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A Study of Stimulating Versus Non-Stimulating Visuals in a Preschool Classroom

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### **Abstract**

This was a qualitative research study with the purpose of examining characteristic and/or behavior changes in children ages two and a half to four based on stimulating and non-stimulating room décor. The data in this study was collected while observing twelve children at the Kiddie Kampus Daycare in Collegedale, Tennessee. Changes in mannerisms, behavior, character traits, and attention span were logged first in the typical, non-stimulating room, and then logged again using the same twelve children, in the same room, during another week of observation after the addition of visually stimulating decorations. Most children exhibited clear reactions to the visual stimuli that were added to the environment. These reactions included violence, disobedience, lack of compliance, overexcitement, refusal to participate/interact with others, irritability, difficulty focusing, decrease of ability to concentrate, and an increase in fidgeting and restless behavior.

## Introduction

With the rise in technology, overstimulation has been an increasing area of interest to both parents and teachers. Although most of the excess stimulation has occurred in the home as a result of watching too much television, sitting in front of computer screens, playing video games, or using touch screen phones and iPads, the classroom was another area of concern in the realm of children and excessive visual stimuli (Kanner, 2013). An estimated 11 million children five and under have been recorded to attend some form of regular, weekly childcare in the United States alone (Child Care Aware, 2012). Full time daycare attendants averaged about 35 hours a week in the caretaking facility; most of this time was spent in the classroom which is why this particular topic is so important (Capizzano & Main, 2005).

There have been many reactions to overstimulation. Children who experienced overstimulation exhibit symptoms like irritability, refusal to participate, over-excitement, poor eye contact, tendency to cover the ears and eyes, difficulty or inability to focus, muscle tension, fidgeting, and restlessness. However, if overstimulation continued, more serious reactions could be displayed, such as: angry outbursts, sleeplessness and fatigue (which can result in a low immune system and could lead to streams of illness), as well as both extremely high and low activity levels (Swanepoel, 2013). Due to the severity and vast range of these symptoms, a large percentage of children who exhibited combinations of these reactions have been misdiagnosed with ADD and/or ADHD. This has been known to lead to further issues because the true problem went untreated, and -in some cases- children have even been unnecessarily medicated due to the misdiagnosis (Swanepoel, 2013).

Distractions caused by an abundance of visual stimuli have resulted in serious consequences in the classroom. If students become covertly engaged with the environment

around them they could become disengaged with the instruction, lesson, and/or educational content. Brightly colored displays that were intended to praise good work, provide information, support classroom events or structure, and build a comfortable and child friendly ambiance were (in some cases) doing more harm than good. "Over-stimulating environments are not always the best and can make it very difficult for children to concentrate," said Elizabeth Jarman, a published writer in regards to teacher's guides. Classrooms that created a visual overload have been known to cause the brain to soak up the atmosphere rather than the actual knowledge (Lightfoot, 2008). The fact that students generally walked into the classroom already over stimulated meant that the classrooms visual appeal was becoming more and more important when considering themes and decorations.

### **Visual Stimulants**

For years the affect colors had on the brain and personality has astonished and amazed specialists. It has been proven that actions and emotions were directly influenced by colors, although most subjects were unaware of this while it was happening. The reported reaction experienced by the brain was involuntary and subconscious. This natural reaction has been utilized by fast food companies, advertisers, and sales people for years; however, it has also had an impact on classrooms and learning. In educational studies, the color red has been proven to have a positive effect on memory and aid focusing, but too much red caused an increase in anger, stress, and frustration. The color blue was shown to promote creativity, but also created a soothing atmosphere because it helped produce calming chemicals. Moreover, it was also found that extended exposure to blue caused an increased risk of depression. Orange (red and yellow combined) was proved to generate happiness (Effect of Different Colors, 2013).

## **Purpose**

In this research study, the connection between young children and their visual environment was studied for the purpose of deciphering the importance of visual stimulants in the classroom and the affects they had on children. This included behavioral changes as well as noticeable affects on personality traits, mannerisms, and fluctuations in responses to usual classroom activities.

## **Research Hypothesis**

Two research hypotheses will guide this study:

1. An abundance of visual stimulants in a classroom will have a strong effect on a child's behavior.
2. Certain colors will induce specific behaviors in most children
  - a. Winter board will provide calming effects on a child's behavior
  - b. Fall board will produce energy in a calming manner on a child's behavior
  - c. Chaotic board will cause disturbance and increase level on energy while also decreasing attention span.

## **Methodology**

### **Materials**

The bulk of the visually stimulating classroom additives were made specifically for this research study by the researchers. Three tri-fold poster boards were designed and put together in an attempt to provoke certain behaviors from the participants. Die cut shapes, colors, and textures were strategically used in the making of the stimuli in order to test the hypothesis.

Board one was created to visually stimulate the participants, but to also help them focus and be calm. The board itself was a deep blue- a cool color that has been thought to be calming

to most people. The design of the board was based on a winter theme and had a 3D image popping off of the surface. Large, white snowflakes cascaded across the snowy horizon, with a small, candy apple red sleigh in the background. The 3D image was a tree made out of brown construction paper that had been crinkled and hot-glued to the board. Overall this board was rather simple.

The second board was fall oriented. This board had a bright orange base color, but a green, grassy area took up the bottom region of the board in order to establish the setting of the scene. White clouds and a yellow sun were placed in the upper area of the background in order to break up some of the orange and add more images to keep the eyes moving around the landscape. There was a tree in the middle with a boy climbing the trunk, and beautiful autumn colored leaves were sprinkled all over the ground. This fall setting was organized, but brightly colored. Designed to energize the students, this board was structured to not only stimulate, but also to promote organization. With these warm colors, the students should become excited, but because the foreground was well-thought-out and ordered they should remain collected rather than get out of hand.

Board three was the chaotic board. With a main color of fluorescent pink, this item of decoration was designed to over stimulate and create an unorganized area. The scene was a mess of different shapes (cakes, cupcakes, birthday candles, animals, triangles, hearts, circles, etc.), colors (bright blue, neon green, dazzling purples, yellows and oranges), and textures (fuzzy, soft, smooth, and rough). Combinations of these were thrown onto the surface and then secured. There were also several pictures included that protruded off the board and out into the air. Random letters and words were also incorporated on the layout, even though the participants could not yet read. To add yet another layer of distraction, glitter glue in shades of green, blue,

red, and gold was used in excess on this board to further increase the stimulation and attract the attention of the participants.

In addition to the three boards, window clings, posters, and toy decorations were also used to decorate the area. These things were placed on the outer edge of the room in order to create even more visual stimulation. The items mentioned were used in addition to the décor already placed around the room. No decorations were taken down; only more visual stimuli were added in the area of the classroom space.

### **Procedure**

For this research study there was only one group observed; this consisted of twelve children (the same twelve for both sets of observations) between the ages of 2.5 and 4. Eight of the participants were male and four were female. Ethnic backgrounds included white, black, and other. The students were asked if they wanted to participate in the study and they responded by circling a “smiley face” for yes or a “sad face” for no. All children agreed to participate. The parents of the participants were notified of the study by the director of the Kiddie Kampus daycare facility, and no objections were received.

The data was collected over a two-week period based on observations; the first week was based on the children in their usual, non-stimulating, environment, and the second week was based on the children in the same environment with the addition of visually stimulating decorations. The data focused on changes in mannerisms, behavior, character traits, and attention span. This was done by placing the created stimuli around the open classroom area, but in different spots around the room, for example: reading area, block/worship area, or the general area. In order to log the results created by the different boards and to ensure the reliability in the



collected data, the boards were moved from day to day so as to compare the attitudes and behaviors of the children in correlation to the board rather than the activity.

Posters, window clings, and toy decorations were also used around the perimeter of the open area to add another layer of visual stimulus. These items were able to be seen by the students, but were not in close proximity to the children, unlike the tri-folds that were placed directly on their level and within their reach.

## **Results**

### **Data Assessing**

The first week of observations provided the groundwork for the data analysis. The purpose of observing the children in their usual environment was to set the standard of mannerisms, behavior, character traits, and attention span of the children both individually and as a class. Making notes of the students' routine and daily functions for a week in the classroom setting before adding extra visual stimulus gave the researchers the ability to compare the data they would collect during the second week.

In addition to a comparison between week one and week two, the researchers also categorized the data of each board to seek out patterns in student reaction. Since some students responded differently than others to the additional decorations, the observations of specific students were grouped together to further analyze the possible connections as to why certain behaviors were exhibited, and when or where these actions could be expected. The data set was categorized and analyzed by the two researchers independently, but because of time constraints, no feedback from experienced individuals or participants were collected.

### **Distillation of Data**

A summary of the observations for week one included a general breakdown of student behaviors. Most of the students listened well, and responded quickly and appropriately to teacher instructions. As a whole, the class functioned positively, and smoothly- with the exception of several small quarrels, and a couple more serious confrontations. Important details during week one became more obvious to the researchers after the data was collected during week two- this was because the changes were seen during the second week, and until a compare and contrast could be done between the two, the researchers did not have enough information about the children and their personalities to make any inferences. The sets of data that yielded concrete results were studied side by side and analyzed in pairs. This method of data distillation was quite effective and was the most efficient way to draw conclusions. Data collected in week two that did not have a direct comparison available from week one was analyzed in a singular fashion. The observers could discuss these findings and speculate on them, but no concrete conclusions could be drawn

### **Observations**

On the first day of week two, a Monday, it quickly became apparent that the aggression and energy level of the participants had risen in comparison to the week before. Students argued, fought over toys, refused to share, neglected to respond to teacher's directions in a timely manner, threw things, and engaged in rowdy behavior; this trend did not abate, but continued throughout the week. While these traits were somewhat typical of most children, the witnessed behaviors were much more frequent during the second week than in the first. Upon the addition of the boards into the learning area, 67% of the students ran from board to board examining the stimuli. Most of the students commented about them- they seemed very excited about the new decorations and they all felt the need to explore them. Several of the children incorporated the

boards in their play, using the items on them to inspire creative games or imaginary items that they could eat. Some of the children wanted to touch the boards and remove the cut-outs so they could be played with physically. Few students were not overly-interested in the boards, and paid little attention to them at all.

During week one, there were three main instances where moderate trouble was caused. The same child was involved with all three of these altercations; one that included tears, another where pinching and flicking took place, and the third which ended in time-out. During the second week, ten incidents were recorded involving a variety of students, but the child involved in the three scuffles during the first week was only involved in two during the second observation period. Based on the information collected concerning the class as a whole, the researchers concluded that stimuli did have an effect on the children collectively and therefore decided to look deeper into their observations to improve their understanding.

When reading through their observations, the researchers noticed that there were patterns in the behaviors that were logged. Children gathered together as a group to do worship (this took place on the floor in the block area) and different days yielded different mannerisms from the participants. On the days that the chaotic board was present, the children were unruly, loud, fidgety, and had much shorter attentions spans, if any at all. The students were caught paying more attention to the board than to the teacher or the story. Even after being instructed to leave the board alone and that it was for seeing and not touching, the notes taken revealed that students strategically waited for the teacher to turn, and then proceeded to disobey and touch the stimulus. On another day, the winter board, or calming board, was placed in this same area, and the response was different. On this day the children not only sat, but laid on the floor- they were also quieter, more polite, calm, and paid better attention.

Another example of this was recorded from the block area, but instead of during worship time, the behaviors we logged during play time. One day the winter board was placed in this area and the participants laid on the floor and calmly built a structure with the blocks. Some students did this alone and others in pairs or small groups. When asked to clean up, the children listened and responded in a timely fashion. When the winter board switched areas with the chaotic board, the block area transformed into a war zone. The kids yelled, argued, fought, knocked over each other's creations, and even threw blocks across the area.

When the fall board was placed in this same area, there was a mixed reaction from the participants. As a whole, the children got louder, but not more rowdy. There were a couple small tussles over blocks and building territory. Two children began to argue and the researcher made an interesting observation: the student who started the argument was usually one of the more relaxed, calmer students; however, the child was more firm and authoritative while in the proximity of the orange board.

The reading area was also affected by the boards. When the winter board was placed in the reading area the students were content to lie on the floor and read. They quietly found a book, either alone or with a friend, and they looked at the pictures. One student did not seem to react to this board, however. His reading habit was consistent with week one. During week one he was logged to be a very quiet student who seemed to enjoy looking at books. Nevertheless, when the winter board was removed from the area and replaced with either of the other boards his mannerisms changed. Rather than being content with one book and sitting quietly, he appeared more anxious and high-strung. He grabbed for new books often, had difficulty being still and staying focused, and even argued with other students.

While comparing data and grouping information, the researchers also found that the majority of violent behaviors and mood swings occurred in the areas that contained the chaotic board or the fall board. More flicking, pinching and spitting took place around these boards than in the areas that contained the winter board. During week one, when no boards were present, flicking, pinching, and spitting were not actions that were a normal occurrence, but after the introduction of the stimuli these mannerisms developed in not a few, but the bulk of the subjects.

In some cases, the observations illuminated the reactions of individual students. There was one student in particular who had a negative reaction to the winter board. He didn't mind the fall board or the chaotic board, but the winter board was displeasing to him. Every time he got an opportunity to attempt to destroy the board or close it, he took it. He knew he was not allowed to touch the board, and that getting caught doing so would lead to a consequence, but even so, he was willing to take the risk. He was the only child who had this reaction to any of the boards.

There were also two female participants who stood out among the children. These girls remained relatively congregant during both weeks of observations. The study noted that at times they were loud and playing with the other children, but this behavior was not related to the presence of the visual stimulation because these behaviors were also noted during the first week of observations.

### **Analysis**

Because of the observations logged, the researchers collaborated and decided that there was significant evidence to support their hypothesis concerning the boards. In general, the boards caused the energy and liveliness of the room to increase. The students were over stimulated and this evoked a change in the children's mannerisms, behavior, character traits, and

attention span. The chaotic board had a drastic effect on students that were interacting in the vicinity of the stimulus; they became louder, more aggressive, and experienced a decrease in attention span and ability to focus on the task or activity that was presented to them. The winter board, as hypothesized, was recorded to bring a calmer spirit to the classroom and allow the students to concentrate on the lesson, listen to the teacher, or complete the assignment in the area where they were placed. The fall board, which was bright but organized, kept the children alert and energized, but seemed to encourage a more organized and structured atmosphere; children who were usually more reserved became more prepared to speak up, lead out, or defend themselves- but not be overbearing or bully others.

As mentioned before, there were two students who seemed to have rather consistent behavior throughout both weeks. These participants were both female. They noticed the boards and extra decorations around the room, but generally remained mellow and collected. Even though the other children in the class reacted to the stimuli by becoming excited and wound up, these girls simply acknowledged the scenes, examined them, and then went about their usual routines. In this scenario and also the instance with the boy and the winter board, it is unclear to the researchers why these children experienced such different reactions to the visual stimulants from the other participants involved; observations such as this would benefit from further investigation.

## **Discussion**

### **Limitations**

The aim of this study was to examine the reactions young children (ages two and a half to four) had when exposed to an increased amount of visual stimuli. According to the results of the

study, as hypothesized, the majority of the participants were observed to exhibit several symptoms of over stimulation.

This research study was short term and had several limitations. Interviews from participants, staff, and parents would have been very enlightening, and may have given the researchers a more in depth look into their topic. Because the researchers could only observe a few hours each day, there were several hours the students were exposed to the stimuli that could not be logged for the purpose of the study. This means that important topic related situations *could have* risen, and went unlogged. Also, only twelve students participated in this study, four of which were females. Therefore, according to this study 50% of females did not respond to the overstimulation. This is probably not an accurate statistic. In order to provide more reliable numbers, a larger group sample should have been studied.

Another large limitation was assessing the short term and long term affects. Originally, the researchers agreed to observe for three weeks: week one for starting observations, week two for reactions to stimulants, and during week three the stimulants would be removed to assess if behaviors would return to normal. Due to time constraints, this was not able to be achieved, but it could have provided some very interesting insights, and should be done in future studies.

### **Implications**

The results of this study demonstrated the important connection between children and their visual atmosphere. The rate at which behaviors and character traits were affected was much quicker than anticipated, and the extent of the reactions exceeded expectations. In this study it was documented that the children were affected by what they saw, and that over stimulation resulted in a remarkable negative impact on the classroom as a whole, as well as students on an individual basis. This information should be studied further, as it could have a dramatic impact

on classrooms around the world, as well as in children's hospitals, play areas, and other high traffic destinations for infants, toddlers, and children.



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**APPENDIX**

## Appendix A

## Classroom Decoration in Kiddie Kampus

Miss Monic and Miss Stephanie are concerned that classroom decorations change the behavior of young children. Our intent is to log students and their behavior in the classroom in both stimulating and non-stimulating environments to see if there is a correlation.

### Consent Form

I, \_\_\_\_\_ have listened to the above information and have been informed of the nature of the study. I am willing to be observed by Miss Stephanie and Miss Monic for their research study. By circling the happy face I give my consent. By circling the sad face I do not give consent. I understand that:

- All information will be kept confidential
- I will not be identified in any way in the report
- This information is solely for academic purposes



**Yes**



**No**

Signed: \_\_\_\_\_

Date: \_\_\_\_\_



Appendix C

