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Socially Mediated Artifacts, Perception of School, and Academic Performance: A Vygotskian Perspective of The Achievement Gap

Trident University International, a Member of the American Intercontinental University System

DR. ROBIN MOOREZAID

Socially Mediated Artifacts, Perception of School, and Academic Performance: A Vygotskian Perspective of The Achievement Gap

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Robin MooreZaid

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Approved by:

Dean of College of Education at Trident University International, December 22,02023

Dean: Heidi Linn Smith, Ed.D., College of Education

Dean: Amanda Jandris, PhD, Research & Doctoral Studies

Committee Chair: Dr. Adam Fullerton

Committee Member: Dr. Barry Chametzky

Committee Member: Dr. J. Hodges

Abstract

An examination was conducted to explore the relationship between socially mediated artifacts (SMA), perception of high school experience, and academic performance to examine the impact of social mediation on an individual's academic performance. This investigation was based on a Vygotskian psychology perspective of social mediation. According to Vygotsky, social mediation is the transmission of symbolic meaning through signs, symbols, and objects in a shared environment. To evaluate the participants' perceptions of their high school experience, 210 adults from various ethnic groups across the United States were surveyed. Multiple regression analyses evaluated the correlation between socially mediated artifacts and individuals' perceptions, which predicted academic performance. In addition, a One-way ANOVA evaluated image impressions between variables. The findings revealed a significant correlation between SMA and perception but had no significant correlation with academic performance. This suggests that SMA does not have an immediate impact on academic performance. Nevertheless, additional research would be required to comprehend the impact of social mediation on learning fully.

Contents

List of Tables

List of Figures

Chapter 1: Introduction

Despite the widely held belief that America is the land of opportunity (Arora, 2022), the country's educational system has consistently failed to close the academic achievement gap between cultural groups. This problem is predominant in public elementary and secondary schools across all 50 states and remains a persistent issue as America ages (McCardle, 2020). Despite years of research, empty rhetoric, and unproductive efforts, there has been little progress in achieving educational equality, aside from a handful of private and nationally recognized schools throughout the country (U.S.). Department of Education 2022). These schools serve as examples of the unrecognized potential of the American educational system to bridge the current cultural divide. Critical Racial Theories (CRT) suggest that inequality, racism, brutality, and the uneven distribution of resources, which are deeply ingrained in the cultural fabric of the United States, guide the social system (Delgado & Stefancic, 2012). Therefore, it is necessary to conduct research from the perspective of sociocultural theories to assess the impact of social learning in Brazil (Hanna et al., 2020).

Sociologists, psychologists, and neuroscientists have revealed current psychological evidence that societal schemes for power, a form of social mediation, fused in media, schools, churches, and places of employment, influence a person’s cognition and behavior (Carter, 2008; Fleming, retrieved 2022; Gazzaniga et al., 2009; Cole, 1995; Esmonde & Booker, 2017; Han & Ma. 2014; Robert, 2015;Wertsch, 1997; Vandervert, 2017; Varnum et al., 2010;Vaughn, 2020;Yasnitsky, 2019). These societal schemes embedded in symbols, signs, and social tools often go unnoticed by the masses, affecting vulnerable children in schools exposed to societal subliminal messages (Earle & Hodson, 2022; Hoewe & Peacock, 2020). Today, educators need more exploration in the area of sociocultural theories to assess children in America, particularly

those who do not belong to the ruling class and are perhaps indoctrinated to underachieve (Yasnitsky, 2019; Esmonde & Booker, 2017). However, Americans continue to hear songs echoing America as an illusion that anyone who puts in hard work can achieve the American dream, irrespective of race, age, gender, socioeconomic status, or social identity (Arora, 2022). Unfortunately, many people believe that the current American system operates according to the principles of equality (Domhoff, 2005). These standards have always been a myth signified within the categorized scheme of academic performance called The Achievement Gap (National Center for Educational Statistics, 2022). The achievement gap is an expectation constructed from the historical schemes of socially mediated social order (Yasnitsky, 2019; Esmonde & Booker, 2017).

The Purpose of this Study

According to Lev Vygotsky (1896–1934), human beings react to social objects that convey meaning, and humans are most likely to react from the perspective of the describer's intended message. In other words, the brain interprets the message of social artifacts in the environment through its five senses in response to social experiences, which leads to the purpose of this study, which is to examine Vygotsky's theory that social mediation in society has a significant impact on behavior and the formation of perception. By examining the relationship between socially mediated artifacts (SMA), students' perceptions of their high school experience, and their academic performance, we can investigate Vygotsky's theory. Vygotsky's theory suggests that a person's behavior is a manifestation of symbolic messages derived from the perception of social experiences mediated by the environment (Daniels, 2017; Esmonde & Booker, 2017; Vandervert, 2017; Vygotsky, 1978; Yasnitsky, 2019). Human responses to social

influences are divided into three categories: psychological, physiological, and behavioral. These reactions were referenced or implied throughout this study (McManus et al., 2020).

According to Vygotskian psychology, social influences can be developed into schemes that allow the media and other organizations to point to no specific person and still direct the thinking of people. The goal of this scheme is to paint perception, which is a way of thinking. For example, the media aimed to promote one cultural group over another, and depending on which social group the message promoted, all humans responded to the same information. The message will have a different impact based on the direction of the implied information, which signifies particular individuals or cultural groups (Boutyline & Soter, 2020; Carbon, 2014; Earle & Hodges, 2022). In other words, the unsignified groups respond differently to the signified group (Esmonde & Booker, 2017).

In the 1780s, the idea of America as the melting pot of fusing cultures and ethnicities for a new society of American citizens resulted in what Domhoff (2005) implied as a social power system filled with political lies, conflict, and separation. The U.S. educational system, according to Domhoff (2005), is considered one of the strongest leading systems for promoting this socially accepted divide-and-conquer system among its citizens. Esmonde and Booker (2017) and many other researchers assert that power and privilege circulating throughout society had thought-out schemes to sustain a social order, while others questioned the use of power in social learning institutions designed to allow a few actors inside the social relationship to be positioned to carry out their will despite resistance (Domhoff, 2005; Kolleck, 2019). Socially Mediated Artifacts (SMA) function much like a property manager who upholds guidelines, repercussions, and rewards for individuals who participate as members, according to Vygotsky's theory. This artifact reinforces the expected behavior (Vygotsky, 1978). That said, to answer why an

achievement gap between ethnic groups born and raised within the same society exists, researchers would have a better chance to reveal the truth through sociocultural theories that lend a better perspective on academic achievement between cultural groups compared to other theories. The cause-and-effect relationship includes signals, meanings, and emotional messages embedded within the social environment (Esmonde & Booker, 2017; Cardona & Neas, 2021; Yasnitsky, 2019). If this information are not read from a sociocultural perspective, the data will always be incomplete or misinterpreted, leaving too much room to do nothing about the achievement gap.

According to research on the achievement gap, the cause of the disparity results from disadvantaged households compared to their more affluent neighbors who have better access to resources and support (Hanushek et al., 2019). This is an evident observation. In most cases, better nutrition leads to healthier bodies (Kervenoael et al., 2020). When the Coleman Report (1966) identified marital status as the primary cause of inequality between Black and White Americans, federal support to address educational disparities went in the wrong direction (Atteberry & McEachin, 2020). Too much focus on the home's environmental impact alone can also be seen as an intentional misrepresentation, as the aim was never to teach the child to read, write, or count to compete with his peers but to feed him for a day. According to Atteberry and McEachin (2020), the problem lies in conflicting social messages (which is a form of gaslighting) and related experiences built into that society, such as media attention to households. Every institution, media message, church, and career form impressions. It is not because the child cannot learn but because the persistent social impressions that pervade the child's environment or family experiences mean that he will be hindered from learning due to the persistent signs, objects, and mixed information that develops his cognition (Vygotsky, 1978).

This type of SMA is a powerful dynamic scheme forged into social relationships (Esmonde and Booker, 2017; Linklater, 2019). The concept of power using an underlining artifact of influence in our society is one of the concepts that seem easy to understand but difficult to define: Sociocultural scholars must consider the ways in which broad systems of power and oppression are embedded in the history of mediational means. Power can be analyzed in the histories of the rules, divisions of labor, and communities (Esmonde and Booker, 2017, p.17).

Families must pay attention to understanding the silent and hidden power in the United States, especially in learning environments, and how it manifests through socially mediated artifacts (SMA) or tools used to guide American citizens thinking about specific behaviors (Vygotsky, 1978). This can be understood as a form of procedural memorization technique or acquired skills that become unconsciously automatic or implicitly operating without any participation in conscious thought (Hong et al., 2019; Vaughn et al., 2020). Perception begins with an observation or experience reinforced by an object with a particular idea or concept, followed by the realization of meaning represented through an activity of perception. The agent, object, symbol, or sign cues the thinking of participants to do or be something. Tools for communication are common in all social cultures to have symbols, signs, and objects that represent an idea; however, not all social mediating tools are forged by the concept of power (Esmonde & Booker, 2017). In school, learning often necessitates deliberate manipulation to perceive concepts that form behaviors to unconsciously recall skills, rules, and habits, as well as conditioned emotional or cognitive effects, including priming and recalling experienced events. Any acquisition of procedural knowledge that includes artifacts mediates human activity, good, or bad (Vaughn et al., 2020). Signs, symbols, and objects perform the work of seeing, remembering, and problem-solving (Vygotsky & Luria, 1993; Yasnitsky, 2019).

The concept of power is relational, and within the educational system, the manipulation of power uses social artifacts that make it difficult to define or point to the finger because the purpose of power often creates conflicting societal goals (Esmonde & Booker, 2017). For example, when comparing the plan for a political and social order with instructional goals for imparting academic knowledge, learning disruption occurs through confusing simple tasks for teaching reading, writing, and arithmetic by shaping the discourse with relational power (Kolleck, 2018). This mixture of messages was observed and experienced during the instructional process. Students experience behaviors such as apathy, misinformation, entitled attitudes, poor instruction, and educational inequity that avoid instructional excellence in a complex educational hierarchy, which tangles the purpose of teaching and learning to promote a way of thinking (Hoewe & Peacock, 2020; NCLB, 2010; Vygotsky, 1978). Children entering educational institutions do not possess the abstract ability to consider or question conflicting messages they receive. Still, in a way, the child asks himself, “Is learning for others only?” The struggle has not only been for equal access to quality educational resources, but also for equal participation in society tampered with societal ideologies infused with ambiguous social artifacts (Carter, 2008). For some citizens, equality in our educational institutions is only a myth of the American dream, suggesting that people who already possess the right resources and support will be better equipped to achieve high academic performance. However, those who do not at least get fed. According to CRT, American society is a fixed system of socially mediated social order soaked in power ideologies of influence (Esmonde & Booker, 2017). This system rewards those who conform and play social roles by adhering to the beliefs, values, and attitudes of the ruling class (O'Connor, 1997).

Power in society began with the celebrated voices of America's historical past of individuals in the ruling class striving for social supremacy, economic power, status, and social order–all the mechanisms for creating a socially mediating agenda for a social order that quietly influences how one is educated, how one behaves, and how one thinks (Esmonde & Booker, 2017; Yasnitsky, 2019). These characteristics underpin the system that mediates not only perception but also behavior, what one does, or how one performs. When perception is influenced by political power softened by the SMA, the results are manifested in a scheme of conditioning for the systematic behavior of mind-manipulated actors (Esmonde & Booker, 2017). In other words, the manipulation of power is a societal ideology that evolves itself in social media, curriculum, and social participation that conditions learned behavior (Esmonde & Booker, 2017; Vandervert, 2017).

According to the CRT, some children attending American public schools are constantly exposed to overt and implicit prejudice, prejudgment, and indifference in their social environment, while other children experience the acceptance and support that enables them to learn and become successful (Esmonde & Booker, 2017). In general, environmental power agreements are effective because they are codified in the form of rules that limit activity and hierarchical division of labor (Yasnitsky, 2019). According to Vygotsky (1978), these characterized behaviors and achievements are conditioned by a mediated social order, as evidenced year after year in public educational institutions and statistics that compare achievement across cultures (Irwin et al., 2022; National Center for Education Statistics, 2022). In recent years, the media has seemed to overlook the true representation of public statistics by selectively highlighting only a few ethnic groups, such as white, black, and brown, without delving into the details of other groups. The media tends to intentionally overlook any cultural

group that outperforms the ruling classes, as implied by its biased focus on comparison. According to recent reports, Asian cultures have demonstrated higher academic performance than Caucasian cultures. As a result, it may be unnecessary to prioritize them as top educational achievers in American society, considering that whites are not typically viewed as dominant in this regard (Katz, 1991; National Center for Education Statistics, 2022).

Background

Lev Vygotsky's theory, as explained by Yasnitsky (2019), helps one to understand human potential and human mindset. Vygotsky was a well-known Russian psychologist recognized as the most influential thinker in the field of cognitive learning and developmental psychology of the 20th century. His work inspired many thinkers in psychology, education, and sociology. Vygotsky looked for patterns of mind manipulation during children's play (Bodrova & Leong, 2018; Zaporozhets, 2002), which is also the goal of this analysis to look for patterns and methods of social manipulation in an environment through students' impressions of socially mediated artifacts that may have influenced learning and human behavior. Taken from Vygotsky's perspective, social manipulation is a social tool that shapes identities, perceptions, and attitudes through the control of information and the power of disinformation through educational and social agencies (Esmonde & Booker, 2017). In this case, the term "social manipulation" was used loosely, only to emphasize the meaning of social mediation.

Vygotsky's theory suggests that conditioned behaviors account for the academic performance of American students, making it the most appropriate theory for exploring student behaviors in educational institutions. According to Vygotsky (1978), the social components of learning play a crucial role in shaping one's intellectual abilities, which are manifested through academic achievements and impact the formation of personal cultures. The impact of societal

influences on individuals' perceptions has been exhibited for generations through cultural performance differences seen in the achievement gap statistics (Hanushek et al., 2019; Hung et al., 2020). As previously stated, the power of influence contributes to the formation of a mindset. However, this viewpoint is also inspirational as it acknowledges that employing force can also be an effective method to positively shape individuals' beliefs and behaviors. When utilized in a constructive manner, social mediation can contribute to the success of cultural communities that were previously regarded as underprivileged (Kovoor-Misra & Smith, 2011; Shabani, 2016; Yasnitsky, 2019). In essence, the disparity in achievement between different cultures can be remedied by employing a uniform method.

Vygotsky (1978) believed that semiotic operations, the process of accepting signs or signs as signifiers, symbols, objects, or artifacts, render the artifact powerful by activating the relationship between thought, language, and behavior. Together, these actions form the mental act of defining something as possible. Semiotics is the study of signs and their interpretation. However, semiotics is not a concept that is superficial or coincidental but instead defines the relationship of thinking (Yasnitsky, 2019). This mental or psychological process of thinking has four stages, according to Vygotsky: “Syncretism (merging of idea, words, etc.), ‘complexive’ thinking (having many thoughts), conceptual thinking (idea development), and scientific concept (Yasnitsky, 2019, p.45),” of which the first three are biological stages and the last stage is cultural and historical. The concept forms procedural thinking, which is a method that orders the process of thinking like a recipe, and this aspect of this process is vital to understanding social influences.

When examining procedural thinking or thought processes, the ambiguities, inconsistencies, and differences in meaning are often manipulated social objects or concepts that

are masked to direct a way of thinking, yet social objects exist and are necessary discourse between members of society to form relationships (Yasnitsky, 2019). Even with discourse, awareness of the ambiguities, inconsistencies, and manipulations must involve an understanding of perception and the thought processes related to socially mediated messages from different cultural perspectives (Cole, 1995; Esmonde & Booker, 2017; Han & Ma, 2014;). By keeping procedural thinking in mind, especially when the child reaches the fourth stage, his intellectual development is complete, and he moves from concrete to experiential to abstract thinking. As the fourth stage approaches, "the stimulus-response mechanism is interrupted by an external mediating tool that the child must learn to master" (Kampourakis, 2018, p. 591). This pause allows the child to move forward, consciously defining and applying his thinking based on an external mediating tool (Yasnitsky, 2019).

Language and Socially Mediated Influence

The ability to create and follow a clear and ordered plan is constructed through discourse, and the use of language is often a significant tool organized by power relations (Esmonde & Booker, 2017). Language, from a sociocultural perspective, is an example of a socially mediated artifact (SMA). SMA, re-emphasized, are objects that influence the psychological processes that move into an individual's perceptional phases to make sense of the idea or concept (Izydorczyk et al., 2020). For example, a child in the process of learning a new language hears his first utterances from adults, which allows him to communicate and form a social relationship; it is the position of the relationship that creates an emotional response. Lewis and Moje (2003) explored the formation of a child's identity development through a post-structural perspective that focuses on power dynamics between individuals. By examining how the child's interaction with others is influenced by their position of analysis, they discovered that social mediation can create blurred

boundaries between individuals (Esmonde & Booker, 2017). As the child moves into the next phase, the language is mastered, becoming an internalized agent that guides his "inner speech" and his inner perceptions. This explains the origin of higher mental functions.

The mental process of language includes two components. The first component relies on the mediation tool for behavior by signs or sign systems, including speech and language, according to Foucault (1980), which the interaction between members of a society focuses on discourse as a conduit for exercising power. Secondly, the historical and ontogenetic extension of the mediation or social instrument positions the relationship between its participants (Vygotsky, 1986). Language as a tool, on the other hand, plays a major role in the maintenance of social order, which also facilitates and incorporates other socially recognized objects for reinforcement. Language is a complex situated practice that categorizes individual perspectives as a double "dialogicity" both in context and in situated interactions (Daniels, 2017). One can observe this practice in how people are positioned in society for opportunities (Esmonde & Booker, 2017; Lewis & Moje, 2003).

Consider, for example, a child who is currently trying to understand the meaning of words, symbols, or signs while encountering conflicting signals of how one in authority responds to him. Several things are happening simultaneously during the mental process of the child, involving multiple occurrences simultaneously (Esmonde & Booker, 2017). This mental process has intrigued psychologists and sociologists following post-structural theory for at least a decade. There are issues that are demonstrated through the cognitive and the differentiation of procedural learning as the subjects through discourse and declarative are learned, which is a practice for recalling information (Esmonde & Booker, 2017). Since then, cognitive learning has evolved and become central to many psychologists' theoretical work around memory and

cognition. However, sociocultural theorists believe that students learn from their social environment in an organized power relationship (Izydorczyk et al., 2020). In addition to learning, children learn their hierarchical position in that environment, especially in educational settings, through a procedural learning process aimed at promoting cognitive and autonomous memory using a series of phases. Once the behavior is mediated by the mediating tool to be learned, the desired behavior becomes appropriated by the child over time (Yasnitsky, 2019). In order for the procedural memory to be formed, the child's conceptual capacity must recruit conscious, explicit (or declarative) processes for retrieving information vital to cognitive skills (Hong et al., 2019). In other words, the process of creating conscious memory, which is an explicit process or technique of declarative memory, occurs through human action and awareness to perform a specific task using specific methods and procedures.

Procedural learning acquisition practice is a widely accepted and supported system of memorization techniques that requires practice. Procedural learning is simply an exercise in which a task is repeated to eventually unconsciously and automatically retrieve information (Hong et al., 2019). Implicit learning, on the other hand, is based on the concept of experience, a pointing or cueing technique that helps one master new tasks. In other words, learning occurs when observed behavior has changed as a result of previous experience or practice or when a mental process that cannot be observed directly behaves in response to a stimulus (Hong et al., 2019). From a sociocultural perspective, think of it as a pre-learning cue (Hurrell, 2021). In Vygotsky's community, cues only count for what can be understood or learned in a particular culture because the application of common practices, expressed and carried out, is rewarded as learning. More importantly, when an object, pointing technique, or prior experience helps a person perform better on a new task, there is a social recognition of accomplishment on that task,

which is the basis of situated learning, and a unidirectional force flows through the learning context (Hong et al., 2019; Hurrell, 2021). This type of influence leads to a focus on the processes of perceptual thinking and learning.

Perceptual Learning and SMA Influence

Perceptual thinking is the mental constructs formed by ontogeny and the individual's assimilation to a social experience that concern the human cognitive system, according to James Gibson, the pioneer of perceptual psychology for an ecological approach (Adolph & Kretch, 2015). In the early stages of a child's mental development, perception is directly associated with movement, emotional processes, and the utility of objects (Hong et al., 2019). As this merger takes place, memory is formed based on repeated mnemonic images that create the perceptual system. At the higher stage of the child's development, perception begins with the verbal thought process that forms the intellectualism of his psychological system. This psychological process is recognized only through observation and has been formed both with the concrete thinking of physical concepts and the abstract thinking demonstrated through the verbal expressions of concepts (Hurrell, 2021). In other words, higher forms of perception are observed through language, which combines perceptual processes with verbal thinking due to the social conditions prevailing in a common environment. Vygotsky's theory of the systemic structure of perception and its changes during phylogeny and ontogeny is important for understanding the problems of mental processes. This concept is similar to the Marxist concept that models human labor actions performed with tools, leading to the useful transformation of actions through verbal reasoning. The language tool is replaced by a sign fused with meaning for optimal regulation of behavior. In this way, verbal thoughts, logical memory, voluntary attention, and higher mental functions develop, thus giving the individual personality (Esmonde and Booker, 2017; Lewis & Moje,

2003). This does not happen sequentially but rather changes the internal composition. Vygotsky wrote:

> These two sequences of changes interpenetrate one another and together essentially constitute the unified sequence of sociobiological development of the child's personality. Since organic development takes place in a cultural environment, it becomes a historically determined biological process. (Vygotsky [*collected works*], 1983, p. 31)

Perceptual learning involves sensitivity independent of cognitive factors, and this implicit memory "links connections with stimuli without guidance and intentions" (Adolph & Kretch, 2015; Izydorczyk et al., 2020, p. 2). Repetition, association, and positive and negative object reinforcers improve the influence with of primary stimulus to produce change in perception (Adolph & Kretch, 2015; Cole, 1995). The debate in education, namely the distinction between the content and the cognitive process of successful execution of skills (automation), is often examined by cognitive scientists. Tulving (1972) distinguished between procedural knowledge and semantic knowledge, which are associated with different types of perception. When considering the types of procedural learning against an isolated view of perceptual learning, it is important to understand that analyzing learning as experience-dependent using social mediation to make sense of what is seen, heard, felt, tasted, or smelled allows access to a permanent for semi-permanent memory observed in behavior (Smyth & MacKinnon, 2021). A person's personality is formed and transformed by alterations in their perceptual thinking. According to The Human Memory (retrieved in 2023), memory forms the bedrock of one's existence, encompassing a sequence of recollected experiences that shape an individual's character, potentially impacting their academic achievements. In other words, the ruling class, as per Marxist philosophy, had a significant interest in how perception influences an individual's

subconscious reaction to a stimulus. Vygotsky, a Marxist thinker, stood out during the era when the idea of human potential based on Marxism was spreading. He pioneered a scientific approach that uncovered the presence of covert social mediation in the environment as well as the enhancement of perceptual learning processes (Yasnitsky, 2019). This scientific method also helps one grasp how a maladaptive scheme for power can use social instruments in a social situation to achieve a desired goal (Domhoff, 2002; Esmonde & Booker, 2017).

Historical thinkers from society's ruling class acted as champions of an ideology that has influenced American cultural knowledge and individuals' personalities (Domhoff, 2019; Dery, 2020). In trying to understand how people perceive the world and themselves, American history is a purely human achievement forged in a historical process of power (Esmonde & Booker, 2017). Power manipulation exists as an explanation of conscious actions using a subject-appropriate methodology that describes Marx's linguistic sign-initiated intellectual revolution and is currently being explored as a historical study of psychological functioning (Boutyline & Soter, 2020; Yasnitsky, 2019). If done positively, the mechanism can do wonders inducing perceptual change. For example, observing the current way humans live (Dery, 2020), the behavioral influences of American citizens are through today's social media, according to Bradshaw and Howard's (2019) studies, which channels our focus, actions, and relationships with each other. Its mediation agenda is intended for the social objects or concepts to be accepted by all participants of the social group through a reward and consequence system for behaviors.

Since American society effectively pushes a system of beliefs, a proselytization process, that promotes acceptance by its members, a historical consideration of the power elites must be reflected upon in the exploration of social learning, the perception of individuals, and procedural thinking within the educational systems for positive change (Domhoff, 2019). Gay (2005)

believed in the notion of systematic change for servicing the increasing population of diverse students in the United States, which must come with improving the design of the current educational philosophies along with the instructional processes and curriculum designs within educational organizations. Improving systematic change to meet the needs of perceived lower-performing cultural groups without dumbing down the learning processes or feeding into a biased ideology (Katz, 1991) takes culturally relevant materials and a new way of constructing social relationships. Gay (2005) believed that it would promote a sense of inclusion in society's values. He also believed that curriculum designs should aim to develop an understanding of other ethnic cultures, histories, and contributions that will engage the learners.

In the early 2000s, multiculturalism was the latest trend, with teachers apparently adopting it in their attitudes and behaviors to adapt school activities and strategies to combat racism and other forms of oppression and exploitation (Trent et al., 2019). With all the attention given to multiculturalism, one wonders why multiculturalism has not impacted the achievement gap between cultures, which has grown wider over the years (National Center for Education Statistics, 2020). Educators need to pay attention to the social and historical mechanisms that operate semantically in the social artifacts of language and symbols to see how they are effectively used in social settings to promote behavior and a way of thinking from a sociocultural perspective. From a sociocultural perspective, one can make lasting changes for positive self-images that ultimately affect the achievement gap (Cardona & Neas, 2021; Waters, 2022). America's history in education is a replication of its economy and the influences of early European thinkers on power relations and control (Domhoff, 2002; Ma-Kellams, 2021; Mayshar et al., 2022; McCardle, 2020).

Vygotsky's Marxist Influence

Vygotsky believed that individuals living under certain social conditions acquire mental capacities arising forms of willing social cooperation with others (Yasnitsky, 2019). The social conditioning concept is influenced by Marxist philosophy, which holds that the human mind is neither innately given nor immutable across time. Vygotsky considered Marx's reference to labor as the mental "will" followed by automatic movements, an inner psychological process working within the individual (Yasnitsky, 2019). He drew on Marx's well-established point of view that social structures hidden in society appear as natural properties that sustain a way of thinking. Social objects within a social setting break the bond between product and producer in its traditions of linguistic thoughts and cutting-edge developments to prepare an individual's perspective and his cognitive behaviors (Esmonde & Booker, 2017; Jones, et al, 2021; Yasnitsky, 2019). Reading Marx and the thinkers who follow his philosophy is instructive when considering learning and conscious behavior as the interaction, reflection, and mutual feeling of different response systems, followed by the initial inclination or stimulus (Vygotsky, 1925, as cited in Yasnitsky, 2019).

Vygotsky's key innovation was designed to further a Marxist philosophy into a science. He understood that the mediating sign within an environment controls one's psychological reactions, called artificial stimulation, grounded in the role of semiotic and linguistic processes during social interactions (Yasnitsky, 2019). He also understood that all psychological functions are the essence of the internalized relations of a social order (Vygotsky, 1997; Yasnitsky, 2019). Most importantly, the socially mediated object or the semiotic object can be employed deliberately to obtain a desired reaction. Marx did not conceive of a causal relationship between a person and a thing, Vygotsky said:

> man compels nature to serve his own purposes and dominate it . . . once symbols enabling man to control his own behavioral processes are invented and practiced, the development of behavior is transformed to an auxiliary artificial means of behavior and the history of man's control over his behavior. (Vygotsky & Luria, 1993: p. 34; Yasnitsky, 2019 p. 32).

Understanding Learning and Instruction

Educators who have failed or ignored considering how the broader social system of power and oppression in America's history has created a mediational means that affects one's learning, emotions, self-image, beliefs, and students' ultimate performance have failed as educational experts of learning and the learning process in humans (Esmonde & Booker, 2017). The context in which a student learns must be equal to that of the content to be learned. When signified students understand and actively interact with the idea of power, particularly within an educational setting, they become empowered participants who can confidently navigate their role in society (Waters, 2022; Zarazosa, 2007). Starck et al. (2020) cited Enciso (2007) who stated that the socially mediated application of concepts is crucial for the creation of meaning in any society. Nevertheless, Starck et al. (2020) recognized that education incorporates diverse forms of mediation influenced by biases associated with race, gender, sexuality, disability, and authority. According to Domhoff (2002), any attempt to analyze learning must involve political and social organizations in order to arrive at a legitimate analysis. For thirty years, there has been little theorization of power in education and a lack of specific tools to uncover misogyny in social practices (Esmonde & Booker, 2017).

Educators are the key to change (Datnow, 2020), and the goal of the educator must be front and center or acknowledged because many teachers have been known to foster linguistic

and cultural biases through their instructional activities that implicitly trigger a type of perceptual learning (Starck et al., 2020). Leaders in education who desire closure of the achievement gap must become aware of the social influences and reveal its effects (Esmonde & Booker, 2017; Trent et al, 2019). In the United States 2017-18, teacher demographic, 80% of the population of teachers were white teachers teaching children of other ethnicities. Although the current ratio of white teachers teaching students of other cultural groups is not as high, it is still high (National Center for Education Statistics, 2021). According to Gay (2005), the implementation of content integration, in which teachers use examples, materials, data, and information from a variety of cultures and groups to illustrate key concepts, principles, generalizations, and theories in their subject area or discipline, allows a more appropriate connection between the effects of emotional and categorical learning (Tulving, 1972). In much of the research, the effects of categorical learning leave out the fact that emotional, perceptional, and social learning cannot be separated (Vandervert, 2017). How one interprets the information in relation to how one feels about something determines the situated outcome (Trent et al, 2019).

Learning as a shift in participation implies what happens when someone develops as a societal participant (Daniel, 2008; Esmonde & Booker, 2017). When students are learning, change is happening, and if the concept of power is recognized, the participant would have the power to develop an unmanipulated perception of himself within a social situation (Waters, 2022; Zarazosa, 2007). The artifacts of power are embedded in language, images, media, curriculum, and social relationships reinforced by social media, slanted research studies, attitudes, and biased social interactions, which also teach teachers how to behave towards students in society (Boutyline & Soter; 2020; Domhoff, 2005; Esmonde & Booker, 2017). Teacher bias is continuously happening, both explicitly and implicitly. At times, the bias of the

perpetrator is not known (Starck et al., 2020; Quinn, 2020). The Vygotskian concept suggests that we naturally learn without conscious awareness through daily experiences, which then shape our psychological capacities shaped by social connections. These connections are embedded in various societal structures, such as regulations, norms, limitations, organized work divisions, shared resources, and shared ideologies, ultimately forming a complex web of interconnected activities. Biasness functions as the fundamental belief system within a broader societal structure governed by the ruling class (Domhoff, 2005; Esmonde & Booker, 2017; Quinn, 2020).

Vygotsky emphasized that all aspects of human life are interrelated and that emotions are inseparable from thinking. How we think and feel acts together. The American societal norms, legal standards, and practices make for a twisted social mediation of racism ordinary to those it targets, which represents cultures in the non-ruling class. In addition, the ruling class finds it necessary to position themselves to readily deny, or gaslight members experiences (Delgado & Stefancic, 2012). Since the Vygotskian concept presumes that all humans rely on external factors within an environment in the form of SMA to learn, the ruling class also presumes that their criminal manipulation of others' perspectives will continue, incorporating both affect and idea in educational institutions, churches, and places of employment (Esmonde & Booker, 2017). More importantly, the twisted SMA methods are used only to gain leverage or to maintain influence over other members of a society within the social interactions called relational power (Kolleck, 2019). The power dynamics hidden in society expand the effects of social artifacts, suggesting that the American public education system deliberately perpetuates an educational and cultural divide that harms numerous students. (Delgado & Stefancic, 2012; Esmonde & Booker, 2017). Nevertheless, the ruling class's anonymous perpetrator remains elusive and unidentifiable (Esmonde & Booker, 2017). According to previous research, the acquisition of knowledge

within a cultural context involves the skilled manipulation of ideas through social interaction and play (Yasnitsky, 2019). Furthermore, the manipulated ideas are influenced by the presence of artifacts and are reflected in one's experience, behavior, and performance (Vygotsky, 1978). Based on the latest statistics provided by the National Center for Education Statistics (2022), student performance provides evidence that there are significant proof points of an underlining social manipulation to maintain power. The ethnic performance gap, characterized by Hanna et al. (2020) reflects deeply ingrained social values and presents a notable phenomenon of evidence. The manipulated focus on academic issues can be traced back to the time of No Child Left Behind (NCLB), indicating and emphasizing that sociocultural theories offer a better explanation for cultural disparities.

Public Educational Statistics

The NCLB Act of 2001, which was an ambitious goal to make all school-age students proficient in reading and math by the year 2013-14, explicitly acknowledges inequalities in education (Taylor et al., 2010). The U.S. government required public schools to be held accountable for every student’s academic success. This strategy rests on the premise that accountability would generate the desired outcomes and that it would provide an incentive to promote improvements, especially with interventions in schools identified with the highest needs (Taylor et al., 2010). This intervention targeted teachers and principals’ qualities but not their biases, racist attitudes, or indifference. In light of the discrepancy between cultural and academic performance, the U.S. implemented rules called standards of accountabilities for where students should be performing in each grade. However, each state established its own accountability systems that varied in terms of rigor in meeting a standardized proficiency level. The results indicated that many public schools missed adequate yearly progress (AYP) and needed

interventions (Taylor et al., 2010).

Forty-seven states had so-called systems of support for schools identified as having high needs. These schools were called Title I schools, and the findings reported that many of these schools did not receive adequate support reported:

> Seven states' proportions of schools that made AYP rose by more than 10 percent, while 15 states' proportions dropped by more than 10 percent from 2003–04 to 2005–06. In five states, 90 percent or more of schools made AYP, while less than 30 percent of schools made AYP in two states. The variability across states may be due to variation in performance or variations in states' implementation of NCLB accountability requirements. At least 83 percent or more of all African American, Hispanic, and white students, as well as students from low-income families, attended schools where AYP was calculated for these subgroups in 2005–06 because the minimum number or percent of students needed to constitute a subgroup was met. American Indian students and Asian students often did not have school-level AYP calculated for their subgroup, due to a small number of such students in the school but were included in AYP determinations for the school as a whole (Taylor et al., 2010, p. 51).

The reason for this gap in performance is further explained by the fact that it may be due to each state's implementation of the NCLB act of 2001 rather than to students' performance. All states used different standards for assessment practices to meet their AYP, making comparisons ambiguous. However, other researchers made a variety of assumptions concerning the reasons for the achievement gap, such as poverty, status, mobility, gender, and, of course, race (Hung et al., 2020). Taken from a sociocultural perspective, this makes one wonder about the underlining intentions behind teaching reading, writing, and basic arithmetic to children. There could

potentially be another occurrence taking place. On average, children typically spend twelve years at public schools. They are acquiring societal beliefs and values that do not relate to the child's true abilities, often portraying them as inherent traits rather than influenced by institutions or relational phenomena (Esmonde & Booker, 2017; Hanna et al., 2020). Taking this alternative sociocultural perspective can help provide a more accurate understanding of the achievement gap.

The direct impact of social mediation on learning and behavior, in relation to the NCLB Act of 2001, has rarely been explored. Nevertheless, an abundance of implications have been suggested by critical race theories, sociocultural theories, and cognitive theory research. In professions related to learning, understanding the significance of mediation is crucial in examining social relationships, performance, the diversity of experiences and skills, and the assessment of knowledge and learning, indicating the presence of power dynamics within these social interactions (Esmonde & Booker, 2017). At the root of social development is the influence of environmental relationships (Vygotsky, 1978). Like a sponge, children are constantly influenced by these impressions that help form their individualization. Who we are is a collection of concentrated social influences united into small units (Bukeranin, 1926, as cited in Esmonde & Booker, 2017). Each state’s explanation of its influential achievement standards is also concerning, as states communicate that research from the viewpoint of individual cognition is not well positioned to deal with the concept of power because power is fundamentally linked (Taylor et al., 2010).

SMA is not “in the head” or in the cultural group; it circulates in society among people influenced by social objects in the environment (Esmonde & Booker, 2017; Porter, n.d.). Vygotsky wrote that the mental nature of man represents the totality of his social relations

internalized and is made into functions of the individual, the form of his structure. Vygotsky saw social relationship strategies as the kernel of social mediation, a fundamental commonality between an object, such as a hammer altering the behavior of a nail and an object altering the behavior of individuals (Yasnitsky, 2019). These social signs are used as psychological tools to precondition behavior. The signifying objects or tools may be deliberate or mechanical strategies designed to manipulate an establishment of thinking styles, especially as it relates to race and ethnicity within a culture (Ma-Kellams, 2021). By observing American educational institutions, the practice of priming manipulation steers a specific cultural construct for the adaptation of its social situations designed to influence adherence using incentives and consequences. However, altering relevant aspects of a situation can change the response of cultural groups to psychosomatic thinking (Robert, 2015). In essence, what society teaches through social interaction plays a fundamental role in developing an individual's cognition (Vygotsky, 1978).

According to social theories, the data from the National Center for Educational Statistics (2011) can be seen as a product of social influence, or SMA. When deeply considering these theories, they suggest that the data subtly highlights disparities in academic achievement in the U.S. and indirectly accentuates the presence of an intellectual divide among ethnic groups (Komer & Eliasmith, 2016). The concept of an intellectual distinction can be traced back to Western philosophy, sociology, and psychology (Fredrickson, 2015). In addition, a recent report by the National Assessment of Educational Progress (2020) suggests that little progress has been made in American society regarding the evaluation of intellectual abilities among different ethnic groups. This lack of change suggests a continuation of the existing pattern, as highlighted by previous studies (Domhoff, 2005: Esmonde & Booker, 2017; Porter, n.d.). For example, the academic gap between ethnicities has not changed in 50 years despite the volume of research that

NCES showed that public educational institutions continually compare students of specific ethnic backgrounds by the masses, which perhaps is a creative way to give the illusion that there is a distinct genetic intellectual difference (The Harvard Gazette, 2019). When reviewing data from the National Assessment of Education Progress (2020), certain ethnic groups were up to four grade levels behind their peers within the same American cultural system. The data implicitly indicated a type of manipulated social relationship between ethnicities. Therefore, the existence of a correlation for dominance is seen between social tools, signs, and symbols and students' performance (Taylor et al., 2010).

According to Esmonde and Booker (2017), SMA embedded in our social environment is like a voice that whispers to people on how to conduct themselves, and they will usually obey this central psychological influence because it functions as a guide to sustaining a way of thinking (Kunst et al., 2017). If this is an active concept for manipulation, then perhaps this is a notion of hegemony and is consistent with Vygotskian and Esmonde's perspectives about power and learning (Esmonde & Booker, 2017; Yasnitsky, 2019). Larry Vandervert (2017) writes about people within a culture having certain insights, principles, and conclusions because they derive from the evolutionary, cerebellum-driven origin of the culture. Neuroscientists now believe that what wires the brain or rewires it after birth is based on external stimulation, which in turn changes the brain or perhaps causes it to malfunction in the demonstration of performance (Imamizu et al., 2009 as cited in Vandervert, 2017). In fact, neuroscientists reinforce Vygotsky's theory that society's external stimulation, even socially mediated artifacts, play a significant role in the development of learned behavior through physical experiences (Eslinger et al., 2021).

Through repetitive experience, according to Vandervert (2017), the individual uniquely human cerebellum enhances the behavioral, cognitive, and affective functions of the cerebral

cortex in at least five ways: the efficiency, consistency, motor, cognitive, and affective processes of the cerebral cortex.

> Social feeling encompasses important experiences that signify optimal function, discord, and dynamics of social synchronization . . . A broad definition for feeling is a subjective experience that appears to emerge from perceptions and mental events involving processes inside and outside the central nervous system as well as physiological and bodily states (Damasio & Carvalho, 2013; LeDoux, 2012; Numenmaa et al., 2016) and in various interpersonal and other environmental contexts (Eslinger et al., 2021 p. 592).

The achievement gap, the cultural processes of thinking, the effects of socially mediated actions, and scientific perspectives enhance Vygotsky's theory of social influence on learning, which influences both consciously and unconsciously the individuals' behavior in specific ways. This concept leads one to wonder how much control students really have over their own behaviors and academic performance. Therefore, this analysis is essential for exploring if a relationship between social tools, perception, and behavioral performance exists. More importantly, the objective of this study must be fueled by research on social concerns, individual perception, and the achievement gap, which has yet to provide an effective resolution for the achievement disparity for fifty years (The Harvard Gazzette, 2019).

Problem Statement

The problem is that the American educational system advertises an achievement gap that categorizes performance between ethnicities, which is defined as the academic discrepancy between ethnic groups called The Achievement Gap. The United States achievement gap compares children, perhaps to signify that one ethnic group is better than another. For years, American education has kept at the forefront an ability gap of intellectual difference (Taylor et

al., 2010; National Center for Education Statistics, 2020). Remarkably, volumes of studies are published on the achievement gap, and most of the discussions are about how to close it. With all the discussions and studies, nothing has significantly impacted the current results. The achievement gap between ethnic groups still exists and has for decades. More importantly, the student performance gap has widened, averaging at least a two-grade level deviation between the African American groups and the Caucasian American groups and a one-grade level deviation between the Caucasian American groups and the Asian American groups, according to the National Center for Educational Statistics (National Center for Education Statistics, 2011; National Center for Education Statistics, 2020).

The influence of social factors on educational institutions and how it impacts perception and performance is an interesting area to explore, even as a resistance (Carter, 2008). Neuroscientists have conducted studies that suggest a significant relationship between perception, environmental factors, and behaviors influenced by these factors (Vandervert, 2017). These studies aim to bridge the knowledge gap regarding the impact of subliminal messages in society on perception and the results of behavioral performance using social concepts and objects. Suppose research showed statistically significant results indicating that social factors either positively or negatively affect perception, which subsequently influences behavior. Research has, in that case, educators should take action to modify these factors.

Purpose Statement

The persistent problem of unequal academic performance across different cultures in America's public schools, according to the National Center for Education Statistics (2022), has remained a pressing concern nationwide. The existence of cultural differences stems from a long-standing history of power dynamics and social inequality within society, according to McCardle

(2020). In order to tackle this issue, it is crucial to thoroughly analyze the influence of social artifacts in an environment, the perception of individuals, and their educational performance. This examination has the potential to uncover quantitative correlations between social messaging platforms and academic performance.

Conceptual or Theoretical Framework

The proposed conceptual framework draws from Vygotskian psychology and sociocultural theories to explain how societal messaging mediates behavior. Examining cultural artifacts in educational institutions, including Literature, communication practices, visual representations, and societal rituals, are reliable ways to gain a deeper understanding of the factors that shape human behavior. This framework offers insight into the interplay between social messages and human behavior and how they influence each other in a continuous cycle. It is based on the scholarly works of Esmonde & Booker (2017) and Yasnitsky (2019), which are invaluable resources for comprehending the role of social mediation in educational environments. Sociocultural theories are believed to offer a better perspective for understanding the development of cultural relationships within a culture and their impact on educational outcomes. According to Vygotsky, influences on perception, both positive and negative, shape human perception through a kind of conditioning. He said that the child acts through others, through the adult. Absolutely everything about a child's behavior is anchored and rooted in social relationships (Zaporozhet, 2002). Vygotsky's followers stress the use of signs that lead people to specific behavioral structures, thereby destroying biological development and creating new forms of psychological processes based on culture, such as a humanly designed matrix (Yasnitsky, 2019). Social mediation is the element in one's society besides the biological that accounts for how individuals behave (Vygotsky, 1978). This term, social mediation, described

how a society designed its indoctrination, which is one of the most fundamental contributions to theories of social practices and learning. It extends natural abilities into an exact method (Holland & Lave, 2009; Yasnitsky, 2019).

Achievement Gap Predictions

Given that the latest achievement gap prediction stemmed from the disruption to education caused by the COVID-19 outbreak in 2019, during which contagious viruses caused school closures across the country, a tendency toward external causes became clear. The COVID-19 ordeal offered online classes to children for an entire year. Many Americans believed that this ordeal had further widened the divide between ethnic groups. However, few American education analysts doubted that the pandemic had hampered the education of large numbers of children despite the government pumping money into schools, particularly Title 1 Schools, which cater to underprivileged children. According to Bailey et al. (2021), the data showed that the disruption due to the COVID-19 outbreak had a minor to moderate impact on the performance results. Earlier predictions about the causes of the educational gap continued to focus on poverty, inequality, and cultural differences. From the NCLB Act of 2001 to the Every Student Success Act (ESSA), the goal of educational research has always been to close the achievement gap (Bailey et al., 2021). Much evidence (Hung et al., 2020) from educational achievement studies indicates that there is indeed something going on between cultures that perpetuates differences in achievement. The assumptions made in past research are questionable. Vygotsky's theory suggests that SMA influences perception to guide behavior but is perhaps more related to a hierarchical relationship between cultures. (Hanna et al., 2020). Given that America’s history of brutality, exclusion, and pure selfishness towards cultural groups, particularly African-Americans, there should be no doubt that social and emotional factors lie at

the heart of the achievement gap (Bodrova & Leong, 2015; Boutyline & Soter, 2020).

Since the underlining factors that investigate the differences in achievement between cultures are based on several research questions that assume that SMA directly impacts perception and that behavior and performance resulted from old ideologies, predictions include a change in how achievement will be measured in America as the power dynamic changes. SMA is assumed to affect both cognition and observable behavior. Perception guides the conceptualization, processes, and constraints that manifest the individual's thought systems obtained through participation in social environments that serve the dual purposes of concept presentation and learning (Vygotsky, 1978). SMA is the external social object, symbol, or sign, and it is believed to represent consciousness's shape, color, and location. Perception occurs through the mental analysis of social objects, signs, or mental images and the identification of content that depends heavily on the judgment of individuals (Carbon, 2014). In other words, SMA dictates the meaning and perception that influences behavior both consciously and unconsciously are based on a system of mental processes (Bodrova & Leong, 2015).

Significance of Study and Research Question(s)

The aim of this study is to stimulate further educational research into the influence of socially learned behaviors that affect perception and performance from a social, cultural, and psychological perspective. Educators who value the development of children and their human potential need to understand the impact of cognitive development. Understanding the role of social influences based on power and manipulation in a learning environment allows educators to understand the concept that SMA and human perception are linked to student performance, thereby providing them with better tools to combat obstacles and ensure the safety of learning. The purpose of this study is to identify a path for moving closer to creating a smooth and

reasonable system to close the achievement gap in America. In essence, the hypothesis is that SMA influences the perception of concepts that directly or indirectly influence behavior. The following research questions (RQ) are:

RQ1. Do socially mediated artifacts (SMA-Ethnicity) have a statistically significant impact on academic performance?

RQ2. Do socially mediated artifacts (SMA-Environment) have a statistically significant impact on academic performance?

RQ3. Do socially mediated artifacts (SMA-Ethnicity) have a statistically significant impact on an individual's perception of school?

RQ4. Do socially mediated artifacts (SMA-Environment) have a statistically significant impact on an individual's perception of school?

RQ5: Does the perception of school have a statistically significant impact on academic performance?

RQ6: Does the perception of school mediate the relationship between SMA (SMA-Ethnicity) and academic performance?

RQ7: Does perception of school mediate the relationship between SMA (SMA-Environment) and academic performance?

Definition of Key Terms

- *Achievement gap*: Achievement gap is the discrepancy between ethnic groups in academic achievement or performance (Ansell, 2011)
- *Perception*: Perception is passive. It is passive in the sense of an inactive mental memory of images and concepts received from an environment through the five senses. The brain then tries to make meaning of things it sees, hears, touches, smells, or tastes, which

shapes learning (Gibson, 2002; Fodor, 1981).

- *Socially mediated artifacts (SMAs)*: well-known objects (tools, symbols, or signs) in an environment that can be either physical or metaphorical used to communicate an idea within a social setting; an SMA is a tool that has psychological effects on the behavior of its social members. These effects can be manipulated to socially position an individual in a society, for the recognition of certain accepted behaviors, and to offer individual members a sense of conditional belongingness (Vygotsky, 1978).

  The definitions of the terms, culture, environment, and learning are:

  (1) Culture is a collection of beliefs and activities learned through socialization (Vandervert, 2017).

  (2) Environment is the conditions where one lives, works, and learns effectively (Cambridge Dictionary, retrieved 2022).

  (3) Learning is the process of acquiring knowledge, behaviors, skills, attitude, and preferences (Vandervert, 2017).

Chapter 2: Literature Review

An examination of this Literature review explored various concepts related to how the environment's social and psychological influence shapes an individual's perception and impacts educational outcomes. The central concept revolved around Vygotsky's psychology and his theoretical premise that social mediation influences human behaviors. The objective of this investigation was to analyze the impact of students' performance through socially mediated artifacts (SMA) in educational institutions to understand its ability to manipulate and obscure societal objectives that lead to a way of thinking and acting. While performance gaps cannot be entirely eradicated through research, this study aimed to shed light on their origins from a socio-cultural viewpoint. Socio-cultural studies about behavior and environment are deemed to offer deeper insights into the social impact of educational mechanisms underlying social practices and the discourse surrounding educational achievements (Miettinen, 2006; Esko & Miettinen, 2019).

In organizing this Literature Review, emphasis was placed on information related to the topics associated with academic behavior mediated by societal influences from a Vygotskian perspective to examine the impact of our society on learning (Esmonde & Booker, 2017; Yasnitsky, 2019). Research in the context of Vygotsky's studies explored how SMA, in various forms of objects, signs, and symbols, was observed and used in culture, media, language, and education. The Literature review also discusses how sociocultural theories identify pathways that shape behavioral outcomes in learning (Esmonde & Booker, 2017).

Literature Search Strategy

Literature was collected via a variety of search engines, including Trident University International Portal, Google Scholar, Sage Publications, ResearchGate, and Frontiers. Data collection focuses on the chain's path of three types of variables, which resulted in a research

method designed to fully describe the phenomena of interest from the Vygotsky spectrum. These variables are SMA (in the form of ethnicity or environment), perception, and academic performance. Thus, the literature discusses the connection between SMA and the theoretical concepts of Vygotsky's knowledge of learning (Esmonde & Booker, 2017). It is acquainted with the literature on the stages of mental processes and external factors that affect the mind. Perception is a complex concept that requires different theoretical perspectives due to the influence of environmental factors and thought processes such as cultural prejudice, biased instructions, social language, social symbols, and images (Bodrova & Leong, 2015; Brewer, 2003; Gazzaniga et al., 2009; Han & Ma, 2014; Hong et al., 2019; Hurrell, 2021; McCardle, 2020; O'Connor, 1997; Quinn, 2020; Siegel, 2017; Vandervert, 2017; Vygotsky, 1978). This Literature Review aimed to better understand how SMA shapes an individual's personality and performance, using the terms behavior and performance as similar concepts to link the theory to the publicized achievement gap. Finally, the investigation ends with the third variable, academic performance, and the disparity of it failing to close (Hanushek et al., 2019), linked by the outcome of perception and societal mechanisms that impact different cultural groups, followed by the research questions that framed this investigation in the following chapter.

For emphasis, the term manipulation is repeated to refer to schemes of social mediation (SM), which control and facilitate the behavior of members of society through mediating tools, symbols, and signs (Esmonde & Booker, 2017). SM, or social mediation, in this case, is expanded to socially mediated artifacts (SMA), which discusses the term as utensils or objects in an environment, either visible or invisible, used to gain an impression on individuals' perceptions (Yasnitsky, 2019). Social-cultural schemes using utensils such as symbols, tools, and signs are designed, according to sociocultural theories, to unite certain artifacts with a concept

that impacts shared perception and behavior in an institution (Kovoor-Misa & Smith, 2011; Yasnitsky, 2019). Sociocultural theories explain how influences shape behavior, learning, and perception-identity through social and cultural factors (Esmonde & Booker, 2017). In addition, this literature review examines how certain influences of mediation tools produce negative or positive behavioral effects. For example, a social tool creates a negative impression on one culture group, while the same social tool creates a positive impression on another culture group.

Established a conceptual framework and theoretical direction by examining articles, peer reviews, research studies, theories, blogs, and books related to sociocultural and psychological concepts to close the knowledge gap for concepts in relationship to social artifacts, perception, and national statistics for academic achievement. This practice helped lay the foundation for understanding cognitive thinking that influences educational behaviors. Social mediation affects and impacts individual perceptions and behavioral effectiveness, resulting in academic performance. As mentioned above, the resources used to obtain information were available through various search engines, such as the Trident University International Search Engine Portal, or through more common search engines, such as Laerd Statistics Premium, Google Scholar, Sage Publications, ResearchGate, and Frontiers.

Synthesis of the Literature

The synthesis of this literature review centered around theories and concepts that emphasized social manipulation and learning outcomes based on sociocultural theories, which were strongly influenced by Lev Vygotsky theories of social mediation. Vygotsky's view of learning is often placed next to radical behaviorist Skinnerian thinking, but with a perspective that takes the concept to a new level (Yasnitsky, 2019). Yasnitsky notes that Skinner defines verbal behavior as behavior that is reinforced through the mediation of another person, which has

a similar thought to Vygotsky (Skinner, 1957 as cited in Yasnitsky, 2019). He writes that Vygotsky's choice of vocabulary blurs the lines between two theoretical systems, and his thoughts certainly belong equally to social behaviorism, but his theories were more related to mass media, and social and cultural issues in relationship to the psychological processes of individuals functioning within a society (Yasnitsky, 2019).

The concise overview of this theoretical approach provided a foundation for understanding the conceptual framework that advanced the study of literature, exploring ideas related to the link between socially mediated artifacts, perceptions, and academic performance. In other words, the fundamental inquiries regarding the context of analyzing research studies and concepts concerning social-cultural theories revolve around the utilization of social mediation in a particular setting, the psychological impacts resulting from external tools, and the subsequent actions or behaviors of individuals following their exposure to social mediation, or SMA.

SMA: A Vygotskian Perspective

Vygotsky's theories highlight the significance of social interaction in the development of cognition and underscore the crucial role of the environment in constructing and comprehending meaning. Social mediation serves to enhance meaning, making it more applicable. It is an agent facilitating and managing external social concepts and social activities. Erving Goffman's (1963) theory on stigma has a Vygotskian perspective suggesting that social stimuli profoundly influence individuals' perceptions and their commitment to the prevailing system. To attain this influence, individuals must set aside their distinctiveness and embrace a common identity that is widely acknowledged by members of society, which ultimately guarantees collective admiration for accepted standards and conduct (Schwalbe, 1993). Vygotsky's utilization of signs and symbols goes further to suggest that social influences form a person's personality. According to

the Oxford English Dictionary, symbols and words have universally comprehensible meanings that all members of a society share and play a crucial role in shaping one's identity and personality by embodying tangible objects, intangible ideas, and abstract concepts (Linklater, 2019).

From this sociocultural perspective, symbols within a particular culture originate from unique experiences, understandings and interactions language plays, which is the most significant role among the three. During the early 1900s, Edward Sapir put forward the notion that the language one speaks influences one's cognitive processes (Linklater, 2019). Linklater brings attention to the repetitive nature of a community where symbols are employed to strengthen a hierarchical social system over time. According to Esmonde and Booker sociocultural studies, the ruling class has cleverly employed symbolic elements in rituals, ceremonies, myths, and narratives as a means of legitimizing their power. For example, the image of Colin Kaepernick, a football player from 2016, kneeling before the flag circulated widely, and President Trump publicly disapproved of the athlete's efforts to redefine the flag's meaning. This resulted in demonstrations to confront the underlying biases, injustices, and power imbalances disguised as liberty and prospects by directly targeting public symbols that have a legacy of endorsing racism and inequality (History, 2021). Similarly, according to Schwalbe (1993) institutional logos have been the subject of intense debate. Individuals not associated with the organization may perceive the logo's meaning negatively. In addition, Linklater argues that symbols in society are so deeply hidden that Durkheim (1965) suggested that many people often forget the natural process of object abstraction, which is second nature to most individuals (Linklater, 2018).

The term social mediation is defined as an external mechanism that changes the internal

mental functions of an individual to assimilate in a shared communal activity such as language, objects, signs, and symbols (Vygotsky, 1978). This is how people in a society learn. Theories from the perspective of social culture put emphasis on social influence and learning in the form of SMA, making influence and learning interconnected, which means that what we learn and what we experience happen through our environment (Vygotsky, 1978). Lev Vygotsky, 1896-1934, breaking away from the influence of Karl Marx's philosophy wrote, "Changing the well-known thesis of Marx, we could say the mental nature of man represents the totality of social relations internalized and made into functions of the individual and forms of his structure" (Yasnitsky, 2019, p. 9).

The cultural history of America, which is the greatest experiment in democracy according to Domhoff (2013) from a sociocultural perspective, is based on the realization that America is a capitalist society and that those who have money hold the power to execute their own desires, called, in this case, the ruling class, which influences the entire society. This power ideology created division between those who have and those who do not have, according to economic theorists (Boutyline & Soter, 2020).

According to Boutyline and Soter (2020), cultural schemas are a central cognitive mechanism that affects action and provide clear principles and conditions that distinguish one culture from another. The history of American society created schemes on the premise that slave and working-class participants submit to the ruling class's will either by mere will or by torture. "Domination," on condition, "by a few does not mean complete control, but rather the ability to set the terms under which other groups and classes must operate" (Boutyline & Soter, 2020; Domhoff, 2019). To feed the appetites of the ruling class, they, 'the have-nots,' have submitted to their rulers' desires. People would rather not see this simplicity in the history of American

citizens but rather keep the illusion that American society is a complex land of opportunity, the land of the free. Imagine seeing the world through the eyes of an African American child trying to make sense of the world around him while strange, dispassionate adults from another sub-culture stand over him, telling him who he is and who he ought to be (Brewer, 2003). The symbolic messages of a collective American identity send confusing signals for appropriate behavior, like the academic achievement gap failing to close (Hanushek et al., 2019).

Power, according to Domhoff (2002), can be seen as America's underlying trait or property of a social group or social class (p. 17-18). Power or dominance is measured by signs or indicators in relation to it. According to Domhoff, there are three indicators of power: one who benefits; one who governs; and one who wins. And the addiction to this is that every member of society craves to be like the ruling class. Nowadays, being powerful is the most valued gain of American society, more than wealth, privilege, or control, which has always forged an unequal distribution of wealth and power managed with manipulation (Domhoff, 2019).

In 2022, during a talk at the Marxist School in New York City, an intriguing idea was presented regarding the presence of seven strategies to maintain authority. The first step involves challenging election results, while the second step focuses on restricting voting rights. The third strategy employs aggressive tactics and fear tactics. The fourth strategy includes manipulating information and spreading false messages. The fifth step involves establishing a framework of regulations, conventions, and administrative procedures. The sixth stage aims to control the judiciary system, while the final step secures dominion over other nations. In summary, form the new individual through the implementation of a structured approach (Waters, 2022).

Above all, learning, particularly social learning, from a historical point of view, endures and develops over time (Atteberry & McEachin, 2020). Social learning uses socially organized

activities that change as social cultures develop their tools, signs, and practices. For example, in the past, the radio and TV were the controlling media; today, it is the internet and the cell phone (Bradshaw & Howard, 2019). Human capacity development has shaped history, which sets the stage for ontogenesis (maturity) or the capacity for new tools (Cole, 1996). These tools affect inheritable factors passed down from generation to generation (Esmonde & Booker, 2017). Learning entails more than an individual's biological functions, and social media is a continued perpetuating tool between social mediation and behavior, even in educational settings. (Jones et al., 2021; Esmonde & Booker, 2017). The manipulation of social artifacts forces the working class to continue to imitate, thus benefiting the ruling class, and constitutes a misunderstanding of the meaning of freedom (Domhoff, 2013). Sociocultural theory helps to take into account the fact that what is learned in the social environment affects the psychological, physical, and behavioral development of a child's personality (Vygotsky, 1978).

Unescapable social influences in educational institutions push a hierarchical capitalist agenda more than promoting true human consciousness and potential. (Domhoff, 2019). The concept of a capitalistic agenda was and is impactful, so impactful that it affects the psychological and physiological health of children (McManus et al., 2020). The American Academy of Pediatrics described social factors impacted by internalized systems of racism continuing to have negative consequences on the health of children's well-being through implicit and explicit biases, institutional structures, and relationships (Trent et al., 2019). Historical influences having symbolic messages fused in implicit and explicit biases carry instructional tools like SMAs that allow the messages to have either a direct relationship to the signified or misdirection of the describer onto an object (Cole, 1995). Humans make tools to help them with their goals in the same way that social artifacts shape culturally historic goals to misdirect the

finger pointer to the abstract, which allows the manipulation to continue influencing perception without a concrete signifier (Bodrova & Leong, 2018).

Vygotsky's advances in ideas about psychological processes and social situations gave rise to the mental stages of cognition and the concept of socially mediated artifacts that shape an environment (Yasnitsky, 2019). He is the pioneer of educational and developmental psychology of the late 1900s and early 2000s, which influenced the current learning theories and the concept of mediation tools that engage the individual's mental functioning. Vygotsky coined the word 'social mediation,' which identifies the term as the driver of influence on an individual's perception and behavioral performances (Esmonde & Booker, 2017). Social mediation plays a role in societal communication, societal activities, how individuals recall concepts, and, on a larger scale, groupthink within and across cultural settings (Yasnitsky, 2019).

SMA, from the perspective of Vygotsky, is paramount to existing models of learning and development in education, paying heed to cognitive effects and the contextual aspect of change (Esmonde & Booker, 2017). For example, Shabani (2016) experimented with Vygotsky's theory arguing that what he claimed about students' learning in a school setting is applicable to teachers learning how to teach. His study discussed several influential models for conducting teachers' professional development, which include mentoring, observation and assessment, scaffolding, action research, guided activities, study groups, and collaboration in the evolving processes. The results concluded that the mechanisms gave insight into the process of learning from Vygotsky's theory to practice by explaining the process of teacher development (Shabani, 2016). Learning is an organized system for cognitive training.

The Birth of SMA

Socially mediated (SM) influences originated from the philosophical ideas of Machiavelli, Nietzsche, and Marx and led to the theory of Vygotsky, who influenced Western thinkers to study the sociogenesis and psychological processes of the human mind, behavior, and cultural programming. (Yasnitsky, 2019). The impact of SMA also reveals the history of manipulation, power, control, and capitalist programs that affected society's human psyche as symbols of systems designed to function with mediated potential. (Dery, 2020; Earle & Hodson, 2022; Yasnitsky, 2019). Vygotsky's sociogenesis concept is that humans are the product of their environment (Esmonde & Booker, 2017). If the environment has the power to influence, the dominant class can and most likely has influenced their social culture (Yasnitsky, 2019). Imagine the critical cases of child neglect, abuse, abandonment, and the effects of immoral leadership and how these experiences formed children's personalities (Katz, 1991). Also imagine the impact on African American students in educational institutions, as they have experienced almost all of their adolescent and post-secondary years with no authority figures who regard them with care (Jones et al., 2021).

People in all cultures have examples of individuals and their groups having a mindset shaped and reinforced by societal structures and expectations so that higher-ranked individuals enjoy privileged access to resources. However, conflicts arise when emphasis is put on who should have these privileges (Kunst et al., 2017). Despite the evidence, dominant practices continue until today, also showing how these types of psychological influences impact a child's mental health when it is perceived as racism, but very few changes have been made to solve the problem of social achievement (Mpofu et al., 2022). Mpofu et al. (2022) conducted a survey of high school students who perceived racism during the 2019 COVID experience. 35.6% of all

students in the United States had perceived racism in school, i.e., students reported being treated badly or unfairly because of their race or ethnicity. These cultural groups were identified as African-American, Asian, Hispanic, and even Caucasian and multiracial students. Asian culture was the main target of racism. Students' mental health and behavioral characteristics were analyzed to include severe difficulties concentrating, remembering, or making decisions and feeling close to people at school (Mpofu et al., 2022).

Americans have repeatedly demonstrated that throughout history, non-white students have experienced many negative interactions with white members of society and abuses related to their ethnic culture using tools such as language and even violence. Currently, media exposure to children in non-white sub-cultures in the U.S. continues to expose them to negative ideas of themselves and symbols deducing or increasing the affective human experience, which aids in forming the personality. For example, Muslims in America have been seen as terrorists (Schmuck et al., 2020). Vygotsky's higher psychic function concept surrounding the social construction of a phenomenon of power has historically and negatively impacted subcultures in the larger society as they compete as citizens for centuries. In the early 1900s, Nietzsche introduced the notion of resentment from those who were powerless. He believed that slave morality was created by Judaism and Christianity indoctrination and that powerlessness created a slave mentality to be meek and humble, which was rewarded as good in society and oppressive behaviors as bad (Yasnitsky, 2019). Before Nietzsche published his thoughts, Machiavelli felt rulers should be above morality to effect change. The slave concept progressed to benefit the powerful by aiding in the idea of control, impressing and fueling the members perceptions with fear and desire, which is considered a homeostatic aspect of survival and regulation (EduBirdie, 2021; Eslinger et al., 2021; Speer, 2016).

Eslinger et al. (2021) assert that individual feelings include meaningful mental experiences that signify optimal functioning, discordance, and social synchronization dynamics. The reviewers examined how media communications influence the emotions of a person positioned for affiliation, including "fMRI meta-analysis confirms that the social brain and limbic structure" mediates feelings for social functions. (Eslinger et al, 2021 p.619). In relation to this, the current statistical results from students' academic performance must consider the human psychological sensitivity mechanism happening due to environmental stimuli, according to a post-Freudian concept of personality development (Nsamenang,1992). Yasnitsky (2019) further explains how Vygotsky modified the concept that socially mediated artifacts in society significantly impact the mind, which can be observed in human activities and social relationships. However, Vygotsky was interested in the processes of human psychology that lead to the level of genius through mutant thinking, the development of supernormal human abilities, and how symbols were able to create new pathways of meaning (Yasnitsky, 2019, p. 5).

According to Yasnitsky (2019), during Vygotsky's era, Leon Trotsky's concept of "Superman", a symbol of power, permeated the era of Nietzsche's published works (p.5). The concept of Superman, particularly the philosophy behind superhero comics, is that of a metaphorical, hyperbolic world of symbols in action. As a role model and one of the most powerful, Superman constantly struggles with ethical dilemmas, primarily those of power and responsibility (Schwartz, n.d.), which arise from Nietzsche's Superman versus Hitler's Superman. However, Vygotsky used the concept of Superman as the "new man", a psychological system for higher processes (Yasnitsky, 2019, p.131). He believed that psychology would be Superman's science to complement Marx's perspective on the human in society and the concept that Nietzsche's "hammer philosopher" image can create new thoughts, personalities, and new

cultures, even a new world (Rosenthal, 2002 cited in Yasnitsky, 2019).

Vygotsky wanted to advance Karl Marx's philosophy (1818-1883), who was considered one of the great thinkers and political activists of the Soviet Union. Marx influenced Western thinkers, but Vygotsky wanted to create a concrete science to explore the depths of human performance by creating a scientific theory. With this theory, he wanted to create scientific methods for biology, history, and psychology. He needed a system of concepts to support his theories and a methodology or a specific scientific discipline. Vygotsky understood that Marxist philosophy was not pure but a dream of the future, and he openly admitted "the dangers of bending a process of open-minded intellectual exploration" (Yasnitsky, 2019, p. 17). He aimed to free psychology from biased and imaginary ideas, seeking a genuine account of conscious actions from initial thoughts to visible behaviors (Yasnitsky, 2019, p.19). For his theories to be recognized as a science, it was imperative to abandon dogmatic indoctrination completely. Through the philosophies of Marx, he made a significant contribution to the idea of the desire to recreate man (superhuman) by creating an environment linked to social conditions. Vygotsky sought to understand how social influences affect children's cognitive development, which he later learned came from cultural relationships and social ideologies (Yasnitsky, 2019). He wrote that children acquire their values, beliefs, and problem-solving strategies through social interaction to develop cognition, even during play. If the concept of SM has a central role in the environment, according to Dewey's theory of activity, it actively directs the thinking of individuals with an agent, a sign, that signifies events (Miettinen, 2006). Many theorists believe that Vygotsky's findings have merit, which assumes that children, especially those not included in a dominant (the ruling class) cultural group, are perhaps indoctrinated to underachieve (Esmonde & Booker, 2017). In a collection of studies by Esmonde and Booker (2017) entitled

Power and Privilege in the Science of Learning, society created illusions. When observers do not observe the individual without considering the surrounding context or context as a secondary medium, they only obscure the true message of the individual's behavioral outcome and generally direct the behavior in a different direction. For example, public high school students' achievement rates vary by ethnicity (National Assessment of Education Progress, 2023). Students' performances were interpreted and divided by their culture, which then reports that poor students were getting worse, making the better performers somehow superior. This is an example of a manipulative attempt to blur the lines of learning between individuals. A socially manipulated method can also disprove the hypothesis that artifacts affecting an individual's cognition are intentional by directing people to look elsewhere. This is confirmed by the colloquial expression "blame the victim," the classic redirection of perception. Perception is influenced by what one sees, tastes, hears, and touches, which has the potential to hide its mediating effect (Fries-Britts, 2002).

Vygotsky, although his initial intent was to create a Marxist psychology to contribute to a historical project for forging a socialist society, made some remarkable contributions, exposing schemes for social power and control (Yasnitsky, 2019). Vygotsky (1978) wrote about social mediation, which is a method of mind control, stating that:

> one could say that new forms of labor will create the new man and that this new man will resemble the old kind of man, 'the old Adam' in name only, in the same way as according to Spinoza's great statement, a dog, the barking animal, resembles the heavenly constellation Dog (p. 61*).*

In other words, humanity will be transformed through socialism (Vygotsky, 1978). Vygotsky viewed Marxist thought as a valuable resource for exploring human development. "He believed

that tools, signs, and symbols are the medium through which an individual can wield his influence on an environment and remain separate from the object acted upon" (Esmonde & Booker, 2017, p. 8). Vygotsky gained followers like Leontiev and Elkonin (1972), who enhanced the concept of social mediation while observing children's play. Daniel Elkonin, a colleague of Vygotsky, continued his work to explain that social tools are identifiable objects for discussing, applying, and understanding children's future behaviors (Yasnitsky, 2019). According to Elkonin, the role that a child lies at the center of a social model. Objects are symbolic representations of relationships between their roles and social artifacts. Since humans rely primarily on socially mediated tools and signs in their physical world to learn, wiring the brain or rewiring it after birth can be manipulated through a psychological process using external stimulation, which changes the brain for certain performance outcomes (Esmonde & Booker, 2017).

Psychological Utensils (SMA)

Consider the following studies to understand how SMA can be interpreted as a psychological utensil to guide behavior in education. But first, note that the term "utensil" is analogous to the medieval tools used to manipulate behavior toward a desired outcome, such as a hammer that drives a person to behave as if driving nails into wood (Subero et al., 2018; Vygotsky, 1997; Wertsch, 1997). The hammer signals the user to act so the device can be used properly. Objects regulate our thoughts and actions. Zarzosa (2007) quotes Elsasser (1991) that these "objects crowd the characters, invading their personalities, displacing them, and ultimately becoming more real than the relationships or emotions they were meant to symbolize (Eslinger, 1991, p. 84)." Consequently, ordinary items, according to Agustin Zarzosa, transform into powerful symbols that convey internal struggles and emotions that are beyond the characters'

comprehension. (Zarzosa, 2007). Zarzosa further explains the slave relationship between master and slave. This is interesting and applies to social intermediation, as objects act as intermediaries in relationships between individuals. He writes:

> In Hegel's famous discussion on self-consciousness, nothing is mediating the struggle that results in the master and slave figures. Nevertheless, the resolution of this struggle demands that the master and slave mediate their relationship by means of objects: the slave expresses obedience by transforming them while the master exercises power by consuming them. In other words, the objects everyday used concretizes a power relationship, whose constitutive poles are production and consumption. Hegel explains that the master's relation to things is ‘a fleeting one,’ while the slave's desire held in check forms and shapes the thing (Hegel, 1977, p. 118).

In this first study of mediating objects, the program developers developed an educational program for elementary school children here in the United States to learn self-regulation. The kindergarten children were given opportunities to practice self-regulation using strategies in the context of academic tasks designed as playful activities. The program, Tools (which is the actual name), is a comprehensive curriculum designed to promote the development of decision-making during play. The challenges faced during the implementation of this program were the teachers’ differences in educational philosophies and classroom practices. It created diverse instructional challenges, along with their culturally diverse population of students, but a level of effectiveness still worked (Bodrova & Leong, 2018). Children who used the Tools program outperformed their peers on literacy and math tests with the strongest effects in targeted high-poverty schools. Implementing Tools meant that teachers had to consider departing from what was familiar to them, a shift in thinking and acting, through professional development. Bodrova and Leong

(2018) used the Vygotskian principle of social mediation of learning as a preparation tool to establish adult-child and child-child interactions. Tools as the socially mediated artifact scaffolded to instruct behavior during play, as well as how the children engage with their peers. "Scaffolding interactions are used in formal or informal instruction to help the child move from being assisted by an adult to being able to perform new and similar tasks independently" (Bodrova & Leong, 2007, p. 481). Participants within each child's zone of proximal development interaction were designed to support the desired skills and knowledge for emergence (Vygotsky, 1978). Teachers gave the children maximum support in the beginning stages and then withdrew their support as they mastered the new skill (Bruner, 1985). The results were inconsistent with the quality of training, which led to the developer's redesign of Tools using the actual developers as the trainer (Bodrova & Leong, 2007).

Since socially mediated artifacts are considered a form of a higher psychological function, it plays a significant role in the behavior of an individual (Vygotsky, 1978). With children, higher psychological functions allow for signifying words or utensils to become a mediating truth influencing perception, according to Zarzosa (2007). A tool, such as a language, mediates between the individual and the actual behavior to create structural relationships. It attempts to make suitable an object, a type of evidence, to affect their perception, which Zarzosa calls subject-medium-object. Even language influences behavior, which influences the thinking of individuals or groups to act in a certain way, like any concrete tool. As people understand and accept the concept of the object, hammer, and its purpose, society, as a collective people, acts accordingly. This idea of social mediation, discussed by Yasnitsky (2019), Daniels (2017), Cole (1995), and Lewis & Moje (2003) have historically expressed that language can also be a tool used as and by a signifier. Words that are repeated over and over send a message that a child

internalizes. If he hears that “he will never be as good as his brother,” he then behaves accordingly. Language alone is a powerful tool that affects the cognitive development, which also psychologically affects a child’s performance negatively. The opposite is true with another child who hears how wonderful he is.

In another study, Poehner & Infante (2019) argued that the internalization of psychological tools together as a concept-based language instruction with mediated learning experience offers a powerful and coherent approach to promoting learner development of abilities in an L2. SMA instruction highlights a curricular exhibition of language as a system of concepts and how the concepts may be represented to facilitate learner comprehension and their use of them. On the other hand, as with any curriculum with complex and abstract concepts, the learner requires support and guidance to access and benefit from it (Poehner & Infante, 2019). These studies positively practice mediation manipulation to get learners to learn a skill. However, negatively, the appearance of learning in a culture embedded in power creates another purposeful scheme for learning with a desired outcome for the benefit of specific people.

Social Influences and The Mental Process

Esmonde & Booker (2017) maintain that social influences play a crucial role in creating a society and a socially organized environment to serve its population. Within a society, diverse cultures act as fragments that form a civilization where every member plays a role. As power is fundamentally a relational concept, it circulates within the environment, mediating both visible and invisible communications to sustain a particular way of thinking for those signified roles. “Power is already in the context of learning . . . explicit and in the hidden curriculum of the learning context. In all learning contexts, power is involved . . . (p.168).” The power concept of hegemony is imperialist thinking which the society expands and then collapses due to it being

controlled by the wealthy. Power accounts for non-equitability in learning amongst the laborers through a social class difference in positions (Domhoff, 2019). These influences of the mind contribute to what is called situated learning, a learning that shifts the identity of the social members (Lave & Wenger, 1991).

Furthermore, the preservation goal of an organized social order sets boundaries between individuals within the context of learning. Every actor must accept their role to facilitate the personal aims of the ruling class. Manipulation was and is used today at the expense of others (Speer, 2016). For example, take the concept of intelligence. Jensen (1969) concluded that intelligence was genetically determined and that certain cultural groups were significantly inferior to others based on their behavior to justify class distinctions (Gotfredson,1998; Varnum et al., 2010). However, history also points back to Karl Marx, perhaps influenced by Niccolò Machiavelli in the 16th century, who was admired for his theoretical methods for analyzing cultures and human behavior to create the ideal social order. Marx is believed to be influenced by two concepts, coercion and consent, based on the need to secure the "New State" (Boutyline & Soter, 2020; Speer, 2016). In the case of Machiavelli, rulers must detach from morality to promote a social rationale for manipulating others. Rarely do educational studies, particularly when inquiring about the achievement gap, discuss these concepts of a culture grounded in the need for power and dominance. The influenced working class, still considered an inferior culture, accepts the social and psychological messages reinforced and trusted in an environment even through secondary instruments due to association with the ruling class in some manner. The accepted behaviors become set in stone, and the seemingly superior cultural group worries only about sustainability with this working-class group (Robert, 2015).

External influences alter the mental process of the brain through social experiences that

can now be measured scientifically, called neuroplasticity, according to Daniel Siegel (2017). The child's developing brain is an embodied and relational process that regulates the flow of energy and information shaped by experiences. Energy drives the activation of neurons. The neurons drive the energy flow throughout the body. In other words, experience directly shapes the brain's circuits responsible for the processes of memory, emotion, and self-awareness called epigenesis, a powerful way in which the experience modifies how the brain develops. Basically, social relationships have a huge impact on an individual, even with patterns of how one communicates (Siegel, 2017). For example, the growth of social media (online tools for sharing information) and its influence on children is concerning as to how it affects their psychological well-being, according to Ostic et al. (2021).

Children and adults spend a lot of time searching sites, which is believed to have altered group interaction and may be leading society to cell phone addictions due to a fear of missing out on something (Ostic et al., 2021). The media builds a sense of connectedness artificially. Cole (1995) defined social capital as features of a social life's norms, trusts, and shared objectives, while Bradshaw and Howard (2019) explained the media as a resource embedded in one's social network. Some think of this media as a positive and negative social tool. Positively, as a resource that binds social capital, it has a positive psychological effect. Negatively, as a source producing social isolation that deprives members of a society of healthy relationships with others (Ostic et al., 2021). Both the positive and negative SMA are examples that show how cultural tools mediate behavior and become a part of a way of thinking. "Mediation occurs when an artifact" such as social media, is dragged into a situation to alter the relationship between people and the world around them (Esmonde & Booker, 2017, p. 8).

Mediation is the first point of contact and is often rooted in power. For example, communication between teachers and students can empower students, but this is often not true. The power exerted by artifacts such as language to communicate ideas and social relationships shapes an individual's unconscious personality (Linklater, 2019). Modeling how the brain works is an ongoing role for teachers, who may also have explicit and implicit biases. Stark et al.(2020) compared American teachers to other adults with similar explicit and implicit bias characteristics to demonstrate societal influence within and across external social contexts. The influences of mediation are cultural, and the institutions reflect their culture. What happens on a larger scale within a culture influences the smaller, individualized pockets of that culture. The researchers used Project Implicit, a website that allows visitors to self-administer IATs (Nosek et al., 2007, cited in Starck et al., 2020). Participants find the website through different channels (e.g., search engines, peer recommendations, media coverage) and can choose between IATs covering different categories (e.g., race, age, sex). In this case, they focused on adults who chose to complete the Black-White IAT. Explicit bias measures and a demographic survey accompany each administration of an IAT. Next, participants receive feedback regarding their performance on the IAT and various reference materials. Project Implicit has collected measures of explicit and implicit bias and various demographic variables from website visitors since 2002. The results show an insignificant difference, meaning there are minor differences between teachers and adults in American society. (Starck et al., 2020).

In an earlier study with a similar concept, the researcher investigates educators' racial attitudes: "Across preK-12 and postsecondary settings, the racial attitudes of educators have important consequences for the learning and developmental outcomes of students" (Quinn, 2017, p.4). The researcher gathered literature on educators and racial stereotypes, explaining how

"teachers' intelligence- and motivation-related stereotypes can affect students' learning through teacher expectancy effects. The teachers' expectations lead to self-fulfilling prophecies." He also interviewed 18 preK-12 educators, postsecondary educators, and non-educators using a GSS survey of 34 items related to racial attitudes. The results said that some educators held racial attitudes detrimental to students' learning and development. Still, others expressed less negative and more positive attitudes towards students of another ethnic group than themselves compared to non-educators. The researcher suggested preferential hiring in favor of the population of students (Quinn, 2017).

According to David Quin (2020), teachers' implicit racial attitudes affect their students on a large scale. Evidence on teachers' implicit biases found that teachers' implicit racial biases varied by teacher gender and race:

> Teachers adjusted bias levels are lower in counties with larger shares of ethnic students. As a whole, counties in which teachers hold higher levels of implicit and explicit racial bias have larger adjusted White/Black test score inequalities and White/Black suspension disparities (Quin, 2020, p. 19)

As the culture's philosophical ideas are incorporated into society, language communication in educational settings has a way of influencing the interactions between participants, which can affect healthy learning (McManis et al., 2020). How one is taught has the possibility to impact groupthink within a social sub-culture, creating an unconscious bias (Janis, 1972; Quin, 2020). Quin explored how teachers demonstrated racial bias during instruction as a sign of a mediating factor that demonstrates various cultural inequalities for students' academic achievement. His study observed two hundred and ten Princeton University undergraduates, using linear regression analysis to measure the instructors' explicit bias or mean-centered

implicit racial bias on Black and White students (0 = White, 1 = Black). The study proved that the social interaction of the implicit bias affected the learners' test performance (Quin, 2020). The researchers then compared the two scored tests of thirty-three questions and examined the difference between the two ethnic groups of Princeton undergraduates that received the teachers' instruction. The lesson that was taught to both groups was the same lesson to examine their pedagogical performance. The scored test results (r = 99, p b .001) explained pedagogical factors of bias between black and white learners. The results showed that the white teachers who taught the black learners compared to white learners demonstrated greater pedagogical skills when instructing the white learners who received higher scores on their tests. The same teachers teaching the black students demonstrated an inability to deliver clear, coherent, easy-to-follow lessons, affecting the learner's performance by 13% below their white peers. This study has been replicated from prior research validating unconscious bias behavior when teachers teach different cultural groups. The researchers concluded that the biased behaviors of the teachers were not always at their conscious level and argued that the biased behavior is often difficult to control as a response (Quin, 2020).

In another study, McManus et al. (2020) investigated the impact of psychosocial stress on cognitive abilities such as memory:

> Stress is believed to impair executive functions, such as the working memory and its cognitive flexibility (Diamond, 2013; Shields et al., 2016). Stress-related effects on memory may therefore be influenced, at least in part, by effects on other forms of cognition. The most prevalent theory suggests that stress influences biased cognitive resources towards dealing with the current stressor, thus limiting available resources for other cognitive processes (p. 3).

Psychosocial stress differs from physical stress. The researcher analyzed fifty studies and compared and identified them based on the timing of stress-related stimuli. The findings had a moderate effect when comparing memory and emotion to a neutral stimulus, which also varied across studies. McManus et al., (2020) concluded that the findings may have a different effect depending on the stimuli. All these studies point to perception as being everything when it comes to the mental development and learning of an individual. How one is signified to think and act in a certain way is the power of suggestion, not always fact.

In the past, research on educational establishments has often led to several key societal influences occurring before students enter schools (Kolleck, 2019). These social influences included historical, political, cultural, social, and technical mediation. Robert (2015) wrote about how mind manipulation is rooted in a hierarchical capitalist society. The ruling class learns to manipulate laws, education, and the economy to control society for their own purposes. This type of influence has been effectively done by gathering as much information about people within the subcultural groups who continued to take up space in their perceived world, which, in turn, also helped to increase their wealth, through the process of observing and gathering information. The ruling class learned human behavior. People in powerful positions became aware of the function of morality through their own behaviors, which provided a basis for creating a social order within institutions (Kolleck, 2019). No wonder that the roots of power lie in Christianity, which influenced self-awareness and technology, but the printing press led to widespread literacy, letter writing, and the birth of the novel. With the development of a new society, new problems for the population also developed. In essence, the ruling class learned to categorize people to those who could do the work and those who could not do the work, called a division of labor (Robert, 2015). The results pointed to a relational power that employs an actor-centered approach, social

networks, and individual positions to improve cooperation. History is then carried to the present through political and economic forces and cultural imaginaries that structure conflicting practices between institutions and shared activities. This is referred to as "historically institutionalized struggles," but also as "enduring relational struggles" (Holland & Lave, 2009, p. 2). The influence of our social construct points to an intentional design that instructs the participants to act on their part, as seen in the achievement gap.

Perception in Relation to SMA

Perception, according to Luria (1929) cited in Esmonde & Booker (2017), focuses on the individual's mind. Perception has a knowledge structure inside the mind that governs how information is stored and how the information relates to one another, called a process for learning. Perception, according to Siegal (2017), works with all of the critical senses; touch, hear, see, taste, and smell, which helps form awareness. The sensory receptors are specialized neurons that react to environmental stimuli. Each sense involves a unique pathway and process mechanism to translate the external world. Sensation is the awareness of the stimulus (Gazzaniga et al., 2009). A deficit in one or more of these senses causes the brain to reorganize the process of acquiring information. This reorganization in the brain is a remarkable example of neuroplasticity. In other words, perception is the interpretation or meaning one forms from the sensed stimulus. Object perception or artifacts within an environment depend on the mental analysis of the object through cues such as color, texture, and motion stimulus. Any socially shared object, despite some irregularities in how the object might be represented, will still be identified as the concept meant to be socially understood. Object recognition can be achieved in many ways and often involves many levels of representation to recognize the object. However, the object must be connected to stored knowledge about its meaning. Humans can recognize

objects in countless situations that develop over time through repetition and interpretation(Gazzaniga et al., 2009).

SMAs are designed to be the first point of symbolic contact, representing a concept of hierarchical power. Distortion in perception distorts the neuron network of the brain, which affects the emotional centers in the limbic system and the decision-making functions of the prefrontal lobes in the brain (Sweeney, 2009). Patterns of information from external stimuli become automatic for rapid recall, such as stereotypes. Stereotypes lead to expectations about someone, allowing humans anticipation and preparedness for an encounter with the individual (Quinn and Desruisseaux, 2022). Marxist psychology allowed sociocultural learning theorists to further the concept of symbolic messages defined for the use of its theories and processes in educational institutions (Speer, 2016). In addition, Waters (2022) found that in the construct of student perceptions, belonging had a significant and positive correlation with self-efficacy as a perceived instrumentality of mastering goals and achievement. Because SMA is believed to influence communitive practices in society, it is also able to clarify the internal or external factors that influence behavior to perform (Yasnitsky, 2019).

Dijker (2008) was interested in the influence of culturally reinforced biases using dolls to emphasize beauty, youth, masculinity, femininity, and even race, which prompted a new study from Saccone and Chouinard (2019). The illusion of perception can make something seem like what it is not. Dijker (2008) investigated whether people's perception of their weight would follow a size-weight illusion. People tend to accept a smaller object as weighing less than a larger object based on their behavior to use more force to lift the taller object. Saccone and Chouinard (2019) also used dolls, Barbie and Ken. To test the illusion of perception, they drilled holes in Ken and redressed him. Then they filled Barbie with lead. The results indicated that a

mechanism can influence conceptual knowledge. Thus, cultural bias can be reinforced by the manipulation of one's perception. It also showed that cultural biases could permeate the processes of perceptual processing, including one's conscious experience of objects surrounding the individual (Saccone & Chouinard, 2019).

Wertsch (1997) declared that all behavior is mediated behavior because symbols and signs are objects that work effectively on perception. After all, it cues an individual's thinking. He also says that it thinks for the individual. The effectiveness of cues using an object of a concept instructs the individual on who to be and how to act (Esmonde & Booker, 2017). The main task of human perception is to develop and strengthen sensory input to be able to perceive something and work efficiently. There is a relationship between objects and perception. An object tells the individual that something is factual or objective, which can be a shared experience with eyewitness testimonies. The concerning factor is that the link between perception and object is relatively strong. How an individual perceives the object will guide their execution of actions (Carbon, 2014). Elkonin concludes that things, in their symbolic functions, act out a symbolic representation for forming a relationship between one's perception and their actual role models (Bodrova & Leong, 2015). These psychological signals have historically prompted students to think weekly and repeatedly for the first 12 years of their educational experience.

The influence of social artifacts on students' perception, especially their social performance, can have unintended consequences. It can negatively impact their behavior and thought processes (Carbon, 2014). Unfortunately, the achievement gap between ethnic groups is perceived as discrimination or racism. Additionally, the language used to describe this gap can be misleading, suggesting that poor students perform poorly. This leads to unhelpful assumptions

that do not address the root of the problem. While social mediation is often used to explain the differences in academic performance, it is crucial to consider the underlying factors contributing to this gap. Racism and economic status are significant contributors, but other mediating factors are often ignored. Therefore, it is essential to look beyond these secondary contexts and consider all potential factors (Esmonde and Booker, 2017).

Sociocultural theories aim to prove the misconceptions of past thinking that intelligence is genetic. Vygotsky's theory of human development and learning places his thoughts in a larger context of academic behavior, with the notion that instruction precedes the shaping of cognitive development. When a child enters a social setting, he or she not only takes from the culture but he also assimilates something, taking something from outside that profoundly refines his or her behavior during his or her development (Bodrova & Leong, 2015). Sawyer (2006) asserts that education was not designed to correct misconceptions from earlier influences or perceptional thinking, which suggests that educational institutions have never intended to correct their earlier misconceptions wholeheartedly. Instead, the socially mediated artifacts within the context of learning are still, in effect, working their magic, ignoring the insight of informed research that the psychology of a social dominance ideology is the result of psychological performance gaps between student achievement (Esmonde & Booker, 2017).

Biased Perception

Explicit bias is conceptualized. The individual is very aware of their biases. Implicit bias is unconscious. The individual is not aware of their biases (Katz, 1991). Bias within perception works within an individual’s beliefs and accepted ideas, which has a level of individualization between cultures and parenting functions (Devine et al., 2012). Perception at the individual level could result in being an outlier of groupthink, according to Janis (1972). However, acceptance of

a concept is most effective when the group of people hears and experiences similar, if not the same, messages and accepts or believes the influence. However, the influence can become ineffective when the person critically thinks about it. For example, everyone in a group sees and experiences a negative image representing their cultural character and responds accordingly, except for one, who reinterprets the image as something positive, which results in a different outcome. Groupthink, according to Janis (1972), is a very powerful tool that has lethal consequences when there are differences.

Cultural differences in learning mean that a cultural difference exists if one culture interprets a symbol to mean something different. For example, "education" can mean something negative in one culture and something positive in another. Artifacts are interpreted and experienced very differently among individuals and ethnic groups. In many cases, interpretation depends on collective reflection of a socially shared point of view. One cultural group may view education as a necessary tool, while another group may view it as unnecessary, as almond harvesting is their cultural activity. The students from Linklater's (2019) study enter school and perceive or interpret it as a place not meant for them, a sense of not belonging. Even though the study does not identify the groupthink influenced by SMA in the school, groupthink is a factor not realized but reinforced in their cultural group (Carter, 2008). The feeling of a fixed future is reinforced by the lack of culturally identifiable objects, visuals, and language. The lack of examples of people who look like them in various occupations reinforces group thinking. Imagine these students in schools experiencing the absence of themselves as a socially mediated message not apparent to another ethnic culture for twelve years. This indicates an indoctrination of exclusion. The practice of exclusion is a psychological message that will predict certain behaviors and academic performance (Esmonde & Booker, 2017).

Perception in Relation to Environment

When perception mediated by an environment affects performance, individuals' developmental cognitive potential could be hindered. According to Varnum et al. (2010), data on patterns of perception taken from different cultural societies will have cultural variances. Some cultures will demonstrate more analytic patterns of thinking, while others' cultural thinking patterns are more holistic. For example, Han and Ma (2014), in *Cultural differences in human brain activity: A quantitative meta-analysis*, examined "35 functional MRI studies to evaluate cultural differences in brain activity with members in a society engaged in social and non-social processes" (pp. 298-9). The results showed:

> That social cognitive perceptions are characterized by more vigorous activity in the dorsal medial prefrontal cortex, lateral frontal cortex, and temporoparietal junction in East Asians but more vigorous activity in the anterior cingulate, ventral medial prefrontal cortex, and bilateral insula in Westerners. (Han & Ma, 2014, p. 299).

East Asians' cognitive processing is associated with more vigorous activity in the right dorsal lateral frontal cortex. Westerners had more significant activity in the left insula and right temporal pole. In conclusion, the Westerners were more independent, while the Easterners functioned more interdependently (Varnum et al., 2010, p.13). Cultures that endorse and afford independent social orientation tend to emphasize self-direction, autonomy, and self-expression. These findings have often been explained as being due to corresponding differences in the learned social environment. If the atmosphere were created by mediating factors that influence perception, the level of cognition would be developed by the practices and beliefs upheld (Varnum et al., 2010, p.9).

Society's social relations play a significant role in the development of who we are and

what we can do. Identity develops one's perception, which is often not defined by the individual but by the groups' thinking. Unless the individual has strong self-reliance, critical thinking, and behavioral resistance to social schemes designed to encourage groupthink, they will have difficulty counter-perceiving the recurring symbolic messages within the environment (Carter, 2008). Vygotsky defines this practice as higher mental functions of something mediated, intentional, and designed through social artifacts, which are often internalized. Most people are unaware that even talented and critically thinking children do not perform well in a socially mediated psychological state (Vygotsky, 1978). Without the initiation of awareness needed to affect resilience, the mediated perception is accepted and trusted as the definition of self (Carter, 2008).

The Achievement Gap

The National Center for Education Statistics indicates several causes for the achievement gap between ethnic groups: environmental disparities, poverty, lack of nutrition, cultural expectations, and a few others. Many of these disparities seem fixable within a resource-rich society (U.S. Department of Education, 2000). Still, the gap continues and has even widened, according to the NAEP (2023). The report found that students' results indicated that the achievement gap between high- and low-performing students has widened significantly in both math and reading in the United States (National Center for Education Statistics, 2020). The results can be statistically understood to indicate that students who experience a lack of resources have more significant hindrances to academic progress. One may question the origin as either resources or mediation that causes and sustains the achievement gap. Even the average of the low-performing cultural group has exceptions or extreme outliers that statistically show how

some disadvantaged students outperform their affluent peers rich in resources (U.S. Department of Education, 2000).

The achievement gap is an object of suggestive language. Medical students studied how the achievement disparity influences perception in medical education, carrying a psychological impact that furthers the possibility of the current cultural gap, according to Jones et al. (2021). The constant comparison showing a disparity can actually worsen academic performance because the targeted individual begins to internalize the negative social messages about themselves that their social group is inferior. The researchers then cite Owens and Massey's (2011) study examining how underrepresented minorities defined as (URM) the psychological pathway of performance and externalizing and internalizing among 4,000 first-year college students define them by believing that white students view this group as inferior, which they view as inferior. Also, they think themselves to be inferior (Owens & Massey, 2011, as cited in Jones et al., 2021). As a result, the study showed a significant relationship between academic underperformance and the externalization of negative stereotypes. This threat to individuals' emergent identity that represents how they view themselves is called imposter syndrome. Blacks and Latinx were more likely to achieve lower scores on their licensing exams compared to other social groups (Jones et al., 2021).

Academic Performance

Quin and Desruisseaux (2022) assert that performing behaviors are the activities of knowledge, skill, and motivation interacting with their environment, according to Doron & Parot (1999) quoted in their literature. Behaviors are limited to an objective and observable reaction. However, according to Hector Lamas (2015), performance results from learning being prompted by an intellectual activity produced by the student. Lamas cites Martinez (2007) who says that

academic performance is the product given by the students and expressed through a grade to indicate performance. He also quotes Pizarro who supposed that academic performance revealed the responsive abilities represented by what an individual has learned from teaching and training. Academic performance is the level of knowledge shown in an area or subject. In other words, academic performance is the outcome of the behavior performed. According to the National Center for Educational Statistics (NCES) annual data reports, performance communicates a psychological message, which displays statistical evidence of a knowledge gap between students' academic accomplishments. This display can be interpreted as a sign of students' intellectual genius by ethnicity (Porter, n.d.). Although power and dominance play a leading intentional factor in intellectual comparison, it is the utensils of social mediation as an agent, which perpetuates deficit mindsets. (Quinn and Desruisseaux, 2022).

The achievement gap, according to David Quin (2020), is the discourse around racial gaps that perpetuates stereotypes and promotes the adoption of deficit-based explanations that fail to appreciate the role of structural inequities. In his study, he examined three randomized experiments resulting in a TV news story about racial achievement gaps "(vs. a control or counter stereotypical video)," which led viewers to express:

> exaggerated stereotypes of Black Americans as lacking education (Study 1 effect size = .30 *SD*; Study 2 effect size = .38 *SD*) and may have increased viewers' implicit stereotyping of Black students as less competent than White students (Study 1 effect size = .22 *SD*; Study 2 effect size = .12 *SD, ns*). (Quinn, 2020, p. 2)

The documentary did not influence the viewers with explicit competence-related racial stereotyping. Instead, they gave the reasons for achievement inequalities or the need for

prioritization to end achievement inequalities. After two weeks, the effect of stereotype exaggeration faded.

Perception in Relationship to Academic Performance

When perception is influenced by fear, prejudices, courage, etc., the individual's brain responds to how that influence is interpreted and accepted. Susanna Siegel calls this influence a highjacked perception, especially when the influence has a lot of weight (Railton, 2020). Perception develops by the way sensory information is organized, interpreted, and consciously experienced through the five senses of what one sees, feels, hears, or tastes. It is a psychological process of disturbance and acceptance built on beliefs, values, and prejudices (Marshall et al., 1963). Regardless of any external messaging system, perception ultimately determines how well an individual academically performs (Stringer et al., 2008).

Quin and Desruisseaux (2022) found that teachers gave lower priority to racial equity when disparities were framed as 'achievement gaps' (AGs) versus 'inequality in educational outcomes. He analyzed data from "two survey experiments using a teacher sample and an Amazon MTurk sample and found that (a) the effect of AG language on equity prioritization was moderated by implicit bias" (Quinn and Desruisseaux, 2022, p. 4). Bias had more significant adverse effects among "teachers holding stronger anti-Black/pro-White stereotypes; (b) the negative impact of AG language replicates with non-teachers; and (c) AG language causes respondents to express more negative racial stereotypes (Quinn and Desruisseaux, 2022).

Quin (2017) argues that educators' racial attitudes significantly affect student learning and development. Still, we know little about educators' racial attitudes in general, how their attitudes may differ from those of non-educators, or how attitudes can change over time. (p.4). He studied these issues using a survey and found that although educators held racial attitudes,

they were not opposed to the government's equalization efforts. Educators gave more liberal explanations for racial inequalities and expressed less negative racial stereotypes. In addition, they were less inclined to social distance and collective resentments toward cultural groups than non-educators. Observation of one cultural group versus another enlightens one to develop a method for change.

In an earlier study, Gertrude Rolland (2011) examined the perceptions of African American male students' positive and negative behavioral outcomes towards something in a qualitative study. The purpose was to understand those factors that either contribute to an individual's academic success or challenge. Rolland's investigation focused on those behaviors that led to success, and the results showed that when the students felt cared for, supported, and had a positive self-image, they performed better academically. However, the opposite occurred when the students were inundated with negativity and negative stereotypes. The positive and negative perceptions reinforced many studies showings that acceptance and positive self-images produced higher performance. Educational institutions can create positive cultures and achieve higher success by understanding human behavior, cultural learning, natural abilities, cognitive processing, and environmental stimulation. "Given the many ways in which educators' racial attitudes can affect students, it is worth understanding the attitudes held by preK-12 and postsecondary educators and whether these attitudes have changed over time" (Quinn, 2017, p. 8).

The Theoretical Lens

The theoretical lens for framing a measurable path of concepts that societal messaging schemes influence perception and, in turn, impact the individual's behavioral performances is the focus of this review. Social mediation referees' human behaviors and interactions, according to

Marxist psychology. Sociologists believe that studying cultural artifacts such as the school's intended literature, communicative practices, visual representations, and rituals within the society would allow one a glimpse into the factors that influence the participants' behavior (Esmonde and Booker, 2017). Sociocultural theories give the observer a better understanding of how cultural relationships developed within that culture, as well as the impact it has on academic performance. Sometimes, the influencing artifacts may be unintentionally produced, causing an undesired change in human nature (Vygotsky, 1978). Still, influences on perception positive or negative are forms of human conditioning, according to Vygotsky. He argues, "Through the mediation of others, through the mediation of the adult, the child undertakes activities. Absolutely everything in the child's behavior is merged and rooted in social relations" (Ivic, 1994, p. 3).

Followers of Vygotsky stress that the use of signs and symbols as tools leads humans to a specific structure of behaviors and breaks away their biological development to create new forms of a culturally based psychological process, a humanly designed matrix (Yasnitsky, 2019). SMA is the set of elements in one's society besides the biological that account for how individuals behave (Ivic, 1994). This term, social mediation, describes how a society designs indoctrination, which is one of the most fundamental contributions to theories about learning. SMA extends natural abilities into an exact method (Holland & Lave, 2009).

The Achievement Gap can be interpreted as a form of social mediation. When a system is formed to highlight cultural differences, there is an underlining message. Vygotsky asserts that "Through the mediation of others, through the mediation of the adult, the child undertakes activities. Absolutely everything in the child's behavior is merged and rooted in social relations" (Ivic, 1994, p. 3).

After the significant disruptions to education caused by COVID-19 in 2019, many Americans believed the ordeal would further widen the divide between ethnic groups. However, few American education analysts doubt that the pandemic has hampered many children's learning (Bailey et al., 2021). Data show that there was a small to moderate influence on performance due to the disruption of COVID-19 (Bailey et al., 2021). Other predictions about the reason for the achievement gap continue to be a focus of educational research. From the NCLB Act of 2001 to the Every Student Succeeds Act (ESSA), the buzz of educational research aims to close it. Many of the findings (Hung et al., 2020) in these types of studies correlate; something is definitely happening within the minority cultures that continues the production of academic performance gaps. The assumptions being made about the situation are debatable. Although some problems may stem from environmental factors, there could also be a lack of enthusiasm or a pessimistic mindset towards involvement, which might be rooted in beliefs or apprehensions. The past of African Americans has been characterized by cruelty, mistreatment, marginalization, and self-centered conduct. Nevertheless, it is challenging to identify a specific entity or institution accountable for this state of affairs (Esmonde & Booker, 2017).

According to sociocultural theories, societal messages affect academic performance, which also consider elements of perception as higher mental functions working simultaneously with environmental influences (Yasnitsky, 2019). Sociologists have observed the impact of social artifacts on human activity for centuries, but it was not until Vygotsky that these observations were formalized. Socially-mediated activity (SMA) enables individuals to perceive, remember, and even solve problems. The learning process is multifaceted, involving our ability to accept, retain, and process information. Vygotsky's theory of social influences offers valuable insights into how social relationships shape our perception and observable behavior (Yasnitsky,

2019). Quantitative studies have the ability to measure cognitive processes that impact behavior in social environments to determine the statistical significance through a correlation analysis between SMA, perception, and student performance. Sociocultural scientists used data-driven methods to explore the relationship between social influences and behavior. While social influences can only be hypothesized in the presence of a relationship, quantitative statistical measures are essential to gaining a deeper understanding of this connection (Boutyline & Soter, 2020). This investigative practice starts with the assumption that socially mediated artifacts influence perception, which in turn affects a person's academic performance. The assumptions for this study are as follows:

Hypothesis and Null Hypothesis

H_1 SMA-ethnicity has statistically significant effects on an individual's academic performance.

$H_{1\ null\ 1}$: SMA-ethnicity does not have a statistically significant impact on an individual's academic performance.

$H_{1\ alt}$: SMA-ethnicity does have a statistically significant impact on an individual's academic performance.

H_2 SMA-environment has statistically significant effects on an individual's academic performance.

$H_{2\ null}$: SMA-environment does not have a statistically significant impact on an individual's academic performance.

$H_{2\ alt}$: SMA-environment) does have a statistically significant impact on an individual's academic performance.

H_3 SMA-ethnicity has statistically significant impact on an individual's perception of

school.

$H_{3\ null}$: SMA-ethnicity does not have a statistically significant impact on an individual's perception of school.

$H_{3\ alt}$: SMA-ethnicity does have a statistically significant impact on an individual's perception of school.

H_4 SMA-environment has statistically significant impact on an individual's perception of school.

$H_{4\ null\ 1}$: SMA-environment does not have a statistically significant impact on an individual's perception of school.

$H_{4\ alt}$: SMA-environment does have a statistically significant impact on an individual's perception of school.

H_5 Perception of school has a statistically significant impact on an individual's academic performance.

$H_{5\ null}$: Perception of school has no statistically significant impact on an individual's academic performance.

$H_{5\ alt}$: Perception of school does have a statistically significant impact on an individual's academic performance.

H_6 Perception of school mediates a statistically significant relationship between SMA-ethnicity and academic performance.

$H_{6\ null}$: Perception of school does not mediate a statistically significant relationship between SMA-ethnicity and academic performance.

$H_{6\ alt}$: Perception of school does mediate a statistically significant relationship between SMA-ethnicity and academic performance.

H_7 Perception of school mediates a statistically significant relationship between SMA-environment and academic performance.

$H_{7\ null}$: Perception of school does not mediate a statistically significant relationship between SMA-environment and academic performance.

$H_{7\ alt}$: Perception of school does mediate a statistically significant relationship between SMA-environment and academic performance.

Summary

Vygotsky's theory has the potential to provide insight into the question of whether SMA is linked to the achievement gap, particularly in terms of academic performance. Employing a quantitative analysis may encourage educators to conduct more in-depth and structured investigations into the relationship between SMA, social messaging schemes, environmental perception, and academic behavior. Additionally, the study's design allows researchers to measure cognitive responses to stimuli quantitatively. The primary objective of the research is to determine if there is a significant association between the variables, thus warranting further investigation.

Chapter 3: Methodology

The media consistently emphasizes the disparities in academic achievement among ethnic groups called the Achievement Gap (Taylor et al., 2010), which aligns with earlier chapter discussions that America has deep-rooted schemes of power to maintain dominance over its citizens. In light of this, this study aimed to develop hypotheses that would accurately analyze the connection between socially mediated artifacts (SMA) or factors of influence, perception of school, and academic performance while staying true to Vygotsky's belief that social mediation influences behavior (Vygotsky, 1978). The primary objective of this analysis was to address the achievement gap indirectly.

Based on Vygotsky's theory, the research examined the achievement gap as a hidden SMA or a product of social influence, disclosing differences in intellectual abilities across cultures (Vygotsky, 1978; Taylor et al., 2010). To ensure a comprehensive investigation, it was necessary to include individuals from various states, age groups, and ethnic backgrounds, ensuring that the sample population accurately represented the United States. Prior to gathering the data, a thorough assessment carefully evaluated every variable being analyzed. Each variable necessitated a path toward the participants' accomplishments, requiring one variable to symbolize the results. Given the intricate connections among the variables, it was essential to carefully position them in a strategic manner, considering their respective roles and the nature of their predictive capabilities. The independent variable (IV), also known as SMA, is the main determining factor having variant impact. However, the precise intention and multiple capabilities of this variable remain uncertain until explicitly specified. For this study, the various factors that represent achievement in academics include one's ethnicity and environment.

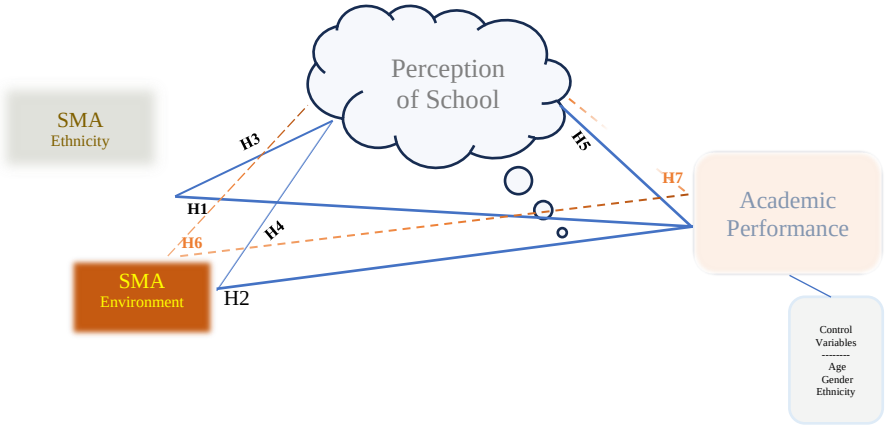
The way the participants perceive their school acts as the mediating variable between

their experiences and their test scores, where test scores are the outcome that relies on those predictions. The way to understand these associations between variables or how one variable responds to changes in another variable, it was essential to conduct a correlational analysis (Salkind, 2008).

Since there is more than one predictor variable that may result in more than one path toward the outcome, the method necessitates a regression analysis to establish the correlation between variables. The graphical model in Figure 1 demonstrates the path to show the possible relationship between the variables to determine statistical significance. See Figure 1.

Figure 1

The Relationship of SMA, Perception, and Academic Performance



Research Methodology and Design

The graphical model represents the various paths that H1 and H2 could possibly manifest from the two distinct forms of SMA that impact perception and performance. Ethnicity, in this case, is an artifact (SMA-I or SMA-Ethnicity) that is signified as a sign, while objects in an environment (SMA-II or SMA-Environment) are distinguished as cue-meaning objects that impact both perception and performance. A perception survey gauges the interplay between these variables, making the observable variables measurable via a Likert scale. Thanks to Rensis

Likert, who introduced the Likert scale, which is the most prevalent psychometric scale employed in survey research today, it offers an effective means of measuring observable data. Participants answered what they perceived about their high school experience using a series of declarative-choice responses to questions and visual images of school artifacts. They provided demographic answers describing the participant's age, school, achievement tests, etc. The survey questions were worth 4 to 5 points on the Likert scale, covering different agreement or sensitivity levels. For example, the 5-stage questions are similar to: 1 = absolutely not or never (AN), 2 = sometimes (S), 3 = neutral (N), 4 = often (O), and 5 = always (A). However, depending on the type of question being measured, the scale labels were arranged differently. When measuring frequency, like in the prior example, the labels are “never-always” used; when calculating the respondent's attitude, belief, or characteristic, labels like “not very much are used. Each questioning type is a modification of the original Educational Panorama questions, mimicking the Likert scale designed using the opinion, attitude, or belief measured appropriately for scale points (Likert, 1932).

The history of this type of analysis addresses the problems of measuring personality traits. Likert (1932) established a method of measuring attitude scales that uses a series of questions as five response scales: strongly approve (1), support (2), undecided (3), disapprove (4), and strongly disapprove (5). . . Data analysis was based on the combined score of the set of questions representing the aptitude scale, thus avoiding the analysis of individual questions. However, although Likert used a five-point scale, other variations of his alternative responses are appropriate, including removing the neutral response (Laerd Statistics, n.d.; Likert, 1932).

Medical and educational research that examines the variables of organizational behavior (Kolleck, 2019; Smyth & MacKinnon, 2021), satisfaction, perception (Sakhaei et al., 2023),

performance modes, and attitudes (Starck et al., 2020) has allowed its use, following data based on their position on the scale in a sequential order, called qualitative or quantitative or both types of methods resulted. Numbers can specify order but cannot perform arithmetic operations. A scale helps to compare one item to another by grouping or ordering items (Laerd Statistics, n.d.).

Role of the Researcher

My objective was to examine the association between the impacts of social messaging, individuals' perception and their academic achievements. I employed Vygotsky's theory as a framework to create and execute a customized Likert-scale questionnaire based on the widely used Panorama Educational Survey. In order to acquire the necessary data for analysis, it was essential for me to create and put into operation an internet-based platform. This platform was subsequently utilized for conducting a Pearson multiple linear regression analysis and a one-way ANOVA analysis processed using SPSS. My goal was to gain a more profound understanding of the correlational analysis between the variables, socially mediated artifacts (SMA), school perception, and academic performance. The intention of this assessment is to guide me toward the academic performance statistics provided by the National Center for Education Statistics, which establishes performance connections to ethnicity. The research also aimed to highlight the importance of observable cognitive reactions and establish a significant relationship between variables. To effectively reduce the achievement gap, it is crucial to conduct further research.

My primary aim was to bridge the knowledge gap in analyzing the correlation between variables. I achieved this by examining the frequency of variable paths and assessing the similarity of variable types. The graphical model, depicted in Figure 1, visually represents each variable with vibrant lines connecting the analysis pathways (SMA I/II, perception, and performance). Every trajectory illustrates the connection between the variables, either through

direct influence or via perception, leading to an effect on performance or perception, as explained by Baron and Kenny in 1986. However, by using a dotted line, the assumption is made that SMA-I and SMA-II can be combined into a single variable. Due to the impossibility of manipulating the variables of SMA, perception, and academic performance, a sophisticated correlational design was necessary for this study, which aimed to analyze the unmanipulated variables individually, employing separate analyses (Field, 2014).

Multiple regression analysis is similar to simple regression and is performed numerous times for each path in the variable chain (Field, 2014). In the first step, hypotheses for the premise were provided, and the null hypothesis was established. The researcher then collected data using various methods for conducting a survey. Once data collection was complete, an evaluation to obtain a measure of central tendency, frequency distribution, and plots was conducted using SPSS. The study found that each variable in the chain (SMA, perception, and test performance) used a logical structure to predict the outcome, although with a not-so-common model. The graphical model established the path between SMA and academic performance, which allowed me to recreate the correlational paths between independent and dependent variables seen in the visual in Figure 1. The visual showed how each independent variable influences the dependent variable. The mediating or transitional variable is called “M,” which mediates the relationship between the predictor variables “X1 and X2” and the outcome variable “Y” (Baron & Kenny, 1986). Baron and Kenny (1986) developed several regression analysis tools to demonstrate the importance of the factor or observable predicting variable using a four-step approach. Kenny, 1986).

The dependent variable was controlled for age, gender, and ethnicity. An additional test to add value to this study, a one-way ANOVA, seemed appropriate. This analytical model is

widely used in psychological research to examine differences across groups in mean scores (Salkind, 2017). Remember that this investigative model was conducted to compensate for the non-parametric analysis between two ordinal variables, SMA and perception, with perception acting as a mediator between SMA and performance in the regression analysis (Fielding, 2014, p.667). Two types of errors can occur: Type I or Type II. Type I occurs when the assumptions assume an effect on the population with a probability of .05 but actually have no impact on the population. Type II occurs when the assumptions assume no effect on the population but actually have an effect on the population.

Population and Sample Selection

The targeted population for this investigative framework included adults ages 18 and older who were born in the United States and graduated from public high schools. Participants were matched by ethnicity to see the difference in their academic performance and perceptions of their public high school. Target groups included whites, Asians, Latinos, and African Americans. These racial groups live under a veil of educational stereotypes, whose major signified behavioral and cognitive outcomes or lack of results accepted or rejected are publicized. Since collecting data on a younger population of school-age children was difficult when recruiting volunteers, the demographic information for authentication purposes focused only on gender, race, and age using an authentic email address, the name of their high school, school address, and year of graduation—participant profiles. The idea was to recruit volunteers with a simple survey that only took a few minutes. Data were collected, categorized, analyzed, and coded based on participants' perceptions of school and selected social artifacts to determine whether their test results indicated a relationship to their performance.

The ideal target groups were those aged 18-46 who had a high school diploma and 11 to 12 years of public education to ensure equal years of adolescent indoctrination. Voluntary participants were not excluded based on their economic status or their parental influence. This research was also not influenced by the many other statistical and cultural stereotypes of ethnic groups. Volunteers were also not excluded based on their gender, but the information was needed as a control method. The decisions made for this investigation mainly focused on the impact of socially mediated messages (within an environment) on the general perception of students (from different ethnicities) to determine if the perception impacted their performance (Siegel, 2017). The population came from any district or public school across the United States but avoided coming from private schools. Data from private schools was discarded. The inquiry called for greater attention to the social impressions produced by symbolic social messages about ethnicities as part of the social patterns historically reinforced by public educational institutions. Perceptual artifacts were identified as objects from the school environment and classified according to their perception within the framework of a perceptual survey. Each participant responded to a ranked printout of the artifact list and reported their test results to determine whether association with the artifact impacted their performance, yielding statistically significant results.

Sample Population

To collect data from a sample population consisting of American citizens aged 18 to 56, it was necessary to seek approval from the Institutional Review Board (IRB) and obtain voluntary consent through a mandatory email confirmation. Each accepted respondent signed and confirmed participation to increase trust between the researcher and the respondent. Respondents were also informed that they could withdraw from the assessment at any time. No

other prior authorization was required. Participants chose to answer a series of approximately 30 survey questions in several areas to investigate their perception of the school artifacts and test results to reveal a relationship. Confidentiality was emphasized before giving any information. All volunteers were invited through word of mouth, social media advertisements, and personal email messages sent by text messages or email addresses with a clear message seeking high school graduates to help with their study. As a token of appreciation for their efforts in recruiting over 25 senior acquaintances to take part in the survey and complete it, each participant was rewarded with a $50 gift card. Once the volunteers expressed their willingness to participate, they were sent a link to an automated version of the survey via email or text message. Upon completion and approval, the participants received a completed survey along with an explanation of the study and a confidentiality clause detailing the safeguards put in place to protect their data.

The process for selecting the volunteers for this study is: 1) ensuring that the volunteers have attended and graduated from a public high school; 2) ensuring that all participants are not under the age of eighteen; 3) ensuring that all participants have acknowledged consent to participate; and 4) ensuring a system for protecting their identity with a confidentiality clause.

Sample Size

The sample size is determined through a G-power analysis. The G-power analysis provides the effect size and graphics options, which calculate the probability of a significant relationship in the sample population by measuring the effect size. The stronger the relationship between variables, the greater the likelihood of a causal relationship (Faul et al., 2009).

> *G*Power 3 in the domain of correlation and regression analyses. G*Power now covers (1) one-sample correlation tests based on the tetrachoric correlation model, in addition to the bivariate normal and point biserial models already available in G*Power 3, (2)*

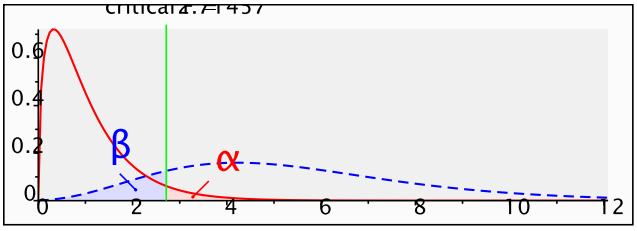
> *statistical tests comparing both dependent and independent Pearson correlations, and statistical tests for (3) simple linear regression coefficients, (4) multiple linear regression coefficients for both the fixed- and random-predictors models, (5) logistic regression coefficients, and (6) Poisson regression coefficients. Thus, in addition to the generic power analysis procedures for the z, t, F, χ2, and binomial tests, and those for tests of means, mean vectors, variances, and proportions that have already been available in G*Power 3 (Faul et al., 2007 p.1149).*

The G-power analysis also determined the minimum required sampling for the number of participants needed to represent a population. The ideal sample size was 300 participants (n =300) to represent the United States sample population with a minimum of 150 participants (n = 150), while G-power gives a priori of (n = 87). The effect size calculates the power of the relationship as either having significantly small, medium, or large effects. For example, $f^2 = .15$ (small effect), $f^2 = .25$ (medium effect), and $f^2 = .35$ (large effect).

In Figure 2, the power analysis gives the effect size by selecting the test family and type of analysis: the F-test; the statistical test linear multiple regression-fixed model R^2; and the priori type of power analysis. By using the standard alpha level of .05 and the recommended power of .85 with four predictors, the recommended sample size is 87. The coordinates of the sample population are also demonstrated in the graphical model below.

Figure 2

G-Power Analysis in Two Graphical Forms



F tests – Linear multiple regression: Fixed model, R^2 deviation from zero Number of predictors = 3, α err prob = 0.05, Total sample size - 87			
effect size F^2	0.15	Noncentrality parameters ⊦	13.0500000
α err prob	0.05	Critical F	2.7145651
Power (1-β err prob)	0.85	Numerator df	3
Number of Predictors	3	Denominator df	83
		Total Sample Size	87
		Actual power	0.8545817

Instrumentation

Participants used an online platform called JotForm and were able to access the survey using several media resources, such as my website, social media, word-of-mouth, or email. The survey is a modified version of the Panorama Education Survey (Panorama Education Survey, 2022). The potential participants were asked to participate in the survey, which was designed mainly by word of mouth. A modified JotForm electronic survey collected three general types of information: (1) demographic information (first name, contact methods, age, ethnicity, date in

school, and confidentiality clause acknowledgment; (2) information supplied by the respondents on various topics related to high school experience, teacher relationship, peer relationship, and overall sense of belongingness; and (3) attitude rating of imagery impressions of school artifacts associated with the values of the school, the literature ideology, and the school's norms soliciting the respondents' opinions using a Likert scale to compare variables (Baron & Kenny, 1986).

Once more, all participants were born in the U.S., belonged to one of the four ethnic groups, and attended a public high school. They agreed to provide their test scores (ACT, SAT, NCLB, CCSS) and answer questions about their high school experiences. In addition, the participants were asked to identify artifacts within the high school. The survey included approximately 30 perceptional questions using the JotForm electronic version from the website www.purposedpath.org.

Table 1

Instruments Matrix

Instruments: JotForm/SPSS/ website	Construct / RQ examined based on variable path	Sample size and rationale 150-300	Traits of group/ subgroup AA, Asian, White, Hispanic, Other	Permissions JotForm survey instrument permission in the appendix
Questionnaire	SMA – RQ1/RQ2 & RQ3/RQ4	15 – saturation of data (citation)	Adults 18+	The researcher developed; site permission granted 06/19/22
Questionnaire	Perception – RQ5	15 – (citation)	Adults 18+	The researcher developed; site permission granted 06/19/22
Questionnaire	Academic Assessment – RQ6/RQ7	3 – convenience sample	Adults 18+	Researcher developed; site permission granted 06/19/22

Note. This table includes examples.

The types of questions were designed using an intensity rating model from strongly agree to strongly disagree, which assumed that attitudes could be measured (McLeod, 2023). This Likert-scaled survey instrument allowed the arrangement of responses using an intensity of strength to measure the relationship between the student's perception, social influence, and performance. In addition, the survey incorporated all the variables in a quantitative correlational study, as demonstrated and defined in Table 3. In this case, two types of independent variables exist: (IV) SMA-1 environment and SMA-2 ethnicity as contributing or predictor variables, with (MV) perception as the mediating variable. The path of variables intended to measure the impact of an outcome or (DV) dependent variable. In other words, measuring the relationship for statistical significance was enough to validate this research study.

Table 2

Summary of Variables' Names, Labels, Values, and Measures

Variable name	Variable label	Values	Level of measurement (LoM)
SMA-1(IV) (Ethnicity) SMA in Relation to Ethnicity	SMAs	5 = Definitely Relate to Me 4 = Mostly Relates to Me 3 =Neither Relates to Me nor Does Not Relate to Me 2 = Somewhat Relate to Me 1 = Does Not Relate to Me at All	Ordinal
SMA-2(IV) (Environment) SMA in Relation to Environment	SMAs	5 = Totally Related/ Definitely 4 = Mostly Relates to Me 3 = Neither Relates nor Does not Relates to Me 2 = Somewhat Relates 1 = Not at All Relates	Ordinal
PERCEPT (MV)	Perception	4 =Strongly agree 3 =agree 2 =Neither agree nor disagree 1 =disagree	Ordinal

Variable name	Variable label	Values	Level of measurement (LoM)
		0 =Strongly disagree	
Test-HS (DV)	SBAC, NCLB	4 = Above-2718+/Advance 3 = At-2628-2717/Proficient 2 = Near-2543-2627/Basic 1 = Below-2543 0 = Not Taken	Continuous
Test-Col	SAT, ACT	4 = 951-1600/31-36 3 = 851-950/25-30 2 = 751-850/19-24 1 = 600-750/9-18 0 = Not Taken	Continuous
ETHN	Ethnicity	4 = Asian American 3 = White American 2 = Hispanic American 1 = African American 0 = Other	Nominal
Gender	Male, Female, Other	2 = Female 1 = Male 0 = Other	Nominal
Age	Range	3 = 36-46 2 = 27-35 1 = 21-26 0 = 18-20	Ordinal

Note. level of measurement, DV = dependent variable, IV = independent variable

Variables and Operational Definitions

Each variable in the graphical model above described a possible relationship using a multiple regression analysis. The data was operationally analyzed utilizing a Pearson multiple linear regression analysis model and one-way ANOVA analysis. The objective was to measure image impression and test the variance between SMAs and perception variables to determine if the relationship between artifacts and individual perception predicted academic performance. The variables' instruments communicated that the operational process began with an object (such as SMA-Environment) helped to create a pathway towards perception and performance, or both M and Y (test scores). The value of the dependent variable is intended to be predicted upon or explain the relationship between the independent variables. In other words, Y defined all the independent variables in the equation together as the behavior of the performance when an SMA object is present, which created the proportion named R^2. However, when two variables are highly correlated, they are considered one-in-the-same phenomenon (Qing, 2013).

SMA Variables Questions

SMA variables had two sub-types (Ethnicity/Environment) of influences. The first type of questioning helped demonstrate the participants' perceptions of their high school experience based on their cultural background and school environment. Testing opinion questions from this perspective is important for understanding the mental influences that impacted their behavioral performance. The second form of questioning was designed for participants to engage in image impressions that go beyond their conscious perception as an alternative to representing their experience. The design demonstrated how artifacts gave a sense of belongingness, safety, and encouragement from their school or education in general (Laerd Statistics, n.d.). Most of the

data collected was based on a relational rating or Likert scale with 4 to 5 items that assessed or measured participants' opinions or attitudes about their school's environment. (Salkind, 2008).

> A Likert scale is a unidimensional scale that researchers use to collect respondents' attitudes and opinions. . . . Rensis Likert established a distinction between a scale that materializes from a collection of responses to a group of items (maybe eight or more). Responses are measured in a range of values. (Laerd Statistics, n.d.).

The assumption for the design of image impression was that many school-related artifacts within the environment contain pictorial clues (signs and symbols) that indicate object settings or environmental values. The items were used to determine whether there was a social influence that the respondent did not recognize. Questions were developed to measure artifacts based on the assumption that cultural artifacts help us understand society through its tools, symbols, and signs (Kovoor-Misra & Smith, 2011). All participants who completed the survey rated or selected the artifacts that best mirrored their experiences (see Appendix).

Perception Variable Questions

The perception questions modified by the prominent panorama education research organization were used to evaluate the participants' subconscious voices. The mission was to transform the school's approach to education (Panorama Education, retrieved 2021). The modified questions did not represent the instrument in its entirety, for brevity. The purpose was to intentionally attract adult participants to simplify and complete the survey with a shorter version of questioning. However, the format of the survey questions stayed true to the Likert scale, which assumed that the strength and intensity of the student's attitude or perception endured a standard classification setup. The participants provided their opinion about the quality

of artifacts and services from high to low or better to worse using four to five levels (Laerd Statistics, n.d.).

The intent to create a survey with images and attitudinal answer options was useful for engaging the participants with an excellent tool for analyzing both conscious and unconscious indoctrination. Image impressions were another form to construct the validity of the investigation with the identification of probable cause, effect, position, and attitude in correlation to the researcher's hypotheses as a unified approach (Messick, 1998). The items were formulated for each hypothesized subscale for functional importance based on experts in educational instruments designed for attitude research (Messick, 1995). See the summary of the variables in Table 2.

The collected data was numerical in nature, as it was expressed using numerical values for accurate mathematical measurement. However, the selection of a regression analysis was influenced by concern regarding the types of variables used. Due to the ordinal nature of the variable arrangements, a standard multiple regression analysis would not be applicable to this approach. Ordinal data is typically found in qualitative data, where the values have a certain level of relative ranking. Nevertheless, ordinal data can be seen as a hybrid between qualitative and quantitative data. The strength of ordinals lies in their capacity to display the order of events or items. Nominal data refers specifically to the selection of names or items (Great Learning Team, 2023). Ordinal data differs from nominal data in that it possesses an added level of ranking that is lacking in nominal data. For instance, instead of directly labeling the participants' ethnicity, they were organized according to their perception levels, both using ethnicity and environmental factors. This approach ensured an analysis that accurately reflected the study population. Ranked question types, according to Bevans (2023), more accurately represented

quantitative data despite the broad range of choices available. Several types of graphs and charts can effectively display quantitative data, including bar graphs, histograms, scatter plots, boxplots, pie charts, and line graphs. For this particular instance, bar graphs and scatter plots were utilized.

Data Collection

The primary method used for data collection involved gathering first-hand information through a survey. In addition, a secondary approach was utilized to gather the test scores of the participants. The website www.purposedpath.org, along with platforms like Facebook, utilized JotForm as a tool for participants to respond to a variety of 30 survey question types. Nevertheless, the primary method of gathering data was through verbal communication, text messages, or electronic mail. After the completion of the survey, an automatically generated response was simultaneously sent to my cell phone and the participants' email for review and approval.

The JotForm tool was utilized based on its internet-based survey creator, much like Survey Monkey. This platform assisted in efficiently managing data and transmitting information to a spreadsheet. JotForm provided an easy-to-use way to create surveys using the Likert scale, a popular psychometric scale in survey research. The platform also simplified the question design process and improved the survey's validity (Baron & Kenny, 1986). Three general types of information were collected from the participants: (1) demographic and secondary data on test scores (first name, contact info, age, ethnicity, and date of high school graduation). The survey instrument asked participants to sign a confidentiality clause that acknowledged their consent to submitting their test scores (ACT, SAT, NCLB, CCSS); (2) participants were asked to select from a list of question types that best represented their high school experiences in the areas of teacher

relationship, peer relationship, and overall sense of school belongingness. All the questions were taken from the popular Panorama Survey for educators and educational institutions (Panorama Education, retrieved 2021). The instrument helped modify the Panorama question types to generate more reliable and high-quality question-types; and (3) participants were asked to select from a list of imagery impressions that best represented their school's social artifacts associated with the values, ideology, and norms of the school to examine their influences.

The data will be stored electronically on my computer for three years to protect the information obtained during the investigation. All electronic information has been password-protected and secured with all best practices for conducting research (Research Integrity and Assurance, 2020). Additionally, I have vowed to respect and not violate the human rights of my participants by registering with the Office for the Protection of Human Subjects and obtaining certification from the Institutional Review Board (IRB). . , 1979). Once data were collected, the first step for analysis was to conduct a descriptive analysis of the data before proceeding with multiple regression analyses and any additional assessments. The examination of this process demonstrated how each variable (SMA I, II (SMA-ethnicity/SMA-environment), perception, and test performance) derived a logical construct to help predict its outcome. Revisiting the research questions, which are:

Research Questions

- RQ1. Do socially mediated artifacts (SMA-ethnicity) have a statistically significant impact on of a person's academic performance?
- RQ2. Do socially mediated artifacts (SMA-environment) have a statistically significant impact on of a person's academic performance?
- RQ3. Do socially mediated artifacts (SMA-ethnicity) have a statistically significant

impact on a person's perception of school?

- RQ4. Do socially mediated artifacts (SMA-environment) have a statistically significant impact on a person's perception of school?
- RQ5: Does the perception of school have a statistically significant impact on academic performance?
- RQ6: Does the perception of school mediate the relationship between SMA and academic performance?
- RQ7: Does the perception of school mediate the relationship between SMA-environment and academic performance?

Multiple linear regression analysis was utilized to generate a mathematical expression, derived from examining each research question, which quantified the correlation between variables within a correlation chain. In the realm of regression analysis tools, Baron and Kenny (1986) were innovators who spearheaded the advancement of measuring intricate correlation constructs. Their pioneering work enabled researchers to effectively address numerous variables that were either unaltered or merely observable, thus emphasizing the significance of multiple regression analysis. The mathematical expression was designed to be multiplied using a four-step approach. The four-step process required several regression analyses to analyze each of the research questions.

- *Step 1) Conduct a simple regression analysis with X predicting Y, as* $Y = B_0 + B_1X + e$;
- *Step 2) Conduct a simple regression analysis with X predicting M, as* $M = B_0 + B_1X + e$;
- *Step 3) Conduct a simple regression analysis with M predicting Y, as* $Y = B_0 + B_1M + e$;
- *Step 4) Conduct a multiple regression analysis with X and M predicting Y, as* $Y = B_0 + B_1X + B_2M + e$.

Table 3 provides a visual representation of different materials that were considered to potentially present challenges during conventional analysis, specifically in step two, because the independent variable and mediator variable had an ordinal nature. Due to the ordering of ordinal variables, which assigns numbers based on their position on a scale, it was feasible to conduct a regression analysis. Moreover, the variables were examined for numerical data, as illustrated in Table 3. Ordinal data is specifically used for examining observed relationships within a sequence. Careful consideration is crucial when interpreting Likert scale data, especially when dealing with ordinal variables. Their unique characteristics in regression analysis may introduce inaccuracies, leading to over or underestimation. The assumption of normality, as pointed out by Burkner and Vuorre (2019), is violated by linear models (RQ3 and RQ4), where the independent variable is not necessarily continuous or normally distributed.

Table 3

Summary of Bivariate Analysis

Research Question	**Hypotheses**	***IV-L o M***	***DV-L o M***	**Statistical analysis test**
RQ1: *Does SMA (in the form of ethnicity)have a statistically significant influence on academic performance?*	$H2_{null}$: SMA does not have statistically significant effects on academic performance. $H2_{alt}$: SMA does not have statistically significant impact on academic performance.	***Ordinal*** *SMA (Ethnicity)	***Continuous*** **Test Scores*	Linear Regression
RQ2: *Does SMA (in the environment)have a statistically significant influence on academic performance?*	$H2_{null}$: SMA does not have statistically significant effects on academic performance. $H2_{alt}$: SMA does not have statistically significant impact on academic performance.	***Ordinal*** *SMA ***(Environment)***	***Continuous*** **Test Scores*	Linear Regression
RQ3: *Does SMA (in the form of ethnicity)have a statistically significant*	$H1_{null}$: SMA has no statistically significant effect on *an*	***Ordinal*** *SMA	***Ordinal*** * *Perception-*	Linear Regression &

influence on an individual's Perception of school?	*individual's* Perception of school. $H1_{alt}$: SMA has a statistically significant impact on *an individual's p*erception of school.	(Ethnicity)		one-way ANOVA
RQ4: Does SMA (in the environment)have a statistically significant influence on an individual's Perception of school?	$H1_{null}$: SMA has no statistically significant effect on *an individual's* Perception of school. $H1_{alt}$: SMA has a statistically significant impact on *an individual's p*erception of school.	***Ordinal*** *SMA* ***(Environment)***	***Ordinal*** ** Perception-*	Linear Regression & one-way ANOVA
RQ5: Does perception of school have a statistically significant influence on academic performance?	$H1_{null}$: Perception of school has no statistically significant effect on *an individual's* academic performance. $H1_{alt}$: Perception of school has a statistically significant impact on *an individual's* academic performance	***Ordinal*** ** Perception-*	***Continuous*** **Test Scores*	Multiple Regression
RQ6:Does perception of school statistically mediate a significant relationship between SMA (in the form of ethnicity) and academic performance?	$H1_{null}$: Perception of school has no statistically significant effect on *an individual's* academic performance. $H1_{alt}$: Perception of school has a statistically significant effect on *an individual's* academic assessment performance	***Ordinal*** ** Perception-*	***Ordinal & Continuous*** **Test Scores and SMA* (Ethnicity)	Multiple Regression & one-way ANOVA
RQ7: Does the perception of school statistically mediate a significant relationship between SMA (in the environment) and academic performance?	$H1_{null}$: Socially Mediated Artifacts have no statistically mediating effect on perception, which in turn affects *an individual's* academic performance. $H1_{alt}$: Socially Mediated Artifacts have a statistically mediating effect on an individual's perception, which in turn affects their academic performance.	***Ordinal &*** **Perception*	***Ordinal & Continuous*** *Test Scores and SMA* (Environment)	Multiple Regression & one-way ANOVA

Note. Source: Content Analysis: Ajzen (1987) and Weber (1990). Survey: a smaller version of the Panorama Education

Assumptions

Socio-cultural theories and psychological research often draw non-statistical conclusions regarding human behavior and social influences from a sociocultural perspective. More importantly, the utilization of a Likert scale in regression analysis may present certain risks, particularly when attempting to measure variables, especially those that involve ordinal data. When ordinal data is considered metric data, it can result in either an overestimation or an underestimation. Hence, adopting a statistical investigative method is crucial for examining attitudinal behavior, and luckily, social and psychological research has been valuable in tackling this issue. According to the research conducted by Burker and Vuorre (2019), it is suggested that a well-thought-out investigative approach is useful when addressing this challenge.

According to Burker and Vuorre (2019), there is a limitation in utilizing linear models (RQ3 and RQ4) for general analysis, as it assumes that variables are continuously or normally distributed. However, this presumption does not always hold true in reality. For instance, the cumulative opinion model assumes that ordinal variables like SMA (IV) and perception (MV) should be considered continuous perceptions, which may not be entirely accurate from a psychological perspective. This research was founded on the social learning philosophies that educational institutions have put forth to promote students' knowledge acquisition through environmental engagements. An individual’s learning is demonstrated through their performance, and through learning, individuals develop meaning that influences their perspective. The main assumption for this study was that some cultures would perform better than others based on what they perceived from their environment (Vygotsky, 1978).

When performing multiple linear regression analysis, it is essential that the variables adhere to the same assumptions as a simple linear regression analysis, which involves modeling the linear relationship between the independent variable (IV) and dependent variable (DV) to test the underlying theory. However, it is also possible that the independent variables may be correlated, so it is crucial to check the degree of their correlation (Statistic Solutions, retrieved 2021). More importantly, this type of analysis assumes that the residuals are typically disturbed or constant, the independent variables are not highly correlated, and the values of the residuals are independent, indicating a positive or negative correlation (Statistic Solutions, retrieved 2021). The assumption of homoscedasticity requires that the residuals have a constant variance at every level of variable X and that the variable be normally distributed.

Ensuring research results' accuracy heavily relies on testing for possible errors and verifying assumptions made during multiple linear regression analyses. It is crucial to separately check each variable's assumptions to ensure they meet the criteria for accurate analysis. Therefore, it is essential to conduct a meticulous and structured approach to data analysis to ensure dependable and valid results (Burker and Vuorre, 2019). The evaluation of data assumptions played a significant role in the research, as certain assumptions were not met, and a linear correlation was not found. Hence, further analysis was required to address this issue. To uncover the underlying factors of two distinct ordinal variables, ANOVA and Principal component analysis (PCA) will be employed. When considering the techniques suggested by the graphical model, it is vital to consider the expectations of this specific test.

In general, hypotheses in this type of analysis assume that variables have a linear relationship, whether positive or negative, between the dependent and independent variables. The residuals are typically discrete or continuous, and the independent variables are not strongly

correlated. Additional analysis would help eliminate data irregularities and represent the students' experiences in empirical reality. The assumption was that the residuals were independent and either positively or negatively correlated. (Burker and Vuorre, 2019; Statistic Solutions, retrieved 2021).

Limitations

Norris and colleagues (2006) noted that ordinal scales often produce scores with skewed material distributions (p. 448). A similar limitation of this study was that both IVs could be treated as qualitative variables. The solution to statistical criticism was to test the quality of fit (or degree of fit) between them. When conducting a multiple regression analysis using the same variable type, the concern may be considered a limitation as independent variables interact, so it is essential to verify whether any variables are highly correlated (Norris, 2006). If one or more of these assumptions are violated, the results will become unreliable.

Moreover, the selection of instruments by human factors may lead to the violation of assumptions, particularly when utilizing a Likert scale questionnaire that relies on individuals' subjective perceptions and impressions of the objects being assessed. One potential drawback is that the selection made by volunteers may not accurately represent their true opinions or test results, possibly leading to inaccurate information due to various internal or external factors influencing their choices. Volunteers could have potentially avoided the truth by presenting themselves more favorably (McLeod, 2023). Another potential scenario for misrepresentation is when surveyors misinterpret the expectations or inquiries, causing them to respond inaccurately and thereby failing to represent themselves correctly. Showing the intervals and the transition in attitude from strongly agreeing to strongly disagreeing is a challenging task. Hence, it is

important to carefully construct precise and targeted questions in order to encourage respondents to provide more honest answers.

During the analysis, several factors could affect the accuracy of the results. One significant limitation would be the absence of data regarding volunteers' performance during testing. This neglect of certain elements could potentially affect the clarity of the results. To avoid such problems, it is crucial to avoid measures that could distract attention during the process. Incomplete data causes errors during the design or coding phase, leading to misleading information. Therefore, it is essential to exercise caution during the collection and coding phases of the statistical process to ensure accuracy and avoid misleading results. (Burkner and Vuorre, 2019; Likert, 1932).

Reliability and Validity

According to Osborne and Waters (2019), statistical tests rely on certain assumptions about the variables used in the analysis. Failure to meet these assumptions can lead to an untrustworthy outcome, resulting in a Type I or Type II error or an over- or under-estimation of significance or effect size(s) (p.1). To ensure reliability, the study must exhibit homogeneity of results, meaning that variances are equal, and values display minimal differences to show precision. Proper calibration or passing reliability and validity tests are necessary to achieve consistency in the repeated measures. It is important to note that either of these tests could potentially result in failure.

It is crucial to ensure that the process of assessing SMA collects evidence to support the validity of various responses. Neglecting to do so could compromise the validity and reliability of the assessment process. The American Educational Research Association, the American Psychological Association, and the National Council on Educational Measurement's (1999)

findings highlight the importance of three types of evidence to support the validity criteria and structures of assessment tools. Messick (1995) suggests that when planning, the construct validity of score interpretations underlie all score-based inferences, including those related to content, specific decision criteria, and actions based on test results. In the social sciences, it is customary to report Cronbach's alpha to demonstrate survey reliability, while the Lavene test is utilized to verify evenness and consistency. (Cohen and Cohen, 1983).

Ethical Assurances

As per university guidelines, ethical consideration was carefully considered to ensure the safety and confidentiality of participants in my research. A coding system was utilized to protect their identity and all data, including student performance records and demographic information, was handled with extra care. Student identification numbers were used to conceal personal information and ensure ethical safeguards. Confidentiality will be maintained, and all research information will be retained for three years after the study is completed. Best practices for ethical conduct in research were followed, as prescribed by Research Integrity and Assurance (2020).

Furthermore, an oath was signed with the Ministry of Human Research Protection (The National Commission for the Protection of Human Subjects, 1979) to ensure that the rights of participants were not violated. Certification was obtained by registering with the Institutional Review Board (IRB) through the Office for Human Research Protection. Essentially, this professional oath was taken for the purpose pf conducting and protecting the rights of the study population with a written agreement registered to OHRP.

Summary

In summary, the method used for determining the conceptual statistical model best suited for analyzing the relationship and frequency data between socially mediated artifacts and

perceptions to understand the impact on academic performance between cultures is a multiple regression analysis. The results intend to point implicitly toward how Americans resulted in an achievement gap between cultural groups (Research Integrity & Assurance, 2020; Statistic Solutions, retrieved 2021; National Center for Education Statistics, 2020).

The data design approach enabled respondents to provide demographic information such as age, school affiliation, and gender, as well as their level of concurrence with the given statement. Questions were based on a Likert scale of 4 to 6 points, ranging from varying levels of perceptive sensitivity. The question types were modified queries from the Educational Panorama Survey that was developed on the basis of opinions, attitudes, or beliefs and measured by the corresponding words of the scale points. In data analysis, the total score of a series of questions was used to represent an attitude scale, which avoided the analysis of individual questions (Laerd Statistics, n.d.; Integrity & Trust in Research, 2020).

Chapter 4: Data Analysis and Results

The data analysis from each research question allowed for quantitative-correlational and factor analyses to examine if a relationship exists between SMA I and II (I-Ethnicity and II-Environment) and their perception of high school, which in turn predicts the outcome of their academic performance. The objective was to provide educators with information about a societal influence that underlines performance behavior. The exploration of this analysis, offering a possible relationship between SMA I and II and students' academic performance based on Vygotskian psychology, would reinforce his theory that societal schemes guide behavior, suggesting that the achievement gap between cultures is forged in a dominance ideology.

To examine this theory, data was taken from 210 adult participants from different ethnic groups across the United States using a Likert scale survey of their perception of their high school experience. A Pearson multiple linear regression analysis model followed by one-way ANOVA analyses to measure imagery impression to check for variance between the variables SMA and perception was conducted to analyze if the relationship between the artifacts and the individual's perception predicts their academic performance (Peterson & Ziegler, 2021).

The key findings demonstrate an overall significant relationship between SMA and perception, as well as students' academic performance when controlled for ethnicity. Otherwise, the data did not show a significant relationship between SMA and performance. Beginning with a descriptive analysis of the population followed by the variable analysis in each research question, the results will indicate the following:

Descriptive Statistics - Demographics

The analysis of the population provided a frequency distribution designed to present the frequency and percentage of the population's ethnicity, gender, age, and location to describe the

minimum, maximum, mean, standard deviation, skewness, and kurtosis (Table 5). In terms of location, most of the respondents belonged to the state of California (60.0%), followed by Illinois (17.1%). In terms of ethnicity, most of the respondents were African American (25.7%) or other diverse ethnic groups (31.2%). With gender, most of the respondents were female (69.3%), while the remainder were male (29.7%). The age of most of the respondents ranged, on average, around 36 years, with a standard deviation of 11 years. The skewness score of 0.697 and the kurtosis score of −0.621 showed that the distribution of age was moderately skewed.

Table 4

Descriptive Statistics

	Frequency				Percentage	
States						
California	126				60.0%	
Florida	2				1.0%	
Illinois	36				17.1%	
Indiana	6				2.9%	
Iowa	8				3.8%	
Kentucky	3				1.4%	
Michigan	7				3.3%	
Missouri	2				1.0%	
Ohio	3				1.4%	
Others	18				8.6%	
Ethnicity						
African American	52				25.7%	
White American	29				14.4%	
Asian American	15				7.4%	
Asian American (Pacific Islander)	6				3.0%	
Hispanic American	37				18.3%	
Other	63				31.2%	
Gender						
Male	60				29.7%	
Female	140				69.3%	
Non-Binary	2				1.0%	
	Minimum	Maximum	Mean	Standard deviation	Skewness	Kurtosis
Age	18	55	35.96	10.802	0.697	−0.621

Exploratory Factor Analysis

Exploratory factor analysis was conducted to reveal the underlying factors or dimensions of socially mediated artifacts and perceptions of school. The Principal Components Analysis (PCA) method for extraction and Equamax with Kaiser Normalization for rotation were used. The results showed that the data was suitable for factor analysis and that the variables in the correlation matrix were not orthogonal. The Kaiser-Meyer-Olkin Measure of Sampling Adequacy was higher than 0.60, and Bartlett's Test of Sphericity was significant at a 5% level. Three factors, namely school belonging, relationships, and school climate, were extracted for perceptions of school. All factor loadings were higher than the acceptable threshold level of 0.50, as suggested by Taherdoost, Sahibuddin, & Jalaliyoon (2022). Additionally, all eigenvalues of factors were greater than 1, indicating that school belonging, relationship, and school climate must be considered as factors. In total, these three factors accounted for 58.366% of the variances in the variable perceptions of school.

The exploratory factor analysis conducted on the 'socially mediated artifacts' variable revealed that the data was appropriate for factor analysis, as evidenced by the Kaiser-Meyer-Olkin measure of sampling adequacy being higher than 0.60. Furthermore, Bartlett's sphericity test indicated that the variables in the correlation matrix were not independent, with a significant result at a 5% level. Consequently, two factors were extracted for socially mediated artifacts, specifically artifacts related to the environment and ethnicity. All factor loadings were above the acceptable threshold level of 0.50, as recommended by Taherdoost, Sahibuddin, & Jalaliyoon (2022). The eigenvalues of both factors were greater than 1, warranting the consideration of artifacts related to the environment and ethnicity as two separate factors. Collectively, these two factors accounted for 67.736% of the variance in the 'socially mediated artifacts' variable.

Table 5

Exploratory Factor Analysis of Perception of School

	Factors: Perceptions of School		
	School Belonging	Relationship	School Climate
Were the teachers friendly towards you?		0.641	
Were the teachers' rules fair towards you?		0.765	
Were the teachers concerned about you?		0.739	
If you came back to visit, would your teachers be excited to see you?		0.704	
Were the teachers concerned about your health and well-being?		0.743	
Were the teachers excited about ensuring that you learn?		0.662	
How often did teachers make you explain your answers?			0.527
When you felt like giving up, how often did the teachers encourage you?			0.739
How often did the teachers expect more than you?			0.739
How often did the teachers expect more from you?			0.762
How eager were you to participate in school activities?	0.649		
Did you feel connected to the adults at your school?	0.805		
Did you feel connected to your peers at the school?	0.770		
How much did you matter to the teachers at this school?	0.686		
Did you make friends easily, and were other students respectful towards you?	0.774		
Did anyone recognize you for what you contributed to the school?	0.756		
Eigenvalue	5.955	2.175	1.208
% of variance	37.221%	13.597%	7.548%
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.870	
Bartlett's Test of Sphericity		1418.195 (< 0.001)	

Table 6

Factor Analysis of Socially Mediated Artifacts

	Factor	
	Artifacts in Relation to Environment	Artifacts in Relation to Ethnicity
Did the stories you read from the assigned literature relate to your culture in a positive way?	0.764	
Did the school's rituals & practices relate to the practices your parents taught you at home?	0.770	
The communication between cultures.	0.764	
Did the School's Mascot give you a sense of encouragement to win?	0.808	

Content-Literature			0.648
Wall Images			0.816
School Values			0.742
Teacher Ethnicity			0.818
Celebrated Holidays			0.761
Cultural Appreciation			0.808
Eigenvalue	5.460		1.313
% of variance	54.605		13.132
Kaiser-Meyer-Olkin Measure of Sampling Adequacy		0.896	
Bartlett's Test of Sphericity		1172.767 (< 0.001)	

Normality Test

A Shapiro-Wilk test was conducted to analyze the normality of the variable under study (Table 8). Results indicated that the Shapiro-Wilk test was significant at 5% for all variables under study, including relationship ($W(202) = 0.955$, $p < 0.001$), school climate ($W(202) = 0.951$, $p < 0.001$), school belonging ($W(202) = 0.981$, $p < 0.01$), artifacts in terms of ethnicity ($W(202) = 0.984$, $p < 0.05$), and artifacts in terms of environment ($W(202) = 0.974$, $p < 0.001$). Hence, the assumption of normality was not met. However, multiple linear regression analysis is a robust test against the violation of the normality assumption, provided that the sample size is sufficiently large (i.e., 202) (Hayes & Cai, 2007). Hence, multiple regression analyses proceeded.

Table 7

Normality Test − Shapiro-Wilk Test

	Test Statistic	df	p-value
Perceptions			
Relationship	0.955	202	< 0.001
School Climate	0.951	202	< 0.001
School Belonging	0.981	202	0.009
Artifacts			
SMA-Ethnicity	0.984	202	0.024
SMA- Environment	0.974	202	< 0.001

Validity and Reliability of Measures

The validity and reliability of the analysis using SPSS were measured using Cronbach's alpha. The analysis was conducted to determine the dependability of the variables under study (Table 6). A Cronbach's alpha analysis examines the internal consistency of how closely related a set of items are grouped, rating a reliability of high having evidence that the scale in question is unidimensional. It checks for dimensionality, which refers to the technique for reducing the attributes of a data feature set. This means that the study has enough samples in the group data sets to represent all the possible combinations of the featured values in the example. The results from Cronbach's alpha indicate that the variable of questionings about the 'school climate' was 0.704, which is higher than 0.70 and lower than 0.80, which means that it has acceptable reliability, while Cronbach's alpha of the variables such as the 'Socially Mediated Artifacts in terms of ethnicity, 'Socially Mediated Artifacts in terms of the environment, 'relationship between teacher and student', 'school climate', and 'school belonging' was 0.891, 0.848, 0.845, and 0.867 respectively which is higher than 0.80 and lower than 0.90, which the results indicate to have good reliability.

Table 8

Reliability Test

	No. of items	Cronbach's alpha	Reliability
SMA-Ethnicity	6	0.891	Good
SMA-Environment	4	0.848	Good
Relationship	6	0.845	Good
School climate	3	0.704	Acceptable
School belonging	6	0.867	Good

Descriptive Statistics – Variables

The mean and standard deviation were computed to describe the average responses of each variable and the variability in the respondents' answers (Table 7). Results indicated that most respondents found themselves neither related to nor unrelated to the artifacts in terms of ethnicity (M = 2.86, SD = 0.9208). Respondents also found themselves neither related nor unrelated to the culture in a positive way and to the practices taught by the parents at home (M = 2.96, SD = 1.0629). In terms of perceptions, the respondents believed to be off point from the relationship between teacher and student (M = 3.73, SD = 0.6276), like the school's climate sometimes (M = 3.19, SD = 0.7514), and feel neither closely nor distantly valued as a student at the school (M = 3.26, SD = 0.8855). Lastly, when it comes to performance, the respondents scored an average of around 751 and 850 points on the SAT test, around 9 to 18 points on the ACT test, a basic level on the NCLB State Performance Scores, and less than 2543 points on the common core standard performance level in ELA.

Table 9

Descriptive Statistics – Variables

Variables	Sub-Constructs	Mean	Standard deviation
Artifacts		2.90	0.8776
	SMA-Ethnicity	2.86	0.9208
	SMA- Environment	2.96	1.0629
Perceptions		3.37	0.5935
	Relationship	3.73	0.6276
	School climate	3.19	0.7514
	School belonging	3.26	0.8855
Performance		0.95	0.8522
	SAT performance	1.54	1.6302
	ACT performance	0.91	1.3590
	NCLB state performance	0.58	1.2242
	State Common Core standardized performance	0.76	1.3724

Data Analysis and Results: Correlation Analysis

In statistical analysis, Pearson's correlation, also known as Pearson's 'r', measures the linear relationship between two data sets. The correlation coefficient ranges between -1 and 1 and is obtained by dividing the standard deviation by the mean. The Greek letter 'p' (rho) is used to represent the total population.

Table 8 shows the results of the correlation analysis. It indicates a strong correlation between the relationship between teachers and students and school belonging ($r = 0.628$, $p < 0.01$), as well as between school climate and school belonging ($r = 0.605$, $p < 0.01$). Additionally, we found a moderate correlation between student-teacher relationships after controlling for ethnicity ($r = 0.513$, $p < 0.01$), student-teacher relationships and artifacts ($r = 0.419$, $p < 0.01$), and student-teacher relationships and the environment of artifacts ($r = 0.459$, $p < 0.01$).

However, there is a low correlation between school climate and student-teacher relationships in relation to ethnicity ($r = 0.355$, $p < 0.01$), between school artifacts and school belonging ($r = 0.315$, $p < 0.01$), between the environment of artifacts and school belonging ($r = 0.289$, $p < 0.01$), and between school climate and the environment of artifacts ($r = 0.280$, $p < 0.01$).

These findings suggest that there is a strong relationship between teacher-student relationships, school climate, and school belonging. Meanwhile, the correlation between school artifacts and school belonging, as well as the environment of artifacts and school belonging, is slightly weaker. Lastly, we observed a low correlation between school climate and student-teacher relationships in relation to ethnicity. More importantly, among the performance scores based on the tests, the results indicate a very low correlation between the SAT performance and

the ACT performance ($r = 0.167$, $p < 0.05$), a low correlation between the SAT performance and the NCLB State performance ($r = 0.321$, $p < 0.01$), and a moderate correlation between the ACT performance and the NCLB State performance ($r = 0.511$, $p < 0.01$). In addition, there is a very low correlation between SAT performance and school climate ($r = 0.156$, $p < 0.05$). Therefore, the testing hypothesis proceeded through multiple regression analysis.

Table 10

Correlation Analysis

	1	2	3	4	5	6	7	8	9
1. SAT performance	1								
2. ACT performance	0.167*	1							
3. NCLB state performance	0.321**	0.511**	1						
4. State Common Core standardized performance	0.100	−0.111	−0.007	1					
5. SMA-Ethnicity	0.019	0.082	0.096	−0.055	1				
6. SMA-Environment	0.023	0.096	0.101	−0.100	0.513**	1			
7. Relationship	0.066	−0.012	0.057	−0.014	0.419**	0.459**	1		
8. School Climate	0.156*	0.009	−0.010	0.012	0.355**	0.280**	0.459**	1	
9. School belonging	0.025	−0.117	−0.042	0.053	0.289**	0.315**	0.628**	0.605**	1

* p < 0.05, ** p < 0.01

Multiple Linear Regression Analysis

The Impact of SMA and Perceptions of School on Academic Performance

The study aimed to establish the connection between socially mediated artifacts and academic performance perceptions in school. Multiple linear regression analyses were utilized to form models with various variables. The academic performance scores of survey participants were compared based on their college SAT and ACT test scores, as well as their high school state NCLB or Common Core standardized test scores. Each test score category was separately analyzed in SPSS. Age, ethnicity, and gender were controlled to determine the actual impact of

each analysis. This method consists of three variables that find the values of all X, M, and Y variables within a formula. The study compares the survey participants' academic performance scores on their college SAT and ACT test scores, as well as their high school state NCLB or their common core standardized test scores. These test score categories were individually run separately in SPSS to determine their impact on socially mediated artifacts and perceptions of school. To determine the impact of socially mediated artifacts on perceptions of school, additional tests were required to examine the relationship. In all models, age, ethnicity, and gender were controlled to determine the actual impact of each analysis.

Three multiple linear regression models were run to assess the impact of socially mediated artifacts on *SAT performance* and the mediating role of perceptions of school after controlling for age, ethnicity, and gender (Table 9). Results indicated that the environment aspect of artifacts was significantly related to SAT performance ($\beta = 0.379$, $t = 2.368$, $p < 0.05$), while artifacts in relation to ethnicity were not significantly related to SAT performance ($\beta = -0.189$, $t = -1.365$, $p = 0.174$). The model was insignificant (F (5, 201) = 1.929, $p = 0.091$) and explained only a 4.7% variance in SAT performance due to artifacts in terms of ethnicity.

Further analysis was conducted to investigate the impact of school perceptions on SAT performance. The results showed that SAT performance was not related to the relationship between teachers and students, school climate, or school belonging. Results indicated that SAT performance was not related to the relationship between teachers and students ($\beta = -0.066$, $t = -0.299$, $p = 0.765$), school climate ($\beta = 0.031$, $t = 0.158$, $p = 0.875$), or school belonging ($\beta = 0.109$, $t = 0.692$, $p = 0.490$). Model 2 was also not insignificant (6, 201) = 1.929, $p = 0.091$).

A deeper analysis was done in Model 3 to investigate how socially mediated artifacts affect perceptions of school after adjusting for age, gender, and ethnicity. The findings indicated

that SMA-ethnicity had a significant relationship with perceptions of school. (β = 0.091, t = 2.056, $p < 0.05$). In contrast, the environmental aspects of artifacts were significantly related to perceptions of school (β = 0.316, t = 8.280, $p < 0.001$). Model 9 was significant (F (5, 201) = 32.346, $p < 0.001$) and explained a 45.2% variance in perceptions of school due to SMA in terms of ethnicity and environmental aspects of SMA. Among all three models, perceptions of school did not have a significant effect on SAT performance, which also inferred that perceptions of school did not mediate the relationship between socially mediated artifacts and SAT performance.

Table 11

The Impact of SMAs & Perceptions of School on SAT Performance

	Model 1 – SAT performance		Model 2 – SAT performance		Model 3 – Perceptions of school	
	β	t (p-value)	β	t (p-value)	β	t (p-value)
Constant	1.593	2.169 (0.031)*	2.169	2.141 (0.034)*	2.506	12.365 (0.000)***
Control Variables						
Age	−0.012	−1.084 (0.280)	−0.015	−1.349 (0.179)	−0.003	−1.108 (0.369)
Ethnicity	0.072	1.245 (0.215)	0.059	0.996 (0.321)	−0.044	−2.739 (0.007)**
Gender	−0.246	−1.017 (0.311)	−0.304	−1.233 (0.219)	−0.031	−0.466 (0.642)
Socially Mediated Artifacts						
SMA– Ethnicity	0.379	2.368 (0.019)*			0.091	2.056 (0.041)*
SMA – Environment	−0.189	−1.365 (0.174)			0.316	8.280 (0.000)***
Perceptions of School						
Relationship			−0.066	−0.299 (0.765)		
School climate			0.031	0.158 (0.875)		

	Model 1 – SAT performance	Model 2 – SAT performance	Model 3 – Perceptions of school
School belonging	0.109	0.692 (0.490)	
R^2	0.047	0.023	0.452
F-value	1.929	0.757	32.346***
p-value	0.091	0.604	0.000

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

An analysis of the study aimed to determine the connection between socially mediated artifacts and academic performance perceptions in school. Multiple linear regression analyses were utilized to form models with various variables. The academic performance scores of survey participants were compared based on their college SAT and ACT scores, as well as their high school state NCLB or Common Core standardized test scores. Each test score category was separately analyzed in SPSS. Age, ethnicity, and gender were controlled to determine the actual impact of each analysis.

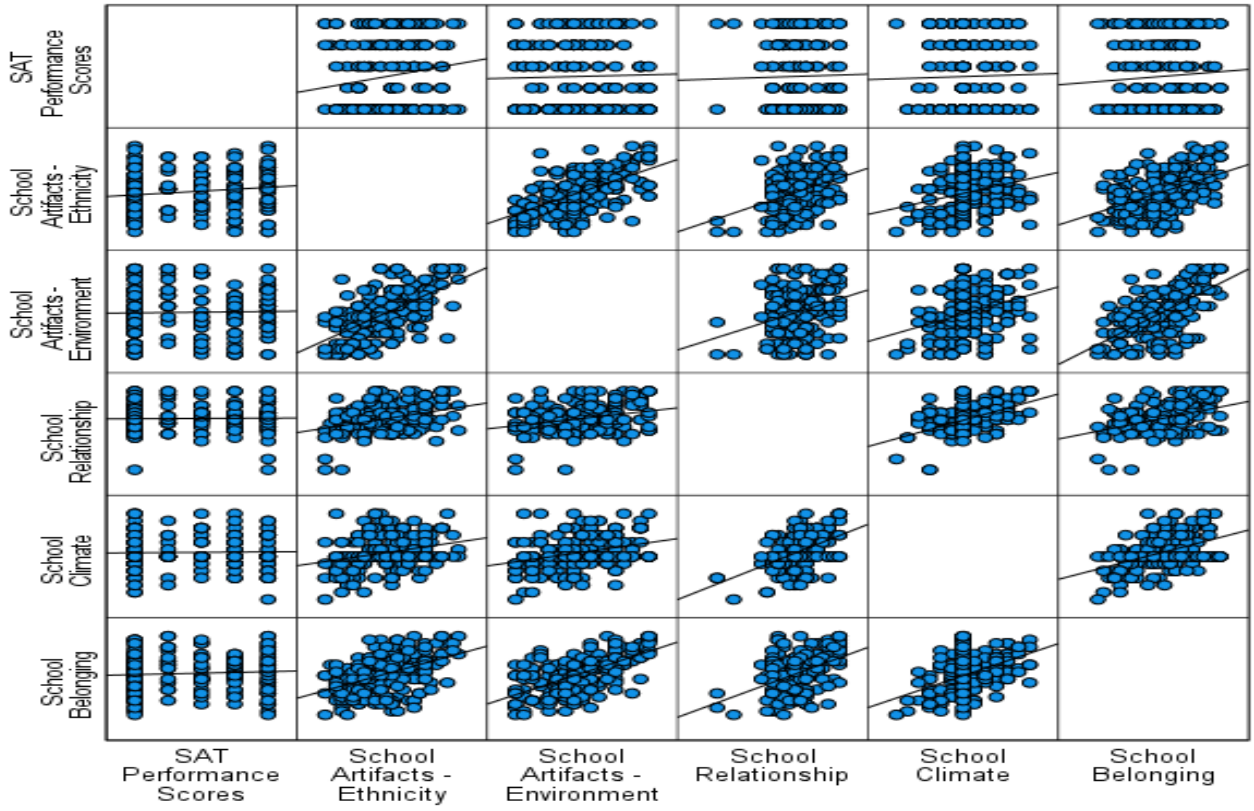
The scatterplot matrix in Figure 3 provides valuable insights. Firstly, it reveals that there is no correlation between SAT performance and socially mediated artifacts in terms of environmental aspects since the regression line in the scatterplot is flat. However, with regards to ethnicity, there is a slightly steep regression line, indicating a positive correlation. Moreover, the regression line in the scatterplots between socially mediated artifacts in terms of ethnicity & environmental aspects and the relationship between teachers and students, school climate, & school belonging is slightly steep, indicating a positive correlation. Conversely, the regression line in the scatterplots between SMA in terms of ethnicity & environmental aspects and SMA in terms of ethnicity and environmental aspects is flat, indicating no correlation. In conclusion, it can be inferred that the perception of school does not play a

	Model 1 – SAT performance	Model 2 – SAT performance	Model 3 – Perceptions of school

mediating role in the relationship between socially mediated artifacts and SAT performance concerning the relationship between teachers and students, school climate, & school belonging.

Figure 3

Relationship Between SAT Performance, SMAs & Perceptions of School



Three linear regression models were conducted to examine the impact of socially mediated artifacts on ACT performance. Additionally, the study aimed to assess the explanatory function of school perceptions after adjusting for age, ethnicity, and gender. The outcomes indicate that there is no significant correlation between the artifacts related to the environmental aspect of the artifacts, and ACT performance. Table 10 presents a summary of the findings. (SMA– Ethnicity: $\beta = 0.056$, $t = 0.463$, $p = 0.644$; SMA – Environment: $\beta = -0.085$, $t = -0.811$,

$p = 0.418$). Model 4 was significant (F (5, 201) = 10.161, $p < 0.001$) only due to the significant impact of ethnicity on ACT performance and not due to the independent variables under study, i.e., artifacts.

Model 5 was used to analyze the impact of school perceptions on ACT performance. Results showed no correlation between ACT performance and the teacher-student relationship. ($\beta = 0.151$, $t = 0.903$, $p = 0.367$), school climate ($\beta = -0.004$, $t = -0.026$, $p = 0.979$), and school belonging ($\beta = -0.096$, $t = -0.814$, $p = 0.417$). Model 5 was also significant (F (6, 201) = 8.541, $p < 0.001$), again due to the significant impact of ethnicity. As discussed earlier in Model 3, the SMA in the form of artifacts in terms of ethnicity and the environmental aspects of artifacts were significantly related to perceptions of school. However, since the perceptions of school did not significantly impact ACT performance, it can be inferred that the perceptions of school did not mediate the relationship between SMA and ACT performance.

Figure 2's matrix scatterplot reveals that there is no correlation between ACT performance and socially mediated artifacts in relation to ethnicity and environmental factors. This is evident from the flat regression line in the scatterplots between them. Likewise, the regression line in the scatterplots between ACT performance and the perception of school, as indicated by the relationship between teachers and students, school climate, and school belonging, was also flat. This indicates that there is no relationship between them. Therefore, the perception of school in terms of the relationship between teachers and students, school climate, and school belonging did not act as a mediating factor in the relationship between socially mediated artifacts and ACT performance.

Table 12

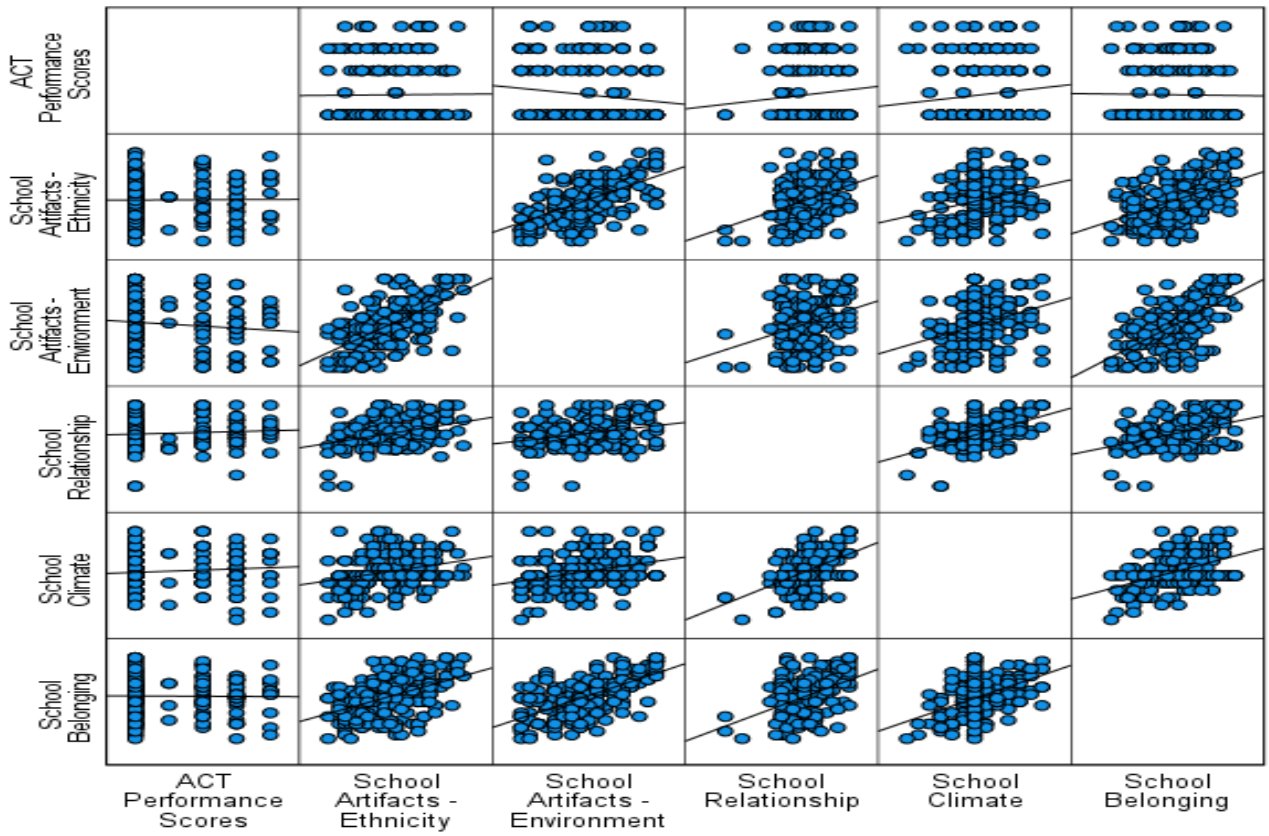
The Impact of SMAs & Perceptions of School on ACT Performance

	Model 4 – ACT performance		Model 5 – ACT performance	
	β	t (p-value)	β	t (p-value)
Constant	2.175	3.892 (0.000)***	1.869	2.458 (0.015)*
Control variables				
Age	0.009	1.079 (0.282)	0.009	1.106 (0.270)
Ethnicity	−0.281	−6.385 (0.000)***	−0.287	−6.477 (0.000)***
Gender	−0.272	−1.479 (0.141)	−0.276	−1.494 (0.137)
Socially mediated artifacts				
SMA – Ethnicity	0.056	0.463 (0.644)		
SMA – Environment	−0.085	−0.811 (0.418)		
Perceptions of School				
Relationship			0.151	0.903 (0.367)
School climate			−0.004	−0.026 (0.979)
School belonging			−0.096	−0.814 (0.417)
R^2		0.206		0.208
F-value		10.161***		8.541***
p-value		0.000		0.000

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Figure 4

Relationship Between ACT Performance, SMAs & Perceptions of School



Three multiple linear regression models were run to assess the impact of SMA on NCLB performance and the mediating role of school perceptions. The results presented in Table 11 indicate that, even after controlling for age, ethnicity, and gender, there was no significant association between ethnicity-related artifacts and the environmental aspect of artifacts and NCLB performance. (Artifacts – Ethnicity: $\beta = -0.020$, $t = -0.163$, $p = 0.870$; Artifacts – Environment: $\beta = 0.001$, $t = 0.013$, $p = 0.990$). Model 6 was not significant (F (5, 201) = 1.846, p = 0.106).

Further analysis was conducted to investigate the influence of school perceptions on the performance of the No Child Left Behind (NCLB) policy in Model 7. The findings of the study

revealed that there was no significant association between the performance of NCLB and the quality of the instructor-student relationship. These results provide valuable insights into the effectiveness of NCLB policies and the factors that influence their performance.. The impact of socially mediated artifacts on school perceptions has been widely studied. However, the non-significant relationship between socially mediated artifacts, school perceptions, and NCLB performance suggests that school perceptions do not mediate the relationship between socially mediated artifacts and NCLB performance. These findings indicate that while socially mediated artifacts influence school perceptions, they do not play a significant role in NCLB performance. Further research is needed to explore the relationship between these variables and to identify other factors that may impact NCLB performance

Table 13

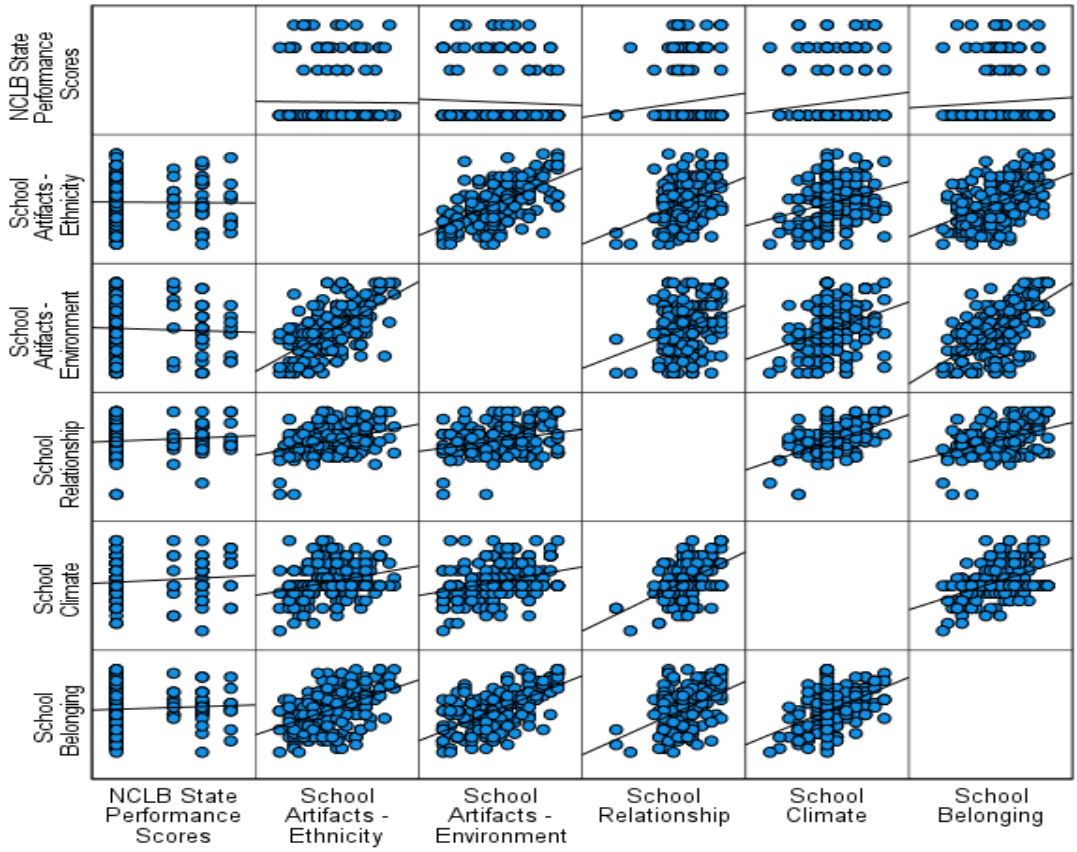
The Impact of SMAs & Perceptions of School on NCLB Performance

	Model 6 – NCLB Performance		Model 7 – NCLB Performance	
	β	t (p-value)	β	t (p-value)
Constant	1.260	2.283 (0.024)*	0.397	0.530 (0.597)
Control Variables				
Age	0.006	0.772 (0.441)	0.008	1.030 (0.304)
Ethnicity	−0.104	−2.394 (0.018)*	−0.095	−2.188 (0.030)*
Gender	−0.276	−1.518 (0.131)	−0.273	−1.502 (0.135)
Socially Mediated Artifacts				
SMA– Ethnicity	−0.020	−0.163 (0.870)		
SMA – Environment	0.001	0.013 (0.990)		
Perceptions of School				
Relationship			0.113	0.689 (0.492)
School Climate			0.075	0.523 (0.602)
School Belonging			0.012	0.102 (0.919)
R^2		0.045		0.053
F-value		1.846		1.830
p-value		0.106		0.095

* p < 0.05, ** p < 0.01, *** p < 0.001

Figure 5

Simple Scatterplot − Relationship Between NCLB State Performance Scores, SMAs & Perceptions of School



Further analysis was conducted to determine the impact of school perceptions on NCLB performance in Model 7. The results indicated that the relationship between teachers and students was not related to NCLB performance. (β = 0.113, t = 0.689, p = 0.492), school climate (β = 0.075, t = 0.523, p = 0.602), and school belonging (β = 0.012, t = 0.102, p = 0.919). Model 7 was not significant (F (6, 201) = 1.830, p = 0.095).

Although socially mediated artifacts had a significant impact on perceptions of school, the non-significant relationship between socially mediated artifacts and perceptions of school

and NCLB performance suggested that perceptions of school did not mediate the relationship between socially mediated artifacts and NCLB performance. This discovery implies that perceptions of school do not act as a mediator between socially mediated artifacts and NCLB performance.

In the final step, three multiple linear regression models were run to assess the impact of socially mediated artifacts on *state Common Core Standardized Performance* and the mediating role of perceptions of school after controlling for age, ethnicity, and gender (Table 12). Results indicated that artifacts in relation to ethnicity and the environmental aspect of artifacts were not significantly related to state common core standardized performance (Artifacts – Ethnicity: $\beta = -0.065$, $t = -0.509$, $p = 0.611$; Artifacts – Environment: $\beta = 0.012$, $t = 0.114$, $p = 0.910$). Similarly, results from model 9 indicated that perceptions of school in the form of relationship between teacher and student, school climate, and school belonging were not significantly related to state common core standardized performance (Relationship: $\beta = -0.106$, $t = -0.612$, $p = 0.542$; School Climate: $\beta = -0.117$, $t = -0.762$, $p = 0.447$; School Belonging: $\beta = 0.008$, $t = 0.062$, $p = 0.950$). Both models, i.e., Model 8 and Model 9 were only significant due to the significance of control variables (i.e., age and ethnicity) in the models (Model 7: F (5, 201) = 6.724, $p < 0.001$; Model 8: F (6, 201) = 5.896, $p < 0.001$).

Although socially mediated artifacts had a significant impact on perceptions of school, the non-significant relationship between SMA and perceptions of school and state common core standardized performance suggested that perceptions of school did not mediate the relationship between socially mediated artifacts and state common core standardized performance.

Table 14

The Impact of SMAs & Perceptions of Schools on Common Core State Standards

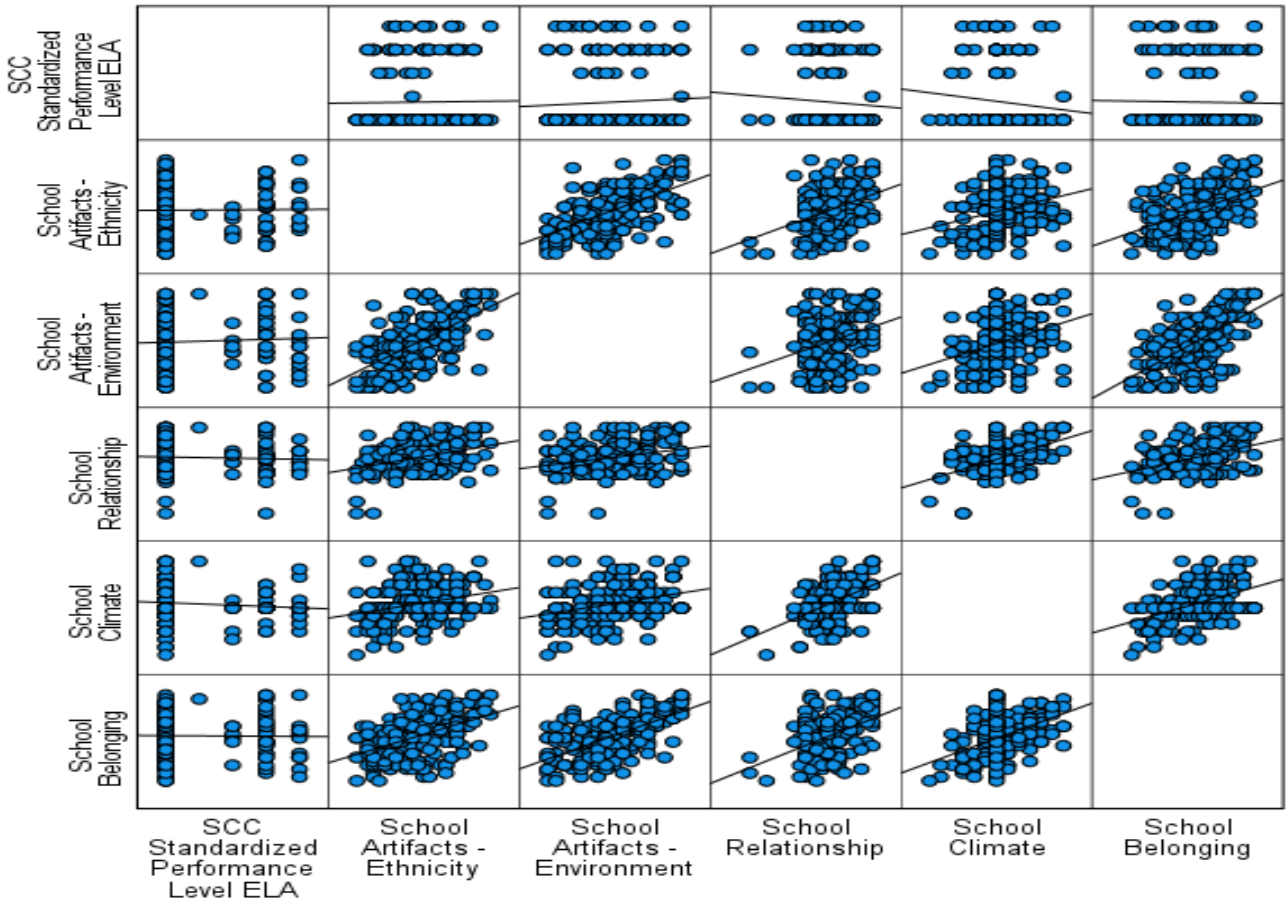
	Model 8 – CCS Standards		Model 9 – CCS Standards	
	β	t (p-value)	β	t (p-value)
Constant	1.740	2.973 (0.003)*	2.382	2.999 (0.003)**
Control variables				
Age	−0.040	−4.579 (0.000)***	−0.040	−4.708 (0.000)***
Ethnicity	0.200	4.348 (0.000)***	0.190	4.102 (0.000)***
Gender	−0.085	−0.441 (0.660)	−0.070	−0.361 (0.719)
Socially mediated artifacts				
SMA – Ethnicity	−0.065	−0.509 (0.611)		
SMA – Environment	0.012	0.114 (0.910)		
Perceptions of school				
Relationship			−0.106	−0.612 (0.542)
School climate			−0.117	−0.762 (0.447)
School belonging			0.008	0.062 (0.950)
R^2		0.146		0.154
F-value		6.724***		5.896***
p-value		0.000		0.000
* p < 0.05, ** p < 0.01, *** p < 0.001				

In the final step, three multiple linear regression models were run to assess the impact of socially mediated artifacts on *common core state standards performance* and the mediating role of perceptions of school after controlling for age, ethnicity, and gender (Table 14). Results indicated that artifacts in relation to ethnicity and the environmental aspect of artifacts were not significantly related to state common core standardized performance (Artifacts – Ethnicity: $\beta = -0.065$, $t = -0.509$, $p = 0.611$; Artifacts – Environment: $\beta = 0.012$, $t = 0.114$, $p = 0.910$). Similarly, results from model 9 indicated that perceptions of school in the form of relationship between teacher and student, school climate, and school belonging were not significantly related to state common core standardized performance (Relationship: $\beta = -0.106$, $t = -0.612$, $p = 0.542$;

School Climate: $\beta = -0.117$, $t = -0.762$, $p = 0.447$; School Belonging: $\beta = 0.008$, $t = 0.062$, $p = 0.950$). Both models, i.e., Model 8 and Model 9, were only significant due to the significance of control variables (i.e., age and ethnicity) in the models (Model 7: F (5, 201) = 6.724, $p < 0.001$; Model 8: F (6, 201) = 5.896, $p < 0.001$). The impact of socially mediated artifacts on school perceptions was significant, but it did not correlate with state Common Core State standardized performance. Therefore, school perceptions did not serve as a mediator between socially mediated artifacts and state Common Core Standardized performance.

Figure 6

Simple Scatterplot − Relationship Between CCSS, SMAs & Perceptions of School



Comparing Test Performance Across Different Categories of Imagery Impression, Classroom Setups, Student Interaction, and Mascots

An analysis was conducted using a one-way ANOVA to compare participants' test performance across various categories of imagery impression, such as classroom setups, student interaction, and mascots (Tables 15-19). This analysis provided a better understanding of how the school environment impacts the participants. Using this type of analysis allowed for a more in-depth examination of SMA's role compared to other models, making it preferable to enhance the study. To determine significant performance differences among categories, a separate analysis was conducted for each test type. Moreover, a post-hoc analysis using Tukey was carried out to identify statistically significant groups.

Prior to conducting a one-way ANOVA analysis, Levene's test was performed to assess whether all groups had equal variances. The results indicated that there were significant variations in variances across all test performance groups. (SAT Performance: F (4, 197) = 3.389, $p < 0.01$; ACT Performance: F (4, 197) = 7.236, $p < 0.05$; NCLB Performance: F (4, 197) = 5.260, $p < 0.001$; SCC Standardized Performance: F (4, 197) = 3.580, $p < 0.01$).

In addition, a one-way ANOVA with bootstrapping was performed. The corresponding results showed a significant difference in SAT performance among different categories of imagery impression. (F (4, 201) = 3.866, $p < 0.01$). There was a significant difference in ACT performance among different types of imagery impressions (F (4, 201) = 5.557, $p < 0.001$).

There were no significant differences among different categories of imagery impressions in NCLB performance (F (4, 201) = 1.401, $p = 0.235$) and State Core Common Standardized performance (F (4, 201) = 0.925, $p = 0.450$). After conducting additional analysis using Tukey, it was found that students performed significantly better in toxic environments than in violent

environments while taking the SAT test. However, the data from the ACT test revealed that students performed significantly better in a collaborative environment compared to a violent environment, which was an unexpected result.

Table 15

Comparison of Test Performance Across Different Categories of Imagery Impression

	SAT	ACT	NCLB	Common Core State Standards
Mean (standard deviation)				
Political environment	2.20 (1.424)	1.47 (1.356)	1.00 (1.309)	0.87 (1.506)
Toxic environment	2.53 (1.685)	1.07 (1.387)	0.60 (1.242)	0.73 (1.534)
Collaborative environment	1.45 (1.638)	0.52 (0.112)	0.39 (0.981)	0.93 (1.445)
Supportive environment	1.74 (0.276)	0.95 (1.432)	0.71 (1.431)	0.53 (1.268)
Violent environment	0.89 (1.304)	1.61 (0.262)	0.78 (1.494)	0.53 (1.134)
Levene's test for equality of variances	3.389 (0.010)**	7.236 (0.011)*	5.260 (0.000)***	3.580 (0.008)**
One-way ANOVA	3.866 (0.005)**	5.557 (0.000)***	1.401 (0.235)	0.925 (0.450)
Multiple comparisons	Toxic > Violent	Collaborative > Violent		

* p < 0.05, ** p < 0.01, *** p < 0.001

Next, a one-way ANOVA was conducted to compare the test performance across different categories of classroom setups (Table 14). Prior to conducting a one-way ANOVA analysis, Levene's test was performed to determine whether all groups had equal variances. The results indicated that there were significant differences in variances among the groups for ACT performance, NCLB performance, and State Core Common standardized performance. (ACT Performance: F (4, 196) = 9.237, $p < 0.001$; NCLB Performance: F (4, 196) = 7.128, $p < 0.001$; SCC Standardized Performance: F (4, 196) = 5.547, $p < 0.001$).

Therefore, a one-way ANOVA with bootstrapping was performed for these test performances. However, Levene's test was not significant for SAT performance, indicating equal variances among groups (F (4, 196) = 1.838, p = 0.123), and hence, a one-way ANOVA without bootstrapping was performed. Results from the corresponding one-way ANOVA indicated that there was a significant difference in ACT performance and NCLB performance among different categories of classroom setups (ACT performance: F (4, 200) = 2.762, $p < 0.05$; NCLB performance: F (4, 200) = 4.968, $p < 0.001$).

However, there were no significant differences among different categories of classroom setups in SAT performance (F (4, 200) = 1.175, p = 0.323) or in State Core Common Standardized performance (F (4, 200) = 1.079, p = 0.368). After conducting further post hoc analysis using Tukey, it was found that students tended to perform better and in a significantly different manner when taking the ACT in a futuristic classroom setup as opposed to a Socratic classroom setup. Similarly, students were believed to perform better and in a significantly different manner when taking the NCLB test in a futuristic classroom setup compared to Socratic, classical, and common classroom setups. These results are supported by the clustered bar graph illustrated in Figure 5.

Table 16

Comparison of Test Performance Across Different Types of Classroom Setups

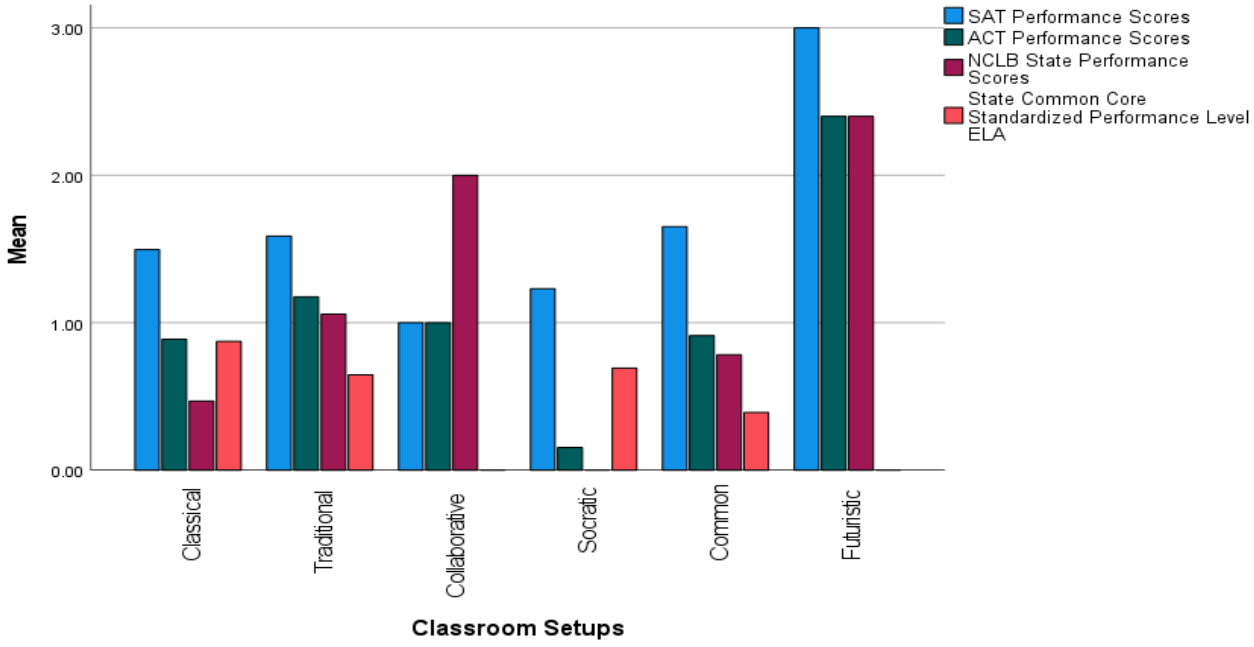
	SAT	ACT	NCLB	Common Core State Standards
Mean (Standard Deviation)				
Classical Classroom Setup	1.50 (1.648)	0.89 (1.359)	0.47 (1.143)	0.87 (1.438)
Traditional classroom setup	1.59 (1.588)	1.18 (1.704)	1.06 (1.519)	0.65 (0.331)
Socratic classroom setup	1.23 (1.641)	0.15 (0.376)	0.00 (0.000)	0.69 (1.316)
Common classroom setup	1.65 (1.641)	0.91 (1.240)	0.78 (1.380)	0.39 (1.076)
Futuristic classroom setup	3.00 (1.225)	2.40 (1.342)	2.40 (1.342)	0.00 (0.000)
Collaborative classroom setup	1.00 (0.000)	1.00 (0.000)	2.00 (0.000)	0.00 (0.000)

	SAT	ACT	NCLB	Common Core State Standards
Levene's test for equality of variances	1.838 (0.123)	9.237 (0.000)***	7.128 (0.000)***	6.694 (0.000)***
One-way ANOVA	1.175 (0.323)	2.762 (0.029)*	4.968 (0.001)***	1.079 (0.368)
Multiple comparisons		Futuristic > Socratic	Futuristic > Socratic, Futuristic > Classical, Futuristic > Common	

* p < 0.05, ** p < 0.01, *** p < 0.001

Figure 7

Comparison of Test Performance Across Different Types of Classroom Setups



A one-way ANOVA was conducted to compare test performance across various categories of student interaction (as presented in Table 15). Prior to the ANOVA analysis, Levene's test was conducted to evaluate if all groups had equal variances. The results revealed that Levene's test was significant for NCLB performance and State Core Common standardized

performance, indicating unequal variances among the groups' (NCLB Performance: F (7, 194) = 8.842, $p < 0.001$; CCSS Performance: F (7, 194) = 3.863, $p < 0.001$).

Therefore, one-way ANOVA with bootstrapping was performed for these test performances. However, Levene's test was not significant for SAT Performance and ACT Performance, indicating equal variances among groups (SAT Performance: F (7, 194) = 1.719, $p = 0.107$; ACT Performance: F (7, 194) = 1.694, $p = 0.113$).

The one-way ANOVA without bootstrapping was performed, and the results from the corresponding one-way ANOVA indicated that there was a significant difference in ACT performance and NCLB performance among different categories of student interaction (ACT performance: F (7, 201) = 3.179, $p < 0.01$; NCLB performance: F (7, 201) = 2.918, $p < 0.01$).

However, there were no significant differences among different categories of student interaction in SAT performance (F (7, 201) = 1.175, p = 0.323) and in CCSS performance (F (7, 201) = 1.079, p = 0.368). Further post-hoc analysis using the Tukey test revealed that students performed significantly better in friendship-student interaction compared to violent-student interaction while taking the ACT. Similarly, while taking the NCLB test, students performed significantly better in competitive-student interaction compared to friendship-student interaction and in violent-student interaction compared to friendship-student interaction.

Table 17

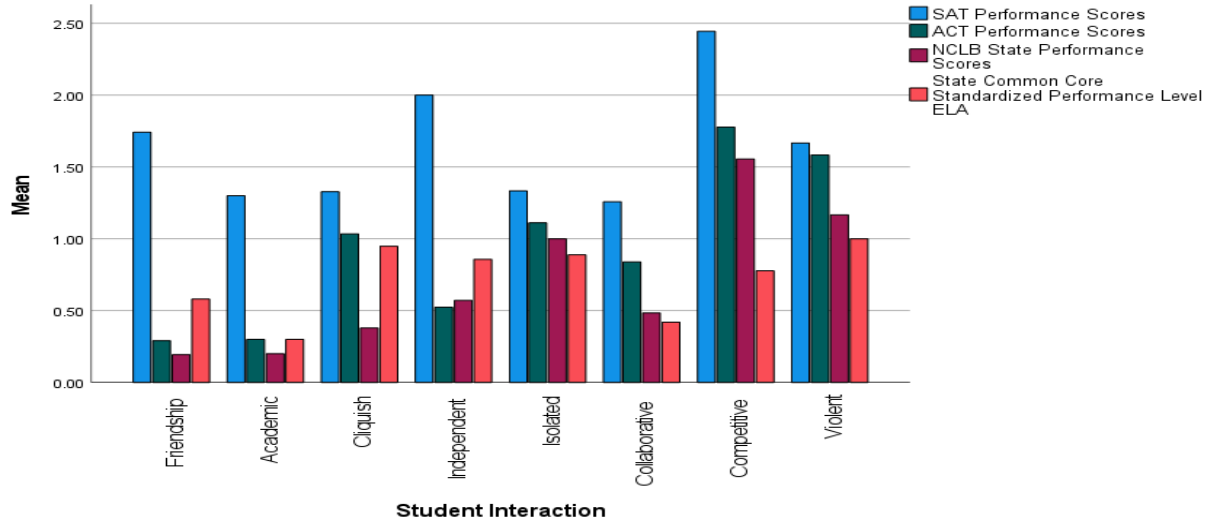
Comparison of Test Performance Across Different Forms of Student Interaction

	SAT	ACT	NCLB	Common Core State Standards
Mean (standard deviation)				
Friendship student interaction	1.74 (1.712)	0.29 (0.783)	0.19 (0.792)	0.58 (1.232)
Academic student interaction	1.30 (1.703)	0.30 (0.675)	0.20 (0.632)	0.30 (0.949)
Cliquish student interaction	1.33 (1.479)	1.03 (1.376)	0.38 (1.057)	0.95 (1.432)
Independent student interaction	2.00 (1.897)	0.52 (1.209)	0.57 (1.248)	0.86 (1.621)
Isolated student interaction	1.33 (1.680)	1.11 (1.641)	1.00 (1.680)	0.89 (1.529)
Collaborative student Interaction	1.26 (1.591)	0.84 (1.293)	0.48 (1.061)	0.42 (1.057)
Competition student interaction	2.44 (1.667)	1.78 (1.481)	1.56 (1.509)	0.78 (1.563)
Violent student interaction	1.67 (1.579)	1.58 (1.613)	1.17 (1.551)	1.00 (1.504)
Levene's test for equality of variances	1.719 (0.107)	1.694 (0.113)	8.842 (0.000)***	3.863 (0.000)***
One-way ANOVA	1.071 (0.383)	3.179 (0.003)**	2.918 (0.006)**	0.802 (0.587)
Multiple comparisons		Friendship > Violent	Competitive > Friendship, Violent > Friendship	

* p < 0.05, ** p < 0.01, *** p < 0.001

Figure 8

Comparison of Test Performance Across Different Forms of Student Interactions



A one-way ANOVA was conducted to compare the test performance across different categories of the mascots (Table 16). Before one-way ANOVA analysis, Levene's test for equality of variances was conducted to determine if all groups had equal variances. Results indicated that Levene's test was significant for all test performance, indicating unequal variances among the groups (SAT Performance: F (5, 196) = 2.257, $p < 0.05$; ACT Performance: F (5, 196) = 28.185, $p < 0.001$; NCLB Performance: F (5, 196) = 12.182, $p < 0.001$; SCC Standardized Performance: F (5, 196) = 11.153, $p < 0.001$).

Table 18

Comparison of Test Performance Across Different Forms of Mascots

	SAT	ACT	NCLB	Common Core State Standards
Mean (Standard Deviation)				
Weak	1.86 (1.464)	1.43 (1.397)	0.71 (1.254)	0.71 (1.496)
Silly	1.96 (1.675)	0.93 (1.238)	1.00 (1.468)	0.44 (1.121)
Soar	1.37 (1.707)	1.32 (1.493)	0.53 (1.263)	0.47 (1.124)
Cultural	1.67 (1.877)	1.27 (1.710)	0.93 (1.624)	1.00 (1.732)
Strong	1.23 (1.495)	1.23 (1.477)	0.68 (1.292)	0.51 (1.166)
Neither weak nor strong	1.74 (1.696)	0.16 (0.676)	0.16 (0.676)	1.30 (1.569)
Levene's test for equality of variances	2.257 (0.050)*	28.185 (0.000)***	12.182 (0.000)***	8.160 (0.000)***
One-way ANOVA	1.192 (0.315)	5.716 (0.000)***	2.443 (0.036)*	2.961 (0.013)*
Multiple comparisons		Soar > Neither Weak nor Strong, Cultural > Neither Weak nor Strong, Strong > Neither Weak nor Strong	Neither Weak nor Strong > Silly	Neither Weak nor Strong > Strong

* p < 0.05, ** p < 0.01, *** p < 0.001

Therefore, a one-way ANOVA with bootstrapping was performed for all test performances. Results from corresponding one-way ANOVA indicated that there was a significant difference in ACT performance, NCLB performance, and State Core Common

Standardized performance among different categories of mascots (ACT performance: F (5, 201) = 5.716, $p < 0.001$; NCLB performance: F (5, 201) = 2.443, $p < 0.05$; SCC performance: F (5, 201) = 2.916, $p < 0.05$).

However, there were no significant differences among different categories of mascots in SAT performance (F (5, 201) = 1.192, $p = 0.315$). Further post hoc analysis using Tukey identified that when taking the ACT test, students were believed to perform better and significantly different in soar, cultural, and strong mascots compared to neither weak nor strong mascots.

Furthermore, when taking the NCLB test, students were believed to perform better and significantly different in neither weak nor not strong mascots compared to silly mascots. Also, when taking the CCSS performance test, students were believed to perform better and significantly differently in neither weak nor strong mascots compared to strong mascots.

Comparing Test Performance Across Different Ethnic Groups

A One-way ANOVA was conducted to compare the test performance across different ethnic groups (Table 17). Before one-way ANOVA analysis, Levene's test for equality of variances was conducted to determine if all groups had equal variances. Results indicated that Levene's test was significant for all test performances, indicating unequal variances among the groups (SAT Performance: F (5, 196) = 3.586, $p < 0.01$; ACT Performance: F (5, 196) = 17.393, $p < 0.001$; NCLB Performance: F (5, 196) = 22.777, $p < 0.001$; SCC Standardized Performance: F (5, 196) = 9.772, $p < 0.001$).

Therefore, a one-way ANOVA with bootstrapping was performed. Results from the corresponding one-way ANOVA indicated that there was a significant difference among ethnic

groups in ACT performance (F (5, 201) = 12.430, $p < 0.001$), NCLB performance (F (5, 201) = 4.260, $p < 0.001$), and State Core Common Standardized performance (F (5, 201) = 2.395, $p < 0.05$). However, there was a significant difference in SAT performance among ethnic groups (F (5, 201) = 0.461, $p = 0.805$). Further post hoc analysis using Tukey identified that in terms of ACT performance, African American, White American, and Hispanic American students were better performing than students having ethnicities other than Asian American, African American, Caucasian American, and Hispanic American. Furthermore, in terms of ACT performance, African American students are better performing than Asian American students, while African American students are better performing than Hispanic American students.

Table 19

Comparison of Test Performance Across Different Ethnic Groups

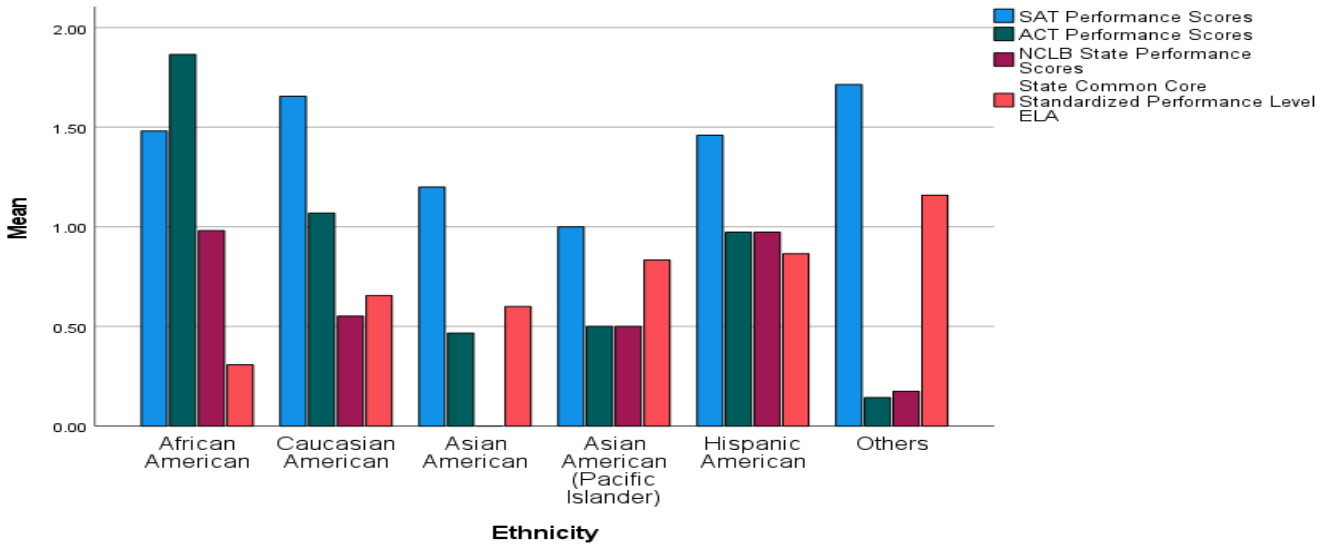
	SAT	ACT	NCLB	Common Core State Standards
Mean (standard deviation)				
African American	1.48 (1.650)	1.87 (1.358)	0.98 (1.488)	0.31 (0.919)
White American	1.66 (1.778)	1.07 (1.462)	0.55 (1.270)	0.66 (1.471)
Asian American	1.20 (1.699)	0.47 (0.990)	0.00 (0.000)	0.60 (1.242)
Asian American (Pacific Islander)	1.00 (0.894)	0.50 (1.225)	0.50 (1.225)	0.83 (1.329)
Hispanic American	1.46 (1.502)	0.97 (1.500)	0.97 (1.462)	0.86 (1.475)
Others	1.71 (1.679)	0.14 (0.644)	0.17 (0.685)	1.16 (1.526)
Levene's test for equality of variances	3.586 (0.004)**	17.393 (0.000)***	22.777 (0.000)***	9.772 (0.000)***
One-way ANOVA	0.461 (0.805)	12.430 (0.000)***	4.260 (0.001)***	2.395 (0.039)*
Multiple comparisons		African American > Others, African American > Asian American, White American > Others, African American > Hispanic American, Hispanic American > Others	African American > Others, Hispanic American > Others	African American > Others

* p < 0.05, ** p < 0.01, *** p < 0.001

Similarly, in terms of NCLB performance, African American students and Hispanic American students are believed to perform better and significantly different from students having ethnicities other than Asian American, African American, White American, and Hispanic American. Similarly, in terms of State Core Common Standardized performance, African American students are believed to perform better and significant different from students having ethnicity other than Asian American, African American, White American, and Hispanic American. The clustered bar chart in Figure 9 also supported these results.

Figure 9

Comparison of Test Performance Across Different Ethnic Groups



Comparing Test Performance Across Different States

A One-way ANOVA was conducted to compare the test performance across different states (Table 18). Before one-way ANOVA analysis, Levene's test for equality of variances was conducted to determine if all states have equal variances. Results indicated that Levene's test was significant for all test performance, indicating unequal variances among the groups (SAT

Performance: F (9, 192) = 7.235, $p < 0.001$; ACT Performance: F (9, 192) = 3.502, $p < 0.001$; NCLB Performance: F (9, 192) = 6.824, $p < 0.001$; SCC Standardized Performance: F (9, 192) = 3.743, $p < 0.001$).

Therefore, a one-way ANOVA with bootstrapping was performed for all test performances. Results from the corresponding one-way ANOVA indicated that there was a significant difference in SAT performance, ACT performance, and NCLB performance among different states (SAT performance: F (9, 201) = 2.464, $p < 0.05$, ACT performance: F (9, 201) = 3.269, $p < 0.001$; NCLB performance: F (9, 201) = 4.101, $p < 0.001$).

However, there were no significant differences in CCSS performance among different states (F (9, 201) = 0.501, $p = 0.872$). Further post hoc analysis using Tukey identified that, in terms of SAT performance, students from Michigan were better performing than students from Iowa and Illinois. Furthermore, in terms of ACT, students from Iowa were better performing than students from California and Illinois. Lastly, in terms of NCLB performance, students were better performing than students from Indiana, Missouri, Illinois, Iowa, California, and other states (including Idoha, Arkansas, Pennsylvania, Georgia, Virginia, Wisconsin, Arizona, Maryland, and New York).

Table 20

Comparison of Test Performance Across Different States

	SAT	ACT	NCLB	Common Core State Standards
Mean (Standard Deviation)				
California	1.63 (1.672)	0.66 (1.231)	0.54 (1.185)	0.80 (1.418)
Florida	0.00 (0.000)	3.00 (0.000)	4.00 (0.000)	0.00 (0.000)
Illinois	1.25 (1.574)	0.75 (1.204)	0.17 (0.561)	0.92 (1.442)
Indiana	2.20 (1.304)	1.20 (1.095)	0.00 (0.000)	0.60 (1.342)
Iowa	0.50 (0.926)	2.38 (1.061)	0.25 (0.707)	0.13 (0.354)
Kentucky	1.00 (0.000)	1.00 (0.000)	0.67 (1.155)	0.00 (0.000)
Michigan	3.57 (1.134)	1.14 (1.952)	1.14 (1.952)	0.86 (1.464)
Missouri	0.00 (0.000)	2.50 (2.121)	0.00 (0.000)	0.00 (0.000)
Ohio	2.00 (1.732)	2.00 (1.732)	2.00 (1.732)	1.00 (1.732)
Others	1.35 (1.498)	1.47 (1.700)	1.24 (1.602)	0.76 (1.437)
Levene's test for equality of variances	7.235 (0.000)***	3.502 (0.000)***	6.824 (0.000)***	3.743 (0.000)***
One-way ANOVA	2.464 (0.011)*	3.269 (0.001)***	4.101 (0.000)***	0.501 (0.872)
Multiple comparisons	Michigan > Iowa, Michigan > Illinois	Iowa > California, Iowa > Illinois	Florida > Indiana, Florida > Missouri, Florida > Illinois, Florida > Iowa, Florida > California, Florida > Others	

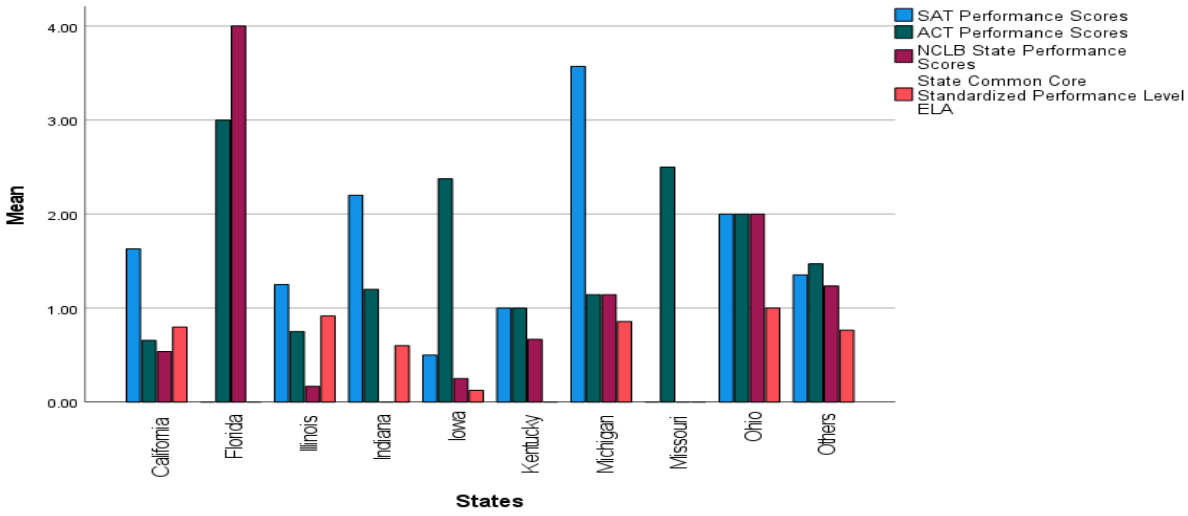
* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Summary

In conclusion, the utilization of statistical methods determined the conceptual orientation models, revealing a significant overall correlation between perception and SMA, as well as the academic performance when ethnicity was considered. Nevertheless, there was no substantial link between SMA and performance, as discussed in the concluding section.

Figure 10

Comparison of Test Performance Across Different States



To summarize, the analysis sought to uncover a social issue in a culture that consistently displays an achievement gap among ethnic groups on an annual basis. This gap appears to be a psychological tool deeply ingrained in the culture to indicate intellectual development, which is based on the history of America and differences between cultures (National Center for Education Statistics, 2020).

The research employed a quantitative analysis approach, using a Likert scale for survey questions. Participants were asked to indicate their level of agreement with declarative statements after providing demographic information. The aptitude scale questions were combined for data analysis, avoiding individual question analysis (Laerd Statistics, n.d.). Chapter five provides a thorough interpretation of the results, their limitations, and their practical implications.

Chapter 5: Discussion and Conclusion

The analysis that demonstrated the relationship between SMA, perception of school, and academic performance from Vygotsky's theoretical lens produced startling results. Data were collected from 210 adults between the ages of 18 and 56 across the US using the Likert scale survey method to evaluate multiple linear regression analysis and a one-way ANOVA to show the relational effect between the variables. The results suggest that there was an overall significant relationship between socially mediated artifacts and perceptions of school but did not have a significant relationship with academic performance. The study found a high correlation between the perception of school and the relationship between teachers and students and school belongingness, as well as between school climate and school belonging, which seemed expected. However, the test also indicated a low correlation between the school climate and artifacts in relation to ethnicity, between the environment of artifacts and school belonging, and between the environment of artifacts and school belonging.

The report highlights the mental impression introduced into society when exploring the achievement gap from a sociocultural perspective. This report can be seen as a sign or symbol of the superiority of one group over another. This study purposed to understand social conditioning problems in the form of social mediation using Vygotsky's theoretical lens and psychological tools called SMA. The multiple linear regression analysis that showed a significant relationship effect between SMA I and II and perceptions of school again did not have a significant relationship with academic performance, which surprising indicated a low or no relationship to behavior. The test found a low correlation between school climate and SMA-ethnicity, between SMA-environment and school belonging, between SMA-environment and school belonging, and between school climate and SMA-environment. When comparing academic performance in the

form of SAT test performance, ACT test performance, NCLB test performance, and CCSS performance, the results showed a very low correlation between SAT performance and ACT performance, low correlation between SAT performance and NCLB State performance, and moderate correlation between ACT performance and NCLB State performance scores. In addition, there was a very low correlation between SAT performance and school climate perceptions.

Three multiple linear regression models were run to assess the impact on each of the variables, SMA I and II, perception, and performance, in separate models to determine the impact of SMA-ethnicity and SMA-environment, and perceptions of school on academic performance. The results indicated that the SMA environment was significantly related to SAT performance, while SMA ethnicity was not significantly related to SAT performance. SMA ethnicity and SMA environmental factors were not significantly related to ACT performance. In addition, the one-way ANOVA analysis compared the test performances among the different categories of imagery impression, classroom setups, student interaction, and mascots (Table 15-20). Such analysis provides a better overview and should be accepted with more preferences to enhance the analysis of perception and academic performance. A separate analysis was conducted for each type of test to determine how performance differed among the different categories of examination. Furthermore, post-hoc analysis using Tukey's test was conducted to determine which groups were statistically significant. The results indicated that there was a significant difference in SAT and ACT performance among the different categories of imagery impressions of perception but an insignificant difference in NCLB and CCSS performances. A further post-hoc analysis using Tukey's test identified that the SAT scores provided some surprising and unexpected results. Based on their perception, the students seemed to perform

better in toxic environments than in violent environments. Similarly, based on the ACT scores, the students seemed to perform better in a collaborative environment than in a violent environment based on perception.

The assumption that SMA I and II have a statistically significant influence on an individual's academic assessment using the Pearson's correlation analysis resulted in an overall insignificant relationship. However, one-way ANOVA indicated that SMA-Environmental was significantly related to SAT performance, while SMA-ethnicity was not significantly related to SAT performance. Neither the SMA I and II ethnicity nor the environment were significantly related to ACT performance, nor did SMA I and II ethnicity, and the environment provided a significant relationship to NCLB performance and with all components of CCSS.

After analyzing imagery impressions, aspects of perception through one-way ANOVA indicated that the SMA environment in relation to ACT and SAT scores showed a noticeable difference in performance. However, there were no significant correlations between the SMA environment and the NCLB and common core scores. ANOVA analyses demonstrated that there was a significant difference in SAT performance among various imagery impressions in each category, and the results of the ANOVA analysis indicated a noteworthy discrepancy in SAT performance. In addition, there was a significant difference in ACT performance among the different categories of imagery impressions. However, there were no significant differences among the different categories of imagery impressions for NCLB performance and CCSS performance. After conducting a post-hoc analysis using Tukey's test, the results were even more interesting. The participants seemed to perform better in the most unlikely environments.

The assumption that the SMA environment had a statistically significant influence on an individual's perception of school using Pearson's correlation analysis resulted in an overall

significant relationship, as did the one-way ANOVA analysis. ANOVA provided a closer analysis when considering the nature of SMA-ethnicity and SMA-environment, and perception variable types were ordinal. The results indicate that SMA-ethnicity and SMA-environment in comparison to perception of the school had three types, that is, the relationship between teacher and student, school belonging, and school climate consistently had an overall association between SMA and perception of school, indicating a significant relationship.

The assumption that an individual's perception of school has a statistically significant influence on an individual's academic assessment performance resulted in SMA I and II and test performance from Pearson's correlation analysis having an overall insignificant relationship. The one-way ANOVA analysis also resulted in an overall insignificant relationship between perception and all test performance scores, SAT, ACT, NCLB, and CCSS, which may imply that the limitations of the survey questions about perception or information concerning performance indicated no influence.

The assumption that an individual's perception of school mediates between SMA I, II and academic assessment performance resulted, although the SMA I, II s had a significant impact on perceptions of school, provided an insignificant relationship with performance, which suggests that perceptions of school did not mediate the relationship between SMA I, II and students' performance.

Implications for Research

The implications of this study remain impactful beyond its limitations. Nonetheless, it amplifies that a correlation between SMA I, II, and perception provides a significant relationship between Pearson's correlation model and One-way ANOVA analysis. The significance of the relationship generated high-to-moderate results, resulting in a strong connection between the two

variables. This implies that social influences between objects and perception are effective in forming what we learn as members of a community.

Vygotsky said that we understand the world through symbols, and that its impressions make it one of the most important mechanisms for understanding learning. He described SMA as a psychological instrument that impacts thoughts. The results are consistent with Vygotsky's theory that children initially learn from their biological parents and siblings, consisting of first facial impressions, household artifacts, language, and tones associated with emotions. However, neuroplasticity occurs once a child enters school or changes the environment, which solidifies neuroscientists' claim that new learning occurs in new social settings beyond the initial home (Vaughn et al., 2020). Therefore, Coleman's 1966 report is crucial for education. This makes a distinction between home and school influence. The transition from home (one social situation) to school (another social situation) affects perception.

Social artifacts are not just physical objects placed in a social situation made by people but are observable patterns of influence, along with imagery impressions that have an affective result. The routines that children learn at home are often not needed in their new social situations. Because this symbolic learning process is hidden from most, the changes are in the revealed behavior. This also makes for an argument that when learning processes are easily transformed or the associations between home and school are similar and clearly understood, performance has a more straightforward adaptation to the new situation. The relationship between SMA I and II and perception but not academic performance also verifies the limitations of this study's data collection process. In the survey, the participants were asked about their high school experiences. Some participants were far removed from these experiences by their age selection, relying solely on, perhaps, a flawed memory.

According to the neuroscientists, the participants learned new things from various current social settings that differed from their high school experience. Neuroplasticity occurred in these cases. The evolution from one experience to another may have given participants a different perceptual meaning for their high school social messaging systems later in life, similar to how a computer software program is updated or reprogrammed. In addition, the results from the study between SMA I, II and academic performance also infer that the limitations of the survey were based on the participants being either removed from their social situation or by some other means. The results that suggest an insignificant relationship are understandable considering the distance of the experience, missing information, or inaccurate selections, which means that, based on the data, the results cannot imply a correlation between test performance and the achievement gap. The effects of the achievement gap may indicate that they healed.

Limitations

Concrete evidence was not provided to derive specific performance reports, which made it impossible to confirm the accuracy of the survey test results. Some participants skipped the questions about their performance. For example, out of the 210 participants who answered that they took the SAT, only a few answered with a certain score, while others skipped the question. All the test performance questions had four range options, and participants could select "Not Taken" as the fifth option. Of the 210 participants, 149 responded to the ACT, 147 to the NCLB, and 196 to the CCSS. The limitation of this study was that it reduced the clarity needed to accurately calculate the variables between social mediation and perception in relation to performance.

However, most participants answered questions related to the school's perception using imagery-type selections of SMA I and II (Laerd Statistics, n.d.). It is worth noting that the

interval between the points in the table did not always show an equal change in attitude from "strongly agree" to "disagree." Therefore, it is crucial that questions focus on a specific and clear form to generate honest answers (Laerd Statistics, n.d.). Additionally, the age difference among the volunteers resulted in a poorer memory of the results and precise details of the experience. Future research must take special care to reduce the risk of gaps, misinterpretation, or misrepresentation of content. Nonetheless, limitations on accuracy were unavoidable for the target population, who were asked to voluntarily provide information (Insch and Black, 2018).

Recommendations for Practice

It is strongly advised that this study be duplicated, although there are limitations to the current analysis framework. To improve future outcomes in the variable chain, researchers must employ a more accurate data collection tool, specifically when examining and evaluating test results. Furthermore, various social theories spanning different time periods have been combined to uncover the progression of ideas. More importantly, one must identify any distinctions between existing social symbols and those of the past to develop an understanding of the meaning of relationships. This perspective has the ability to challenge belief systems that are centered on authority and advantages. In other words, the researcher ought to consider the potential outcomes of adopting different approaches to teaching and learning for personal development and the development of others. Currently, societal symbols accentuate divisions, classifications, and interconnectedness within the social structure, influenced by factors such as socioeconomic status, race, and cognitive abilities. Nevertheless, the acquisition of symbols can foster personal growth, self-acknowledgment, and the preservation of genuine knowledge since the process of learning is tainted.

The human brain, or the process of perceptual thinking itself, should be the object of focus without any ethnicity attached to it. A growth mindset needs to be learned in social relationships, which should be consciously taught for collective behavior and participation during social activities.

In short, researchers should grasp the social influences that regulate immediate behavior or impair its development by integrating lower functions and behavioral reactions. Consider action research on how new children enter school with a range of emotions to adapt to strangers and new environments. Imagery impressions of an environment are a good idea, along with the signs and symbols for social communication that generate higher psychological functions that are not immediately understood (Vygotsky, 1997). As children grow, the brain spontaneously makes associations, as they encounter new and more faces in various social settings with their emotions. This action research puts into action the functions of thinking and feeling simultaneously and evaluates them.

The relationship between human behavior and the environment is not direct, but culturally conditioned, which changes the learning conditioning for each member of society. Consequently, this study highlights everyday objects as legible signs that express both internal conflicts and emotional articulations that are inaccessible to the characters themselves (Zarazosa, 2007). Zarazosa (2007) explains two types of self-consciousness between master and slave, which the master mediates by means of an object, a type of social learning. The struggle results in the master and slave figures. Nevertheless, the resolution of this struggle demands that the master and slave mediate their relationship by means of objects: the slave expresses obedience by transforming them, while the master exercises power by consuming them. In other words, the object's everyday use concretizes a power relationship, whose constitutive poles are production

and consumption. Hegel explains that the master's relation to things is "a fleeting one," while the slave's desire held in check "forms and shapes the thing. (Hegel, 1977, p. 118). Social manipulation is an American story that shows the violations of learning oneself from others, thereby limiting an individual's potential. Since Wertsch (1997) states that all behaviors are mediated, there should be a consensus in the education field that impairing children's intellectual development is a crime. This is how people learn, and what they learn in social environments affects the psychological, physiological, and behavioral development of the personality of the individual, as well as the society in which that member resides. Schools should be a safe learning environment with clear goals and not a powerful mechanism.

Vygotsky's advancements in the ideas of psychological processes and the social situation gave rise to how thinking is shaped by the environment (Yasnitsky, 2019). It plays a role in societal communication, activities, concept recall, and learning (Esmonde & Booker, 2017). Researchers in the social sciences can conduct research in various disciplines to improve the society. From the perspective of Vygotsky, SMA is paramount for understanding the mental processes involved in learning and mental development. It pays heed to the cognitive effects and contextual aspects of change. Members of society acquire their values, beliefs, and problem-solving strategies through social interactions as they grow and learn, making the concept of SM play a fundamental role in all disciplines of study.

A child learns and relearns based on experiences created in society. In other words, how the brain interprets meaning from one object's impression to another develops a sense of self. The mental analysis of an object through environmental cues with recognition, such as color, texture, and motion, creates a memory impression despite how it might be represented. External mechanisms are socially identified and understood (Gazzaniga et al., 2009). Repetition of the

external mechanism becomes internalized, shifting the participant's response to social cues. Since learning is a shift in the participation of what has been mediated, it is situated. As skills and knowledge are developed and understood, personalities are formed in relation to co-participants, and behavior is observed as a result. This is why explicit bias, as the child is learning from instruction, is criminal, and implicit bias is dangerous in hindering the skills that need to be learned. Most studies on power, racism, and biased instruction describe the abuse of power in nature and learning as the signified of offering situated learning and unequal learning opportunities.

Making unhealthy children struggle to make sense of the world around them, inundated by symbols, signs, and tools for social exclusion, character naming both explicit and implicit, poor instruction, profiling, and belief manipulation five days a week for 12 years is inhuman. Neuroscientists, medical doctors, and psychologists are now investigating the effects of negative social stimulation. Social-emotional learning due to COVID-19 has been implemented in schools because of the impact of isolation and death. However, little has been done to cure the mental health effects of years of abuse in the American educational system for subcultures across the United States.

Recommendations for Future Research

After reviewing various studies on social mediation (SMA) and its impact on perception, examining its relevance in education is crucial because of its powerful influence on behavior. Neuroplasticity, which refers to the brain's ability to continue growing and evolving in response to life experiences, allows it to be molded or shaped in new social situations. This implies that humans can adapt or change over time by creating new neurons and building new networks (Eslinger et al., 2021).

Therefore, I recommend that researchers consider sociocultural theories that include the social aspects of mediated behaviors in all aspects of human relationships. This approach is the best way to uncover the truth behind human behavior and reveal the society as naked and vulnerable. Children are our most valuable contribution to the future, and any attempt to manipulate their minds could destroy their authentic potential and the society in which they live. Therefore, educators should have the necessary knowledge and expertise to make a difference in the lives of children and create a better society similar to doctors, who must take an oath to heal and not harm.

Furthermore, researchers who replicate such studies should use platforms to create instruments for data collection to ensure the accuracy of the information, especially when collecting information about participants' actual test performance. They should also strategize methods for collecting the population's demographics during the participant's attendance in high school to reveal perceptional feedback by partnering with the school to access the students' actual performance scores. Schools ignorant of their values or having something to hide will definitely close their doors to researchers. In addition, researchers should ensure that the participants do not skip questions on the survey platform.

These recommendations would eliminate some of the limitations encountered when using a Likert-scale survey and improve information accuracy. Asking about individuals' perceptions and impressions of their school experiences and artifacts is still worthwhile. Therefore, it is crucial to choose a survey platform that does not allow skipping, to avoid too much freedom, which leads to random answers. Although the perception survey asks for opinions on how participants perceive their experience, data collection will need more evidence-based materials, such as test scores, to ensure precision. JotForm is the best instrument for conducting multiple

forms of data collection. Most importantly, researchers should ensure that volunteers have less chance to avoid the truth for any reason by using a platform that allows them to answer questions discreetly (McLeod, 2023).

Conclusion

In conclusion, disparities between ethnic groups on a larger scale are similar to the achievement gap. At the heart of the achievement gap lies a pattern of meaning that perpetuates the importance of unknown masses. In other words, intellectual labeling is inferred to focus on a signification scheme that perpetuates the signification of masses of people in obscurity. According to Vygotsky's theories, the practice of academic differentiation signals to society who, as a cultural group, is intelligent and who, as a cultural group, needs academic help. It is similar to other mediating artifacts that signify who you are and how you are supposed to act towards other members of society. Although this study has limitations, it provides an interesting insight into the influence of data-collection tools. The few schools that have successfully reported closing academic disparities between cultures are our model.

There are numerous ways to use this information. Since SMA has been chiefly used maladaptively, I believe SMA, used to manipulate power, is an act against human nature, and that more studies should be conducted at both the local and national levels. American society needs to have open intellectual questioning in education to authentically prepare its members for ripples that are pulsating in the future. Before we can improve society's way of life, members of society must admit to the truth of their history, such as the truth that America perpetuates a land of inequalities, separation, and cruelty, which at the individual level can also promote growth and competition to those resisting its influences. Currently, the disparity between cultures continues in this society, all embedded in societal schemes for power fused in the media, schools,

churches, and places of employment, which have a significant impact on people's psyche and the behaviors that continue to perpetuate. This maladaptive behavior is accepted and goes unnoticed by the masses, cheating vulnerable children in schools affected by subliminal messages using social instruments (Earle & Hodson, 2022; Hoewe & Peacock, 2020).

In essence, this study is necessary for educators and anyone whose goal is to create positive change who is not indoctrinated by the need for power and prestige (Esmonde & Booker, 2017; Yasnitsky, 2019). It is also recommended that Americans stop singing songs that echo the American illusion that everyone can achieve the American dream, irrespective of their race, age, gender, socioeconomic status, or social identity, until it becomes true. Instead, it is a change by improving educational research on authentic learning (Esmonde & Booker, 2017; Yasnitsky, 2019).

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Appendix A: Invitation Letter

Email Letter to Potential Candidates

Dear potential participant,
You are invited to participate in a doctoral research study. The study collects information about your high school experience in a brief survey that will take five minutes or less.

Your willingness to answer a few questions will aid in the possibility of revealing the root cause of academic achievement gaps in public schools. This study has the possibility to promote thought as to how to best serve you towards better and more individualized instructional training that not only benefits you and your background, communities, and future endeavors but enhances your school experience.

My name is Robin Moorezaid, a Ph.D. candidate @Trident University International, a school known for servicing many student candidates in or from the military. Help me complete this study by answering just a few questions about your experience during high school. You can also help if you get 25 of your friends to participate. For helping me, you will get $50 dollars.

For your security and peace of mind, any personal information that is requested of you is held at the highest discretion. That means only the researchers can see your very limited and general information. I will ensure to use that information only to match and compare your survey questions for analysis. All information will be coded and secured for privacy as well as submitted through a shredding system for destruction. The most valuable information from this study is your feelings and perception of your school.

Please answer all the questions honestly. It takes little time and thought because you know all the answers. If you have any questions or concerns, my contact information is at the end of the survey. I will be available.

Sincerely,

Robin Moorezaid

Robin Moorezaid

Contact Researcher @ RobinA.Moorezaid@my trident .edu for any questions or concerns. You may also contact the Trident Univerisity International IRB 2200 East German Road, Suite 150 Chandler, AZ 85286, telephone 7148160366, or email irb@trident.edu for ethical issues or the review process.

Thank you for your participation:

Appendix B: IRB Approval

TRIDENT UNIVERSITY INTERNATIONAL
TUI
A member of the American InterContinental University System

Office of Institutional Research
Institutional Review Board
2200 East Germann Road Chandler, AZ 85286
Office: (714) 816-0366 ext. 2518 | Fax: (714) 226-9844

Memo
From Simcha Pollard, Ph.D.
Chair, Institutional Review Board of Trident University International
Re: IRB approval IRB # 1435

Protocol and Study Information	
Date Submitted to IRB: Submitted 6/16/2022 Approval 6/19/2022	
Principal Investigator: Robin Moorezaid	Research Advisor: Dr. Wenling Li
Proposal Title: Socially Mediated Artifacts, Perception of School, and Academic Performance: A Vygotskian Perspective of the Achievement Gap	

Investigator Information		
Name	Department	
Robin Moorezaid	College of Education	
Co-Investigator		
Co-Investigator		

I am pleased to inform you that Trident University IRB has approved your project. Approval is granted under 45 CFR 46.111. Please feel free to start your study at any time. Reapplication is not required in a year if the study is still being conducted.

Best wishes and good luck,

Simcha (Stephen) Pollard, Ph.D.

Appendix C: Tables

Survey Source:

https://form.jotform.com/220760221790146

```
GET
  FILE='C:\Users\moore\Downloads\3. ALL DATA (3).sav'.

Warning # 67.  Command name: GET FILE
The document is already in use by another user or process.  If you make
changes to the document, they may overwrite changes made by others or your
changes may be overwritten by others.
File opened C:\Users\moore\Downloads\3. ALL DATA (3).sav
DATASET NAME DataSet1 WINDOW=FRONT.

SAVE OUTFILE='C:\Users\moore\Downloads\3. ALL DATA (4).sav'
  /COMPRESSED.
DESCRIPTIVES VARIABLES=Age Ethn Gender
  /STATISTICS=MEAN STDDEV MIN MAX.
```

Descriptives

Table C1

Notes

Output Created		19-APR-2023 17:01:24
Comments		
Input	Data	C:\Users\moore\Downloads\3. ALL DATA (4).sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>
	N of Rows in Working Data File	210
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.

	Cases Used	All non-missing data are used.
Syntax		DESCRIPTIVES VARIABLES=Age Ethn Gender /STATISTICS=MEAN STDDEV MIN MAX.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.00

```
[DataSet1] C:\Users\moore\Downloads\3. ALL DATA (4).sav
```

Descriptive Statistics

Table C2

	N	Minimum	Maximum	Mean	Std. Deviation
Age	210	18	55	35.96	10.802
Ethnicity	210	1.00	6.00	3.6733	2.07620
Gender	210	1.00	3.00	1.7129	.47498
Valid N (listwise)	210				

```
FREQUENCIES VARIABLES=Age State Gender Ethn
  /STATISTICS=STDDEV MEAN
  /ORDER=ANALYSIS.
```

Frequencies

Table C3

Notes

Output Created		01-MAY-2023 07:09:56
Comments		
Input	Data	C:\Users\moore\Downloads\3. ALL DATA (4).sav
	Active Dataset	DataSet1
	Filter	<none>
	Weight	<none>
	Split File	<none>

	N of Rows in Working Data File	210
Missing Value Handling	Definition of Missing	User-defined missing values are treated as missing.
	Cases Used	Statistics are based on all cases with valid data.
Syntax		FREQUENCIES VARIABLES=Age State Gender Ethn /STATISTICS=STDDEV MEAN /ORDER=ANALYSIS.
Resources	Processor Time	00:00:00.00
	Elapsed Time	00:00:00.01

Table C4

Statistics

		Age	States	Gender	Ethnicity
N	Valid	202	210	202	202
	Missing	8	0	8	8
Mean		35.96	2.80	1.7129	3.6733
Std. Deviation		10.802	2.863	.47498	2.07620

Frequency Table

Table C5

Age

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	18	6	2.9	3.0	3.0
	24	5	2.4	2.5	5.4
	25	35	16.7	17.3	22.8
	29	13	6.2	6.4	29.2
	30	35	16.7	17.3	46.5
	35	33	15.7	16.3	62.9
	37	2	1.0	1.0	63.9

	40	34	16.2	16.8	80.7
	55	39	18.6	19.3	100.0
	Total	202	96.2	100.0	
Missing	System	8	3.8		
Total		210	100.0		

Table C6

States

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	California	126	60.0	60.0	60.0
	Florida	2	1.0	1.0	61.0
	Illinois	36	17.1	17.1	78.1
	Indiana	5	2.4	2.4	80.5
	Iowa	8	3.8	3.8	84.3
	Kentucky	3	1.4	1.4	85.7
	Michigan	7	3.3	3.3	89.0
	Missouri	2	1.0	1.0	90.0
	Ohio	3	1.4	1.4	91.4
	Others	18	8.6	8.6	100.0
	Total	210	100.0	100.0	

Table C7

Gender

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Male	60	28.6	29.7	29.7
	Female	140	66.7	69.3	99.0
	Non-Binary	2	1.0	1.0	100.0
	Total	202	96.2	100.0	
Missing	System	8	3.8		
Total		210	100.0		

Table C8

Ethnicity

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	African American	52	24.8	25.7	25.7
	White American	29	13.8	14.4	40.1
	Asian American	15	7.1	7.4	47.5
	Asian American (Pacific Islander)	6	2.9	3.0	50.5
	Hispanic American	37	17.6	18.3	68.8
	Others	63	30.0	31.2	100.0
	Total	202	96.2	100.0	
Missing	System	8	3.8		
Total		210	100.0		

Appendix D: Informed Consent

Accepted

SOCIALLY MEDIATED ARTIFACTS, PERCEPTION OF SCHOOL, AND ACADEMIC PERFORMANCE: A VYGOTSKIAN PERSPECTIVE OF THE ACHIEVEMENT GAP

Student Researcher in a Doctor of Philosophy in Educational Leadership Program, Robin Moorezaid College of Education, at Trident University International
Committee Chair: Committee Chair: Dr. Wenling Li; Committee Member: Dr. Michael Wesolek; Committee Member: Dr. Carey Ford, Ph. D., Trident University International

Thank you for consenting to participate in this research study. Taking part in the research project is voluntary. And your consent is mandatory.

This study is about mind manipulation in educational settings. It seeks evidence that students may be programmed to achieve while others are not. It is a quantitative-correlational study framed to examine the causal relationship between socially mediated artifacts' (or objects) influence on an individual's perception to see if the relationship, in turn, predicts academic achievement.

What will happen if you agree to participate in this study?
If you agree to participate in this study, you will complete this easy and quick survey about your high school experience. It asks thought-provoking questions that will reflect your own experience.

First, you will be asked to provide demographic information. Then, you will be asked to give your perception of your school and its artifacts. It's that simple.

Take your time. The survey can be taken at any place and at any time convenient for you, and you may choose whatever electronic equipment is accessible to you. The survey is online for your convenience and must be filled out by the participant who consents to participate. Once the participant has completed the survey, the researcher will code your information and evaluate the results.

What are the benefits of this study?
The benefits of this study include an analysis of the potential mind-controlling effects that may have influenced how you performed academically, which may also have impacted your behavior and even your test results. Another benefit is that you gain knowledge about influencers, which may help you protect your children. It may help educators with developing more effective learning programs. Ultimately, respondents benefit by becoming more aware of any type of social elements that affect learning and how those elements can be used to manipulate your way of thinking.

What are the risks of participating in this study?
There is no risk from participating. The risk is that the participants may fabricate their information, making the analysis skewed. All the information collected in this study is beneficial to us and helps us understand how social mediation and its effects on learning operate as mind manipulations. Remember, any answers you give do not reflect any individual person or school but may reflect our societal thinking.

If you experience any issues related to participation in this study, please notify the researcher.

This is how we protect your information.
The researcher will use an alphanumeric code to identify the data collected. This code will prevent any identifying information from being associated between the participant and the data collected.

The researcher will protect the confidentiality of your answers and information using password protection on data files encrypted on a local hard disk. The researcher will have sole access to the raw data. The data will be aggregated and anonymized prior to release and publication. Only the researcher will have access to the information collected about you. The data will be kept for three years. Very limited personal information is collected to ensure the focus of the study.

Again, the data will be kept for at least three years, and the final report will not include any personal information that will directly identify you. The researcher will not use any information for any purposes outside this research project. The researcher will not share the participant's anonymous research data with other investigators without asking for consent personally.

Payment for Participation. You have a chance to get $50 cash.
Participants are offered an incentive for participating in this study. If you get 25 people between the ages of 18-42 to complete this survey, you will get fifty dollars sent to you via Cash App or some other electronic transfer instantly upon awareness.

Who can profit from study results?
This study is for research purposes only. No direct profit will be made from this research.

Remember, your participation in this study is voluntary. Taking part in this research study is a valuable decision. You do not have to take part in this study, but if you do and change your mind, you can stop at any time. Participation at any point in this study without penalty or loss of benefits to you or the researcher, to which you are otherwise entitled, may refuse to participate. However, If you decide to withdraw before this study is completed, the data that we collect from you to the point of withdrawal may be included in the study.

The researcher may also withdraw participants from the study if they are selected in error and do not meet the criteria for inclusion in the study. Wenling.Li@trident.edu

Questions about the Research
If you have questions about this research, you may contact:

Robin Moorezaid, Doctoral Candidate
Phone: 773-6174421
Email: Robin.AMoorezaid@my.trident.edu (moorezaid@msn.com)

Dr. Wenling Li, Ph. D. Committee Chair
Email: Wenling.Li@tridnet.edu

Questions about Your Rights as a Research Participant
If you have questions about your rights as a research participant, please contact Trident University's research department. See the Information below.

The Institutional Review Board for the Protection of Human Subjects
Trident University International
A member of the American InterContinental University System
2200 East Germann Road, Suite 150
Chandler, AZ 85286
Telephone: (714) 816-0366
Email: irb@trident.edu

Your signature of consent.
By signing up for this survey online, you are agreeing to participate in this study. Please ensure that you understand what the study is about before you sign. Again, if you have questions at any time during the study, you may contact the researcher using the information provided above.

Please sign this document saying that you understand what this study is about and that the questions I answered have been answered to my satisfaction. You will be given a copy of this form and agree to take part in this study.

PhD EL Dissertation Approval – Robin MooreZaid

Dear Robin,

I am very pleased to inform you that your dissertation entitled "Socially Mediated Artifacts, Perception of School, and Academic Performance: A Vygotskian Perspective of The Achievement Gap" has been APPROVED following the successful final defense and post-defense revisions required by your committee and the Dean of the College of Education at Trident University International, a Member of the American InterContinental University System.

The doctoral degree is the highest level of accomplishment in academia. It signifies that you are an expert in your chosen area of study and can now conduct independent research.

Completion of this degree is a true testament to your strength, dedication, and perseverance. I'm sure you will regard it as one of your most significant accomplishments in life. You have worked very hard to achieve this goal, and you made it!

I would like to thank your Committee Chair, Dr. Adam Fullerton, and Committee Members, Dr. Barry Chametzky and Dr. James Hodges, for their mentorship, advice, and support. In my role as the Doctoral Program Chair, I have seen your hard work, and I am very proud and happy to see you graduate. Please reflect November 8, 2023, as your defended date and December 22, 2023, as the approval date.
You now have completed all the academic requirements toward your degree of Doctor of Philosophy in Educational Leadership.

Congratulations Dr. MooreZaid!

Regards,

Kenneth Cromer, Ph.D.
Doctoral Program Chair, Research & Doctoral Studies
Trident University International
A member of the American InterContinental University System
Kenneth.Cromer@Trident.edu