

The Effects of Artificial Food Dyes on Children with Attention Hyperactivity Disorder

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ABSTRACT

Food dyes have been present in human diets since ancient times. Artificial food dyes gained fame and are now found in most products consumed daily, and some are even banned by the FDA for being toxic. Through this literature review, this poster examines the effect of food dyes on the brain, with an emphasis on effects it has on children's brains. In particular, this poster aims to evaluate ADHD symptoms in children who consume artificial food dyes. Multiple academic databases were searched for relevant information to help us gain knowledge on this topic. We then compared the articles we found and made a list of what was similar and different between them all. Those similarities and differences that were found will be further expanded on in greater detail throughout this project. The existing research under this topic had some shocking results. Recent academic research has concluded that the consumption of artificial food dyes by children has been linked to the cause of ADHD symptoms. There seems to be no clear reason as to why these artificial food dyes cause ADHD symptoms, but various different sources speculate their assumptions about this. The existing research focuses on proving that these dyes do cause ADHD symptoms, but as to why exactly this happens has not been proven yet. We hope our project can inspire further research on what exactly causes the ADHD symptoms in children that consume artificial food dyes.

INTRODUCTION

- Artificial food colorants have been used for years for customer satisfaction, enhancing appearance, flavor identification, and cost effectiveness.
- Recent studies have found synthetic food dyes to cause allergic reactions and have behavioral and neurocognitive effects
- Genetic factors and environmental factors such as diet affect the symptom severity of ADHD (Attention Deficit Hyperactivity Disorder), a neurodevelopment disorder in children without a specific known cause
- Clinical trial studies have made an association between AFCs consumed and behavioral responses such as hyperactivity

OBJECTIVES

- Address the association of synthetic food dye with ADHD symptoms; determining whether there is correlation between hyperactivity and artificial food coloring.

METHODS

A literature review of varying journals, articles, and research papers was used to conclude the presented results

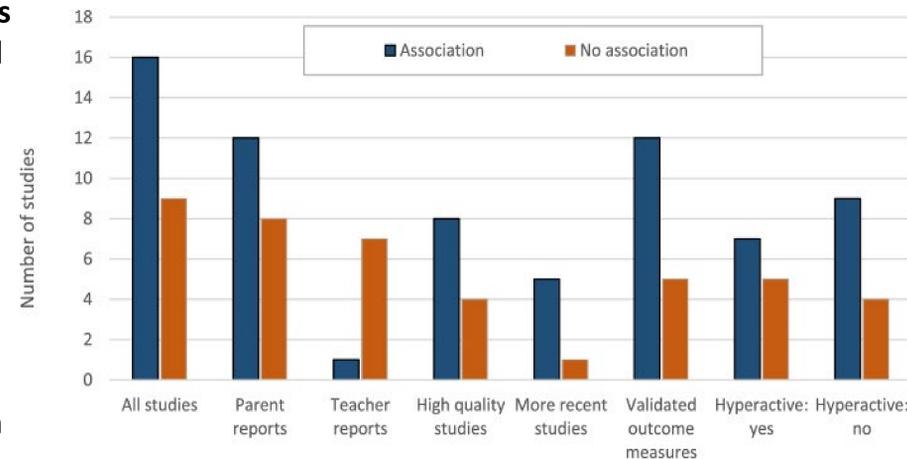


Figure 1. Number of clinical studies reporting positive associations by key study variables.

RESULTS

- The first study in England, found that in the 2 age groups after consuming the dose of food dye drink, it influenced ADHD symptoms. (Momotyuk and Nahmani)
- The results from the second study showed 30 children (60%) had a positive response to the food coloring restriction/elimination diet. (Momotyuk and Nahmani)
- The third study showed 150 out of 200 (75%) of the children's symptoms have improved after the food coloring elimination diet. (Momotyuk and Nahmani)
- The National Institute of Health conducted a literature review deducing an overall 25% rate of ADHD symptom reduction. This spans both partial and complete lessening of hyperactivity.



Figure 2. Cupcakes with food dye in the frosting. Some food dyes used are blue 1, blue 2, red 3, red 40, green 3 and yellow 5.

LIMITATIONS AND FUTURE WORK

We would like to see a panel study done that would delve into a clear and exact reason why these artificial food dyes cause ADHD symptoms in children. We would hope to see that once researched more, there would be a clear answer to what causes these ADHD symptoms and what precautions we can take in order to prevent/limit them from happening. Because of the studies' subjective nature, (relying on parents and teachers to gather all differences,) findings could potentially be biased or misinterpreted. Finding an adequate sample size also proved difficult with all observed studies. The children participating in the studies had to have an ADHD diagnosis. Families also had to be willing to commit their children to uncompromising diets for the duration of the trial. Trials typically lasted two to four weeks.



Figure 3. Bottles of food coloring dyes.

CONCLUSIONS

Correlation between food dye and ADHD symptoms is a possibility, though additional research is necessary to conclude the efficacy of these findings. Most studies listed in NIH's literature review had differing findings. The inconsistencies in the listed research studies prompt future work.

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