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**Remote Learning in the Era of COVID-19:
Accounting for Students' Personal Verve**

by

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**Submitted to Scripps College in Partial Fulfillment of the
Degree of Bachelor of Arts**

**Professor Ma
Professor Wood**

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Abstract

This study focuses on accommodating remote academic lessons for students' personal verve levels. Personal verve is defined as the ability to adapt to and concentrate in environments with high levels of stimulation. The sociocultural psychologists Boykin discerned higher verve levels in Black communities compared to White communities. Boykin found that many Black students tend to learn best in high verve conditions, which incorporate aspects of African American culture like group work, varied activities, movement and noise, as opposed to traditional low verve conditions which consist of sitting quietly at a desk during lectures. White students tend to have low personal verve and thus excel in low verve academic environments. The prevalence of low verve conditions in Western education has contributed significantly to the achievement gap between Black and White students in America. With the onset of the pandemic and subsequent remote learning, the achievement gap threatens to widen due to discrepancies in resources students have at home. In order to maintain engagement and participation from *all* students, schools should incorporate high verve lessons into their curriculum. This study will measure the personal verve of 150 students from Pasadena High School before randomly assigning them to a high verve or low verve remote lessons on 15 SAT vocabulary words. They will take a pretest and posttest on the words, then complete an Engagement and Motivation Questionnaire, and answer demographic questions. Results are predicted to show slightly improved performance and increased motivation and engagement in all students assigned to high verve conditions, but a significantly greater increase in Black and Latinx students. This study has the potential to provide schools with remote lesson plans that will prevent the achievement gap from widening during the pandemic by effectively teaching students with high verve.

Remote Learning in the Era of COVID-19: Accounting for Students' Personal Verve

On January 30, 2020, the World Health Organization declared COVID-19 a “public health emergency of international concern” (Wargadinata et al. 2020). The resultant school closures required that students transition to emergency remote learning. Students are now required to have a home, a computer, internet, and the motivation to continue school online. While this study will not be able to lend advice on providing the necessary equipment for remote learning, it does offer research on the teaching methods that will ensure students with all learning styles are not left behind.

A prominent feature of one's learning style is one's personal verve, which was coined by the psychologist A. Wade Boykin as one's receptiveness to high levels of stimulation in an environment (Boykin, 1978). A person with high verve would focus relatively well in a room with music playing, people talking, and the TV on. In his research, Boykin found that Black children tended to have high personal verve, or an affinity for high stimulating environments, while White children have low verve (Bailey & Boykin, 2001). Boykin attributed this pattern to lower levels of stimulation in typical middle class White homes compared to Black homes. The home environment one is raised in plays a critical role in the development of one's personal verve level by conditioning them to process information in a certain way (Boykin, 1978). Further research showed children with high personal verve tend to perform better in academic tasks and have greater motivation when the task or environment is more stimulating (Bailey & Boykin, 2001; Carter et. al, 2008). As a result of his research, Boykin deemed personal verve as a determinate for one's optimal learning conditions.

Unfortunately, traditional classrooms are low verve environments that appeal to the learning style of low verve, typically White, students. Boykin (1978) called upon educators to

incorporate aspect of African American culture in order to create more stimulating curricula that account for the learning styles of many Black children. By doing so, Boykin hoped to narrow the achievement gap between White and Black students.

Today, the need to narrow the achievement gap suddenly transitions to the need to prevent its growth during emergency remote learning. The disparities in wealth have been emphasized by the pandemic. A lack of resources can prevent children from receiving their online education. Furthermore, the challenge of motivating children to focus on their lessons and homework escalates. Curricula must account for the variance in verve of students by providing remote lessons that employ multiple senses and account for cultural differences. This study seeks to provide evidence for the positive effects of high verve lesson plans on the academic performance of all students, particularly those with high personal verve.

Emergency Remote Learning

Like many schools, one public school district in Southern California has transitioned to using a video conferencing platform called WebEx to deliver lessons to children during remote learning (Lynn Scott, Personal Communication, September 19, 2020). Many teachers will lecture over WebEx for the first 20 - 30 minutes of class and designate the remainder of the period as individual work time in which students can ask for the teacher's help. During the student work time, kids can be put into breakout rooms, in which multiple users are grouped together and separated from the rest of the class or from other breakout rooms. Some instructors will create breakout rooms and visit each one separately in order to decrease the student to teacher ratio and help each child with their assignment (Lynn Scott, Personal Communication, September 19, 2020). Other methods utilizing video conferencing at a private school in Southern California employ an "I do, We do, You do" model (Monica Langley, Personal Communication, September

27, 2020). The lesson begins with the teacher modeling a new skill, followed by the class performing the skill along with the teacher, and is completed with each child practicing the skill individually with teacher supervision.

While the discussed methods utilize typical models of teaching for elementary through high school students, the challenge of maintaining engagement increases, exposing such methods as optimal for visual and auditory learners and not for those who require more stimulation through movement, in-person group work, and variability. Instructors can no longer walk around the room and check that each student is on task, nor can they confirm that students are sitting at their computers watching the lesson. A teacher at the aforementioned public school observes that her students have a “spectrum of focus” (Lynn Scott, Personal Communication, September 19, 2020). Students at the top of the spectrum are thriving with the static nature of remote learning while those at the opposite end are falling behind due partly to a lack of motivation to focus. Mrs. Scott suspects the majority of students join class, turn their cameras off, and walk away. Similarly, a private school teacher has found that her students employ creative methods to avoid class even with the camera turned on. “The other day I watched one of my students walk away from the camera, but her face was still there. She had set her background to a picture of herself sitting in front of the computer before leaving” (Monica Langley, Personal Communication, September 27, 2020).

The varying ability of students to focus in low-stimulating lessons is most likely accounted for by discrepancies in motivation due to learning styles that demand greater stimulation. Generally, focus is defined by the American Psychological Association as the “concentration or centering of attention on a stimulus”. The characteristics of the stimulus most likely have an effect on whether one focuses on it. If the stimulus fails to be engaging, one may

stop paying attention to it. Maintained focus is dependent upon both one's personal level of ability to pay attention despite distractions, and the level of cognitive engagement the stimulus demands. Although many children will be in their natural learning environment while they study from home, academic material should be presented in a manner aligned with students' learning styles to ensure student engagement, motivation, and optimal performance.

Defining Verve

Boykin's research (Allen & Boykin, 1991; Boykin & Allen, 1988) indicates that one's receptiveness to high stimulation is a determinate of one's optimal learning condition, which is dependent upon one's home environment and culture. In the 1960's, Boykin investigated the discrepancies in academic achievement between Black and White students in America by studying differences in the two cultures. He observed that many Black homes held a certain level of physical stimulation spurred by music, the TV, loud talking, and body movement. This aspect of Black culture was not to be mistaken as a deficiency, as many psychologists had previously deemed the movement within Black homes, but as a distinct cultural difference that allowed many Black children to be highly adaptable. Boykin coined the energy, movement, and expressiveness of Black culture as "verve" (Boykin, 1978). For the sake of the following study, this paper will define two dimensions of verve, where 'personal verve' is a student's receptiveness to high levels of stimulation and 'conditional verve' is an environment's or lesson activity's level of multisensory stimulation and integration of movement, variation, communalism, music, and expression.

While the home environment of many Black students was found to be higher in conditional verve than the school environment, the low verve of White middle class homes aligned with the conditional verve of traditional classrooms (Boykin, 1978). Boykin observed

that the typical school environment prefers students to be passive and quiet, while the home life for Black students requires a high capacity for adaptivity due to rapidly changing stimuli. He pointed to the possibility that Black students may be bored and less motivated in traditional low verve educational environments due to a lack of stimulation (Boykin, 1978). Furthermore, the consistency between White students' upbringing and the typical classroom gives White students the advantage of pedagogies closely tailored to their learning needs based on their cultural context.

Further research (Carter et. al, 2008) supports Boykin's theory that high personal verve levels play a role in the learning processes for Black students. Carter et. al (2008) tested White and Black junior high students. After being measured for their personal verve, the participants took a standardized test for reading and math. Black participants scored higher in verve than White participants. Furthermore, participants with high verve performed worse on the math and reading tasks than participants with low verve, although it was not statistically significant. High personal verve had a greater negative impact on math compared to reading assessments. The researchers suggest that this could be due to the low conditional verve with which math is taught compared to the more expressive, discussion based, and creative methods used for teaching reading (Carter et. al, 2008). This study provides evidence for the disadvantage high verve students, typically Black students, are at in America's traditionally under-stimulating education system.

Further studies show the educational benefits of high verve learning conditions for Black students, which consist of high levels of stimulation through variation, movement, communalistic features, and music (Allen & Boykin, 1991; Boykin & Allen, 1988; Boykin & Toms, 1985; Hurley et al., 2005). However, it should be noted that not all Black children are

aided with high verve conditions, and some White students show improvement in high verve conditions, though not as significantly as for many Black students (Boykin, 1978). The findings of Boykin et. al (2010) indicate that such variance may be due to the interaction of race and economic status. Boykin et. al (2010) measured home stimulation level and explored the performance of White and Black middle and working-class children. After either a varied or non-varied presentation, participants completed a task. Black children, particularly those from working-class families showed the highest levels of stimulation at home. In terms of performance, both White and Black participants from all economic classes improved if assigned to the varied condition compared to non-varied condition with the exception of middle-class Black participants who scored similarly regardless of variation (Boykin et. al, 2010). Such results imply that high verve conditions could be beneficial to more students than Black children alone. Furthermore, the significant increase in scores due to high verve conditions may not apply to all Black students, as personal verve may vary based on the interaction between economic status and race. Although, a multitude of research indicates that high verve conditions significantly improve learning for many Black students (Allen & Boykin, 1991; Boykin & Allen, 1988; Boykin & Toms, 1985; Hurley et al., 2005).

Past research by Boykin (Allen & Boykin, 1991; Boykin & Allen, 1988) examined the positive effects of movement and music on Black students' learning, two aspects of a high verve environment. Boykin & Allen (1988) examined the performance of elementary school children in a paired-picture association task. They compared the recall ability of participants after either a high or low verve condition. The high verve condition played rhythmic music and allowed children to move or dance during the activity while the low verve condition did not. The children recalled the paired pictures at higher rates after the music and movement condition, particularly

the youngest participants in this condition who were from homes with high stimulation levels (Boykin & Allen, 1988). Thus, the opportunity for rhythmic motion and auditory stimulation improved the learning condition for Black children, particularly for those from home environments higher in verve.

Similar methods were used by Allen and Boykin (1991), who compared the effect of music and movement on paired picture recall between Black and White low-income children. One learning condition allowed for movement and played music while the other condition played no music and allowed for little movement by the participant. During the assessment for paired-picture recall, participants either heard music or did not. Results indicated that Black participants performed better after the music and movement condition than after the condition where such aspects were absent. Conversely, the White participants performed best after the condition with little movement and no music. For assessment conditions, only the Black participants had optimal performance while music was playing (Allen & Boykin, 1991). Such results indicate that the enhancing effects of music and movement on learning and testing for Black students are greater than for White students.

Boykin recognized a fundamental part of learning as motivation to engage with material, and in 2001 he conducted a study (Bailey & Boykin, 2001) to monitor verve's effects on motivation. Participants were Black, low-income elementary school students. Spelling, vocabulary, math, and picture-sequencing tasks were administered in both a high variability and low variability condition. Variability in the environment and with material had been determined by Boykin to be an aspect of high conditional verve (Boykin, 1978). The participants' motivation to complete the task was measured in both conditions (Bailey & Boykin, 2001). The results showed that the higher variability condition leads to greater motivation levels and better

performance than the low variability condition. While these results are beneficial for increasing motivation for Black students in normal classroom settings, their implications are not positive for high verve students' motivation during remote learning. Children with high verve and a resultant need for more stimulating lessons could be at a greater risk of losing motivation and focus in online school than those with low personal verve. High verve students may be the children turning their cameras off during class, as previously discussed, in order to engage with more intriguing things happening around them.

Additional research on a feature of high verve environments, specifically cultural context, was performed by Hurley et al. (2005) The study tested Black elementary school students on a math estimation task. Participants studied for the assessment in one of two conditions: one high in communalism and one low in communalism. The high-communal condition put students in groups of 3 at one table where they were read a script emphasizing their group identity before communicating with each other to learn the material. The low-communal condition put each student at their own desk to study the material alone. The students in the high-communal condition performed better on the posttest than those in the low-communal condition (Hurley et al., 2005). The results importantly emphasized the value of considering cultural context in education by showing that Black cultural norms of communalism aided in Black students' learning and test performance. Specifically, in-person group work is a critical part of learning for Black students.

Similarly, Boykin & Toms (1985) found that Black students tend to focus more on people rather than things, use hand gestures and movement to communicate, and are more proficient in nonverbal communication than verbal in the classroom. These characteristics of communal learning are potentially jeopardized by remote teaching as interacting with other people using

visual cues and movement can be challenging to achieve while sitting at a computer with the camera showing only the top half of each person, if the camera is on at all. The lack of in-person student interaction and collaboration could put students from culturally communalistic backgrounds (e.g. Latinx and Black) at a greater disadvantage if communal aspects of verve are not incorporated. Online lessons should encourage group work, movement, and include variability and rhythmic auditory stimulation in order to prevent high verve students from losing motivation. Furthermore, throughout Boykin's research he found that high verve conditions can provide a level of improved learning for students from other racial backgrounds, although not as significantly as for Black students (Boykin, 1987). The following will explore the neuropsychology behind improved engagement and focus in conditions that stimulate multiple senses, as is typical of high verve environments.

The Neuropsychology Behind High Verve Learning Conditions

Sociocultural research in psychology has been discussed to describe variations in students' ability to focus on information due to personal verve and conditional verve. The theory that a high verve condition, which involves variation and rhythmic auditory stimulation, can improve learning is supported by neuropsychological data as well, although research has not been done to show significantly greater improvement in learning for Black students.

Multisensory stimulation and variation have been shown to affect aspects of learning including attention, perception and representation. Researchers such as Shams & Seits (2008) theorize that utilizing multisensory information is a natural process throughout human development that causes and synthesizes activity in particular brain areas. Sensory input is processed and integrated in brain regions such as the brain stem and cortical areas to provide more comprehensive perception. For example, humans use auditory and visual information to create an

awareness of objects around them, including an object's distance, speed, and size. Thus, multi-sensory training protocols are optimal for learning as they simulate the natural environment (Shams & Seits, 2008). Such research implies that there is greater engagement and holistic understanding of material with the stimulation of multiple senses. The following discussion will display the neuropsychological reasoning behind the benefits of multisensory stimulation, specifically rhythmic auditory stimulation, and variation in stimuli (employed in high verve conditions) in the learning process based on one's ability to bind sensory information.

At the basic level of information processing, research supports the theory that multisensory nodes, or specialized collections of neurons in the brain, are activated in order to bind sensory information for holistic perceptions of stimuli. Raji et al. (2000) test the audiovisual processing integration in the brain, or binding, using a Roman letter identification task. Adult participants were asked to identify the letter on the screen in three conditions: matched visual and auditory letters, mismatched auditory and visual letters, and meaningless random auditory and visual information for the control. Results showed that the mismatched letters were unhelpful to the participants' reaction times, while the matched audiovisual condition produced faster reaction times than predicted for singular auditory or visual stimuli. The researchers found their results to support the theory that multisensory nodes are activated in order to bind sensory information for holistic perceptions (Raji et. al, 2000). Integration of audiovisual information occurred in brain areas other than sensory-specific auditory and visual cortices, thus the multisensory nodes in sensory-specific areas must have communicated (Raji et. al, 2000). This study displays the natural process of sensory processing integration in the brain, otherwise called binding. When one is presented with new material, they are prepared to engage multiple senses. The results of this study imply that matched auditory and visual stimulation are optimal for

learning, and thus variation in lesson activities should not be differentiated between auditory and visual information but should instead be more holistic variation.

One example of research on providing a successful level of variation for learning is seen in Lavan et al. (2019), in which participants were able to develop a greater storage of facial representations when the faces were presented with variation. In Experiment 1, children learned to recognize a person's face more quickly when shown multiple videos of the person in which only the filming conditions and person's appearance varied compared to videos in which those factors did not vary (Lavan et. al, 2019). Such results show that with a certain kind of variability in material presentation, children are able to learn more effectively in high verve conditions.

Further research has found a correlation between a student's ability to bind sensory information and their performance in noisy environments, or high verve conditions. Barutchu et. al (2011) found that reliable and persistent multisensory stimulation in quiet and noisy settings correlate with optimal development of general intellectual abilities. Barutchu et al. (2011) investigated the correlation of multisensory integration abilities with elementary school aged students' performance on the Full-Scale IQ test using an audiovisual detection paradigm. They found that children with enhanced multisensory integration abilities in both quiet and noisy settings were likely to have an above average IQ score. Children with such enhanced multisensory integration could have adapted to high stimulation in the home environment, making them more receptive to high verve conditions. High personal verve could have resulted from such conditioning, leading these children to perform better than other students during multisensory stimulation in a condition with background noise.

The effects of rhythmic auditory stimulation on learning have been studied further by Tamminen et. al (2015). Tamminen et. al (2015) tested the ability of participants to learn new

vocabulary words when the words were presented as sung versus when they were spoken. Free recall and recognition memory tests showed no benefit of sung words compared to spoken. However, mental representations pertaining to the lexical properties of the words were more strongly integrated in the brain after the sung condition than spoken when the words were sung to a familiar tune. Thus, melodic presentation of new vocabulary is helpful for mental lexical representations (Tamminen et. al, 2015). These results suggest that rhythmic auditory stimulation, characteristic of high verve conditions, are helpful for learning beyond the function of long-term memory. Such research lends insight into why musical conditions were optimal for recall in Boykin's research (Allen & Boykin, 1991; Boykin & Allen, 1988). Rhythmic auditory stimulation must be incorporated in a particular way to affect long and short-term memory compared to methods for improving lexical representations.

Further research (Garcia et. al, 2019) has explored the benefits of binding of sensory information in students with academic difficulties in addition to neurotypical students. Garcia et. al, (2019) investigated the general cross-modal binding abilities in children with reading difficulties. The control group performed significantly better than those with reading difficulties, suggesting that having such difficulties correlates with having weaker cross-modal binding abilities which are beneficial to neurotypical students (Garcia et. al, 2019). In order to account for the cognitive context of a student with reading difficulties, perhaps the implementation of other forms of sensory information in addition to auditory and visual exposure could lead to improved learning in children with reading disabilities. In order for children with reading difficulties to make phonological associations, they may need to have interactions with the material using methods such as tactile interaction with letters and words. Tracing a letter or drawing it in paint in addition to hearing its pronunciation and simultaneously viewing a visual

model of the letter would allow for three modes of sensory input. This would increase the chances of cross-modal binding as there would be more potential for interaction between multisensory nodes in the brain than offered by visual and auditory exposure alone. This would be an example of higher verve tasks aiding students with cognitive differences.

Considering the Student's Context: Aligning the Verve of Remote Lessons with Students' Personal Verve

High verve conditions, which typically consist of high levels of stimulation, are theorized in this paper to be beneficial for all students' learning, but especially for students with high personal verve. As previously discussed, high personal verve is largely determined by the child's upbringing based on culture and the home environment. Thus, in order to create pedagogies that are engaging and effective for all students, the context of the child must be taken into account (e.g. personal verve, culture). Traditional education has failed to account for this due to its roots in Western measures of intelligence and teaching methods based upon scientists such as Swiss developmental psychologist Jean Piaget. Piaget described children as independently acquiring new knowledge throughout four stages of cognitive development. However, Piaget failed to account for differences in culture when developing the tasks that would define his developmental stages (Kozulin et al., 2003). New pedagogies should be developed by studying the child in context, as proposed on a basic level by the Soviet psychologist Lev Vygotsky, who acknowledges the role of socialization in cognitive development. Vygotsky proposed that children require mediation symbols such as psychological tools in order to develop higher mental capacities (Kozulin et al., 2003).

Psychological tools include signs, symbols, texts, formulae, graphics, and more that children automatically internalize to operate within their everyday life (Kozulin et al., 2003). The

appropriation of these mediations into learning tools depends on the importance the teacher, parents, and ultimately the student associates with the tools. Thus, psychological tools are dependent upon the culture a child grows up in. As they guide perception, memory, and attention, the cultures behind students' psychological tools are critical for education (Kozulin et al., 2003).

American psychologists have echoed Vygotsky's learning theories in an effort to account for culture in education. In a presidential address presented to the American Psychological Association, Dr. Remmers describes the effects of race, religious beliefs, parental education, and socioeconomic status on one's attitudes and learning styles (Remmers, 1953). Dr. Remmers concludes that learning should be researched by recognizing such contexts as culture and race of participants (Remmers, 1953). More recently, following the onset of COVID-19 and the transition to online learning, educators have called upon teachers to consider the student's context. When designing learning activities, Rapanta et al. (2020) instructs teachers to consider the context of the learner's goals, the tools and resources available to the learner, concrete tasks (e.g. group work), and the interaction between these three factors. This paper designates personal verve as a critical feature of a student's context and a mediator in the use of Vygotsky's psychological tools. Moreover, this study will be performed in an effort to provide research which education systems can include in consideration of students' personal verve context.

In order to account for students who require high verve lessons due to high personal verve, Boykin suggests incorporating aspects of the child's culture in the lesson. For Black students, Boykin advises teachers use encouraging repetitive gestures of encouragement, communicate with rhythmic tones and language, use call and response, enact variations in the pace of a lesson, provide opportunities for engagement of student's emotions and creativity, use

figurative or symbolic language and catchy phrases, include body movement, and encourage lively discussion with student participation (Carter et. al, 2008). High verve lessons should consist of varied, multisensory stimulating activities that incorporate group work, self-expression, movement, symbolism, and more. The purpose of the following study is to adapt such tactics to remote teaching in order to enhance engagement, motivation, and academic performance for students during emergency remote learning.

Study Overview

This study will compare the effectiveness of high and low verve remote lessons on academic performance, motivation and engagement in 9th graders from a high school with a predominantly Black, Latinx, and White student body. Participants will complete a pretest on SAT words before being randomly assigned to a high verve or low verve lesson activity for learning the SAT words. After finishing their activity, participants will complete the posttest. Then they will be measured for their personal verve before completing demographic questions. Finally, they will describe their experience in the study, including their motivation and engagement in the task.

Due to research (Carter et. al; 2008, Hurley et. al, 2005) indicating communal cultures have higher verve than individualistic cultures, it's hypothesized that there will be a significant difference in personal verve scores such that Black and Latinx students have a higher personal verve score than White students. Based on neuropsychological evidence on multisensory integration's correlation with optimal learning (Barutchu et. al, 2011; Lavan et. al, 2019) and Boykin's (2001) findings that high verve conditions slightly improve all students' learning, it is predicted that there will be a main effect of lesson type on performance such that all students will have improved performance after the high verve lesson compared to the low verve lesson.

Because of research indicating performance depends on the conditional verve of an activity (Bailey & Boykin, 2001; Hurley et. al, 2005), there will be no main effect of personal verve on performance. Due to further evidence for the significant improvement in academic performance for high verve students in high verve conditions (Bailey & Boykin, 2001; Hurley et. al, 2005), it is hypothesized that there will be an interaction between personal verve and lesson type such that there will be significantly greater improvement for high verve participants after high verve lessons compared to other participants' improvement after high verve lessons. Conversely, low verve participants will have greater improvement than high verve students after the low verve lesson activities.

The last set of hypotheses predict a similar pattern of effects for lesson type and personal verve on both the participant's motivation and engagement scores. Neuropsychological research (Barutchu et. al, 2011; Raji et. al, 2000; Shams & Seitz, 2008) implying the beneficial effects of multisensory stimulation and variation on engagement and performance imply similar effects on motivation. As a result, it predicted that there will be a main effect of lesson type on motivation such that all participants in the high verve lesson will have greater motivation scores than those in the low verve lesson. Because of psychological research indicating that the effect of a condition's verve level on motivation is dependent upon participants' personal verve (Bailey & Boykin, 2001), it is further hypothesized that there will not be a main effect of personal verve on motivation scores as the effect will be dependent upon lesson activity. Thus, it is predicted that there will be an interaction between personal verve and lesson type such that high verve students score higher on the motivation subscale if placed in the high verve lesson activity compared to the low verve lesson activity. In contrast, low verve participants will not have a significant difference in motivation scores between high and low verve lessons. Due to the correlation

between motivation and engagement, similar hypotheses are predicted for participant engagement scores based on personal verve and lesson type.

Proposed Method

Participants

Students in their first year at Pasadena High School (PHS) will be asked to complete the survey. PHS is a public school in Southern California with about 1800 students, with 83% minority enrollment as of 2018 (Public School Review, n.d.). The student body is 6% Asian, 61% Hispanic, 12% Black, 17% White, 0.4% Pacific Islander, 0.2% Native American, and 4% multiracial. The school is about 50% female. 9th graders tend to be in the age range of 13-15 years old. There are exactly 200 students enrolled in the 9th grade PE classes which will be recruited through an email sent to each student describing the study. An a priori power analysis was conducted using G*power to determine an appropriate sample size for this study. A medium effect size was used based on prior research (e.g., Hurley et. al, 2005). Assuming $\alpha = 0.05$, the desired power = .8 and the design is 2 x 2 between participants groups, the analysis indicated 132 participants are required for the study. Realistically there will be around 150 students willing to participate, with about equal numbers boys and girls. The majority of participants are expected to be monoracial from Hispanic, Black, or White backgrounds based on student body demographics. A small percentage are expected to be Asian, Native American, or multiracial.

Materials

Vocabulary Assessment

There will be a pretest and a posttest to assess knowledge of 15 Scholastic Assessment Test (SAT) vocabulary words. The tests will be multiple choice and timed at 10 minutes. They will ask students to choose the answer that uses the vocabulary word in the sentence correctly out

of three choices. This form of assessment requires students to truly understand the semantic meaning of the word and prevents them from relying on rote memorization of a given definition. The pretest and posttest will use different sentences in order to prevent students from achieving any improvement due to familiarity with the sentences in the posttest.

High and Low Verve Lesson Activities

Participants will be randomly assigned to a high verve or low verve lesson. As previously discussed, high verve conditions include such methods as self-expression, movement, variation, communalism, symbolism, and multisensory engagement (Carter et. al, 2008; Hurley et. al, 2005). Conversely, low verve conditions are traditionally based on individual, quiet and focused work in the classroom. In this study, both types of lessons will be limited to 12 minutes of active engagement by the participant in order to learn 15 vocabulary words. The high verve lesson will consist of three activities that must each be attempted but can be switched between freely. Participants are allowed to complete the lesson while moving their body if wanted, such as pacing while thinking or standing up. One activity in the lesson will be visually stimulating and uses symbolism, requiring that students draw the meaning of each word on a piece of paper. A second activity will include rhythmic auditory stimulation and self-expression by instructing students to write lyrics that properly integrate any number of the vocabulary words. They will record themselves singing, rapping, or reciting the lines. Background music is not required but is permitted. The third activity involves participants imagining that they are teaching the word definitions to a chosen friend of theirs. They will record their hypothetical lesson, engaging a slight communal aspect typical of high verve conditions which can be replicated in online classes using live video conferencing. At the end of the online study, participants will take a picture of

their drawing and submit it, submit the recording of the song and a picture of the lyrics, as well as the recording where they explain the vocabulary word.

The low verve condition will be based on traditional vocabulary lessons. It requires the students to follow a link in Qualtrics to a premade Quizlet with the 15 vocabulary words. Quizlet is an app typically used by students to study definitions using digitalized flash cards. Each vocabulary word will be shown on the front of the digital card with its definition on the back. For the first six minutes, participants will be instructed to go through the flash cards by reading them aloud or silently. For the last six minutes they will be instructed to copy the words' definitions down onto a piece of paper with pencil. Participants will be instructed to sit and not move more than necessary for this lesson.

Personal Verve

The Child Activity Questionnaire was created by Boykin (1983) to measure the personal verve of children. This measure is composed of 20 questions and completed using 5-point Likert scale items, 1- *never*, 5 - *always* (Carter et. al, 2008). An average of all the responses represents personal verve level, with a score of 3 or higher showing high verve, and a 1 or 2 showing low verve (Carter et. al, 35). Original questions include items such as “How often do you move your body when you talk?” and “How often do you prefer to sing aloud to music rather than sit and listen quietly?” Six questions were added in order to ask specifically about condition preferences for completing schoolwork and to account for new research (Carter et. al, 2008; Hurley et. al, 2005) on the importance of variability and communalism in high verve tasks. Items such as “How often do you prefer group work over individual work when completing a task?” and “How often do you prefer to switch between multiple tasks instead of completing one task at a time?” were added. The complete measure can be found in Appendix A. Congruent with the original

questionnaire model, an answer of 5 (always) on these items is indicative of high verve, and 1 (never) shows low verve. Carter et. al (2008) utilized the original scale and found it to have acceptable reliability by calculating Cronbach's alpha to be 0.75. There is also adequate face validity for the adapted version of the CAQ.

Motivation and Engagement

The Motivation and Engagement Questionnaire consists of 2 subscales measuring motivation and engagement, where motivation pertains to willingness to perform the activity and engagement is enjoyment of the activity in the moment. The Engagement subscale includes three questions that ask how much the participant enjoyed the lesson activity, how focused they felt while doing the lesson, and how bored they felt while completing the activity. The Motivation subscale consists of three questions that ask how much the participant wanted to stop doing the lesson activity, how much they would want to repeat the activity with the same words, and how much they would want to learn more SAT words with the same lesson activity for a class. The complete Engagement and Motivation measures can be found in Appendix B.

All questions will be measured on a 5-point Likert scale (1 - *not at all*, 5 - *a lot*). An average score will be calculated for each subscale. An average score of 4 or 5 shows high levels of motivation and engagement in the activity, 3 shows adequate, and 2 or 1 shows low levels of motivation and engagement. This questionnaire has adequate face validity for measuring motivation and engagement. Content validity of the measures is adequate as the six questions cover many aspects of engagement and general motivation. The reliability of the measures will be examined after data collection.

Manipulation Check

After the posttest, participants will be asked an open-ended question in which they describe their lesson activity in two sentences. These descriptions will be read in order to ensure that participants understood the instructions of their assigned lesson. A second question will ask how stimulated the participant felt on a 5-point Likert scale (1- *not at all*, 5- *extremely*). Answers will be reviewed to ensure that the high verve condition was more stimulating than the low verve condition.

Procedure

Upon attaining parental consent and child assent, the participants will complete the entire study online using Qualtrics during their PE class. Qualtrics is software for the creation of detailed surveys which can be used for online research. Participants will be instructed to complete the study alone in a room at home. The study can be completed on a smart phone or a computer. A timed pretest will be administered first. Then, participants will be randomly assigned to a high verve remote lesson or a low verve remote lesson. After 12 minutes, participants will be instructed to stop the activity and complete the posttest.

Participants will then complete the personal verve measure. Finally, participants will complete the engagement and motivation measure, demographic questions on race and gender, and the manipulation check questions. They will be asked to upload recordings and pictures from their lesson activity before being debriefed and thanked.

Ethics

In any research, the benefits of the study and risks for participants must be weighed. Participants of this study will be minors in the age range of 13 to 15 years old. Because minors are considered a vulnerable group, informed parental consent will be obtained in addition to the participant's assent. Both will be informed by a short description of the study and the level of

risk involved. Despite the vulnerability of minors, this age group is necessary as my study explores the benefits of high verve remote teaching on young students' learning abilities. The benefits of the study include potentially increased academic engagement and performance for struggling students, and possibly the prevention of the widening of the achievement gap due to emergency remote learning.

The risk to participants is minimal as the study does not ask students to put themselves at any greater risk than everyday life. Possible psychological distress as a result of this study could include momentary stress due to taking an SAT vocabulary assessment. However, any stress would most likely end after the posttest is taken, as performance has no consequence on the participant's actual SAT score, or any other test grade. In terms of privacy, there is no risk that the participant's identity will be exposed. In order to ensure that the data collected remains anonymous, no sensitive information will be requested, participants will not be identified by name, and IP addresses will not be collected. While the high verve condition requires students to turn in documentation of their recited lyrics and hypothetical teaching session, participants will be instructed to record themselves auditorily without cameras to ensure the protection of their identity, the privacy of their home, and the privacy of their family who may walk into the room during the study.

In addition, it will be voluntary to participate in this study and participants will be given ample information about the study method. A description of the study will be sent to students in the 9th grade PE class at PHS through email. The email will inform students that participation is optional, that completing the study during class time will not affect the participant's grade in the class, and that they will be allowed ample time to finish the study within the class period. At the end of the study participants will be debriefed on the study method and purpose. In order to make

sure participants understood what they were asked to do in the study, questions about the lesson activity and stimulation level will be asked as manipulation checks. Additionally, there will be no added stress of deception, as this study does not require participants to be deceived in any way. Should the study trigger psychological distress, though this is highly unlikely to occur, the participant will be provided with information about their school's mental health resources at the end of the study. Therefore, the risk of participation is minimal and is outweighed by the amount of knowledge to be gained for optimal remote learning.

Predicted Results

It was hypothesized that personal verve will vary by race, such that Black and Latinx students will be more likely to have high personal verve scores than White students. A simple analysis of variance (ANOVA) with post-hoc test will be conducted. The results will likely show higher personal verve scores for Black participants, as Boykin found that Black children have a higher verve than White families, associated with an energy, communalism, and expressiveness, and movement unique to Black culture (Allen & Boykin, 1991; Boykin, 1978). Subsequent studies have found Black students to be the highest in personal verve (Carter et. al, 2008). Latinx students are expected to have high verve levels similar to Black students due to Latinx cultural values of communalism and expressiveness. In comparison, White students are expected to have lower verve levels than Black and Latinx students due to research (Boykin, 1978; Carter et. al, 2008) showing that White homes tend be quieter environments with less movement, creating low verve levels.

In the following hypotheses and tests, personal verve will be used as an independent variable rather than race. As previously discussed, personal verve is due mainly to cultural

upbringing. While personal verve is correlated strongly with race, personal verve is distinct from race. Because of this, further tests will be conducted with personal verve.

Additionally, the dependent variable in the second set of hypotheses will be the improvement in performance between the pretest and the posttest.

The second set of hypotheses predicted that there will be a main effect of lesson type on performance such that all students have improved performance during high verve lessons compared to low verve lessons. Neuropsychological research has found optimal learning occurs when multiple senses are engaged and variation is used, as in a high verve condition (Barutchu et. al, 2011, Shams & Seitz, 2008;). Additionally, there will be no main effect of personal verve on performance because performance depends on the lesson type. There will be an interaction of personal verve and lesson activity on vocabulary improvement such that the high verve participants will have greater improvement after high verve lesson activities than the low verve participants. By contrast, low verve students will have greater improvement than high verve students after the low verve lesson activities. An ANCOVA test with covariate interaction will be run to test how the interaction between personal verve and lesson activity impacts improvement on the vocabulary assessment. Because of the correlation between race and personal verve, and the lack of research explicitly on personal verve, predicted results are based on research utilizing race as the participant variable. Specifically, results are predicted to support the hypotheses due to research (Carter et. al, 2008; Hurley et. al, 2005) implying students with high personal verve have significantly greater academic improvement in high verve conditions in comparison to students with low personal verve. Conversely, research implies that students with low verve perform better in low verve conditions compared to students with high personal verve (Carter et. al, 2008).

The third set of hypotheses predicted that there will be a main effect of lesson activity on motivation scores such that all participants in the high verve lesson activity will have higher motivation scores compared to participants in the low verve lesson activity. Research shows that higher variability in activities, a facet of high verve conditions, leads to greater motivation and performance levels compared to low variability activities (Bailey & Boykin, 2001; Garcia et. al, 2019). Due to such research showing the effects of a condition's verve level on motivation is dependent upon participants' personal verve (Bailey & Boykin, 2001; Garcia et. al, 2019), it is further hypothesized that there will not be a main effect of personal verve on motivation scores as the effect will be dependent upon lesson activity. Because students tend to be more motivated in activities aligned with their personal verve level, high verve students may be more motivated when placed in a high verve condition, while low-verve students tend to be only slightly more motivated in high-verve situations (Bailey & Boykin, 2001; Garcia et. al, 2019). As a result of such research, it was hypothesized that there will be an interaction between personal verve and lesson activity such that high verve participants score significantly higher on the Motivation Scale if assigned to the high verve lesson activity compared to the low verve lesson activity, while low verve participants will not have significantly different scores between high and low verve lesson activities. An ANCOVA test with covariate interaction will be conducted, followed by simple effects to determine the direction of any patterns.

The fourth set of hypotheses predict similar patterns for engagement scores based on personal verve and lesson activity as for motivation scores and will be tested with the same analyses. Due to the correlation between engagement and motivation, the pattern of scores for each should be similar. Research previously discussed on motivation implies the engagement of low-verve students increases in high verve conditions but not as significantly as for high-verve

students, while low verve students show greater engagement than high verve students in low verve settings (Bailey & Boykin, 2001), supporting the predicted results for the interaction of personal verve and lesson type on engagement scores. Generally, results are predicted to show higher engagement scores for all participants assigned to the high verve lesson due to research on multisensory stimulation increasing engagement and directing focus (Rajj et. al, 2000; Shams & Seitz, 2008). Participants have been found to be more engaged in multisensory tasks than ones that stimulate one or two senses (Barutchu et. al, 2011). Such research indicates that the effect of personal verve on engagement score would be affected by the lesson type, thereby supporting the prediction that there will be no main effect of personal verve on engagement score as the score would be dependent upon lesson type.

Discussion

A student's personal verve is defined as their ability to adapt to and concentrate in environments with high levels of stimulation (Boykin, 1978). Boykin discerned verve levels in Black communities as being higher than White communities (Boykin, 1978). As a result, Black students tend to learn best in high verve learning conditions, which incorporate aspects of their culture like group work, varied activities, movement and noise, as opposed to traditional low verve conditions which consist of sitting quietly at a desk during lectures (Boykin, 1978). Conversely, White students tend to have low personal verve and thus excel in low verve academic environments (Carter et. al, 2008). The prevalence of low verve pedagogies in Western education has contributed significantly to the achievement gap between Black and White students in America (Boykin, 1978). In order to prevent the achievement gap from widening during emergency remote learning due to lack of engagement from predominantly high-verve students, schools should incorporate high verve lesson plans into their curriculum. Because the

wealth gap is already a threat to student learning as it demands they have the resources necessary to learn at home, such as a computer, it becomes increasingly more important that academic material does not put students at a further disadvantage by not accommodating all learning styles.

Main results of this study are predicted to display improved performance on the SAT vocabulary assessments in all participants assigned to the high verve condition compared to those assigned to low verve condition, with a significantly greater improvement for high-verve participants in the high verve condition. Additionally, results are predicted to show higher Motivation and Engagement scores in all participants assigned to high verve conditions compared to low verve conditions, with significantly higher scores for high-verve participants assigned to the high verve conditions. Because of the correlation between race and personal verve, the results are predicted to indicate that high verve lesson activities are optimal for Black and Latinx students and can significantly improve academic performance.

Limitations to this study are derived from the inability to perform it in person and thus ensure that participants are following instructions correctly due to COVID-19. Additionally, the study will not be performed over a real-time online platform with a live camera or microphone in order to prevent participants from feeling self-conscious while performing the lesson activity. This could damage their performance and skew the results. Because the study will be conducted unsupervised, there is the possibility that participants could cheat on the pretest and posttest by Googling the vocabulary words. However, the tests are designed to require an understanding of how to use the words in context, making it more difficult to cheat. It is also possible that students in the low-verve assignment did not go through the Quizlet flashcards for the entire duration of

time instructed to. This would make their lesson time shorter than the high verve condition and could skew their performance and motivation and engagement scores.

Furthermore, it is a consistent challenge to conduct research examining the effects of race of participants due to the mixing of cultures and races. The beautiful complexity of families in our society makes it impossible to measure every participant as strictly monoracial and obtain a sample that accurately represents the American population. Thus, a limitation to this study is that it will not study multiracial participants specifically by separating them into distinct categories composed of particular racial combinations. Rather, the multiracial participants will be put into one multiracial category. Consequently, results for this category will pertain to all participants who are of more than one race, and not to participants with a particular combination of racial backgrounds. This will be done so that the hypothesized patterns of high and low personal verve associated with monoracial Black and White children are not generalized to mixed children. The optimal learning conditions for mixed children most likely vary as their home environment is not predictable from research by Boykin on monoracial homes.

An additional limitation is the lack of data collection for participants' economic status. The intersection of class and race could have a significant effect on personal verve. A lower-class White family could potentially have higher levels of stimulation in the household due to more cramped living arrangements than an upper middle-class Black family where each person has their own room. As the home condition affects the personal verve of children, said White child may have higher personal verve levels than the Black child. Future research should explore the interaction between economic status and race on personal verve levels.

Therefore, future research with the interested of developing pedagogies that account for student verve should recognize the complexity of race and economic status and variance in

personal verve in multiracial children. Such research should be applied to developing both remote and in-person lesson strategies. In-person high verve lessons are necessary in the few classrooms currently operating during the pandemic and should be adapted for socially distanced activities.

Future research concerning the neuropsychology of verve should study the relationship between multisensory integration processing in children and personal verve. As previously discussed, Barutchu et. al (2011) found that children with enhanced multisensory integration abilities were more likely to have an above average IQ score when assessed in both quiet and noisy environments. Such processing abilities could be correlated with high personal verve and the result of high stimulation at home. Future research on this topic could lead to a better understanding of how to improve the learning process utilizing multisensory stimulation for high verve kids, as well as the best methods for administering standardized tests (i.e. noisy or quiet setting).

This study was done to seek the optimal educational style for kids with high personal verve, which is commonly seen in Black children. Such research is necessary for maintaining engagement from high verve students during emergency remote learning. The verve level of the lessons should align with students' personal verve in order to engage and motivate them to maintain attention while taking classes at home. Main findings are predicted to show that the high verve lesson activity was optimal for improving performance, motivation, and engagement for all participants, but significantly more so for high verve participants. Such findings can be utilized to develop holistic pedagogies for remote and in-person learning that recognize the variance in personal verve levels, possibly combatting the achievement gap between White and Black students in America. It is crucial during this time of world-wide death and suffering that

we protect one another from the threats of systemic racism, if not for moral reasons than for the survival of the human race.

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Appendix A

Personal Verve Measure

- 1 = Never
- 2 = Rarely
- 3 = Sometimes
- 4 = Often
- 5 = Always

1. How often do you prefer for your body to be moving?
2. How often do you feel that a party must have music or it's not really a party?
3. How often do you need music in your life?
4. How often do you move your body when you talk?
5. How often does good music put you in a good mood?
6. How often do you feel that one should not sit still when he or she is listening to music?
7. How often are drum beats essential for enjoyable music?
8. How often are there many ways that you move your body at once?
9. How often do you move while watching TV?
10. How often do you feel happier when music is on?
11. How often do you like to clap and tap your feet when music is on?
12. How often do you have to dance when you listen to music?
13. How often do you prefer to sing aloud to music rather than sit and listen quietly?
14. How often do you use your hands and body when you speak?
15. How often do you prefer group work over individual work when completing any task?
16. How often do you prefer to work on multiple tasks simultaneously instead of one task at a time?
17. How often do you prefer to do homework in a place with background noise instead of in a silent place?
18. How often do you move your body more than what's necessary to complete the assignment while doing your homework?
19. How often do you prefer to homework with other students instead of on your own?
20. How often do you listen to music while doing homework?

Appendix B

Engagement and Motivation Questionnaire

Engagement Subscale

- 1 = Not at all
- 2 = A little
- 3 = Somewhat
- 4 = Very much
- 5 = A lot

1. How much did you enjoy the lesson activities?
2. How focused did you feel while doing the lesson activities?
3. How bored did you feel while completing the lesson activities?*

*The last item will be reverse coded.

Motivation Subscale

- 1 = Not at all
- 2 = A little
- 3 = Somewhat
- 4 = Very much
- 5 = A lot

1. How much did you want to stop doing the lesson activities?*
2. How much would you want to repeat the activity with the same vocabulary words?
3. How much would you want to learn new vocabulary words using the same lesson activities for class?

*The first item will be reverse coded.

