philosophies and how they should be utilized to better serve Chinese society. Lu Xun incorporates both traditional Chinese remedies and his knowledge of Western treatments into "Diary of a Madman." The contrast between the two, especially the use of Western clinical treatments for madness, plays an important part in the layers of commentary in the work. In "'In Search of New Voices from Alien Lands': Lu Xun, Cultural Exchange, and the Myth of Sino-Japanese Friendship," Eileen Cheng writes that employment of a Western-based diagnosis for madness explores the fear that the influence of Western ideas in Chinese modernization would only "legitimize systems of oppression" (Cheng 595). This is in line with Lu Xun's other short stories, which reveal that certain Western outlooks on science and individuality can be "little more than tactics of 'civilizing' oppression" (Cheng 595). In the short story, the madman is "cured" by conformity to the cannibalistic culture he fears in the beginning of the text.

The fear of Western science being used to enforce compliance to a supposedly more advanced culture would have been especially relevant at the time Lu Xun wrote the story. Theories such as social Darwinism proposed that non-white "races" were evolutionarily underdeveloped. Many atrocities committed against supposedly uncivilized peoples were justified as saving them from themselves. Instead of resolving the already present issues of Chinese society, modernization may only have added new injustices. Many readers have interpreted the main character's paranoia as a warning against blindly conforming to modernization without preserving China's own national heritage and culture. One could interpret his literal fears as a figure of speech, that the madman, whose madness represents Chinese culture, would be devoured by society if he gave in to the clinical Western remedies for his supposed disease. The text was a reminder that while Western ideas may have come with positives for Chinese society, there were dangers to recklessly abandoning the previously established ways of life.

However, the story is complex and multi-faceted. Many readers, especially Chinese readers, "believe that the madness in his short story is prophetic rather than clinical, and so read it allegorically" (Ma 358). "Transculturation of Madness: The Double Origin of Lu Xun's 'Diary of a Madman'" by Xiaolu Ma proposes that the specific words used in the text to describe madness are extremely important. Western definitions of madness moved east with modernization. In China, madness was traditionally seen as a lack of balance in the body rather than a lack of reason, and *kyōjin*, one Japanese word for madness, held prophetic meaning (Ma 354-355). In the classical Chinese style, *kyōjin* refers specifically to defiant people rejecting social norms (Ma 354-355). Ma writes that the language used in Lu Xun's story "reveals an indisputable connection between the story and classical Chinese culture" (362). This single word carries vast amounts of cultural context which is difficult to portray outside of the Chinese language. This created the interpretation in which the text is criticizing traditional Chinese society through the madman's new view. One night, as the madman tears through books containing Chinese history, he begins to see in the pages "scrawled all over…two words—'Eat people'" (Xun). This and other references, along with the very specific wording, have led to a popular interpretation of the short story being a "searing indictment of traditional culture" (Cheng 595).

Instead of fears that modernization will instill destructive, indifferent societal norms, this interpretation reads that traditional Confucian society is the danger, and that any sense of kindness was merely a cover-up for its cannibalistic nature. Confucianism places an emphasis on a strict adherence to rules, respect for the traditions of one's ancestors, and keeping up rigid social appearances. In this interpretation, Lu Xun appears concerned that these outward shells were hiding and disregarding the dangers of such a society. The specific context of the word *kyōjin* especially implies that the madman's point of view was an opposition to political and societal norms, not a deficiency of logical thought. Interestingly, this interpretation is nearly the exact opposite of the one mentioned previously. While the two interpretations may seem at odds, Lu Xun's writing has many layers and is intentionally ambiguous. The two perspectives on the story may be two halves of the same coin, as Lu Xun acknowledged that the solution to healing Chinese society was not black-and white.

Lu Xun understood that modernization and Western influences had negatives. Still, he was hopeful that the "transformative properties of cultural exchange" (Cheng 590) could ultimately improve Chinese

society, and that grafting the two distinct ideologies together—not replacing one with the other—would improve the nation. There were benefits, for example, to advanced medical technologies which the West had developed. However, there are also positive aspects of Confucianism such as a focus on order and respect. Lu Xun's madman being interpreted as a prophet rebuking his own people is no accident, nor is the warning of Western medicine's promotion of harmful ideas. Rather than the two interpretations of Lu Xun's text opposing one another, it is very likely that he intentionally included both meanings. In "Diary of a Madman," it is likely that he advocates for a middle-of-the road approach to social change rather than abandoning all tradition or refusing any modernization, supporting, as Cheng refers to it, "Grabbism"—taking certain positive ideas from other cultures and leaving ones which are harmful (Cheng 589).

Ma writes that "the power of Lu Xun's 'Diary of a Madman' lies in its restless tensions, the tension between the old and the new, the East and the West. These tensions emerge from the author's word choices. His employment of a given lexicon embeds ambiguity into the narrative and ushers his readers into allegorical readings" (363). His work does not shy away from the difficulty of reconciling both cultures. It is likely not even meant to suggest a one-size-fits-all solution in itself, but to bring thought to the state of Chinese society, the benefits and dangers of modernization, and to ask readers to wrestle with the same questions Lu Xun did.

In light of Lu Xun's message, of his desire to change Chinese culture, what is his legacy? In China, he is remembered as the father of modern vernacular Chinese literature. Despite this, Lu Xun saw little success in his work in his lifetime. His bold writings went against the Kuomintang, the party in power during Lu Xun's literary career, and his messages were suppressed as a result. However, near the end of his life, his writing, which expressed the need for change in Chinese society, and his mission as a prophet who would inspire change in the hearts of Chinese citizens, came to be used by the Chinese Communist Party to stir up rebellion among the proletariat. Mao Zedong turned Lu Xun into somewhat of a deity among authors after China's communist revolution (Ke 13). Lu Xun's writings, read in a political context, were ripe for use by the Chinese Communist Party due to their revolutionary themes of fighting for social change.

Paradoxically, however, not even Lu Xun, the Father of modern Chinese literature, was safe from censorship under the new Communist government. Early in Mao Zhedong's rule, Lu Xun's love for Soviet literature had made him well educated in Marxism, a quality useful to Mao Zhedong (Ke 16). However, after relations between Soviet Russia and China soured in the 1950s, some of Lu Xun's work related to his affinity for Russian literature began vanishing from textbooks. One example of this is the story "The Comedy of the Ducks," which was an allegory for Lu Xun's friendship with the Russian Eroshenko, which was censored in 1952 (Ke 18). The success of Lu Xun's works in China, and his legendary status, is at least in part due to its political use by Mao Zhedong and the Chinese Communist Party. There is tragic irony in the fact that the works of an author so revered in China would eventually be censored by those whom his writings supported.

Lu Xun set himself the task of changing the minds of the entire Chinese nation. However, he knew that with this change would inevitably come loss, and that any positive growth would have to be approached carefully and slowly. He understood the paradoxical nature of "The Madman's Diary" and its seemingly conflicting meanings, including them intentionally. David Wang expresses that "all these tensions testify

to the eternal interplay between reality and vision/illusion, between realism and allegory" and that the appeal of Lu Xun's work is "not that he manages to smooth out these tensions but his tragic awareness of an inability to deal with them" (Wang 40). Understanding Lu Xun's work does not rest on a single interpretation because he himself did not know of one single answer to the problems facing Chinese society in his day. But he knew that answers did not lie fully with adhering to strict tradition or embracing radical Western ideas fully. Yet, he felt burdened to write in an attempt to reach as many ears as possible, to, if nothing else, grant some of his madman's clarity to Chinese citizens so that they too could question the nature of their society and how it might be improved.

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Subvocalization: A Critical Cognitive Process for Reading Comprehension
Ruqiyyah Muhammad

Abstract

Subvocalization occurs in one's mind as they read. When a person subvocalizes, they are reading internally, without externally stating the words. This review aims to analyze subvocalization and determine if current research supports that the lack of it is associated with learning difficulties. Although it is a heavily researched topic, few researchers have reviewed its associations or connections with learning differences. Many, however, have agreed that it has unparalleled effects on reading comprehension and recollection. It is possible that the lack of such a critical function may be associated with the development of a learning disorder. This review of relevant research has two conclusions. First, subvocalization is as equally important as oral reading. Secondly, individuals with learning and speech deficiencies may have significant difficulties in both subvocalization and oral reading. This impacts their ability to comprehend and recall information. This does not support or invalidate if the lack of subvocalization is correlated with speech and learning difficulties but does support that it is a fundamental aspect of reading and learning. There is more research needed to determine a correlation between subvocalization and learning difficulties.

Keywords: subvocalization, inner reading voice (IRV), internal dialogue, inner speech, subvocal speech, cognitive processes, cognitive skills, learning differences, learning difficulties, and silent reading.

Subvocalization, inner reading voice, internal reading, or silent reading are all terms that describe a common and integral cognitive process. Subvocalization occurs when individuals read silently and are processing the words internally without explicitly stating the word. Subvocalization allows one to read and process the word without saying the word out loud. Our brains allow us to see and process words without verbalizing them externally. This important and fascinating function has been a heavily researched topic since the late 19th century (Cleland and Davies, 1963). Since then, there has been significant documentation on the reality of subvocalization and how it occurs. Many researchers concur that subvocalization allows individuals to comprehend and recall information. Due to its important role in processing information, researchers should study if the lack of subvocalization is associated with speech and language difficulties.

It is reasonable to consider that a vital aspect of comprehension can be associated with difficulties in learning and comprehension. This association is important to understand for a few reasons. First, the lack of information on the causes of speech and language disorders continues the stigma that individuals with learning difficulties are "lazy" or "unintelligent" (Haft et al., 2023). Individuals with learning differences are not "unintelligent," they simply require additional resources and opportunities to comprehend information and learn. Secondly, there will continue to be a lack of resources available, especially if future interventions should include teaching subvocal techniques (Swanson et al., 1983). Lastly and most importantly, many individuals with learning difficulties struggle academically (Haft et al., 2023). The study of subvocalization and its effects can help in not only psychology but in education and related fields. Understanding the importance of subvocalization may improve the lives of many who have difficulties in speech and language.

Subvocalization is a cognitive process that facilitates covert reading. It is similar to inner speech or internal dialogue; however, these terms are not interchangeable. Inner speech does not only occur in

reading, but it also occurs throughout many individuals' daily lives (Morrin et al., 2020). It allows them to think, consider, decide, and complete tasks. For example, while completing a mathematical equation, some may internally recall the steps of "PEMDAS" to calculate the problem. This allows the individual to speak within their own mind. However, in subvocalization, the individual is internally reading the words without speaking aloud. For example, subvocalization is seeing and hearing the word "red" in this sentence, without saying aloud "red."

Understanding the importance of subvocalization is necessary to understand the stigma associated with learning disorders and the effects it can have on one's self-esteem and academic development. In an article by Haft and colleagues (2023), the authors discuss the stigma of learning disorders and how this is associated with academic difficulties. One of the key elements of this article is that society tends to be judgmental and label those with significant difficulties or differences as "lazy" or "unmotivated." These labels are inaccurate and misleading. An example of an accurate and inclusive term for these individuals is neurodivergent (Baumer and Freuh, 2021). These labels can affect one's self worth and self-esteem, which causes many individuals to feel that they do not have the capabilities to perform well in school or in other aspects of life.

The aim of this review is to examine relevant literature on subvocalization and its connection to speech and language difficulties (e.g., dyslexia). Many researchers have studied subvocalization in various populations, including individuals with speech disorders, learning disorders, and individuals who did not have significant difficulty in reading or in speech.

Subvocalization and Speech/Language Difficulties

In 1983, H.L. Swanson compared 12 individuals with learning disorders and 12 individuals who had not been diagnosed with a learning disorder. The participants were given a test to read words aloud and silently. Swanson suppressed subvocalization by having participants count simultaneously. This study found that both groups had similar reading comprehension when using subvocalization. This study concluded that subvocalization is a necessary aspect for reading comprehension across groups, regardless of disability. He explained that subvocalization is more important for individuals with learning disorders and is especially useful for their reading comprehension. This article also identified that it is possible that individuals with learning disability have certain limitations in language skills that could be correlated with them not using subvocalization compared to their peers that do not have a learning disorder.

Later in 1985, Miller and Smith examined the differences in reading comprehension among individuals with various reading levels. This study used ninety-four students in the second through fifth grades. The researchers compared the differences in silent and oral reading among the participants. They were asked to read a grade appropriate passage. Then, the participants were asked inferential and literal questions. Miller and Smith (1985) found that oral reading enhanced the comprehension of the students who had reading difficulties. They concluded that individuals without reading difficulties had similar levels of comprehension in silent and oral reading. This article suggests that both oral and silent reading are valuable methods for comprehension.

A few years later, Bosshardt (1990) compared subvocalization between stuttering and non-stuttering individuals. Bosshardt hypothesized that stutterers would have a slower rate of subvocalization than non-stutterers. He examined the assumption that skilled readers do not use subvocalization as much as unskilled readers. Bosshardt (1990) tested fifty-nine school aged children and thirty-nine adults. The participants were instructed to read half the words silently and half the words aloud. This study found that the children who stuttered had a longer subvocalization time compared to children who did not stutter. This study concluded that stutterers did subvocalize slower than non-stutterers. He also found that there was a significant difference in silent reading for children than in adult stutterers.

A recent study by Robinson and colleagues (2019) studied the importance of oral and silent reading. This article investigated if different reading methods were a factor in students with specific learning disorders (SLD) to comprehend information. The researchers used participants from the second, third, and fourth grades and recorded their progress over a two-year period. The students were all attending a remedial treatment program in a private school. They were given passages to read silently and aloud. The researchers measured subvocalization by timing the students as they read the passages. Then, asked the participants to recall the information they read in only one minute. The researchers calculated the results by analyzing the accuracy of the student's recollection. They found that oral reading improved the second and third graders' comprehension and recollections of the information. In the late elementary students, they had similar scores in both oral and silent reading. The findings of this research indicates that subvocalization, like all aspects of development, improves with age, and individuals can use it more effectively as they mature. The findings of this study correlate with the conclusions drawn by Swanson (1983), Miller and Smith (1985), and Daneman and Newson (1992) that subvocalization is a critical aspect for reading comprehension.

Subvocalization and Reading Comprehension

Other researchers have expanded this study and examined subvocalization and its importance for reading comprehension. This is exemplified by Daneman and Newson (1992) who used two experiments to study comprehension and subvocalization. The goal of this study was to examine subvocalization's role in comprehension and recollection. In the first experiment, there were 24 participants. The participants were told to speak while reading, which tremendously interfered with their ability to subvocalize. In the second experiment, there were 48 participants. Each participant had to read while either tapping, counting, or without interference. Daneman and Newson (1992) concluded that performing tasks that interfered with subvocalization impacted both comprehension and recollection. This study supported the idea that subvocalization is highly important for reading comprehension.

Freese (1996) compared subvocalization and reading rates to level of comprehension. This study used participants ranging from 8 to 15 years of age. The goal of this study was to examine the relationship between subvocalization and comprehension and reading rate and comprehension. Freese recorded both psychological and physiological processes using an electromyograph (EMG). The EMG recorded non-speech patterns like coughing, clearing throat, and swallowing. As they were being recorded, the participants were asked to read a passage silently. The results from the EMG illustrated that the participants still used physiological responses even when using subvocalization. The study suggested that

subvocalization has a more pivotal role for children than for adults. Freese explained that children learning to read should use subvocalization more than adults because this process aids them in comprehending the words better and absorbing the information being presented.

Several years ago, Vilhauer (2017) utilized the term "inner reading voices" (IRVs) instead of subvocalization to study this skill. Vilhauer used a questionnaire that asked individuals specific questions about inner reading voices. This study recruited 574 participants, however only 414 answered each question. The participants were between the ages of 18-65. The results indicated that the female participants reported having an IRV more than males. Vilhauer also explained that the inner reading voice can change from being in one's own voice to the voice of a friend, family member, or acquaintance when reading a message from that person. They concluded that most of the participants said that their IRV was "automatic" and not controllable. Only 19% reported that they could control when they used their inner voice.

Conclusion

Subvocalization is a key aspect in comprehending information. The current literature on subvocalization suggests there is an association between subvocal abilities and learning differences, but there is still more to study. Over the last thirty years, researchers have analyzed and developed many theories that have shaped our current view of reading. Now, for example, psychologists understand reading as a process of planning, seeing, and executing, rather than merely speaking words as they are seen. Many researchers have studied this and agree that reading is both a necessary and complex skill.

Although researchers have studied learning disorders and reading difficulties there is still a lack of research on possible causes or explanations for why some people do not possess subvocal skills. Based on the current research, we cannot confirm or dismiss that the lack of subvocal skills is a precursor for learning difficulties. A common limitation in recent research is that there were limited methods of testing subvocalization because it is an internal skill. This may have impacted the results because the researchers cannot support the participants recollections for accuracy. Most studies depended solely on the accounts of the participants which may have altered the results. It is possible that the participants' recollections of utilizing subvocalization was not accurate. Future research could use neurological exams to confirm how subvocalization occurs while individuals are reading and learning information. Future research should also repeat the methods that Daneman and Newson (1992) did and study how to suppress subvocalization, and observe how not possessing this skill can affect one's comprehension.

It is possible that with extensive research on subvocalization, the lives and academic skills of individuals with learning disorders will improve. This was supported in many of the articles that discussed learning disorders. Subvocalization is a necessary skill that can benefit reading and comprehension.

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Level of Choice and Narrative Impact:
How They Influence a Video Game Player's Understanding of Space
Kristene Peterson

Video games have evolved over the decades into more than just the simple challenges of timing and puzzle solving. Numerous narrative-based video games (NBVGs) such as *The Last of Us*, *Bioshock*, or *The Legend of Zelda* franchise thrust players into complex and realistic environments with rich and engaging stories (video game narratives) where attunement to what is occurring around them and within the story is just as important as pressing the correct button on a controller. Video games can feature vast landscapes with the freedom of exploration and seemingly unlimited options in gameplay and story progression based on the player's decisions and actions. In contrast, non-narrative-based video games (non-NBVG) strictly limit the ability to explore spatially, as in *Super Mario Smash Bros.*, *Tekken*, *Pac-Man*, or *Tetris*. These more stringent games only offer a set of allowed actions to choose from with little to no presented storyline.

The element of interactivity (Qin et al., 2009) separates NBVGs from other narrative modalities. Interactivity is the amount of player choice, and the amount of impact players have on the narrative (Ness-Maddox, 2022). There is a spectrum regarding NBVGs in which player choice and the narrative impact vary in four general combinations: high impact on the narrative/more player choice, high impact on the narrative/less player choice, low impact narrative/more player choice, and low impact on the narrative/less player choice.

In high impact on the narrative and more player choice games such as *The Outer Worlds*, the player is given almost limitless options for progressing the game and consequently becomes a co-creator of their own narrative with the game designers. In high impact on the narrative and less player choice games, the player must complete a task related to the narrative but can choose how to complete the task. For example, in *The Last of Us*, a player cannot leave the scene when confronted by a group of infected zombies, but the player can choose how to progress past the obstacle and continue the narrative.

In low impact on the narrative and more player-choice games, depending on the game's design and how much control players have, players can choose to act outside the game's narrative. For example, in *The Legend of Zelda: Breath of the Wild*, within the overarching narrative, the player has a variety of tasks or quests to help them progress through the narrative. Because of the game's open-world design, the player can choose to ignore those tasks and explore the game's environment. However, if the player completes the necessary tasks to progress the narrative, the narrative always completes with the same outcome. While the player has almost unlimited choice in the game, they have little impact on the narrative outcome.

In NBVGs with low impact on the narrative and less player choice, such as choice-based, reaction time NBVGs (e.g., *Life is Strange*), players have structured and limited freedom to choose how to interact with the game and progress the narrative. In these games, the narrative progresses much like film until the player faces time-sensitive, multiple-choice options for their character's actions or dialogue. These choices

then impact which events players see play out in the narrative, which can be limited. For example, in the original *Life is Strange*, regardless of the player's numerous choices throughout the game, the narrative ends in only one of two ways.

While navigating through a virtual world, the player is guided by storyline cues and the options of actions available. There are boundaries in all games, but some are broader than others. However, no game has infinite space or infinite options. The variations of the two paradigms of freedom of player choice and the impact of the video game's narrative give rise to questions of how they affect a player's spatial awareness. Uncovering how a player understands the space they experience while playing a video game concerning player choice and narrative impact may reveal conscious and unconscious cognitive processes of which we are unaware.

Schubert (2009) identified spatial presence as an unconscious cognitive process that the player is simultaneously conscious of. This anomaly, highlighted in the article, identifies a gap in knowledge and understanding of this duality. In the study, Schubert poses that future approaches must include a cognitive theory of spatial presence and assumes that spatial presence influences judgments, decisions, and behavior. Using questionnaires to assess spatial presence concerning media in this empirical and quantitative study, Schubert opens the door to new questions and hypotheses to explore spatial cognitive processes in video games, books, and text. While this study only examines spatial presence, Schubert suggests that how we experience space in video games is subject to numerous factors embedded in the game.

Johnson's 2017 literature review discusses the integral element that video game animation fulfills. Johnson describes the intricate processes by which game developers create environmental effects to enable game players to become cognizant of their agency regarding how objects, characters, and spaces respond to their actions. The fading in and out of the game world, the increased detail of objects as the player gets closer, and an increased sense of movement through space gives the player a higher understanding of the in-game environment. Narrative progression is also noted to be dependent on environmental prompts in the form of the vast and expanding landscapes of NVBGs. Considering how game development has advanced to include environments that influence players to alter their gameplay in response reveals a need to know the mechanics involved in processing this extraneous spatial or environmental information.

Clemenson et al. (2019) examined how spatial training and expertise in the video game *Minecraft* might improve hippocampal-dependent memory and elicit structural changes in the hippocampus. In this pretest/post-test experiment, participants were evaluated using the lure discrimination index (LDI) of the mnemonic similarity test (MST) designed by Kirwin and colleagues in 2013. This test is used to detect memory decline associated with age and function of the hippocampus. Participants played *Minecraft* in either building-focused or exploration-focused scenarios, and these conditions were compared. The results are mixed. The improvements seen in hippocampal-dependent memory of the building group were inconclusive; however, the findings in the free spatial exploration (i.e., free roam) condition indicated hippocampal memory task improvements. These findings suggest that player choice (i.e., player control) and spatial exploration can affect the players' cognitive processing of the environment of the virtual world.

Caglio and colleagues (2009) set out to determine if video game training was correlated with memory improvement and an increase in fMRI signals in hippocampal and extrahippocampal areas of the

brain. A case study participant with a traumatic brain injury played a simulation driving game in a virtual town in 15 one-hour sessions weekly for 3 weeks with pre- and post-fMRI and standard neuropsychological evaluations conducted. Findings suggested that intensive video game training improved the participant's verbal and spatial short-term memory learning, with post-learning improvements noted at the 1-month and 2-month follow-up testing.

Researchers state that future studies with a larger group of subjects would be beneficial in generalizing these findings. Cognitive mapping of a player's movements with the virtual world triggers parts of the brain much like a person walking through a neighborhood does. In determining how the brain processes navigation through a video game, we can see more evidence of how the in-game environment affects a player's actions.

This empirical and quantitative study by Balakrishnan and Sundar (2011) examined the differences in the level of spatial presence attained between the ability to navigate throughout a virtual world versus the impact of a narrative. In a between-subjects study, participants ($N = 240$) experienced 16 manipulated variables (8 for navigation effects and 8 for narrative effects) with pre-tests and post-test questionnaires. Findings indicated that the conditions in which participants had greater levels of navigational ability experienced higher levels of spatial presence over the narrative conditions. Conversely, conditions emphasizing the narrative in a video game reduced spatial presence. As with Clemenson et al. (2019), these findings imply that video game conditions that allow for greater player choice, specifically more choice to explore the video game environment, with fewer narrative constraints, will increase spatial presence.

Wang et al. (2018) investigated the changes in perceptuo-motor associations connected to virtual environment-based spatial knowledge as a result of retrieval demands and involvement in virtual navigation. This empirical and quantitative study aimed to investigate differences in individual's abilities for spatial information retrieval in real life. Two experiments were conducted, one with novice video game players and the other with expert video game players. The participants played a virtual environment game and were instructed to explore freely to retrieve spatial knowledge. Post-tests were administered to evaluate the spatial knowledge the participants had gained. The results of the two experiments conducted in this study revealed that novice video game players had more difficulty acquiring spatial knowledge without semantics. In contrast, experienced game players performed at a higher level without semantics.

Using an online survey in a qualitative study, Yesiltepe and colleagues (2021) set out to find whether computer models of saliency were tied to landmark saliency. Participants were asked to watch a video from a spatial navigation video game (*Sea Hero Quest*) and to pay attention to the environment while in a moving boat. The rate of perceived landmark saliency was rated. There was no correlation between subjective and objective saliency data, indicating that passive observation does not predict individual reports of visual attention to landmarks.

Havranek and colleagues (2012) conducted a within-group experiment investigating spatial presence, the feeling of actually being in a virtual environment. Perspective and agency were the manipulated variables. The perspective variable was manipulated as each participant played a video game from a first-person or third-person perspective. The agency variable was manipulated as either the player is in control of the actions in the virtual reality environment or simply as an observer of gameplay. The

study aimed to determine if these manipulations would result in differing activity levels within the parietal and frontal brain areas using electroencephalograms (EEG). The experiment results suggested that those with agency within the game experienced more significant levels of SP than in other conditions. This implies that agency, or player control, may influence understanding of the video game environment over perspective.

Ventura et al. (2013) conducted a correlational study to examine a new assessment tool, the Virtual Spatial Navigation Assessment (VSNA), to measure environmental spatial ability using action video games. The focus was to develop a deeper understanding of how spatial ability can help to improve students' achievement in STEM-related degrees. The study included 323 participants who played a VSNA online video action game to measure their ability to retrieve and encode environmental information. The subsequent phases were the self-report Santa Barbara Sense of Direction Scale to assess environmental spatial ability, a mental rotation test, and a questionnaire about participants' past video game play frequency. Their findings supported the VSNA as a valid measure of environmental spatial ability, and the self-reports of video game playing indicated improved environmental spatial ability.

Rekers and Finkle (2023) researched whether neurological impairments common in older populations negatively affected their spatial navigation abilities. Unlike other spatial navigation assessments, like *Sea Hero Quest* (Ventura et al., 2013), VIENNA's interface does not require specialized equipment (i.e., virtual reality systems) or participant training and is approximately 16 minutes long. Researchers recruited 79 participants, aged 50 to 85 years old, with a mean age of 67.8 years. Participants were given an answer form with 15 maps, one designated for each of the 15 short videos they would watch. The first three videos consisted of an instruction video and two practice videos. The participants watched from the first-person perspective as an individual walked down a hallway lined with doors. As each video played, the person would turn and look at each door, eventually choosing one. The participant must mentally trace the person's position in the hall and select on the answer form which door they believe was chosen. As the assessment progresses, the maps become more complex. The study's results found that age significantly negatively correlated with performance on VIENNA. Participants over the age of 60 displayed the sharpest decline in scoring.

The available literature does not address whether a player's understanding of the space within a video game is contingent on the level of available actions, or if the game's storyline is of influence, or both. There is an abundance of research that focuses on spatial cognition and how video games change thinking (Bediou et al., 2018; Feng et al., 2007; Spence & Feng, 2010), but not on the cognitive functions that a player already possesses to play NVGBs well. As video games become more immersive, they rely on more of the player's intrinsic cognitive abilities. There may be some novel processes involved. It is unclear whether spatial effects during gameplay and the level thereof impact the player's performance and understanding. This leads to the research question, *Is a player's understanding of space affected by a narrative video game's level of player choice and impact of the narrative?* A pilot study was conducted to answer this question and test the practicality of using think-aloud methods with video games to measure attention to space in think-aloud responses.

Methods

Participants

Using G*power, an a priori power analysis for a repeated measure, within factors ANOVA with two conditions, with a Bonferroni correction ($p = .025$) to adjust for two separate statistical analyses and a medium effect size, suggests that we should recruit at least 22 participants for this pilot study. We recruited participants ($N = 12$) through the Department of Psychology and Criminal Justice's SONA system, but only 10 of the participants' audio recordings were usable for analysis. Participants were required to be at least 18 years old to participate. Participants received extra credit in their psychology courses for their participation.

Video Game Stimuli and Conditions

The three conditions involved participants playing a narrative-based video game that meets the spectrum of player choice and the player's impact on the narrative. While the framework from Ness-Maddox (2022) identifies four types of NBVGs, we chose to explore three of the types out of consideration for participants' time and potential study fatigue. Each participant played each of the following three NBVGs in the three conditions.

High Impact/More Player Choice

In the game *Fable*, participants played as a young boy instructed by his father to complete three tasks in town. The goal was to earn three gold coins to buy his sister a box of chocolates as a birthday present. Players had a choice of five tasks to choose from. Players completed three of the five tasks, earning a gold coin for each before they moved on to the next portion of the narrative. They were allowed to explore the town and complete tasks in their desired order. After the players complete the tasks and give the sister the chocolates, the town is decimated, and everyone except the hero is killed. No matter the player's choices throughout the game, the next part of the story always ends the same way.

Low Impact/More Player Choice

In the game *Assassin's Creed: Mirage*, participants played as street thieves in 9th-century Baghdad. As the narrative progressed, the player explored the ancient city while completing various quests to become a Master Assassin. In the portion played by the participants in this study, Basim, the main character, was ordered to steal a shipping ledger for the "Hidden Ones" in a highly guarded area. The player could choose to either complete this task or explore the seemingly endless world in the game. Additional choices available to the players included looting, pickpocketing, or completing side quests. No matter the players' choices during gameplay, the story would end the same way if the ledger was obtained. The narrative's advancement depends on whether the player chooses to complete the quest of stealing the ledger.

Low Impact/Less Player Choice

In the game *Life is Strange*, participants played as a high school girl who has the ability to rewind time and alter events. Players' choices and ability to explore were limited throughout the game. The setting is a small recreation area surrounded by dormitories. Max, the main character, had to get to her dorm room to retrieve a flash drive for her friend. The dormitory is blocked by three aggressive girls who bar her from entering. Players had to complete tasks in a specific order to get the girls to move out of the way. First, players had to find and turn on the control switch for the sprinkler system. The water would cause the sprinklers to soak the girls, forcing them to jump under some scaffolding. Next, players needed to tamper with a paint can, which the janitor would pick up and take directly above the girls to paint a window. If that order was incorrect, the player had to keep trying by rewinding time until they completed the tasks correctly. This part of the story only ends in one way. Max gains entrance into the dormitory.

All three NBVGs are for the Xbox Series X. The content rating for each game ranged from Teen to Mature. Participants played the same scene from each game for approximately fifteen minutes each.

Assessment Materials

The virtual environments navigation assessment (VIENNA; Rekers & Finke, 2022) measures environmental spatial ability. The VIENNA assessment required participants to watch videos from the first-person perspective of a character exploring a virtual maze environment of halls. Participants indicated on a bird's-eye-view map which door the video ends. The assessment consisted of instruction, two practice trials, and twelve trials. Participants completed the VIENNA in approximately sixteen minutes.

Procedure

Participants scheduled one timeslot to participate in the study through SONA. They agreed to the online informed consent form before coming to their first scheduled timeslot. They were instructed to go to the LEGO lab room (TEB 337) at their scheduled time. Participants first completed the VIENNA before playing the three video games. With the participant's consent, headphones were worn to reduce background noise. Each participant was given a graphic card of the X-Box controller displaying the basic controls for each game. The order in which participants completed each video game was counterbalanced across participants.

While playing the NBVGs during their sessions, participants were prompted to talk out loud as they participated in the session. While playing and talking aloud, participants were audio-recorded. The audio recordings of participants were deidentified, and no personal information was recorded in the audio recordings. The audio recordings were transcribed.

Coding

The audio recordings were transcribed using Otter.ai, and the transcriptions were coded to show how often the participant talked about the space or environment of the game. Coding rules were restricted to only identifying words related to places and spatial relationships. Some examples of words indicating spatial relationships are "near," "far," "map," and names of places in the game. Investigators coded 50% (5 of the 10) of the transcriptions in common across the raters to establish interrater reliability. Raters counted how many times participants commented on the space or environment while playing each of the three video

games. The interrater reliability for coding space words in participants' think-aloud responses was found to be good (ICC(1,1) = .866) with a 95% confidence interval (.656 - .953).

Study Design and Analysis

This pilot study tested think-aloud methods with video games and measured participants' attention to space through think-aloud responses. This study is a within-subjects experimental design with three conditions. Participants have four scores: the VIENNA score and a spatial presence score for each of the three conditions. Due to the small sample size, we will only report descriptive statistics.

Results

Descriptive Statistics

Table 1.

Descriptive Statistics of VIENNA and Space Scores

	VIENNA	*Assassin's Creed* (Low Impact/More Player Choice)	*Life is Strange* (Low Impact/Low Player Choice	*Fable* High Impact/ More Choice
Mean	20.300	22.10	13.20	13.000
SD	3.561	26.10	9.65	12.02
Minimum	14	3	3	2
Maximum	24	91	34	30

The participant data ($N = 10$) indicates a difference between each NBVG condition. The low impact on the narrative/more player choice condition had the highest comments of space ($M = 22.10$). The low impact of the narrative/less choice condition ($M = 13.20$) and the high impact on the narrative/more player choice ($M = 13.00$) elicited a similar and much lower number of comments regarding spatial relationships. Though the study consisted of a small sample size, the data suggests that a video game with a less impactful narrative and a higher level of freedom may allow the player to be more immersed, thus noticing more of the environment in which they are playing.

Discussion

This pilot study aimed to determine whether the level of player choice and/or impact on the narrative affected a player's spatial understanding of the environment in a video game. The methodology in this pilot study, with a small sample size, enabled researchers to investigate psychological constructs novelly. The results suggest that the low impact of the narrative coupled with more player choice may increase a player's understanding of the spatial elements of the in-game world. The study also suggests that

video games with low impact on the narrative and low player choice reduce the player's ability to connect with spatial understanding.

Limitations

Potential issues pertaining to this study involved a small sample size and the methodology of the think-aloud task. The prompt "think aloud whatever comes to mind" may be too vague and leave room for confusion. Participants may also find it difficult or unnatural to talk out loud while focusing on the tasks required in the game. *Life is Strange* and *Fable* contain more cut scenes than *Assassin's Creed*, which may have contributed to players not talking aloud as much during the 15-minute segment. *Life is Strange* and *Fable* also have more dialogue from the in-game characters. Both cut scenes and character dialogue could have affected the participants talking out loud due to watching the cut scenes and listening to dialogue.

Future Research

Subsequent research should utilize all four variables described in the introduction (Ness-Maddox, 2022). Due to time constraints and the availability of participants, it was not possible for this study. Future research should also consider comparing the novice video game player versus the expert video game player. Many participants in this study commented that they had never played video games and took considerable time to familiarize themselves with how to play, reducing the time to participate fully. As for think-aloud studies, subtle guidance to participants as to the focus of the study may be needed to help alleviate any confusion. However, this may be difficult due to the risk of leading participants to respond a certain way. In addition, each segment of the video game used in the study should be assessed for cut scene length and in-game character dialogues to ensure each game has an equal amount. Lastly, a larger sample size is needed.

Conclusion

Although the data in this study is limited, there is the potential that the level of the narrative and the level of player choice can affect a player's cognitive experiences when playing video games. The methodology of talk-aloud studies is valuable when studying narrative comprehension of video games, but it must be recalibrated for this area of research.

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Breathing Life Back into a Toy Company:
A Study on Toys "R" Us and Information Systems
Carson Pierce, Erin Smith, Gabriel Smith,
Sedrick Thompson, Zachary Weldon

Abstract

Toys "R" Us was a major toy store for several years. Often described as a category killer, this company was the largest toy seller until companies like Amazon began to rise in power. Unable to keep up with competitive pricing and quantity, Toys "R" Us went bankrupt and closed in 2021. In the past few years, Toys "R" Us has begun rebuilding itself, mainly focusing on small mall outlet stores. The goal of this research paper is to determine what resources Toys "R" Us could use to rebuild itself and make it into a competitive business once more. This research paper describes several information systems, noting what they do and the benefits of each system. Some third-party businesses offer their own information systems for companies to use. This information will be used to create a new framework with the intent of making suggestions for a prototype Toys "R" Us competitor in the current market.

1. Brief Overview

There have been many major companies that have closed in recent years due to failure in keeping up with the competitive market. Toys "R" Us is one of these companies and will be the focus of this research. The goal of this project is to determine what information systems would be needed to help Toys "R" Us succeed as it reemerges into the market. This research paper consists of a brief history of Toys "R" Us and its downfall, what information systems the company developed, and what information systems are available now that can help the company regrow. This paper will focus primarily on product information management (PIM) systems, marketing information systems (MIS), and point of sale (POS) information systems.

Background

Toys "R" Us was a successful toy company for several years. The company had always been able to win over both children and adults with their attractive modular toy displays in the brick-and-mortar stores. However, as online shopping through competitors such as Amazon began to become much easier and cheaper for consumers, Toys "R" Us started to struggle with attracting these consumers until it finally closed in 2018. The toy company has begun reopening locations as of 2021 and is attempting to reestablish a hold on the market. The biggest factor in determining their success will be the information systems that are available to them and how they choose to implement these systems. Many new information systems providers have emerged over the past few years, and with artificial intelligence becoming much more sophisticated, Toys "R" Us has several methods at its disposal to become successful.

Unfortunately for Toys "R" Us, it couldn't keep its grip on the toy market as the rise in e-commerce became one of its biggest threats. Amazon became a major competitor against Toys "R" Us as it was able to offer better prices on products and an overall simpler and more convenient experience. Initially, Toys "R" Us created their own website to rival Amazon, but this attempt was not successful. The toy company then decided to create a partnership with Amazon in hopes of improving toy sales. This, too, was a failure

as Amazon began selling toys from other companies, causing Toys "R" Us to break away from their contract (de Oca, 2022). Due in part to the rise of competition both from brick-and-mortar stores, as well as a large debt that the company had accrued, Toys "R" Us filed for bankruptcy in 2017 (Unglesbee, 2022) and closed its last stores. In 2021, Toys 'R' Us began to reopen physical locations. Most of these stores are just small outlets in malls, but there have been some plans to bring the stores back to their full scale.
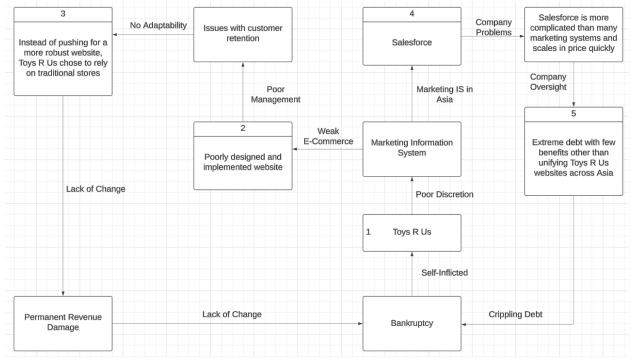

Figure 1: A Theory of Failure for Toys "R" Us

2. Objectives

This research is focused on the different information systems supported by Toys "R" Us that could affect its success as its stores reopen. We will focus on several information systems that are outlined in the following points.

- product information management systems
- marketing information systems
- point of sale systems

In addition, there are many ways that these systems may be improved to produce an overall stronger company. It was due to the lack of components like a strong e-commerce platform and poor management oversight that Toys "R" Us collapsed. Therefore, it is necessary to determine just how important factors such as these are to the development and success of businesses. Our goal is to look at several different information system designers across these categories to determine which systems are the most efficient, offer the most freedom in system design and adjustment, and determine what new features could be implemented on Toys "R" Us.

Information Systems

There are many different information systems that work together to make a company successful. These systems range in purpose and objective, but they all play a vital role in the company's success. This section will describe some of these systems and their roles in a company and will also discuss some major examples of information systems designed by companies.

Product Information Management Systems

Product information management (PIM) systems are designed to store information about the company in a database. The information stored is geared toward company marketing such as SKUs, specific designs, pricing guidelines, and company procedural manuals (lumavate, 2024). A product information system logs information about a company in such a way that it is simple to locate and easily transferred when required. This data is typically logged in a large database from across multiple files to allow a simple, effective way to keep data consistent (Manchanda, 2023). Easy access to data is important for a company because this allows employees to quickly find solutions to any problems that have been dealt with previously and create logs of any data or issues that may arise. Product information systems also contain a system called digital asset management. This system allows a company to grant or deny access to their resources, as well as grant employees remote access to digital files (lumavate, 2024).

There are several great examples of PIM systems including Sales Layer, Lumavate, and Akeneo. Sales Layer is a large PIM system that has played a major role in companies like Amazon using their application program interface (p. 1). The system allows a user to simply upload an Excel-style sheet into the database and use their stored information for generating an information system (Sales Layer, 2023). The user can then access the information through the Sales Layer system to ensure accuracy of the input information and create an organization for their items. Lumavate is designed to integrate the features of product information management and digital asset management together to streamline the business process (lumavate, 2024). In addition, the platform allows a company's employees a more informal connection through texting, which may aid in establishing better personal connections among employees. Lastly, Akeneo offers a PIM system used across the world that capitalizes on modern technology. This system uses cloud-based technology to hold a company's data. Artificial intelligence is a hallmark design of this system as it allows users to collect product description data and create descriptions about their products (akeneo, 2024). The only downside to this system is that it tends to be more expensive due to using multiple advanced technology features.

Marketing Information Systems

Marketing Information systems provide the financial information of the company and control such processes as data collection and information provision for finances. On the consumer's side, this system collects information through a process called clickstream data, which monitors information about consumer access and length of stay on the company's website (Principles of Marketing, 2015). Another major way that a Marketing Information system collects data is through scanning public resources such as a rival company's marketing data, government records, or online posts (p. 1). It is essential that a company collects information in multiple different ways to know what customers are currently demanding so that the business may adequately supply their consumers with the proper goods. When a company has gathered an

appropriate amount of data, they can make intelligent decisions on how to execute a marketing strategy. To hold this marketing data, companies have devised many methods for tracking information to make it easily accessible. One such method of making the data accessible is through using the intranet.

The intranet acts as an internet system for a company's employees where only the members of that company can access the information (p. 1). This ensures that the confidentiality of the information is kept while also providing employees with the appropriate resources to accomplish their tasks. Dashboards also act as a good display system because they contain groups of related data that management may easily access for reference (Principles of Marketing, 2015). Marketing Information systems do more than just collect and display this data though. These systems are responsible for analyzing trends from data and creating marketing solutions to improve their company. Research is often conducted almost like the scientific method in which data is gathered from multiple sources, analyzed over a group, and tested to document results (p. 1). Companies may collect information through various processes as mentioned above, but they can also purchase data called syndicated research from companies that collect and sell information (p. 1). Once this system has collected enough data, the company can begin testing their methods in a controlled environment to determine how well a marketing strategy might function. When the tests have yielded results, the research is documented and may be used to determine if a marketing strategy is viable for the company.

Point of Sale Information System

A POS or Point of Sales System is what businesses such as retailers use in tandem with Transaction Processing Systems to be able to exchange their goods and services with a customer for money. Processing transactions is not the only purpose of Point-of-Sale systems as they can also track inventory, employee hours/shifts, and customer data. Having an up-to-date, well-maintained POS information system can help with efficiency and customer satisfaction when it comes to purchasing goods and services from a business.

A comparison may be made by looking at a chief competitor to Toys "R" Us in the form of Target. With the help of their IT team, Target was able to craft their own Point of Sale information system that catered to Target's specific needs. Making a unique system can also protect the business from any attacks or foreign entities. Also, having a specifically designed and curated POS system that allows room for growth and expansion is important. To be successful, a system must be simple and accessible to a wide range of individuals. Poland's branch of Toys "R" Us experimented with a newer POS system in 2016 that used Comarch ERP standard, Retail POS, and WMS. These systems combined to make customer shopping fast, efficient, and accurate all while tracking inventory and consumer data. Having these other systems attached to the POS information system allows the company to track more data such as what is popular with customers or the difficulties and the time it takes for the transactions. This company POS system could also be used to monitor how promotions were going as "the software supports promotions, vouchers, and individual discounts granted to clients" (Comarch, 2024).

3. Methodology

To determine the best system to use for each information system category, we implemented a SWOT analysis to help compare systems. For example, when deciding the best PIM system, a SWOT

analysis was created for Sales Layer, Lumavate, and Akeneo to determine which one was best. This was especially helpful when looking at information systems that had third-party services. Some systems, like management information systems, did not have many third-party sellers. In these cases, we looked at some of the tools that companies commonly used, like dashboards and artificial intelligence, and determined what would be the best resources to construct a new information system. Once the best information systems and resources were determined, the information was combined into one corporation which was determined to be the most advantageous design for Toys "R" Us's success.

4. Proposal for a New Business Design

Utilizing the information found, this project has compiled the objective best components of each information system together to create a new design for a restructured Toys "R" Us. For the PIM system, we chose Sales Layer because of the Excel Sheet capabilities. Even though there is a potential that the service could provide users with unnecessary extra features, the simplistic information upload design is incredibly useful as the service does all the work for the user.

The Marketing Information System will utilize a mixture of digital advertising data and customer input to create successful marketing strategies. Digital advertising is probably one of the most common methods for presenting users with a product. A new website will be designed using Artificial Intelligence that will be trained to gather customer information in such a way that it can generate recommended products for users. Artificial Intelligence will also be implemented to design descriptions for products online. This company will also implement advertisements through popular media platforms and television, as these media are most likely to reach the targeted audience. Customer input consists of tracking information like consumer transaction history or product viewing, as well as customer surveys or other methods of feedback. As mentioned above, consumer product viewing informs businesses of what products are popular in a market, which helps a company make decisions on what items should be sold or removed. Customer feedback is an incredibly important aspect of marketing as this is consumers telling a producer what their opinion is on a product. This information will be gathered both through a product feedback section attached to each product on their online listing, as well as surveys that are sent out to customers to gather information on products they may have purchased.

The Company's Point-of-Sale (POS) system will utilize an in-house design as this allows the company to be more versatile in their system usage. Building an in-house system is time-consuming, but if a company's IT team creates the system themselves, then the company will be able to better implement features or fixes to the POS system in the event that something is broken or needs to be changed. Another major benefit of creating a POS system in-house is that it will be uniquely designed. This is important for security purposes as perpetrators will have a more difficult time in determining how the system works, thereby protecting data integrity. Finally, building a POS system in-house aids in scalability. As the company grows, more intricate features may need to be added to systems to accommodate complexity. If the POS system is designed within the company, the system will be much easier to scale as the company can create plans for business growth.
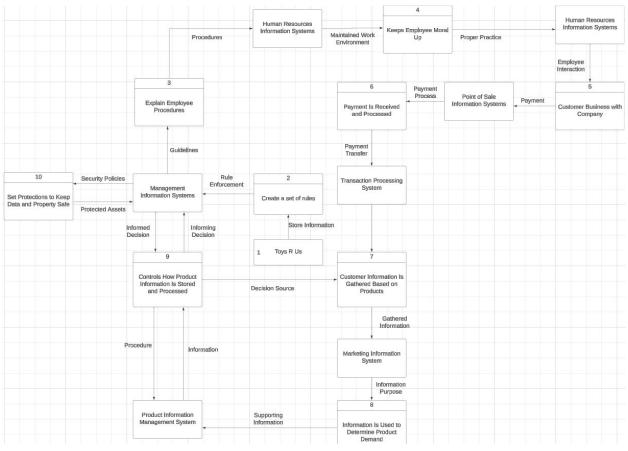
Figure 2: New Proposed IS Model for Toys R Us

5. Recommendations

If this project were repeated, one of the biggest overhauls to it would be the depth of research. One semester isn't enough time to do a deep dive into all the factors that make an information system successful. If given more time, a very interesting approach to our research question would be to design an information system from the ground up and test it to determine how well it would work with a business like Toys "R" Us. Research could include looking at how each information system works together and creating resources within those systems with maximum compatibility. Additional research could be done on the effectiveness of Artificial Intelligence in the business environment. Because AI is such an important topic at the time of writing, every business should at least have some form of research into AI to determine how it could improve their business system or stimulate customer interaction.

6. Conclusions

Toys "R" Us has potential to become a major competitor in the toy industry. Not only does the company possess a major nostalgia factor that would attract people of all ages to their stores, but the stores also possess creative displays that attract customers into making purchases. Toys "R" Us struggled before because it lacked a strong e-commerce platform, causing the company to fall to other consumer giants like

Amazon or Walmart. If the company can create both a strong brick-and-mortar presence and a powerful e-commerce platform, the company would be able to prosper, as this approach is the best answer to most consumer purchasing methods. Furthermore, with the growth of new technologies such as artificial intelligence, Toys "R" Us will have access to more resources that it can use to aid in its regrowth. For example, artificial intelligence can now be used to track customer purchases or product information and store data on these topics. If a company knows what items are popular at any given time, they can order more of that item to keep up with customer demand. If Toys "R" Us can adapt to these new changes in commerce, then the toy company should be able to grow into a powerful competitor in the market.

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Contagion and Colonization: The Historiography of Disease in Sixteenth-Century European Colonies in the Caribbean
Jonathan Robbins

The 16th-century colonization of the Caribbean was marked by the spread of European diseases—smallpox, measles, and influenza—that devastated Indigenous populations. Early accounts of disease emphasized its catastrophic effects, often framed by colonists' biases. Over time, scholarship has shifted from these descriptive narratives to more nuanced analyses, incorporating ecological, demographic, and sociopolitical factors. Scholars such as Alfred W. Crosby and Noble David Cook have explored how disease shaped colonial systems, highlighting its role in the collapse of Indigenous societies.

The arrival of Europeans in the Caribbean introduced a biological exchange unlike any the world had seen before. Alfred W. Crosby, in his seminal work *The Columbian Exchange*, characterized this period as the genesis of "ecological imperialism," where the biological advantages of the Old World contributed significantly to the success of European colonization.[1] However, as the Indigenous peoples of the Caribbean—Arawak, Taíno, and Carib communities—were unprepared for the pathogens that accompanied European settlers, mortality rates as high as 90% were reported within decades, a phenomenon well-documented in both historical records and modern demographic studies. Psychologist and demographer Sherburne F. Cook and American Historian Woodrow Borah provide statistical models for the Caribbean and surrounding regions, emphasizing the scale of depopulation and its implications for colonial governance.[2]

Early accounts of disease in the Caribbean often relied on the observations of colonists and clerics, whose interpretations were framed by their cultural and religious biases. Bartolomé de las Casas, a Dominican friar and one of the first advocates for Indigenous rights, offered one of the most detailed early accounts of the demographic collapse in his *Brevísima Relación de la Destrucción de las Indias* (*A Brief History of the Destruction of the Indies*). While his descriptions are vivid and sympathetic, they are also hyperbolic and heavily influenced by his agenda to critique Spanish colonial practices. For example, he declares "[t]he natives of this land were so overwhelmed by disease that they could not even bury their dead."[3] De las Casas's writings were complemented by the work of chroniclers such as Gonzalo Fernández de Oviedo y Valdés, who focused primarily on the practical challenges of colonial administration, including the loss of labor due to disease. These early narratives often framed disease as an act of divine intervention, punishing the "heathen" Indigenous populations while simultaneously absolving Europeans of their

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[1] Alfred W. Crosby, *The Columbian Exchange: Biological and Cultural Consequences of 1492* (Westport, CT: Greenwood Press, 1972), 45-67

[2] Woodrow Borah and Sherburne F. Cook, *The Aboriginal Population of Central Mexico on the Eve of the Spanish Conquest* (Berkeley: University of California Press, 1963) 12-15

[3] Bartolomé De Las Casas, *A Short Account of the Destruction of the Indies*, Translated by Nigel Griffin (London: Penguin Classics, 1992) 73

complicity in the devastation. Additionally, Oviedo noted that the depopulation of Hispaniola seemed to pave the way for the introduction of African slaves, a theme later revisited by modern scholars such as American historian Karen Ordahl Kupperman and anthropologist Eric Wolf. Kupperman critiques these deterministic narratives, suggesting that they oversimplify the complex interplay of disease, resistance, and colonial policy.[4]

In contrast, more recent scholarship has moved away from such moralistic interpretations. Noble David Cook's work illustrates how ecological factors and malnutrition exacerbated the impact of disease.[5] He also highlights the inadequacy of colonial health interventions and the exploitative labor systems that left Indigenous populations particularly vulnerable.[6] His synthesis of archival records and demographic data underscores the importance of viewing disease not as an isolated variable but as part of a broader colonial system.

Early narratives laid the groundwork for understanding the role of disease in colonial history but were limited by their reliance on anecdotal evidence and Eurocentric perspectives. As the field evolved, scholars began incorporating multidisciplinary approaches and more rigorous methodologies to reassess these historical dynamics. This evolution is explored further through the historiographical developments of the mid-20th century and the transformative critiques of later revisionist historians.

The mid-1900's marked a pivotal shift in the historiography and study of disease in the Caribbean colonies, as historians began to transition from the aforementioned early narratives to analyses rooted in the study of demographic data and economic frameworks. This period was characterized by the systematic quantification of historical records, a growing interest in the socio-economic implications of depopulation, and the inclusion of Indigenous perspectives in colonial histories. Key figures include Sherburne F. Cook, Woodrow Borah, and Alfred W. Crosby, who laid the foundation for a more scientific and interdisciplinary approach to understanding the dynamics of epidemiology in the 16th century.

Cook and Borah's collaboration on demographic studies had a profound influence on Caribbean studies by providing quantitative models to estimate Indigenous population decline. Their methodologies, which involved analyzing tribute records, baptismal registries, and early colonial censuses, revealed staggering mortality rates that echoed across the Americas.[7] While their primary focus was on Central Mexico, their framework informed the studies of many other regions in the New World, including the Caribbean, underscoring the sheer scale of depopulation caused by the spread of Old World diseases, such as smallpox and measles. Noble David Cook expanded on this demographic foundation by applying similar approaches to Hispaniola and other Caribbean islands in his book, *Born to Die*, in which he reasoned, "[t]he depopulation of the Caribbean was not just a demographic tragedy; it was a systemic failure of the colonial project itself."[8] His work illuminated how population decline was not only a biological catastrophe but also

[4] Karen Ordahl Kupperman, *The Atlantic in World History* (Oxford: Oxford University Press, 2012) 114-116

[5] Noble David Cook, "Sickness, Starvation, and Death in Early Hispaniola," *The Journal of Interdisciplinary History* 32, no. 3 (2001): 349–86

[6] Noble David Cook, *Born to Die: Disease and New World Conquest, 1492-1650* (Cambridge: Cambridge University Press, 1998) 150-153

[7] Borah and Cook, *The Aboriginal Population of Central Mexico,* 12-18

[8] Cook, *Born to Die*, 153

a systemic failure of colonial governance, as labor systems and food supplies collapsed under the strain of demographic implosion.[9]

Crosby's concept of the "Columbian Exchange," introduced in his innovative work of the same name, further revolutionized the field. He argued that the transference of plants, animals, and pathogens between the Old and New Worlds created what he called an "ecological imperialism" that advantaged European colonizers. His exploration of how disease facilitated conquest offered a compelling explanatory model, though it was criticized for its deterministic undertones. Scholars like Noble David Cook noted that Crosby's focus on biological inevitability often overshadowed the agency of Indigenous communities and the broader socio-political factors at play.[10] This tension between determinism and complexity became a recurring theme in subsequent historiography, particularly in the work of Jared Diamond, who would make Crosby's theory central to his own thesis in 1997.

This period also saw a greater emphasis on the socio-economic ramifications of disease. Eric Wolf would position the Caribbean as a critical node in global capitalism, contending that depopulation created both a labor vacuum and an ideological justification for the transatlantic slave trade.[11] This argument was further supported by Sidney Mintz, whose examination of the transformation of Caribbean societies under the plantation economy emphasized how the decline of Indigenous populations necessitated the increased importation of African slaves, fundamentally reshaping the region's demography and economy.[12]

While these works enriched the historiographical landscape, they were not without limitations. Many mid-century studies, including Crosby's and Wolf's, tended to generalize the Caribbean experience, often conflating it with broader trends in the Americas. This approach risked erasing the specificities of individual islands and Indigenous groups, a critique voiced strongly in the works of Kupperman, who argued for a more localized understanding of colonial encounters, pointing out that variations in geography, labor systems, and colonial policies produced distinct epidemiological outcomes.[13] Other limitations of the historiography of this era include the tendency to prioritize quantitative data over qualitative narratives. While the work of Cook and Borah in demographic studies was revolutionary, they often reduced Indigenous populations to abstractions of statistical data. This critique was echoed by scholars in the latter half of the 20th century, who sought to reintegrate Indigenous voices and experiences into the historical narrative.

Despite these shortcomings, the mid-20th century remains a critical period in the historiography of disease in the Caribbean. The integration of demographic analysis, ecological perspectives, and socio-economic frameworks set the stage for the more nuanced and interdisciplinary approaches that would emerge in the following decades. By quantifying the scale of demographic collapse and linking it to broader colonial and economic structures, the works of these historians also highlighted the interconnectedness of

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[9] Ibid, 155-160

[10] Crosby, *The Columbian Exchange*, 43-67; Cook, 165-167

[11] Eric R. Wolf, *Europe and the People Without History (*Berkeley: University of California Press, 1982) 195-198

[12] Sidney W. Mintz, *Sweetness and Power: The Place of Sugar in Modern History* (New York: Viking Penguin, 1985) 74-76

[13] Karen Ordahl Kupperman, *Indians and English: Facing Off in Early America (*Ithaca: Cornell University Press) 110-115

the Caribbean with global systems of trade, labor, and governance, providing a foundation upon which subsequent scholarship could be built. This perspective not only broadened the scope of Caribbean studies but also challenged earlier historiographical trends that isolated the region from global historical processes. As we turn to the studies conducted during the late 20th century, we see how these foundational insights were refined, critiqued, and expanded to encompass a more holistic understanding of disease in the colonial Caribbean.

The emergence of revisionist historiography in the 1980s and 1990s marked a profound transformation in the study of disease and its impact on 16th-century colonies in the Caribbean. This period was defined by a critical reassessment of earlier narratives, incorporating Indigenous voices and challenging Eurocentric assumptions. These revisionist scholars sought to address the oversights of mid-century works, particularly the reductionist tendencies that emphasized population decline as an inevitability while neglecting the sociopolitical complexities of colonial encounters.

One of the cornerstones of revisionist thought was the insistence on re-centering Indigenous agency in the narrative of epidemiological and colonial histories. Noble David Cook exemplified this approach, embedding his earlier demographic work within a more nuanced framework that emphasized Indigenous responses to disease and colonial pressures. He argued that while disease was catastrophic, its impacts were neither uniform nor purely biological. Instead, the extent of depopulation was mediated by factors such as pre-existing social structures, levels of resistance or accommodation to colonial rule, and the nature of labor exploitation under the *encomienda* system. Specifically he asserts that "Indigenous responses to disease and colonial pressure were not passive. Rather, they reflect the agency of these communities in confronting and negotiating colonial violence."[14] This perspective directly challenged Crosby's earlier biological determinism, positing that Indigenous societies were not passive recipients of colonial incursions but rather active participants in their own histories, even in the face of unprecedented challenges.

Complementing this reorientation, Kupperman's insistence on recognizing the regional specificity of colonial encounters proved invaluable for reinterpreting Caribbean contexts. Though primarily focused on the English colonies, her arguments underscored how disease and depopulation were not monolithic phenomena but varied significantly based on geographic, cultural, and political circumstances. For example, in regions where Indigenous populations were heavily concentrated, such as Hispaniola, the immediate demographic collapse was more pronounced than in smaller, more dispersed populations in areas like the Lesser Antilles.[15] This emphasis on localized narratives found resonance in the work of other scholars, such as Anthony Pagden, who explored the ideological and cultural dimensions of colonialism and how they influenced the experiences of Indigenous peoples.

At the same time, revisionist scholars were interrogating the moral and rhetorical frameworks through which earlier accounts had been constructed. Bartolomé de las Casas, long celebrated as the "Defender of the Indians," became a focal point of critique and re-evaluation. While his descriptions of disease and suffering were crucial for documenting the catastrophic effects of colonization, scholars such as Gustavo Verdesio argued that De las Casas often imposed his own theological and paternalistic

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[14] Cook, "Death, Starvation, Hispaniola," 172-176
[15] Kupperman, *Indians and English*, 94-98

interpretations onto Indigenous experiences. This tendency, Verdesio suggested, risked perpetuating a form of epistemic colonization, even as it sought to critique physical and economic exploitation.[16] Oviedo's earlier chronicles, once dismissed as overly biased in favor of the Spanish crown, were also revisited for their detailed descriptions of epidemiological events, offering a valuable counterpoint to De las Casas's narratives.[17] The emphasis on Indigenous perspectives and cultural survival further extended to the works of others, like Michael Keegan's studies of Caribbean archaeology, which provided material evidence of how Indigenous communities adapted to and resisted colonial pressures. Keegan's research demonstrated that, contrary to earlier assumptions of complete extinction, certain Indigenous practices and populations persisted, influencing later Caribbean societies in unexpected ways.[18] Similarly, Walter Mignolo argued that colonial narratives of disease often obscured the continuity of Indigenous knowledge systems, which, though fragmented, remained vital in shaping interactions between colonizers and Indigenous peoples.[19]

Another hallmark of historiographical scholarship during the late-20th century was the integration of post-colonial and critical theory into the study of colonial epidemiology. Scholars such as James Blaut challenged the underlying assumptions of European exceptionalism that had permeated earlier works. Blaut's critique extended to Crosby's Columbian Exchange model, arguing that it downplayed the systemic inequalities and coercive structures that amplified the impacts of disease. He also emphasized that the introduction of Old World diseases to the New World was not merely an ecological accident but a consequence of deliberate colonial strategies, including forced labor, land dispossession, and the imposition of extractive economies.[20] Importantly, revisionists also highlighted the intersectionality of disease with other vectors of colonial violence, such as gender, class, and race. Ann Stoler's work on the "colonial body politic" illuminated how medical discourses were often weaponized to justify the subjugation of Indigenous and African populations. Her arguments about biopolitics and colonial governance, though primarily focused on later periods, offered valuable insights for understanding how health and disease were entangled with the ideological underpinnings of 16th-century colonialism.[21]

Jared Diamond's highly controversial work, *Guns, Germs, and Steel* further exemplified the revisionist turn. While his book remains influential for its broad synthesis of geography, biology, and history, other scholars like Blaut and Kupperman have argued that it, like Crosby's Columbian Exchange, oversimplifies the complex interplay of the myriad of factors shaping historical outcomes. Diamond's suggestion that geographic determinism played a pivotal role in predisposing European success in the

[16] Gustavo Verdesio, *Forgotten Conquests: Rereading New World History from the Margin* (Philadelphia: Temple University Press, 2001), 134-136

[17] Gonzalo Fernández de Oviedo y Valdés, *Natural History of the West Indies,* Translated and edited by Sterling A. Stoudemire, (Chapel Hill: University of North Carolina Press, 1959) 48-52

[18] William F. Keegan, *The People Who Discovered Columbus: The Prehistory of the Bahamas*. (Gainesville: University Press of Florida, 1992) 203-207

[19] Walter D. Mignolo, *The Darker Side of the Renaissance: Literacy, Territoriality, and Colonization,* 2nd ed (Ann Arbor: University of Michigan Press, 2003) 72-74

[20] James M. Blaut, *The Colonizer's Model of the World: Geographical Diffusionism and Eurocentric History* (New York: Guilford Press, 1993) 141-144

[21] Ann Laura Stoler, "Carnal Knowledge and Imperial Power: Gender, Race, and Morality in Colonial Asia" In *The Gender/History Reader*, edited by Ruth Roach Pierson and Nupur Chaudhuri, 183–206 (London: Routledge, 1998 1998) 187-190

Americas has been particularly contentious, with critics pointing out that such arguments risk perpetuating a narrative of inevitability that obscures the active agency of both colonizers and the colonized.[22] As a result, newer scholarship has succeeded in reshaping the discourse surrounding disease in the Caribbean colonies, moving beyond reductionist models to embrace a more multifaceted understanding of the past. By integrating Indigenous perspectives and critiquing colonial narratives, this body of work not only deepened our understanding of the epidemiological history of the Caribbean but also laid the groundwork for the interdisciplinary approaches that would define 21st-century scholarship.

The recent turn toward interdisciplinary methodologies has dramatically enriched our understanding of the interplay between epidemiology and colonialism in the 16th-century Caribbean. By synthesizing insights from archaeology, ecology, and other fields, scholars have been able to move beyond textual analysis and demographic estimates, constructing a more nuanced and diverse picture of the catastrophic damages that accompanied European colonization. These approaches have illuminated the complex interplay of ecological, cultural, and social factors that shaped the spread and impact of Old World diseases in the New World, while also providing a richer context for understanding Indigenous resilience and adaptation. One significant contribution of interdisciplinary studies has been the integration of archaeological data to complement historical records. Archaeologists like William Keegan have provided material evidence of Indigenous responses to colonization, including how communities reorganized in the wake of epidemics. Keegan's excavations in the Bahamas, for example, revealed shifts in settlement patterns that reflected attempts to mitigate the effects of disease and resource exploitation. By analyzing artifacts and settlement structures, Keegan demonstrated that many Indigenous groups developed strategies to cope with the dual pressures of ecological disruption and demographic collapse, explaining that "[e]ven as populations declined, Indigenous communities continued to adapt, resisting colonial pressures through shifts in settlement patterns and cultural practices."[23] His interpretation underscores native agency even in the face of profound adversity.

Ecology has also emerged as a critical field for understanding the dynamics of disease transmission. Crosby's work on the Columbian Exchange laid the groundwork for ecological interpretations, and building on these insights, more recent ecological studies have investigated the role of human-induced changes in exacerbating the spread of diseases such as smallpox, measles, and influenza. Clark Spencer Larsen, an American anthropologist, has demonstrated that European agricultural practices, including monoculture plantations, disrupted local ecosystems in ways that increased the prevalence of mosquito-borne illnesses like malaria and yellow fever.[24] Such findings underscore the interconnectedness of ecology and epidemiology in shaping colonial outcomes.

Anthropological research as a whole has further expanded the scope of inquiry by focusing on the cultural dimensions of disease and health. Jean and John Comaroff's work on the intersection of colonial medicine and ideology, though focused primarily on Africa, has offered valuable frameworks for analyzing

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[22] Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W.W. Norton, 1997) 196-201; Blaut, *The Colonizer's Model of the World,* 146-147

[23] Keegan, 203-207

[24] Clark Spencer Larsen, *Skeletons in Our Closet: Revealing Our Past through Bioarchaeology* (Princeton: Princeton University Press, 2000) 89-93

the Caribbean context. Their concept of the "colonial body" as both a biological and symbolic site of control has been applied to the study of how European colonizers imposed medical practices that often disregarded or actively suppressed Indigenous knowledge systems. This perspective is echoed in Mignolo's arguments about the epistemic violence inherent in colonial narratives, which frequently framed Indigenous peoples as inherently vulnerable to disease while ignoring the ways in which colonial practices created the conditions for epidemics to thrive.[25] Another key component of interdisciplinary research has been the study of genetic evidence to reconstruct patterns of disease transmission and population movement. Advances in bioarchaeology and paleogenomics have allowed researchers to analyze the remains of Indigenous and European individuals from early colonial sites, providing direct evidence of pathogen presence and immune responses. For instance, studies of ancient DNA have revealed the presence of tuberculosis in pre-Columbian populations, challenging earlier assumptions that the disease was introduced entirely by Europeans.[26] Such findings not only complicate simplistic narratives of one-directional transmission but also highlight the need for greater specificity in understanding the origins and impacts of diseases.

Interdisciplinary approaches have also been instrumental in re-evaluating the scale and variability of demographic collapse. While earlier estimates, such as those by Cook and Borah, focused on large-scale depopulation figures, recent studies have emphasized the importance of regional and temporal variation. Anthropologist Jeremy Sabloff's comparative analyses of Mayan and Taíno populations, for example, have demonstrated that the timing and severity of population decline varied significantly based on factors such as geographic isolation, pre-contact population density, and the degree of interaction with European settlers.[27] These findings challenge monolithic portrayals of Indigenous extinction and underscore the diversity of experiences across the Caribbean. Ecological and climatological studies have further expanded our understanding of the environmental context of disease, as well. Researchers such as William Denevan have explored how the Little Ice Age, a period of global cooling that coincided with the early colonial period, may have exacerbated the impacts of disease by altering food availability and migration patterns. In his work, Denevan suggests that climatic instability compounded the effects of European colonization, creating a "perfect storm" of ecological and epidemiological disruption.[28] This perspective aligns with broader environmental histories that emphasize the role of climatic and ecological factors in shaping human societies.

Critically, interdisciplinary studies have also sought to address the ethical and political implications of historical epidemiology. American anthropologist Deborah A. Thomas argues that the legacy of colonial epidemics continues to inform contemporary debates about public health and inequality in the Caribbean. By connecting past and present, her studies highlight the enduring relevance of understanding the historical

[25] Mignolo, *The Darker Side of the Renaissance*, 72-74

[26] Kirsten I. Bos et al, "A Draft Genome of *Yersinia pestis* from Victims of the Black Death." *Nature* 478, no. 7370 (2011) 575-579

[27] Jeremy Sabloff, *Archaeology Matters: Action Archaeology in the Modern World* (Walnut Creek: Left Coast Press, 2008) 112-115

[28] William Denevan, "The Pristine Myth: The Landscape of the Americas in 1492," *Annals of the Association of American Geographers* 82, no. 3 (1992) 369–385.

intersections of disease, power, and colonialism. Moreover, they challenge scholars to consider the ways in which their work can contribute to broader efforts toward decolonization and social justice.[29] The integration of interdisciplinary perspectives has allowed for a more comprehensive analysis of European narratives themselves. James Blaut and other historians have critiqued the Eurocentric biases that underpin many traditional accounts, emphasizing the need to deconstruct colonial ideologies that framed disease as a justification for conquest. Blaut's arguments align with broader postcolonial critiques, which highlight the ways in which historical narratives have often served to legitimize colonial violence.[30] This shift has opened new avenues for analyzing the cultural and ideological dimensions of epidemiology, offering a richer understanding of how disease was both a biological and a discursive phenomenon in the colonial Caribbean.

The adoption of interdisciplinary methodologies has profoundly transformed the study of epidemiology in 16th-century Caribbean colonies. By integrating insights from multiple fields of study, such archaeology, ecology, and anthropology, scholars have moved beyond reductionist and deterministic models to construct a more nuanced and multifaceted narrative. These approaches not only deepen our understanding of the past but also challenge us to critically engage with the legacies of colonialism in the present. As the field continues to evolve, the interplay of diverse perspectives promises to yield even greater insights into the complex histories of disease, power, and resistance in the Caribbean.

However, the study of this phenomenon does not come without its own distinct challenges that continue to shape the evolution of our understanding of 16th-century Caribbean epidemiology. Mid-20th-century scholarship was groundbreaking in its use of quantitative analysis to estimate Indigenous population losses. However, the reliance on colonial records—many of which were incomplete or biased—posed significant challenges. The assumption that European chroniclers accurately recorded demographic and epidemiological events risks overemphasizing certain narratives while obscuring others. The absence of Indigenous voices further limited the scope of their work, raising questions about the validity of extrapolations based solely on Spanish administrative records.

Revisionist historiography sought to address these gaps by reinterpreting colonial narratives and critiquing Eurocentric biases. Yet, this approach has vulnerabilities of its own. James Blaut and Noble David Cook highlighted how colonial justifications for conquest often shaped epidemiological accounts, but discerning deliberate propaganda from genuine observations remains difficult. Revisionist scholars must grapple with the challenge of contextualizing such records without imposing modern assumptions, risking anachronism or overcorrection. Furthermore, debates within the revisionist school about the relative weight of ecological, political, and cultural factors in explaining demographic collapse have sometimes led to fragmented analyses.

Recent interdisciplinary approaches, while offering a more holistic understanding, are not immune to methodological pitfalls. Integrating data from archaeology, bioarchaeology, and ecology requires synthesizing findings across fields with different evidentiary standards. For example, genetic studies may

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[29] Deborah A. Thomas, *Exceptional Violence: Embodied Citizenship in Transnational Jamaica* (Durham: Duke University Press, 2011) 214-216
[30] Blaut, 141-144

contradict archaeological interpretations, or ecological models may oversimplify complex human-environment interactions. Additionally, interdisciplinary studies must balance breadth with depth, ensuring that the inclusion of diverse methods does not dilute the analytical rigor of each individual discipline. As these approaches often rely on advanced technologies, such as radiocarbon dating or genetic sequencing, access to resources can also create disparities in research, privileging well-funded institutions over smaller or less resourced ones.

Despite the challenges inherent in studying colonial epidemiology, each methodological shift has contributed to the field's growth. Scholars now benefit from a variety of tools and perspectives, refining their approaches as they address the complexities of disease in colonial contexts. By critically evaluating the strengths and weaknesses of these methods, the field continues to evolve into a more nuanced interdisciplinary study, providing a much more complete picture of the complexities surrounding 16th-century epidemiology.

Encouraged by the substantial advancements made through these collaborative approaches, the field continues to grow. New technological innovations, such as advanced genetic analysis and more refined archaeological techniques, promise to yield even more data and provide fresh insights into the ways disease shaped the Caribbean. As these technologies advance, scholars will undoubtedly uncover new layers of understanding, further enriching the complex story of disease and colonization in the Americas.

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Single-Parent Families and Behavioral Problems
Angelica Williams

Since 1968, the number of children living in two-parent homes has dropped significantly (Hemez & Washington, 2021). This is especially true in the United States, where almost 24 million children under 18 are living in a single-parent family (Annie E. Casey Foundation, 2022). This is three times more than the share of other children around the world (Krammar, 2019). Within single-family homes, about 15 million children live with their mother (Annie E. Casey Foundation, 2022). While many children in single-parent homes exhibit higher levels of behavioral problems (Hassan & Al-Diwan, 2022), single mothers tend to have their sons become more engaged in criminal activity than girls (Wasserman, 2020). Meanwhile, children living with both parents are less likely to become involved in negative behaviors (Boccio & Beaver, 2019). Evidence shows that young people who have their families broken apart by divorce or separation engage in crime at a higher rate than children whose families have a deceased parent (Krouse, et al., 2020). Many single-parents, especially single mothers with children, struggle with financial instability or financial crises compared to most two-parent homes, causing their children to experience more stress than children in two-parent households (Ali & Soomar, 2019). This paper critiques two articles based on distinct studies, one from the UK and the other from Western nations, to provide further evidence that children from single-parent families face greater behavioral issues than those from two-parent households.

Article 1

Faulconer, S.C.M., Hveem, M.R., & Dufur, M.J. (2022). Gendered Associations between Single Parenthood and Child Behavior Problems in the United Kingdom. National Library of Medicine. pubmed.ncbi.nlm.nih.gov.

Literature Review

The literature review in this study contains relevant and current sources. Faulconer, Hveem, & Dufur (2022) describe how a large and robust literature examines aggression and behavioral problems in children to factors in children's home environment. They state that child behavioral problems are often categorized into either internalizing or externalizing issues. Behavioral problems in a child's home environment can be caused by numerous factors, such as parental emotional support, family transitions, and family structure. This article describes that expansive research correlates living in a single-parent family with an increase in negative behavior in children. Meanwhile, previous research has used a mixed number of parents (mother, father, grandmother, etc.) and a variety of gender differences available to children. However, this study endeavors to explore how the behavioral problems in children in two-parent households (married, cohabitating, and stepparent families) compare to the behavioral problems of children living with single-mother families and single-father families in the United Kingdom. By including single-mother and single-father families, two competing sociological theories are used as possible explanations for why child behavioral outcomes may vary across married, cohabitating, and stepparent families. The essentialist theory suggests that there are innate and natural differences between the parenting styles of men and women

because of the belief that children in two-parent homes have fewer behavioral problems. The constructivist theory suggests that child behavioral problems will be consistent in single-mother families and single-father families, because two-parent families are associated with having two incomes resulting in more resources. To find the most accurate theory, this study uses a baseline model that replicates findings from previous studies to compare single-mother families to two-parent families, while including single-father families to the study. By using this baseline model, Faulconer, Hveem, & Dufur (2022) state in Hypothesis 1 (H1), "children from single-parent families exhibit more behavioral problems than their peers in two-parent families" (2.5), and in Hypothesis 2 (H2), "children from single-mother families exhibit more behavioral problems than their peers in single-father families because of a lack of resources" (2.5).

Research Methods

This is a quantitative study, because it endeavors to produce precise and generalized findings (Rubin & Babbie, 2016). This method is used so that, through the use of questionnaires and scales, precise and generalized data can be procured. This data can be used to determine whether living in a single-mother family, a single-father family, or two parent home has any significant effect on the internalizing and externalizing behavioral problems of a child. This study also uses secondary collection methods. It pulls from previously existing longitudinal studies, cohort studies, and available records, to validate the hypotheses. A deductive method is used in this study. Theories are used to help form the hypotheses before collecting observations to test these hypotheses (Rubin & Babbie, 2016).

Dependent Variable

The dependent variables in this study are the child's internalizing and externalizing behavioral problems. These two variables are measured by asking parents a series of questions about their child's behavior while using the Strengths and Difficulties Questionnaire (SDQ), from which two scales are created to measure the child's internalizing and externalizing behavioral problems. The internalizing behavioral problem scale consists of 10 variables, while the externalizing behavioral problem scale contains 12 variables. Because internalizing and externalizing behavioral problems do not contain the same number of indicators, the two scales are standardized by using z-scores for the regression analysis. Higher than average negative behaviors are above zero, while lower than average behavioral problems are numbers below zero. Since the dependent variables comprising the child's internalizing and externalizing behavioral problems are standardized, coefficients with each independent variable are interpreted as changes in standard deviation.

Independent Variable

The primary independent variable is parent sex, which is used as a substitution for gender. Other independent variables are children who live with two parents, children who live with a single mother, and children who live with a single father. In order to measure for these independent variables, two parent families consist of children living with both biological parents (married or cohabitating), parents who remarried, or are cohabitating with a new partner. Meanwhile, children in single-mother or single-father families live exclusively with either their mother or father. Children with two parents account for 75% of the final study and are coded as 0. Children with a single mother make up 23% of the final sample and are coded as 1, and children in single-father households create 2% of the final sample and are coded as 2.

Control Variables

The control variable is the sex of the child, because girls often report higher levels of internalizing behavioral problems, while boys often exhibit higher levels of externalizing behavioral problems. The sex of the cohort member is reported as 0 for male children and 1 for female children. The closeness of the parent-child relationship is controlled, with the main parent whom the child lives with answering how close the parent feels to the child and the child expressing how close he or she feels to the parent. Closeness is measured on a 4-point scale with 1 being "not very close" and 4 being "extremely close." Meanwhile, economic resources are controlled by using the variables, such as if the main parent owns a home, receives child benefits, and according to the child's household income. Likewise, health and substance use are controlled using a score for parental depression, parent and child health, as well as whether the main parent respondent smokes or drinks heavily. Parental depression is controlled and measured using the Kessler six-item psychological distress scale, ranging from 0–24 and based on the frequency of depressive symptoms the main parent experienced in the last 30 days. Parent and child health are controlled and reported with the main parent stating "excellent health" as 0 and "poor health" as 5. Parental smoking is dichotomous with respondents receiving a 1 if they smoke and a 0 if they do not. Parent drinking is also dichotomous, and marked as "does drink" with a 0 and "does not drink" with a 1. Parental physical health behaviors are controlled and measured by using categorical measures. Child drug and alcohol use is also a control variable with 0 representing no substance use and 4 representing frequent substance use. Other control variables are extracurricular participation, where 0 is "no" and 1 is "yes" as well as the number of siblings a child has and its effect on the child's mental health, with the number of siblings measured from 0 to 5 or more. These control variables will result in a better understanding of what factors contribute to children's internalizing and externalizing behavioral problems.

Research Design

This study describes an exploratory research design that compares behavioral problems in children in either two-parent, single-mother, or single-father families in order to explore competing gender theories as possible explanations for the reason why children may experience different behavior outcomes. Exploratory research design fits this study because it is a methodology approach that uses theories in order to investigate and back up a research topic that has not yet been studied in depth (Rubin & Babbie, 2016). This enables this study to have the ability to gain greater insight and understanding as to how family types contribute to children's behavioral problems. A cross-sectional design is used in this study because it studies the observations that were gathered at a single point in time (Rubin & Babbie, 2016).

Data Collection

The data in this study came from Sweep 6 of the Millennium Cohort Study (MCS), a longitudinal study, which examined more than 21,000 children born across the United Kingdom (England, Wales, Scotland, and Northern Ireland) in 2000. The Millennium Cohort Study was collected by The Centre for Longitudinal Studies at the University College London under the auspices of the National Health Service Research Ethics Committees in the South West, London, and Yorkshire, from which they received ethical approval. Access to the MCS data was obtained through a contract with the UK Data Services. The original MCS sample was drawn from children born in 2000–2001. Sweep 6 was collected between 2015 and 2016,

which surveyed parents and their children from across the United Kingdom. This study uses purposive sampling by selecting a sample based on units that best represent and are useful to the study. This enables the study to extract valuable insights from the collected data and illustrate the effects of the findings on the population (Rubin & Babbie, 2016).

Participants

The children participating in this study average around 14 years old. The final sample includes 7,834 two-parent families, 2,458 single-mother families, and 210 single-father families.

Data Analysis

This study uses a baseline model. It is a single-case evaluation design that consists of repeated measures before it introduces a new intervention. By using a ratio level of measurement, the variable attributes in this study all have the qualities of interval measures and are based on a true zero (Rubin & Babbie, 2016).

To test the hypotheses, a series of 6-stepped Ordinary Least Squares (OLS) regression models are applied. Ordinary Least Squares (OLS) regression is an optimization strategy that allows for a straight line to be as close to the data points in a linear regression model as possible (Alto, 2023). All three types of family structure categories are used before each model is repeated, while using only respondents from single-mother and single-father households.

Model l, which only measures the relationship between family structure and behavior problems, serves as a bivariate model. Models 2-5 are examined using multivariate analyses. Models 2–4 include controls for other possible explanations for child outcomes, such as parent-child closeness (model 2), economic resources (model 3), and health factors (model 4). Model 5 includes the variables from each of these blocks allowing the family structure to analyze how child behavioral problems are affected due to a variety of potential factors.

Findings

The findings in this study only partially confirm Hypothesis 1(H1) that "children in single-parent families exhibit more behavior problems than their peers in two-parent households" (2.5). When all five models are applied to the three parent types, it resulted in children in single-mother families having the highest rate of negative internalizing behavioral problems. However, when single mothers have similar levels of financial and social capital as two-parent homes, the children of single mothers exhibit similar levels of internalizing behavioral problems as children in two-parent homes. Meanwhile, single-father families and two-parent households exhibit similar internalizing behavioral problems throughout all five models.

The findings concerning internalizing behavioral problems result in mixed evidence for Hypothesis 1(H1), while contrasting with the findings in contexts, such as the United States. All five models support that young people in single-parent homes have higher internalizing behavioral problems than children in two-parent households. However, the results show that when single-mother and single-father children have similar financial resources to two-parent families, children exhibit similar levels of internalizing behavioral problems as children in two-parent households.

The findings for Hypothesis 2 (H2) confirm that "children from single-mother families exhibit more behavioral problems than their peers in single-father families of a lack of resources" (2.5). When all five models were tested in the United Kingdom, the results reached similar conclusions to results reached on populations in the United States. Young people in single-mother and single-father families have a similar level of internalizing behavioral problems. Meanwhile, children in single-mother families have the same advantages when single mothers have similar resources and structural positions as single-father households. Therefore, this supports the constructivist theory that child behavioral problems will be consistent in single-mother families and single-father families when children lack the financial resources two-parent families provide to the household.

The findings in this study performed in the United Kingdom resemble similar results discovered on single-parent families in the United States. Internalizing and externalizing behavioral problem differences in children in two-parent families, single-mother families, and single-father families stay relatively the same throughout this study when controlling for parent and child closeness, involvement in extracurricular activities, and a variety of other factors such as income and overall health. The only difference in family types is seen in financial and social capital. These findings show that helping single parents access financial resources is the most effective way of lowering child behavioral problems.

Article 2

Krouse, J., Bernasco, W., Liefbroer, A.C., & Rouwendal, J. (2021). Single-Parent Families and Adolescent Crime: Unpacking the Role of Parental Separation, Parental Decease, and Being Born to a Single-Parent Family. Journal of Developmental and Life-Course Criminology. doi.org.

Literature Review

This study contains relevant and current sources. Krouse, Bernasco, Liefbroer, & Rouwendal (2021) describe how well-established empirical literature, and several criminological theories, demonstrate that growing up in a single-parent family and juvenile delinquency are related. They describe that there has been a change in the increasingly tolerant attitudes and norms regarding single-parent families in Western countries such as the Netherlands. First, parental separation and mothers choosing to become single parents has become more common. Second, starting in 1995, parents who were divorcing could request joint custody of the child instead of one parent having sole custody. However, in 1998, joint legal custody became the default option. Third, men and women in Western society are both starting to have equal resources and opportunities. This study endeavors to add to the existing literature by examining the relationship between criminal behavior during adolescence and how the family was constituted through either parental separation, parental decease, or being born in a single-parent home. The age of the child when the different type of family was formed and the differences between growing up with a biological mother or father in the different type of family structure were also taken into account. Using the family crisis model, which states that psychological distress, emotional resentment, and social tension are more often felt when experiencing a parental separation than a parental death, Hypothesis (H1a) suggests that, "growing up in a single-parent family increases the likelihood to engage in juvenile delinquency compared to growing up with two biological parents" (p. 598). Meanwhile, Hypothesis (H1b) suggests that "of those children

growing up in a single-parent family, children experiencing a parental separation show the highest level of juvenile delinquency, followed by children experiencing a parental death, and children born to a single parent show the lowest level of juvenile delinquency" (p. 598-599). Using Bowlby's attachment theory, which states that the loss of a child's biological parents (especially during the first five years) can have negative results on the child leading to weaker attachment and the development of forming attachment, Hypothesis 2 (H2a) suggests, "that a lower age of the children during the constitution of the single-parent family increases the likelihood to engage in juvenile delinquency" (p. 599). By combining Hypothesis 2 (H2a), Bowlby's attachment theory, and the family crisis theory, Hypothesis (H2b) states "that children experiencing a parental separation at a younger age show a higher level of juvenile delinquency compared to children experiencing a parental death at a younger age" (p. 599). By using Bowlby's attachment theory, which states that separation from the mother is more harmful to a child than separation from the father, and the maternal hypothesis, which states that living with a single mother would cause lower levels of delinquency than living with the father because the mother is better at controlling her children, Hypothesis (H3a) suggests, "that growing up with only a biological father in a single-parent family increases the likelihood to engage in juvenile delinquency in comparison with growing up with only a biological mother" (p. 600). By combining these theoretical ideas and the family crisis model, Hypothesis (H3b) suggests, "that children experiencing a parental separation and growing up with only a biological father show the highest level of juvenile delinquency, and children born to a single parent growing up with only a biological mother show the lowest level of juvenile delinquency" (p. 600). In contrast to Bowlby's attachment theory, the equality hypothesis suggests that single-mother and single-father families have the same level of criminal behavior in children because the equality between men and women in Western societies is increasing. This results in Hypothesis (H3c), "that the sex of the biological parent in a single-parent family does not affect the likelihood to engage in juvenile delinquency" (p. 600). The same-sex hypothesis states that a child living with a biological parent who is the same sex as the child is a better role model, thus leading to Hypothesis (H3d) that, "children growing up in same-sex parent-child dyads are less likely to engage in juvenile delinquency than children growing up in opposite-sex parent-child dyads" (p. 600).

Research Methods

This study uses a quantitative research design. This design is used to obtain numerical representations and for the manipulation of the observations so that the findings will be precise, objective, and generalized. This study also uses secondary collection methods, pulling from previous existing longitudinal studies, cohort studies, and available records, to validate the hypotheses. A deductive method is used in this study, because the study begins with theories which help form the hypotheses before observations are collected to test these hypotheses (Rubin & Babbie, 2016).

Dependent Variable

The dependent variable in this study is juvenile delinquency as based on recorded criminal behavior of the adolescents as registered by the Dutch National Police. Juvenile delinquency is defined as a dichotomous variable, indicating whether or not the adolescent has been a suspect of any criminal act between the ages of 12 and 18, regardless of the number of crimes or the severity of the crime(s).

Independent Variable

The two main independent variables in this study are single-parent family and type of single-parent family. The first independent variable represents family structure and is concerned with whether or not the child has always lived with both biological parents between birth and age 12. A child living with both biological parents is measured at the start of each calendar year by verifying that the child's registered address corresponds to the same registered address of both biological parents, regardless of whether the parents are married or cohabiting. Single-parent families include children living with only one biological parent (possibly in combination with other adults, such as a step-parent or grandparent), while children living without any biological parents are excluded from the analyses.

The second independent variable concerns the type of family the child lives with before age 12. In the first single-parent family, children live together with only one biological parent after their parents separated. When one biological parent has a different registered address than the other biological parent and their offspring, this is coded as a parental separation, regardless if the biological parents reunite after a couple of years. The second single-parent family includes children who live with one biological parent because the other biological parent is deceased. In the third single-parent family, children live together with only one biological parent throughout childhood, because they were born to a single parent.

Another independent variable is the age of the child when the single-parent family began. The value of the variable (children born to a single parent) is defined as 0. Regardless of whether the biological parents separated more than once, the child's first age is used in the analyses.

An independent variable is also the sex of the biological parent that the adolescent lives with in a single-parent family. The dataset contains an indicator of sex, and not gender identity, which means that only a binary indicator is available. To be able to test the hypothesis, the sex of the biological parent is cross-classified with the sex of the child.

Control Variables

A set of control variables is also included. The first control variable is criminal behavior committed by the biological parents. This variable is defined as whether none of the biological parents, one of the biological parents, or both of the biological parents has been suspected of a criminal act before the child turned 12 years old, independent of the number of crimes and the severity of the crime. Second, to account for the universally-observed sex difference in delinquency, the sex of the child is controlled. Third, the annual income of the household in which the child lived at age 12 is controlled, using an equivalence scale (CBS, 2019b), and taking into consideration (1) the size of the household and (2) whether the members are adults (18 years and older) or children. Also, to prevent households showing a negative household income from being excluded from the sample as a consequence of using the natural logarithm function for household income, an additional dummy variable is included for negative household incomes. Fourth, the birth cohort of the children from the years 1993 until 1999 is controlled to regulate for unmeasured period effects in crime or in crime reporting practices. Fifth, the possibility that a biological parent in a single-parent family got a new partner, by means of partnering in the form of a cohabiting union or remarriage, is controlled. This variable is defined as whether none of the biological parents, one of the biological parents, or two of the biological parents had a new partner before the child turned 12 years of age. Sixth, the country

of birth of the biological parents (based on a distinction made by Statistics Netherlands; CBS, 2021), is categorized as "both biological parents were born in the Netherlands", "one or two biological parents were born abroad in a Western country", and "one or two biological parents were born in a non-Western country" are controlled. If a child has one parent who is born in a Western Country and one parent who is born in a non-Western Country, this child is categorized as "one or two biological parents were born in a non-Western country." Seventh, the age of the biological mother when the child was born is controlled, consisting of the categories "until age 19", "between age 20 and 29", "between age 30 and 39", and "40 years and older." In order to prevent multicollinearity, the age of the biological father is not included, because it usually correlated with the age of the mother.

Research Design

This study describes an exploratory research design because it seeks to further investigate a topic in order to gather deeper insight and understanding (Rubin & Babbie, 2016). Krouse, Bernasco, Liefbroer, & Rouwendal (2021) state that the purpose of their study is to "explore competing sociological theories as possible explanations for why child outcomes may differ across the three groups" (p. 606). This study uses a cross-sectional design, because it studies the observations that were gathered at a single point in time (Rubin & Babbie, 2016).

Data Collection

This study is composed of seven complete birth cohorts of individuals that were born between 1993–1999. These seven birth cohorts are chosen to maximize the number of observed adolescents since all required microdata sets are available for these birth cohorts. The data includes crime data for each individual between the ages of 12 and 18. This results in a sample of 1,296,652 children. The data in this study were constructed by combining various register-based datasets accessible via Statistics Netherlands. These datasets (generally longitudinal) contain individual or household level data on the entire registered population of the Netherlands. The anonymized personal identifiers constructed by Statistics Netherlands are used to link the microdata sets. The datasets contain information from different sources. For this study, individuals are registered at a single address, therefore not making the registered address the children's place of full-time residence, especially for children of separated parents. However, for children of separated parents in 50/50 custody arrangements, the registered address is the place where they spent only half of their time. This study uses purposive sampling by selecting a sample based on units that best represent and are useful to the study. This allows a lot of information to be gained out of the data that is collected and used to describe the impacts the findings have on the population (Rubin & Babbie, 2016).

Participants

A total of 1,296,652 children were included in the analyses. Out of these children, 77.08% live with both biological parents, 14.47% experienced their parents separate, 1.11% experienced a parental death, and 7.33% were born in a single-parent family.

Data Analysis

Data management, record linkage, and analyses were done using the secure server of Statistics Netherlands with STATA, version 15.0. Since the dependent variable is a dichotomous measure, logistic regression analyses, which obtain odds-ratio in the presence of one explanatory variable, were performed.

A logistic regression model is used in this study to "determine the relation between growing up living with both biological parents or living in a single-parent family and becoming a suspect of juvenile delinquency" (p. 606). Odds-ratio levels of measurement is used in this study, because the outcome of the dependent variable (juvenile delinquency) is important for the categories of the independent variables. This study uses several theories to help explain aspects of social life, and to go from the deductive phase of reasoning toward observations, to the inductive phase of reasoning from the observations (Rubin & Babbie, 2016).

Findings

Hypothesis (H1a) confirms the family crisis model. The regression logistic model shows that living with one biological parent before age 12 when compared to living with both biological parents before age 12 increases the chances that a child will engage in juvenile delinquency (H1a). However, Hypothesis (H1b) could not be confirmed that, "children growing up in a single-parent family and children experiencing a parental separation show the highest level of juvenile delinquency, followed by children experiencing a parental death, and children born to a single parent show the lowest level of juvenile delinquency" (p. 614). Instead, the results show that children born to a single parent have the highest tendency to engage in criminal behavior before age 12. Meanwhile, children, who have their parents separate or have a parental death before age 12, have the least chance of juvenile delinquency.

Hypothesis (H2a) confirms Bowlby's attachment theory that the lower the age of the child during the start of a single-parent family the higher the chances are that the child will engage in criminal behavior (H2a). However, the second part of Hypothesis (H2b), using Bowlby's attachment theory and the family crisis model, is rejected, because children experiencing a parental separation or a parental death both show a higher tendency to engage in criminal behavior (H2b).

Hypothesis (H3a) and Hypothesis (H3b) cannot be confirmed, because the hypotheses contrast with Bowlby's attachment theory, the maternal hypothesis, and the equality hypothesis. Hypothesis (H3a) formed using Bowlby's attachment theory and the maternal hypothesis, states that being raised by a biological father in a single-parent family will increase the chances for a child to engage in criminal behavior compared to a child being raised only by a biological mother (H3a). Meanwhile, Hypothesis (H3c), formed using the combination of these two theories and the family crisis model, states that children raised only by the father will show the highest rates of juvenile delinquency while children born to a single-parent and raised by their mother will show the lowest level of criminal behavior (H3c). This shows that growing up with only a biological mother increases a child's chance of juvenile delinquency. Hypothesis (H3b) formed using Bowlby's attachment theory, the maternal hypothesis, and the family crisis model, states that a child whose parents separate and is raised by the biological father will show the highest level of juvenile delinquency. Meanwhile, a child who is born to a single parent and grows up with a single mother will be less likely to engage in criminal behavior (H3b) could not be confirmed. The results show that a child born to a single parent and living with a biological mother have the highest chance of engaging in juvenile delinquency, while a child raised by a biological father shows the least likelihood of engaging in criminal behavior. Hypothesis (H3d), formed using the same-sex hypothesis, only partially confirms that the sex of the biological parent in a single-parent home will increase the child's likelihood of engaging in juvenile delinquency if the child is of the same sex (H3d), because results show that sons growing up in

single-mother homes are more likely to commit criminal behavior. These findings show that the relationship between growing up in a single-parent home and juvenile delinquency is more complicated than first understood. Therefore, more research, which focuses on diversity, is needed when breaking down single-parent families.

Conclusion

Both articles lead to the same conclusion: that single-parent families and juvenile behavioral problems are related. The two main conclusions that are reached after reviewing these articles are (1) children living with a single parent, especially children living with a single mother, will have a higher chance of engaging in juvenile delinquency when compared to children living with both parents (Krouse, Bernasco, Liefbroer, & Rouwendal, 2021), and (2) single parents, especially single mothers, will see their children exhibit lower levels of behavioral problems if they have adequate physical and social resources (Faulconer, Hveem, & Dufur, 2022). Therefore, these two articles confirm the importance of children growing up in a two-parent household and the significance of ensuring that single parents have the resources to provide for their family so that their children will be less likely to exhibit behavioral problems. Improving access to financial resources may be the most effective way of reducing child behavioral problems. By ensuring that low-income families, especially single-parent families regardless of parent gender, have their essential needs met, parents would be able to spend more time with their children and develop a closer relationship with them (Faulconer, Hveem, & Dufur, 2022). Also, participation in extracurricular activities can assist with the internalizing and externalizing behavioral issues of children from both two-parent and single-parent families. Schools and policymakers should support extracurricular activities as an easily implemented intervention that can reduce child behavioral problems (Faulconer, Hveem, & Dufur, 2022).

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Middle Georgia
State University

Middle Georgia State University

100 University Parkway

Macon, GA 31206

School of Arts
And Letters