

The Hidden Figures of Cognitive Dissonance

Jennifer Berkebile

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Cecil V. Kramer, D. Min.
Thesis Chair

John T. Dunkle, Ph.D.
Committee Member

James H. Nutter, D.A.
Honors Director

Date

Abstract

In utilizing cognitive dissonance theory (CDT) as postulated by Festinger (1957), this research sought to identify how European American (EA) superiors Paul Stafford and Vivian Mitchell were influenced by EA coworkers while interacting with African American (AA) subordinates Katherine Johnson and Dorothy Vaughan, respectively, within the film *Hidden Figures*. Based upon a thorough review of the literature on CDT and its relationships with racism and sexism, this research examined specific scenes in which the pair interacted individually and around coworkers before determining the impact of external interpersonal relationships upon the central biracial relationships. Conclusions demonstrated the key principle of dissonance resolution, as proposed by Festinger, in relation to multiracial working relationships.

Keywords: cognitive dissonance theory, racism, *Hidden Figures*, interpersonal relationships, sexism

The *Hidden Figures* of Cognitive Dissonance

Humans enjoy grouping themselves with others of like nature. This very recognizable piece of human nature functions on a subconscious level, yet a single look at online social media indicates the existence of subcultures. Those who agree spend time together, and those who disagree scatter. When this complex displays itself upon genetically based traits such as gender, race, and ethnicity, it can and will result in situations of deadly discrimination. The 2018 renewal of the #MeToo social media movement in the aftermath of Title IX violations involving a large group of universities (Pinski, 2021; Keierleber, 2018) as well as the protests of 2020's Black Lives Matter (BLM) in the wake of George Floyd's death (Stone, 2020) attest to the volatility of such topics. Groups from political parties to families split over these divisive issues, drawing deep rifts that may never heal.

When these groups attempt to perform effective studies to glean their answers, they must choose an artifact or event to study. However, current events such as #MeToo and BLM are forever in motion, as evidenced by #MeToo's younger, more evolved counterpart MeTooK12 (Keierleber, 2018) and BLM's resurgence in cases such as Kyle Rittenhouse's 2021 acquittal (Black Information Network, 2021). Casting a glance back at historical events such as the 1960s civil rights movement (CRM) allows for a peek behind the curtain of time, but historical events only grant so much stagnancy for a credible review. It seems only fitting, then, to turn to a biographical film that encompasses related historical events. The 2016 *Hidden Figures* fulfills these three factors without abridgment. Culture influenced the film enough that the events mirror current ones, but the events of the film remain static enough to provide for an accurate study.

With a biographical film that spans a decade of the Space Race and encompasses a little more than two hours of material, it is necessary to study one aspect rather than the entire product

as a whole. This research will focus on how European American (EA) superiors Paul Stafford and Vivian Mitchell found their interactions with African American (AA) subordinates Katherine Johnson and Dorothy Vaughan informed by external relationships with EA coworkers. These interactions will serve as a stable case study and response to the question: what role do external relationships play within interracial and interpersonal interactions within the film *Hidden Figures*?

The role of external relationships in the creation of subconscious pressures is revealed through applying cognitive dissonance theory (CDT) to the film *Hidden Figures*. To begin gaining this insight, humanity must first review prior research to garner criteria for the identification of cognitive dissonance before applying CDT to external relationships to better understand the effect that external relationships have upon interracial and interpersonal interactions.

Literature Review

Inexplainable phenomena often find themselves processed in unique ways by the intellectually designed human brain. Two examples of these phenomena, racism and sexism, appear throughout the film *Hidden Figures*, but their appearances prove more than mere arbitrary selection by the filmmakers. In today's society, where racism and sexism appear prevalently (Sue et al., 2007), the items must undergo significant examination to better draw attention to those affected by these issues. Given the wonder of the human brain, one of the more impactful ways to address these issues is through the mass media and the stories that such media provide (Leslie, 2019; McCardy & Matusitz, 2021). Antagonism acts as a central motivator for racism and sexism's inclusion in the film, but the dissonance caused by that antagonism must be understood before investigating the antagonism itself. Thus, the goal of this literature review

contains three parts: (a) to identify the relationship between dissonance and action-based resolution in a socio-psychological influence communication theory, (b) to demonstrate evidence of the theory's impacts upon the racism and sexism, and (c) to examine the ways in which these themes appear within filmography.

Cognitive Dissonance Theory

Conceived by communication scholar Leon Festinger (1957), cognitive dissonance theory (CDT) emerged as a new lens by which scholars might view communication and interpersonal interactions, particularly those which involve decision-making moments. Though the theory could be rendered obsolete due to aging at over half a century of use, Festinger synthesized the three terms of dissonance, consonance, and cognition to act as repetitious, interdisciplinary concepts. When the three interact, they form what is known as CDT. Though he coined the three terms as parts of his theory, he merely renamed psychological phenomena when he did so. Festinger (1957) defines dissonance as an inconsistency in a person's actions and positional thoughts, consonance as consistency in a person's actions and positional thoughts, and cognition as the knowledge that a person holds to inform his actions and positional thoughts. He proposed that a person experiences dissonance if he acts differently than his positional knowledge—knowledge that comes from cognition—might predict. Consonance, then, comes from an equilibrium between action and positional knowledge. Since humans enjoy consonance and would rather possess consonance than dissonance, they will take any action necessary to regain consonance (Festinger, 1957).

However, where Festinger (1957) garnered proof in proposed action and reaction, he never truly tested his theory in the original text, and the actions and subsequent reactions were only generalized or further theorized through logic rather than actual tests and experiments.

Devine et al. (2019) proposed a dissonance thermometer as the means by which a researcher might be able to measure the extent of cognitive dissonance. However, this tool would only measure external responses to cognitive stimuli rather than the internal process. The dissonance thermometer shows the results of the dissonance rather than the dissonance itself (Devine et al.). Without direct measures, dissonance remains merely an ambiguous concept. There is nothing concrete to evaluate which means that tests of proposed dissonance may not be repeatable. Without this objective standard, no researcher may be able to validate another's results (Devine et al.), making it difficult to sustain any claim, including Festinger's (1957) claim that dissonance exists. If dissonance does not exist, then the tenants of CDT and the research they prompt would be unnecessary.

However, as research has progressed, it is clear that humans feel a compulsion to separate themselves from that which causes them anxiety or distress, and CDT is the best way to explain this phenomenon. Harmon-Jones and Harmon-Jones (2008) delved deeper into CDT's working theoretical model with an expanded model of their own that they term the action-based model. In their updated version of Festinger's (1957) CDT, Harmon-Jones and Harmon-Jones proposed reasoning as to why dissonance and consonance matter as a result of human-centered action. They suggested that dissonance interferes with action-based effectiveness, stalling human productivity and circumventing success. Since humans enjoy the idea of productivity, inferring that there is greater satisfaction in the amount and quality of work generated in productivity rather than laziness, dissonance that interferes must be mitigated. Not all humans are action-driven, however, leading Harmon-Jones and Harmon-Jones (2008) to make the provision that dissonance interferes with an enjoyment of life and therefore must be mitigated to enjoy life's fullest benefits.

Homola et al. (2020) and Czopp (2019) would agree with Harmon-Jones and Harmon-Jones (2008) in their studies on action-based resolution of dissonance. Homola et al. studied antisemitic sentiment in communities around infamous Nazi concentration camps. The closer the community placed to a camp, the higher the antisemitic intolerance measured. These communities experienced a sizable amount of cognitive dissonance when their political ideologies differed from the Nazi majority standpoint, and they chose to act through inaction by shifting their ideologies to match. Czopp (2019) concurs in an exploration of confrontation mentality. If an individual chooses to defend a differing ideology in a prejudicial situation, the individual will be shunned by the majority. If, however, an individual chooses inaction, the individual will experience worsening states of dissonance. When challenged with these options, the communities in Homola et al.'s (2020) study preferred to war with themselves rather than the majority opinion, and Czopp's (2019) evaluation promotes comprehensive consideration of situational factors before choosing confrontation. All of these choices result in inaction or adherence to the majority.

Dissonant Racial Thought

As recent events have shown in George Floyd's 2020 death and Kyle Rittenhouse's 2021 acquittal, the AA experience differs from the EA experience. Even in the United States of America, referred to as the land of the free and focused on equality for all men and women regardless of age, gender, or sexual orientation, discrepancies between the two races show in abundance. Whether it is through social and political experiences (Fortunato et al., 2018; Sue et al., 2007), school structure (Leyva, 2021; Olitsky, 2019), or psychological effects (Oates & DeMaris, 2021), discrimination does exist, and as Oates and DeMaris (2021) demonstrated, it impacts the minority race in permanently damaging ways.

When Oates and DeMaris (2021) addressed the rising tensions between AAs and EAs, they focused on the distress that the AAs experienced as a result of discrimination. Although one could claim that this discrimination occurs in minimal forms with minimal results, the data provided to Oates and DeMaris supports the opposite stance. On average, the EAs experienced less distress in direct correlation with the lesser amount of discrimination they received, thereby allowing EAs to experience better mental and emotional health than their AA counterparts (Oates & DeMaris).

The older findings of Sue et al. (2007) maintained this claim, distilling the aforementioned minimal discriminations into three categories: microassault, microinsult, and microinvalidation. Microassault is an explicit verbal or nonverbal attack, microinsult is an implicit verbal or nonverbal offense, and microinvalidation is the negation of a person of color's racial experience (Sue et al.). Though these three might each occur on the perpetrator's subconscious level, an attempt to excuse an unintended microinsult may result in a known microinvalidation (Sue et al.). The latter item says that simply because the insult was unintended, the person of color—in this case, the AA—has no right to feel insulted, and his or her feelings are therefore invalid (Sue et al.).

With these three subtle categories, it is no surprise that discrimination on all three levels causes more damage than it may initially seem (Oates & DeMaris, 2021), nor is it a surprise that all three types may be found within every aspect of American life. Education appears the most common space of division, and it seems clearest between female teachers who experience intersectionality (Leyva, 2021; Olitsky, 2019). Intersectionality, a state where a human being experiences the downfalls of holding two or more minority memberships, occurs most often in racial minority females (Griffin et al., 2019). Women qualify as a minority due to their inequality

with the patriarchal male race, and AAs in the United States qualify as a minority race due to their inequality with the EA race (Griffin et al.). The women that Leyva and Olitsky chose to study experienced a third category of intersectionality in their choice of science, technology, engineering, and mathematics (STEM) careers. According to the aforementioned studies by Leyva (2021) and Olitsky (2019), the lack of women in STEM fields leads to the majority of these women who enter such fields to experience intersectionality.

When Leyva (2021) performed the study as a set of interviews with four AA women who worked within the mathematics education system. Likewise, Olitsky (2019) performed the study as a series of observations of a group of AA female science teachers. The only difference was that Leyva (2021) relied solely on interviews and recollections; Olitsky (2019) entered the environment and attempted to fill any gaps with supplementary interview material. Both studies found that AA women in STEM face a plethora of discrimination and discriminatory tactics (Leyva, 2021; Olitsky, 2019), though it appears more prominently in that of the professional education environment (Olitsky, 2019).

According to Collins (1990), the AA school of thought—including the experiential knowledge of AA females—is silenced due in part to the majority's control of vital areas such as economy and policy. AA women, she says, fail to enter fields such as that of professional education because the system inherently prevents them from entering it with the necessary credentials. The system silences minority voices. Olitsky (2019) would agree. As professional educators who collaborate directly with EA males, AA females are more likely to combat conflicts in the form of an EA male school administration (Olitsky, 2019). Given the objective choice between a qualified EA male and an equally qualified AA female, an EA male administrator would be more likely to choose the qualified EA male in a subconscious,

subjective display of their shared characteristics (Olitsky, 2019). EA males also tend to expect females to react emotionally, but when AA females do it, they are often seen as overemotional, leaving AA women with the unspoken expectation of hiding their emotions (Olitsky, 2019).

As a result, many female AA teachers find it difficult to connect with their students and coworkers on a deeper, more personal level (Olitsky, 2019; de Saxe & Trotter-Simons, 2021). This inability connects to the silencing of the minority voice (Collins, 1990) and the inability to modify the status quo (de Saxe & Trotter-Simons, 2021). Causes and effects such as these connect back to Sue et al.'s (2007) breakdown of microaggressions and their detrimental impacts, particularly that of concealing one's emotions. Though the expectation may not be explicitly made present, as in a microinsult, AA women still feel the weight of it, and it still affects their everyday conduct and actions. Leyva (2021) recognized, however, that this brand of microaggression and intersectionality in AA women give common ground and a basis for group bonding. Since AA women share their experiences, they find it safer and more conducive to learn in an environment that caters to those shared experiences (Leyva, 2021). While an environment of shared experience allows for a measure of comfort, it also limits the opportunity for microaggression and misunderstandings (Sue et al., 2007; Leyva, 2021).

Fortunato et al. (2018) attested to the opposite of microaggression limitation in a study on the conditions surrounding the resignation of the president and chancellor at the University of Missouri. When confronted with a crisis such as the 2014 Ferguson, Missouri police shooting of Michael Brown, an unarmed AA teenager, the University of Missouri's leadership found itself unprepared for the task of quelling protests and tensions within its student body (Fortunato et al., 2018). Rather than allowing the students to speak and sympathize with one another as well as the majority EA crowd who might have disagreed with the protests, demonstrated as effective in

limiting microaggressions (Leyva, 2021), the university leadership acknowledged the protests and then pushed past them without considering the ideology behind the protests (Fortunato et al., 2018). They did not allow themselves to empathize with the student body, serving only to further inflame passions as the student body felt negated rather than equalized (Fortunato et al., 2018; Sue et al., 2007). Though Cross et al. (2018) might disagree, given that the EA male standpoint is rarely addressed, Sue et al. (2007) and Leyva (2021) make it clear that aggression of all types will continue without an effective way to limit the copious microaggressions.

AA Women in Science Filmography

Since modern experiences influence global and human surroundings, it was inevitable that as science progressed, films would emerge about its history and the near-mythological giants that loom large within that history. However, within those historical retellings lie the struggles of the ages, two of the most common being the struggle for racial equality and the struggle for gender equality. Intersectionality emerged most recently in the 2016 biographical film, *Hidden Figures* (Melfi et al., 2016; Lieway et al., 2017; Pecis & Berglund, 2021). Set in the early 1960s, the events of a female AA computer's life find themselves surrounded by the CRM as well as the Space Race against Russia (Melfi et al., 2016). Katherine Johnson lived during a time of trial and turmoil, both in her community and her workplace, but she emerged as one of the National Aeronautics and Space Administration's (NASA) most distinguished and decorated employees despite her race and her gender (Malcolm, 2020).

The box office hit film adaptation of Johnson's life's work during the Space Race (Mendelson, 2017) found itself the subject of many critiques and comparisons. Leslie (2019) took the route of comparison in a study on the impact of women in space technology throughout the years. In contrasting *Hidden Figures* against *Mercury 13* (Sington et al., 2018), also of Space

Race fame, and *Bombshell: The Hedy Lamarr Story* (Dean et al., 2017), of a Hollywood star who harbored intellectual dreams, Leslie (2019) found that the three leaned upon the male roles to tell the female stories. Moss-Wellington (2020) disagrees, claiming that *Hidden Figures* (Melfi et al., 2016) emerged as a counter-film to typical gender and race stereotypes in the genre. However, even Moss-Wellington (2020) recognizes and corroborates Leslie's (2019) note of the film's blunder in drawing fictionalized characters and plots to accentuate the AA women's struggle.

Rather than remaining true to the historical accounts (Malcolm, 2020), the film diminishes women's roles by forcing them to remain reliant upon fictional male authority and fictional EA interactions (Leslie, 2019; Moss-Wellington, 2020; Nkrumah, 2021). Similarly, *Mercury 13* and *Bombshell* relied upon contrasts with archived footage of John Glenn and narration of Mel Brooks, respectively, to tell the stories of the female astronauts who were slighted on the Mercury 13 mission and the female star who had been intellectually suppressed by her physical beauty (Sington et al., 2018; Dean et al., 2017; Leslie, 2019). Without the men, the filmography would not exist (Leslie, 2019). Gendered differences also parallel those of the critical choice to add EA antagonists as an effort to appeal to a broader audience (Weaver & Frampton, 2019). McCardy and Matusitz (2021) found Leslie's (2019), Weaver and Frampton's (2019), and Nkrumah's (2021) claims to be true in a Critical Discourse Analysis (CDA) of Melfi et al.'s (2016) *Hidden Figures*. Through an examination of language and a series of microaggressions, the study found that the women experienced oppressive genderlect, language that favors one gender over another, and discriminatory actions (Sue et al., 2007; McCardy & Matusitz, 2021). The genderlect favored the broad audience with majority appeal, and the blatantly discriminatory actions favored the depiction of women as weak characters (McCardy & Matusitz, 2021).

When combined with microaggressions such as microassault and microinsult (Sue et al., 2007), genderlect makes a powerful discriminatory weapon (McCardy & Matusitz, 2021). Johnson experienced several instances where her gender as a female prevented her from entering the same environments as her male counterparts, simply because no protocol existed for a woman's presence in the same room as the men (Melfi et al., 2016; McCardy & Matusitz, 2021). There were also many instances where her race, AA, prevented her from attaining equal credit or status as her EA counterparts, simply because her race was viewed as a second-class race (Melfi et al., 2016; McCardy & Matusitz, 2021). For McCardy and Matusitz (2021), this displayed AA females' condition in a premier field and gave experiential evidence to support Leslie's (2019), Weaver and Frampton's (2019), and Nkrumah's (2021) claims.

Implications of Three Elements

A thorough review of the literature established that AAs, particularly AA women, experience discrimination through a variety of forms including microassault, microinsult, and microinvalidation (Leyva, 2021; Oates & DeMaris, 2021; Olitsky, 2019; Sue et al., 2007). Correlation may be drawn between the experiences of the AA population as a minority race's members, the accounts of women's gendered inferiority, and the stories told through film (Leslie, 2019; McCardy & Matusitz, 2021). However, the latter item may experience the detriments of racism and sexism's reality existence (Leslie, 2019), making it necessary for the proposed study to justify the use of such a film as well as to recognize the potential weaknesses of using such a film.

Although CDT correlates with the perpetuation of racist and sexist experiences and the minimization of those discriminatory effects (Festinger, 1957; Leyva, 2019), the same justifications and recognitions are necessary with the use of CDT (Festinger, 1957; Harmon-

Jones & Harmon-Jones, 2008) as with racism and sexism in film. Without an application of the theory as a prior basis (Festinger, 1957; Harmon-Jones & Harmon-Jones, 2008), the study will require explicit justification and recognition throughout the study to sustain any succeeding claims or original findings. However, the study will contribute to the expansion of CDT and allow for a clearer conceptual understanding of CDT.

CDT's limitations in conjunction with the cautions on the use of film's critique of racism and sexism (Leslie, 2019; McCardy & Matusitz, 2021) make conducting a study with reliance on both items a gap to fill and a strong caveat of which to take heed. On the other hand, the potential reward of seeing CDT and extended CDT (Festinger, 1957; Harmon-Jones & Harmon-Jones, 2008) in action far outweighs the risks of potentially invalid or skewed results. When the limitations are acknowledged correctly, then the benefits to the field of communication and CDT as a holistic view are well worth the potential risks to the process.

Methodology

This research used Harmon-Jones and Harmon-Jones's (2008) expanded CDT model in conjunction with Festinger's (1957) original model. The study examined the effect of external relationships and the resulting peer pressures upon interracial and interpersonal interactions in the popular film *Hidden Figures*. Formatted as a qualitative, theory-based rhetorical criticism, two full viewings, one without the script and one with the script, allowed the study to pick out six key scenes. Three of these conversations occurred between Paul and Katherine and three occurred between Vivian and Dorothy. These interactions underwent closer examination of the evident racism and sexism by analyzing the scenes and extracting specific appearances of historical significance, microaggressions, and external stressors before applying Harmon-Jones and Harmon-Jones (2008) dissonance model to these situations. The historical significance

provided context, microaggressions provided a standard of racism and sexism, and external stressors provided peer pressures. This examination allowed the study to conclude that individual peer pressures from Paul and Vivian's external relationships created dissonance and resulted in their subsequent actions toward Katherine and Dorothy, respectively.

Given the length and breadth of the film, the selection of scenes for the study's analysis began with a brief overview of the film and base understanding of racism and sexism as broad concepts without theoretical filters. Final selection of six key scenes relied on the following series of criteria as based on the prior research: historical significance of EA and AA relations as determined by McCardy and Matusitz (2021), the microaggression categories of microassault, microinsult, and microinvalidation as defined by Sue et al. (2007), and the action to inaction structure proposed in Harmon-Jones and Harmon-Jones's (2008) expanded model of Festinger's (1957) foundational CDT. The appearance of these criteria allowed these six scenes to be selected, and the further breakdown examined the significance of these criteria by extrapolating dialogue and actions from Paul, Vivian, Katherine, and Dorothy's interpersonal exchanges. These criteria and examination also allowed for the identification of peer pressure influence throughout the course of the film.

Results and Discussion

Throughout the course of the film *Hidden Figures*, head engineer Paul Stafford and East Computing Group supervisor Vivian Mitchell must learn to interact with and work alongside West Computing Group members Katherine Johnson and Dorothy Vaughan. When Katherine, an AA female, receives a promotion to work with the elite, all-EA, all-male Space Task Group headed by Paul, she finds herself separated in both race and gender. Similarly, Dorothy spends the duration of the film in conflict with Vivian, separated not by gender but by race. In both

scenarios, AAs Katherine and Dorothy fight to find credibility in the eyes of their EA superiors despite the internal and external pressures on their working relationships.

Since the film primarily follows the AA women as principal protagonists, it sets up the two EA characters as principal antagonists. Both Paul and Vivian pronounce personal beliefs that contradict their subsequent actions in areas of both racism and sexism. These pronouncements lead to distinct conflict between their interactions with Katherine and Dorothy, respectively, as well as the external pressures from their interactions with same race and same gender coworkers. However, the ways in which these stereotypes and peer pressures act directly upon each other are not made explicit and therefore is worth investigating further.

Scene One—Katherine Meets Paul

When Katherine joins the Space Task Group, she first encounters her EA coworker Paul Stafford after a hasty conversation with their supervisor (Melfi et al., 2016). As she begins to set up her desk, the loud squeaking of a marker starts. She pays no mind to it until it suddenly stops. Peering around her box, she meets Paul's gaze as he stares at her from one desk over. He holds a black marker in his hand. She looks back down at her desk, and the squeaking resumes. A few moments later, a blue book of papers slams onto her desk, and she looks up to see Paul, who says by way of request, "My numbers are spot-on" (Melfi et al., 20:42). Katherine nods, tells him, "I will double-check them, sir, no problem" (Melfi et al., 20:45), and drags the book across the table to begin checking it. Paul turns away from her desk as she begins to peruse the pages. However, only a page or two into her review, she frowns, prompting her to riffle through the pages in confirmation before calling Paul back to the desk. Katherine tells him that she cannot see the information, to which he shrugs, picks up his coffee mug, and tells her that she does not have clearance to see anything more (Melfi et al.).

For McCardy and Matusitz (2021), historical significance stems from the ways in which the AA women experienced racial discrimination within the film as it accords with the ways in which AA women experienced racial discrimination within documented history. Paul's refusal to grant Katherine access to more information with a derogatory glare also indicates his belief that she should not work alongside EAs, which corresponds with a matching historical occurrence. This refusal emphasizes the concept that Paul views Katherine's presence as a computer unbecomable, and he views her presence alongside his group of EA males as staunchly unthinkable, leading him to refuse a retraction of his redaction. Given this marker, it is reasonable to assume that this scene within *Hidden Figures* fulfills the historical significance criterion. However, much like life itself, this scene does not exist in a vacuum, implying a necessity to examine the surrounding scenes, particularly the ones that involve coworkers with whom Katherine interacted prior to her meeting with Paul. Each conversation contains indicating markers as to why this behavior persisted throughout time.

Katherine begins as a manual computer for the West Computing Group, a group of all AA women (Melfi et al., 2016). Their work, to calculate supporting mathematics for the elite Space Task Group housed within the National Aeronautics and Space Administration (NASA), acts in conjunction with the East Computing Group, a group of all EA women. However, when Vivian, the head of the East Group, visits the West Group with the request from the Space Task Group for a computer "with a handle on Analytic Geometry" (Melfi et al., 11:33), the West Group's de-facto leader Dorothy recommends Katherine for the position. Despite her evident surprise, expressed to her assistant, Vivian agrees to check Katherine's credentials.

In the next shot, Vivian leads Katherine down the corridor toward the Space Task Group, rattling off numerous instructions before slapping Katherine's new clearances onto Katherine's

cardboard moving box and turning on her heel, leaving Katherine alone in front of the doors to the Space Task Group (Melfi et al., 2016). Katherine pushes the door open and steps through, gazing around at the engineers as they work independently at their desks or collaborate at the blackboards. The moment of awe ends abruptly as one of the EA male engineers passes by her and, in a motion similar to Vivian's slap with the credentials outside the room, drops a trash can onto Katherine's box with a muttered, "This wasn't emptied last night" (Melfi et al., 16:51). She begins to protest, but the engineer is already gone. However, the minor interaction leads to the rest of the EA male engineers pausing their work to stare at her, and she meets their gazes in an abashed manner as she removes the trash can, sets it back on the floor, and makes her way to the front of the room (Melfi et al.).

Katherine exchanges a few words with the Group's EA female secretary, Ruth, who, after a moment of surprise, gives Katherine a desk assignment and says that she will bring the work to her (Melfi et al., 2016). Katherine makes her way over to her desk with almost the entire room staring at her save for Ruth. She steadily ignores them until the Space Task Group's supervisor, an EA male named Al Harrison, strides out of his glass-enclosed office to address the EA male head engineer, Paul Stafford. They exchange several terse words about the dire situation of the Mercury 7 rocket. As Al makes to return to his office, he asks Ruth if they have a computer yet, and Ruth introduces Katherine to him (Melfi et al.).

Al delivers Katherine's assignments, which includes checking the engineers' math (Melfi et al., 2016). Paul, already irritated from his earlier chastisement, begins to object. However, Al replies that if Paul could handle it himself, then the rocket's heat shield would not still be losing shingles. Al then asks for the room's attention, reminding them that they are "America's greatest engineering and scientific minds" (Melfi et al., 19:57) and should not resist a quality check on

their work, directly addressing Paul at the end of the statement. Although irked, Paul responds in the affirmative, and Al leaves them to their work. In the very next shot, Katherine meets Paul directly as recognized in the preceding summary (Melfi et al.).

First, this progression of scenes fulfills McCardy and Matusitz's (2021) parameters for historical significance from Katherine's original computing situation through the EA male engineer's assumption of her role occupation. Katherine's original computing situation separated the AA women from the EA women so that, although they worked on the same assignments—ostensibly making them equal to the EA women—the AA women could not work within proximity to the EA women and vice versa. This situation demonstrated the historical precedence of Jim Crow era segregation where living situations existed in separate but supposedly equal conditions. Similarly, the EA male engineer's assumption of Katherine's position as the custodian, a low-paying position, reflected the historical precedence of the AA community as nothing more than janitorial cleaning crew. During the film's historical focus on the 1960s, women rarely worked outside the family unit (McCardy & Matusitz). If they did work, they worked in similar capacities to those that they assumed in the home—usually housemaids—and, although the educational landscape began to evolve into a more female-prolific sense, AA women remained on the bottom of the socio-economic ladder.

Second, this progression of scenes can be distilled into three key conversations, each with demonstrations of multiple microaggressions as posed by Sue et al. (2007). First, she converses with EA female Vivian about the requirements for working with the elite Space Task Group. Second, she encounters an unnamed EA male engineer who draws an assumption about her occupation based upon her skin color. Third, she introduces herself to EA male Al about her credentials and duties with the Space Task Group. In each of these exchanges, Katherine must

address her suitability to the position of Space Task Group computer due to her race.

In the first interaction, EA female Vivian walks Katherine to the doors of the Space Task Group (Melfi et al., 2016). Her final instruction, “They’ve never had a colored in here before, Katherine. Don’t embarrass me” (Melfi et al., 16:21), explicitly uses the derogatory term *colored* to describe Katherine before implicitly assuming that Katherine will sully Vivian’s reputation. The assumption also implies that Katherine only received the position due to Vivian’s influence and power via recommendation rather than Katherine’s skill and credentials. Additionally, Vivian’s action to grant Katherine’s clearances—an aggressive slap onto the cardboard moving box rather than a calm passing to Katherine’s hand or setting onto Katherine’s box—implies a particular level of tension between Vivian and Katherine. In this case, the explicit use of *colored* pairs directly with the implicit assumptions against Katherine’s skill and credentials, constituting a joint microassault and microinsult (Sue et al., 2007). These actions demonstrate degradation, though the microassault appears more evident than the microinsult.

In the second interaction, the unnamed EA male engineer slams a trashcan onto Katherine’s moving box with an irritated comment about how it should it have been emptied the previous night (Melfi et al., 2016). This engineer simply assumes Katherine’s occupation with a flawed syllogism—all working AAs are custodial, and Katherine is AA, therefore she must be custodial—and undermines her ability to calculate complex equations alongside the Space Task Group. According to Sue et al. (2007), this action categorizes as a microinsult since he may not have consciously processed his action as aggressive toward Katherine’s status as AA. However, this behavior persists in its contribution to later instances of not-so-innocent microaggressions.

The third interaction appears similarly when EA male Al addresses his EA female secretary, Ruth, before deigning to address Katherine at Ruth’s behest. In doing so, Al pointedly

devalues Katherine as a human, treating her as subhuman (Sue et al., 2007). When he asks questions about her credentials, Ruth gestures to Katherine, but Al only addresses Ruth until he asks, “Does she know how to handle Analytic Geometry” (Melfi et al., 2016, 18:20). Ruth has to make a specific effort to direct his attention to Katherine by saying, “Absolutely. And she speaks” (Melfi et al., 18:22), before Al will speak directly to Katherine. His slight, whether intended or not, implies that Katherine’s race prevents her from communicating for herself and implicitly places a higher value on Ruth because she is EA. Again, while it could be argued that Al remained consciously unaware of what his actions implied, allowing for the categorization of his slight as a microinsult, the actions still serve to degrade Katherine’s skill, credentials, and value as a person (Sue et al.).

Each of these interactions fulfills the historical significance and racial microaggression criteria, signifying that this progression aptly contributes to the main conversation for examination: Katherine and Paul’s first meeting. As such, that conversation must now undergo its own evaluation of the racial microaggression criteria as set forth by Sue et al. (2007) and defined previously in the review of relevant literature: microassault, microinsult, and microinvalidation. These microaggressions heavily involve microinsults aided by previous microaggressions displayed in the aforementioned interactions.

During this conversation, Katherine speaks with EA male Paul about his calculations in which he not only redacts the necessary information but also proceeds to disqualify her from viewing all of his work due to a lack of clearance (Melfi et al., 2016). While his reasoning appears much more solid than that of his unnamed counterpart who gave Katherine the trashcan, Paul’s nonverbal body language as well as his tone of voice when speaking with Katherine indicate his dislike and microaggression (Sue et al., 2007). When she catches him redacting the

material before he approaches her, they make eye contact, and he looks away almost immediately as though she caught him in a morally bad action (Melfi et al.).

As Katherine returns to unpacking her desk items, Paul pushes back his chair and stands (Melfi et al., 2016). When he finally approaches her, he only says, “My numbers are spot on” (Melfi et al., 20:41), slamming the blue book of calculations onto her desk by way of request. Throughout their discussion, he does not make eye contact with her, and he begins to stride away before Katherine even agrees. After she calls out to Paul and asks him for an unredacted copy, he speaks condescendingly of her lack of clearance, dismissing her concern with a mere shrug. None of his terms or actions evidence explicit racism, but his actions and tone imply microinsult (Sue et al., 2007). Paul’s microinsult parallels the microaggressions presented by his EA coworkers in Katherine’s previous interactions, and, much as in the previous interactions, Katherine does not appear surprised, indicating that these microaggressions are to be expected from either these individuals or EAs in general.

In Harmon-Jones and Harmon-Jones’s (2008) action-based cognitive dissonance model, human-based action operates as the method by which individuals alleviate dissonance. If cognitive dissonance is present, it interferes with human productivity, and this interference forces individuals to take action to alleviate the dissonance. When viewed in the context of Katherine and her EA coworkers’ interactions, the model appears through microaggressions. For Vivian and the engineers, EAs comprise a specialized in-group in which Katherine and other AAs hold no membership, indicating that all AAs comprise the distinct out-group. When Katherine, an AA, is promoted to work alongside the EAs as an equal, the EAs experience a distinct sense of cognitive dissonance because her promotion is inconsistent with what they believe.

For Paul and the EA engineers specifically, Katherine represents someone different

within their elite group. As Paul expresses, they feel that they should not need an AA woman to check their math because they are superior to her in both race and gender, leading them to inundate her with microaggressions as a means of establishing that dominance. All EAs act without remorse or shame, indicating that these microaggressions fulfill the intended goal of alleviating dissonance. Although she continues to work alongside them, they feel that consistency has been established because she knows of their supremacy in this situation.

Additionally, the close mirroring of the EAs' microaggressions with each other evidences that they agree among themselves about Katherine's treatment (Harmon-Jones & Harmon-Jones, 2008). No one protests on her behalf because they have found consonance in the establishment of supremacy. Paul sets this standard through his actions in redacting the mathematical calculations within the blue book that he hands to Katherine. As the head engineer of the Space Task Group, Paul sends social cues of the status quo to his coworkers. His redaction of material impedes Katherine's work and allows him to vocalize her lesser clearances, reminding her of her place in the workplace hierarchy. Paul's action and Katherine's lack of a further argumentative protest on her own behalf set the standard: EAs superior, Katherine inferior. For the EAs, to protest would be to cause further dissonance.

Scene Two—Supervisors and Computing Groups

While Katherine settles into the Space Task Group, her friend Dorothy begins another day with the all-AA, all-female West Computing Group (Melfi et al., 2016). After Vivian, her white counterpart of the all-EA, all-female East Computing Group, delivers the day's assignments, she exits the West Group's room, but Dorothy follows. Though she hurries after Vivian and her female EA assistant, the two EAs do not slow until Dorothy calls, "Mrs. Michell" (Melfi et al., 12:03). As Vivian halts and turns, Dorothy manages to draw equal with the EAs, a

pleasant smile on her face as she proceeds to inquire as to the status of her application to become the group's official supervisor. Vivian shifts uncomfortably, exchanging a resigned, almost distasteful, look with her assistant as she tells Dorothy that NASA is not planning to assign a permanent supervisor to Dorothy's group (Melfi et al.).

Dorothy, disappointed, asks for the decision's reasoning (Melfi et al., 2016). After a brief pause, Vivian replies, "I don't know why. I didn't ask why" (Melfi et al., 12:22) as if explaining to an impertinent child as to why the question is invalid. Dissatisfied with this answer, Dorothy persists, explaining that the group "need[s] a supervisor, ma'am" (Melfi et al., 12:25) and that she is "doing the work of a supervisor" (Melfi et al., 12:33). Vivian simply shrugs, uses Dorothy's first name to tell her that the current arrangement works fine, and changes the subject back to the topic of their day's calculations. Before Dorothy has the opportunity to protest further, Vivian and her assistant turn on their heels and stride away, leaving Dorothy alone in the hallway outside the West Group's room (Melfi et al.).

According to McCardy and Matusitz (2021), historical significance appears not only through the repetitive theme of AAs in traditionally EA-held positions but also through pointed respect—or lack thereof—between Dorothy and Vivian. During the interaction, Dorothy makes a point to address Vivian as *Mrs. Mitchell* or *ma'am* (Melfi et al., 2016). Conversely, Vivian makes it a point to address Dorothy by her first name rather than any title or salutation. Historically, these forms of address proved common between individuals of differing races. The perceived superior received a more respectful version of address whereas the perceived inferior received a more common version of address. Such a separation allowed the establishment of racial boundaries and the accompanying power differential (McCardy & Matusitz).

While Dorothy's brief conversation with Vivian indicates a clear power difference

between the two women, Vivian's perceived racially based power also appears through her indirect encounter with the other West Group computers. Although the West Computing Room fills with excited chatter as Dorothy begins to hand out assignments, the AA computers fall silent and studious upon Vivian's entry, focusing on their work rather than their rapport with each other (Melfi et al., 2016). Her very presence creates a more solemn atmosphere, and her form of address to the whole group makes common use of the term *girls* despite her closeness in age to the AA women. She speaks quickly and dismissively of their presence with statements that draw their attention back to their work and away from each other's socialization (Melfi et al.).

Once again, the historical significance appears through the verbal form of address and the nonverbal indicators that she perceives the AA women as disruptions to her focus rather than as human coworkers to her position. Due to her verbal and nonverbal communication, Vivian can be classified as delivering microinsults (Sue et al., 2007). While the communication may appear explicitly aggressive and therefore should be categorized as microassaults rather than microinsults, nothing explicitly offensive appears within her language. Only context grants the offensive implications, and the context would indicate implicit meaning, leading to a categorization as microinsult. Since she is accompanied by her EA assistant, who fails to oppose Vivian and who rather encourages Vivian's behavior, the microaggressions appear complicit between all EAs in NASA's employment at the Langley Research Center (Sue et al.).

During her conversation with Dorothy, Vivian persists in utilizing both nonverbal signals that Dorothy is not worth her time as well as verbal signals that Dorothy is inferior, resulting in continued use of microinsults (Sue et al., 2007). These microinsults only further increase the implication that Dorothy is inferior to Vivian and her assistant due to their races. The microinsults also serve to cement the hierarchical status quo between EA and AA employees. By

weaponizing language differentials, Vivian verbally reinforces the invisible structure that separates her position from Dorothy's position. The language allows Vivian the power to minimize the significance of Dorothy's work without granting Dorothy the opportunity to dismantle the language structure. Vivian's matter-of-fact delivery of the microinsults acts as a subconscious pressure for Dorothy to maintain the language boundaries (Sue et al.).

The action-based model indicates that Vivian feels dissonance from Dorothy's request after her supervisor application, and the external stressors compound this dissonance as she sees AA women completing the same work that she and her EA coworkers do (Harmon-Jones & Harmon-Jones, 2008; Melfi et al., 2016). Vivian believes that AAs should be inferior, unequal in power and intellect. Therefore, AAs cannot complete the same work, and official supervisor positions should only be awarded to EA women. EAs are the only women who can handle an evident position of authority. Dorothy's request for information on the status of her application for such a position challenges Vivian's thought and leads her into a balancing attempt through microinsult. The presence of Vivian's EA coworker also empowers Vivian to deliver these microinsults as a means of maintaining her own superiority. When her EA coworker reacts positively to Vivian's microinsults, Vivian continues to act in terms of microinsult because the positive reaction brings consonance (Harmon-Jones & Harmon-Jones).

Scene Three—No Colored Bathrooms

Katherine's first experience with the Space Task Group sets the precedent for the continuation of her time with the group. After months of the same divisive treatment, Katherine returns to the Space Task Group's workroom after physically running between buildings to utilize the Colored Only bathroom near her old West Computing Group room (Melfi et al., 2016). As Katherine makes her way back to her desk in the center of the Space Task Group, her

dark hair plasters to her scalp, and her makeup runs down her face and into her sodden clothing, dripping wet from the downpouring rain outside. She draws stares from her EA coworkers, who wait silently, as their supervisor, Al, demands to know where she goes every day. His demand indicates that she makes this run on a daily basis. She wipes her face off with her equally wet hands and replies, “To the bathroom, sir” (Melfi et al., 1:01:26). As Al stands outside his office above the floor of the Space Task Group, he incredulously repeats her answer and asks what she does for 40 minutes in the bathroom every day (Melfi et al.).

Katherine begins quietly, maintaining an even expression and tone as she explains that there is no bathroom for her in the building that houses the Space Task Group. When Al presses her further, her tone grows colder as she enlightens him to her situation:

There is no bathroom. There are no Colored bathrooms in this building or any building outside the West Campus, which is half a mile away.... I have to walk to Timbuktu just to relieve myself. And I can't use one of the handy bikes.... My uniform—skirt below my knees, my heels, and a simple string of pearls. Well, I don't own pearls. Lord knows you don't pay Coloreds enough to afford pearls! And I work like a dog day and night, living off of coffee from a pot none of you wanna touch! (Melfi et al., 1:01:49-1:02:29)

By the time she finishes, she turns to include the rest of the EA engineers in the last part of her explanation, turning it into an accusation (Melfi et al.). Her voice cracks through the silent room on the last word, but the EA engineers remain stone-faced and unreactive. Katherine takes a shaky breath, recomposes herself, and turns back to Al, asking to be excused for her restroom use before collecting her purse and exiting the still-silent room without waiting for a response. After her departure, Al glances around the room before walking to the segregated coffeepots and peeling the label off the one marked out for Katherine, sweeping a pointed glare around the room

as he does so (Melfi et al.).

As McCardy and Matusitz (2021) note in their critical discourse analysis, the most historically significant piece of this scene lies in the further allusion to the Jim Crow era separate but equal doctrine. Within Katherine's fury, she references bathrooms and coffee pots as separate. She must use specific bathrooms, designated for her race at that historical age as *Colored*, and she must use a separate coffee pot from the EA engineers, who set out a separate pot on her second day of work after they decided not to treat her as an equal in their group (Melfi et al., 2016). Historically, the separate but equal dictum worked to maintain a boundary line between the two races and further the concept that AAs are not equal to EAs. Therefore, EAs deserved special privileges (McCardy & Matusitz). Framing the distinction as separate but equal allowed the Jim Crow-practicing states to comply with federal mandates—providing equal service to both AAs and EAs—while maintaining their own positional beliefs about racial inferiority. However, as Katherine experiences, separate facilities were not equal in quality, which contributed to the EA positional beliefs of Jim Crow (McCardy & Matusitz).

Two key instances occurred prior to Katherine's response with AI, and both of these contributed to her frustration in that response. First, AI's female EA secretary Ruth refused to tell Katherine where the bathrooms were. Second, the EA engineers created separate coffee pots to prevent Katherine from touching their special pot.

In the first conversation, Katherine approaches Ruth on her first day with the Space Task Group to ask where the ladies' room is (Melfi et al., 2016). Ruth, busy with a phone call, gives Katherine an irritated glance before covering the receiver and whispering to her, "Sorry. I have no idea where your bathroom is" (Melfi et al., 21:24), before turning back to her phone call. This conversation sends Katherine on a search for the bathroom, and she eventually returns to the

West Campus where she knows an AA-approved bathroom exists, dragging her books and pencil with her so she does not delay her work's completion.

In the second interaction, Katherine approaches the coffee table near the back of the Space Task Group room (Melfi et al., 2016). Buried in her paper, she fails to notice the EA engineers' heads slowly turning in her direction as she stands before the coffeepot and fills her cup. The EAs gradually stop their work to watch her at the coffee table until silence dominates the room. Paul is the last to look, realizing only a few moments before Katherine as to why silence fell. Only when Katherine finishes and turns does she see the EAs, who stare at her in silent reprimand. The minute that she meets their gazes, they all return to their work, and she puts her head down as she makes her way back to her desk. The next morning as she goes to fill her coffee cup, she sees a new coffeepot, unplugged and unfilled, with the label *Colored* on it. She sighs, looks around, and goes to brew her own pot (Melfi et al.).

Both of these external stressors fall into the same historical significance category as the main scene, therefore making the stressors equally valid for examination under the microaggression criterion as pressures on Katherine's key relationship with Al (McCardy & Matusitz, 2021; Sue et al., 2007). First, Ruth's refusal to tell Katherine where the restroom is as well and the condescending tone that Ruth uses act as examples of microinsult, although her refusal to give Katherine an answer could be classified as a microassault (Sue et al.). Second, the EAs' presentation of a separate coffeepot can be classified as a microinsult. None of these instances are explicit attacks to Katherine. None of the comments or actions would offend without the previously established context, making them implicit offenses rather than explicit ones. However, their implicit natures, a hallmark of the historical era, make it difficult for Katherine to respond (McCardy & Matusitz; Sue et al.).

Although the central interaction between Katherine and Al focuses on Katherine's address of the microaggressions that she has confronted over the past several weeks, new microaggressions appear within the interaction. The foremost microaggression issues from Al as he incredulously prompts Katherine to explain her absences. At best, the incredulity is only a microassault due to its explicitly aggressive tone and attack on Katherine's honesty (Sue et al., 2007). Al does not believe that Katherine could spend 40 minutes in the bathroom every day. At worst, however, the incredulity categorizes as microinvalidation due to its innate roots within disbelief. In choosing not to believe her experience of running to the bathroom, he chooses to invalidate the experiences that drove her to need a 40-minute restroom break each day (Sue et al.). The other primary microaggression within this interaction involves the EAs in the background of Al and Katherine's conversation. Their apathy to the situation categorizes as microinvalidation, implying offense in their refusal to acknowledge Katherine's grievances against them (Sue et al.). They want to act as though the grievances never occurred, which invalidates her experiences as a whole.

In this scenario, the action-based model appears through Al's statement and the other EAs' lack of action. First, Al's statement indicates that action remains the first method of status-setting and consonance-inducement. Much like his engineers in Scene One when Katherine first joined the Space Task Group, Al uses both verbal and nonverbal signals in microaggression to express his disbelief toward Katherine. He cannot reconcile what he knows of standard restroom breaks with Katherine's account of her own restroom breaks, which causes dissonance within Al's mind. To alleviate it, he demands an answer, which the action-based model qualifies as mitigating action (Harmon-Jones & Harmon-Jones, 2008).

Conversely, the other EAs choose inaction to alleviate their dissonance in this case.

While their earlier adherence to the model indicates that they require action to dissolve dissonance into consonance, their lack of action in this case indicates one of two scenarios (Harmon-Jones & Harmon-Jones, 2008). First, Al's microaggression and Katherine's response increase their dissonance to the point of inaction because her response does not adhere to their earlier expectations. Their positional beliefs about her fail to align with the demonstrated action, which causes further dissonance. Second, the EAs' dissonance has dissolved into consonance with Katherine's actions and does not require mitigating action. Due to historical significance in this scene as well as Al's microaggression, the former option is more likely, and inaction in this case signifies heightened dissonance (Harmon-Jones & Harmon-Jones).

Within this interaction, the action-based model reveals dissonance within the mind of the Space Task Group's ultimate authority, Al, and it also reveals a turning point within Katherine's mindset as she demonstrates unexpected behavior. Al's microaggression reinforces the EA engineers' previous mindset and the status quo that Paul set when Katherine first joined the Space Task Group. When Katherine challenges this status quo, she creates further dissonance because the EA engineers are unsure of how to react. This uncertainty results in their utter silence while Al attempts to alleviate his own dissonance by discarding the segregated coffeepot. While it may not be full consonance for all EAs in the situation, it is the start as Al begins to modify the Space Task Group's status quo.

Scene Four—Sharing a Bathroom

After Katherine's infuriated response to Al, a new age of desegregated bathrooms dawns upon NASA, and the EA and AA women share the ladies' rooms (Melfi et al., 2016). One day after work, Dorothy washes her hands in the formerly EA-only women's restroom when Vivian exits the stall behind her. The two women's gazes meet for a brief moment in the mirror above

the sinks before Vivian greets Dorothy, who returns the greeting. They make small talk about their work as Dorothy dries her hands, and Vivian reaches for a paper towel before realizing that the paper towel holder on her side of the sinks is empty. Dorothy realizes it at the same time, and, without hesitation, she hands one from her side to Vivian, who accepts it with a terse, “Thank you” (Melfi et al., 1:34:13). Dorothy nods and returns to fixing her hair in the mirror.

As she does so, Vivian compliments Dorothy about her work with the new International Business Machine (IBM), which has the power to make calculations much more quickly than human computers (Melfi et al., 2016). Dorothy, who learned how to work with the IBM as a means of job security for herself and the women in the West Group and who was transferred from manual computing to IBM oversight, takes the praise with a polite smile before Vivian indirectly asks Dorothy if she would mind teaching Vivian’s computers in the East Group about the IBM. Dorothy simply responds that such a decision would be under a supervisor’s purview with the implication that she is not yet a supervisor (Melfi et al.).

After that statement, Dorothy finishes fixing her hair and turns to leave, bidding Vivian a good night (Melfi et al., 2016). However, Vivian stops her after a moment, saying, “You know, Dorothy. Despite what you may think...I have nothing against y’all” (Melfi et al., 1:34:51-1:34:58), to which Dorothy responds, “I know. I know you probably believe that” (Melfi et al., 1:34:59-1:35:03). She gives Vivian a last smile and a nod before making her way out of the bathroom, leaving Vivian standing at the sink in contemplation (Melfi et al.).

For McCurdy and Matusitz (2021), historical significance does not require historically unique events or attitudes. In certain cases, historical significance refers to attitudes that are reflected in today’s civilization. Historical attitudes remain significant due to parallel attitudes in modern society, which creates immediate impacts through historical research findings. What

applied to the historical attitude likely applies to the continuation of the modern attitude as well. In this scenario, Vivian's historical attitude of indifference toward her actions leads to her indifferent dismissal of her previous microaggressions toward Dorothy and other AA coworkers. However, this historical attitude appears in modern society as evidenced by reactions to the BLM movement (Stone, 2020). According to Stone, a sect of modern attitudes existed that denied AAs' need for a movement such as BLM to amplify AA voices in a predominantly EA world. In doing so, non-AA individuals mirrored Vivian's attitude of dismissal, making her attitude historically significant within the film.

With this scene's placement about three-quarters of the way through the duration of the film, multiple external stressors exert influence upon this interaction. The first major external stressor occurs during Dorothy and Vivian's initial conversation in which Dorothy asks for an update on her application for supervisor, and Vivian dismisses Dorothy's inquiry as impertinent to her position in the NASA hierarchy (Melfi et al., 2016). The external pressure, provided by Vivian's unnamed EA female assistant, encourages Vivian's action of dismissal and sets the precedent for future dismissals of Dorothy and other AAs as insignificant.

The second major external stressor occurs when Dorothy visits the East Computing Group's room to personally deliver the West Group's morning calculations (Melfi et al., 2016). As Vivian dismisses her yet again, implying that Dorothy is irresponsible for departing from her calculations, she directs Dorothy to take the afternoon set of calculations. When Dorothy turns to leave, she struggles to load the boxes onto her moving dolly, but the East Computers, led by Vivian, disregard Dorothy once more as an insignificant figure. Throughout the brief interaction, Vivian treats Dorothy as an interruption and distraction to the EA East Computers, fulfilling the precedent that she established in their first conversation (Melfi et al.).

These two scenes fulfill the historical significance criterion due to the repeated implications that Dorothy must remain within the social and workplace hierarchy that Katherine circumvented in Scene One (McCardy & Matusitz, 2021). Employing AAs as human computers for NASA alongside EAs pushes the boundaries of the acceptable hierarchy, and Dorothy's request for equality as a supervisor contradicts this hierarchy, producing dissonance within the EAs. The scenes also fulfill the microaggression criterion, largely through microinvalidation (Sue et al., 2007). Each time Vivian and her EA coworkers dismiss Dorothy, they engage in microinvalidation because they tell Dorothy that her experiences as an AA within the workplace hold no credibility. Since all of the EAs act in accordance with each other, the vocalized microinvalidation assists in the alleviation of dissonance and restoration of consonance.

Similar to the external stressors, the main microaggression in this conversation categorizes as microinvalidation (Sue et al., 2007). In this conversation, Vivian microinvalidates Dorothy through the dismissal of her previous microaggressions and the effects of those microaggressions upon Dorothy. By claiming that she does not actively discriminate against AAs, she undermines the grievances expressed by Dorothy and the West Computers. In other words, if no active discrimination exists then no discrimination exists at all. This implication conveys a lack of care for the emotional damage that the discriminatory microaggressions caused (Sue et al.).

The microinvalidation from Vivian to Dorothy expresses a continuation of dissonance through the action-based model (Harmon-Jones & Harmon-Jones, 2008). Where the external stressors expressed dissonance and consonance through collective microaggressions that agreed with each other about the established attitude between EAs and AAs, the main conversation occurs between Vivian and Dorothy alone. No consonance can be derived from collective action.

Therefore, Vivian attempts to absolve herself of implicit bias through a denunciation of conscious discrimination. If Vivian were surrounded by EAs, her action would create consonance. However, with only Dorothy, an AA, her action creates further dissonance because of Dorothy's reminder that Vivian "probably believe[s] that" (Melfi et al., 2016, 1:35:03). In other words, Dorothy does not accept Vivian's statement and actively identifies the dissonance.

This identification conflicts with Vivian's consideration of herself, which, in turn, causes further internal and mental conflict. According to the model, action-minded individuals like Vivian who attempt action to resolve dissonance measure success based on the evidence of consonance (Harmon-Jones & Harmon-Jones, 2008). If consonance appears, then those individuals will attempt action upon the next instance of dissonance, which supports Vivian's use of action in vocalized statement during this conversation. However, if consonance fails to appear, then those individuals will choose inaction upon the next instance of dissonance, which supports Vivian's silence as Dorothy exits. Vivian's statement led to Dorothy's careful acknowledgment, which caused more dissonance. In an attempt to resolve this new dissonance, Vivian chooses to remain silent (Harmon-Jones & Harmon-Jones).

Scene Five—Higher Clearances

During a tense scene near the conclusion of the film, Katherine sits with the EA male engineers in the control room during the Friendship 7 shuttle's launch into orbit (Melfi et al., 2016). However, when one of the safety precautions on the shuttle shakes loose, the engineers find themselves unsure of whether they can trust the remaining precautions to protect Friendship 7's pilot, Colonel John Glenn. Al suggests a change in landing protocol to preserve the remaining precautions, and Paul asks, "Will that work" (Melfi et al., 1:52:10), clearly skeptical about the solution's practicality in this sensitive situation. Katherine watches them speak rapidly

to each other, remaining silent until she sees Paul's expression, which prompts her to say firmly, "It will work" (Melfi et al., 1:52:11). He turns to look at her, not with disdain, but with desperation. As she explains, he nods, turning back to the control panel as Al tells another engineer to convey the instructions to John in the shuttle (Melfi et al.).

The main historical significance in this scene stems from the Friendship 7 launch rather than the segregationist tendencies. According to McCarty & Matusitz (2021) as well as Leslie's corroborating report (2019), history's account of the launch focused on male contributions. None address the contributions of the AA female computers, and none mentioned that an AA female computer kept company in the control room during the launch. However, the launch itself marked a milestone in United States space history. With this particular scene's distinct perspective on the launch and Katherine's pivotal role in it, this scene becomes one of significant historical significance.

The main external stressor in this scenario traces back to Paul's repeated refusal to allow Katherine's presence in the company of all-male, all-EA spaces such as the control room (Melfi et al., 2016). He consistently tells her that she lacks the necessary clearances, implicating her womanhood and racial status as two key reasons, but her lack of clearances makes concrete the invisible boundaries of the status quo. These boundaries' concrete nature creates historical significance, and his repetitious statement acts as a microinsult (McCarty & Matusitz, 2021; Sue et al., 2007). Context grants it the offensive racial and gendered implications, and they remind Katherine of her inability to break the structural hierarchy.

In this scene, no microaggressions present themselves, which represents an apparent consonance within the minds of Paul and his EA coworkers (Sue et al., 2007). Al accepts Katherine's reassurance toward Paul, refraining from giving one of his own, and Paul's simple

nod to Katherine as he returns to his control console indicates an acceptance of his own (Melfi et al., 2016). The other EA engineers ignore Katherine, continuing to brainstorm for solutions. No one attempts to establish the boundaries of the previous status quo structure. Even when she chooses to speak, breaking the boundary and opening herself to retaliation, none of the EAs respond in a negative manner. While the lack of response could qualify as a microinsult, indicating Katherine's status as subhuman, Al's and Paul's direct acknowledgments of her statement support the suggestion that silence is not weaponized as microinsult in this instance (Sue et al.). Instead, silence is representative of consonance, and, with consonance, acceptance.

As the lack of microaggressions indicates, lack of microaggressions leads to lack of aggressive action, and lack of aggressive action characterizes the resolution of dissonance and the onset of consonance (Harmon-Jones & Harmon-Jones, 2008). The EA men have supported the idea of action to dissolve dissonance. Based on the model, their lack of action could indicate a different attempt to dissolve dissonance, or it could indicate the presence of consonance. Due to Al's and Paul's positive reactions, the latter option appears more likely. If consonance has been gained, the majority of the men refrain from action as a means of maintaining the consonance and circumventing another invitation for further dissonance. The collective decision to refrain from microaggressions also supports Al and Paul in their decision to accept Katherine as a member of their group as they use actions of reconciliation toward her (Harmon-Jones & Harmon-Jones).

Scene Six—New Assignment

After the Friendship 7 mission successfully enters orbit, Dorothy smiles at the television set in the West Computing Group room, collapsing the antenna as she prepares to leave for the day (Melfi et al., 2016). However, as she makes her way to the door, Vivian enters. Without

preamble, Vivian hands an assignment card to Dorothy, who takes it with a curious look on her face. She opens it slowly, reading it with a straight face as Vivian confirms what Dorothy has read on the card: “IBM Computing Lab Supervisor” (Melfi et al., 1:49:52). Vivian continues, “Seems like they’re gonna need a permanent team to feed that IBM” (Melfi et al., 1:49:54). Still refusing to give more than a verbal reaction, Dorothy asks how many NASA wants on the team.

When Vivian confirms 30, the number of the women in the West Computing Group, Dorothy gives a slight nod, accepting the assignment and recognizing that she will not be leaving her former group without secure positions (Melfi et al., 2016). She thanks Vivian for the information, and Vivian nods in acknowledgment. After a hesitation, she adds, “Mrs. Vaughan” (Melfi et al., 1:50:09). A long pause stretches between the two women as they exchange a smile before Vivian takes her leave, and Dorothy glances back down at the card, makes her way to the door, and shuts the lights off in the room as she exits.

McCardy and Matusitz (2021) identify historical significance within this scene as positive significance through integration efforts. Much as the bathroom integration supported the representation of equality between EAs and AAs on a broad level, the promotion that Dorothy receives supports the representation of equality between EAs and AAs on a more personal level. The promotion represents a historical significance on two levels: NASA superiors and EA coworkers. For NASA superiors, the promotion indicates an acceptance of AAs as intellectual equals to EAs. For EA coworkers, to accept the promotion is to accept the AA individual. In historical context, integration efforts signified the start of equality for all races, the start of racial reconciliation, and the start of peace for all human beings (McCardy & Matusitz). While the significance does not guarantee peace as the dominant approach, it does represent hope in healing discriminatory wounds.

For this interaction, external stressors originate in the actions of other EAs toward AA employees. The first glimpse of racial reconciliation appears in Colonel John Glenn's egalitarian attitude upon his arrival at the Langley Research Center for space training (Melfi et al., 2016). As he disembarks from the motorcade along with his six contemporaries, he greets the Langley employees, who have lined up outside the building to meet the astronauts-to-be. They meet the EA male employees first, followed by the EA females, and then finally, the AA females. However, before they can meet the AA females, EA male Al and his EA female secretary Ruth attempt to chivvy John and his fellows into the building, citing their tight schedule. John does not listen and proceeds to AA female computers, treating them as kindly as he did the earlier EA employees (Melfi et al.).

John continues his egalitarian actions in a second glimpse of racial reconciliation by accepting Katherine into the EA-male-dominated briefing room as she makes her calculations for the Friendship 7 mission (Melfi et al., 2016). Although the other men treat Katherine as a foreign member of their assembly, John jokes with her, acting no differently with her than his EA counterparts. This action helps to put the room at ease with Katherine's presence, and she accepts it with a smile before continuing her calculations (Melfi et al.)

The third glimpse of his racial reconciliation appears when the IBM returns incorrect calculations on the morning of the Friendship 7 launch (Melfi et al., 2016). John, impressed by Katherine's earlier mathematical prowess, tells her supervisor that he wants "the girl to check the numbers" (Melfi et al., 1:42:14). Despite her race and her gender, John views her as more intelligent than the IBM as a machine or her engineering counterparts as men, personally requesting her to check the calculations of a life-or-death space situation. Once again, Katherine's EA coworkers express shock but accept John's request more quickly this time,

sending the booklet of numbers to her in the West Computing Room (Melfi et al.)

Once again, the historical significance lies within the integrationist roots of these interactions (McCardy & Matusitz, 2021). No microaggressions appear as the AA employees react positively to John's actions (Sue et al., 2007). Although the surrounding EA employees persist in their microaggressions, the microaggressions fade over time as John's behavior becomes more accepted amidst the EA authorities. The lack of a large number of microaggressions indicates that the EAs are moving toward acceptance of their AA counterparts and finding consonance in the lack of discrimination. They appear content to allow egalitarian treatment, which results in the slight furthering of equality.

Within this scene, no microaggressions appear between Vivian and Dorothy, although Vivian's momentary hesitancy in presenting Dorothy with her new assignment might qualify as a truly subconscious microinsult (Melfi et al., 2016; Sue et al., 2007). This potential for a microinsult indicates that Vivian has not yet reached full acceptance of the change in status quo. The change strikes her as antithetical to the way her perceptions about AAs have existed for years, and her momentary silence indicates this uncertainty. She does not want to consciously offend Dorothy, but she remains silent out of an uncertainty to how Dorothy will respond to the change in status quo. For the most part, however, microaggressions remain absent from the interaction, indicating that Vivian has reached a low level of consonance in her perception of EA and AA relationships (Sue et al.).

Due to Vivian's previous conversation with Dorothy in Scene Four, Vivian initially approaches this conversation with the will to maintain inaction. Since action did not result in consonance during the integrated bathrooms scene, Vivian now attempts inaction in silence to find consonance (Harmon-Jones & Harmon-Jones, 2008). She says nothing more than the bare

minimum to communicate information about the new assignment, and she does not address the change in status quo until Dorothy responds positively and thanks Vivian for the information (Melfi et al., 2016). Only then does Vivian depart from her standard conversational patterns, and she utilizes the salutation of *Mrs.* along with Dorothy's surname in a show of respect. Rather than action as a means of conveying dissonance, her action articulates consonance. The show of respect demonstrates that she views Dorothy as a fully independent and intelligent woman who, despite her race, qualifies as Vivian's equal. With the restoration of mental consonance, Vivian feels free to return to action-based expressions without fear of triggering further dissonance (Harmon-Jones & Harmon-Jones).

While Dorothy's openness contributes to Vivian's consonance, another significant contributing factor rests with the EA reactions to the AA employees after the status quo shift. When John Glenn begins to treat the AA women with respect despite their gap in race and gender, the entirety of the EA perception toward AAs begins to change. AAs become more accepted by their EA counterparts. Much as the EAs united in their microaggressions toward AAs and found consonance within collective actions, the EAs now unite in their acceptance toward AAs. Since Vivian is not alone in acceptance toward the AAs, supported by both her EA coworkers and superiors, she feels comfortable and confident to further that action within her personal relationships (Harmon-Jones & Harmon-Jones, 2008). In other words, her coworkers' acceptance of AA employees leads to her acceptance of Dorothy.

Conclusion

To the extent that this rhetorical criticism of *Hidden Figures* examines the effect that external relationships have upon interracial and interpersonal interactions, the study's results conclude a strong and widespread effect of peer pressure. Without peer pressure as a significant

factor within Paul's and Vivian's interactions with Katherine and Dorothy, respectively, the two EAs might have acted differently. When Paul and Vivian's dissonance occurred, peer pressure encouraged the two EAs to treat their AA coworkers with disrespect through numerous microaggressions. Since the surrounding EAs failed to discount or oppose the microaggressions, Paul and Vivian persisted in using them. However, when they received resistance from John, an EA, they began to change their actions from microaggression to reconciliation. In other words, as the object of peer pressure changed, so too did the EAs' actions.

While the implications of such an impact could be astronomical, it should be noted that this study consists of three key limitations: time, scope, and fiction. First, the limitation of time affected the length of the study, and this limitation interrelates with the second limitation of scope, which affected the depth of the study. Without unlimited time, the study had to choose what to examine and what to disregard, including scenes of significance. Under different scenes or different criteria, the scope of the study may have widened and included differing implications that are overlooked in this study. These limitations do not discount the accuracy of these results, but they do indicate untouched material. Second, the limitation of fiction affected the reality of any implications. This study examined the relationships between fictional figures of Paul and Vivian as well as the fictional portrayal of historical figures of Katherine and Dorothy. As such, any results must be critically measured against the historical standard. The indications are still strong as interpersonal relationships are mirrored through film, but factual pressures and outcomes cannot be guaranteed from a study based upon fictional portrayals and authorship.

To remedy these limitations, recommendations for further study would be to (a) lengthen the study, (b) deepen the scope, and (c) corroborate these findings against the historical events. With more time, studies will gain the ability to deepen scope and address more possibilities and

implications than those presented within this research. Additionally, further accuracy might stem from a deeper corroboration of these findings against historical accounts of the AA women along with the reactions of their historical EA counterparts. *Hidden Figures* itself is grounded in historical fact, which allows for these results' historical relevancy, but the deeper inclusion of primary source material would increase the results' historical accuracy and relevancy. This study expands existing literature on CDT, *Hidden Figures*, and this period of history while also addressing key factors of interpersonal relationships that affect modern society. In doing so, it begins to grant humanity the ability to grow alert to the ways in which the subconscious pressures of external relationships affect everyday actions, which leads to the ability to consciously formulate guards against such biases.

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