Effect of Media Usage on Child Development

Group 4

KidFocus Behavioral Consultants

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Introduction

Currently, policy and lawmakers are attempting to create legislation that promotes and supports the cognitive, social, and emotional development for early childhood in the areas of childhood education, media literacy, digital well-being, and parental education and support. To accomplish this, they seek to understand how media use patterns, demographic factors, and parental attitudes and behaviors affect a child's media usage habits, which in turn affect early development. Through the analysis of the "Common Sense Census: Media Use by Kida Age Zero to Eight in America" of 2013 and 2017, and study of external literature, our consultant group has provided recommendations and research that can be used to support legislation on this topic.

Background

Since the 1980s, education experts have expressed growing concerns about the impact of media consumption across various segments of the population. Mendes and Amar (2024) note that "the growing consumption of media by various segments of the population has been of concern to education experts, who have warned of the need for teacher training to integrate Media and Information Literacy (MIL) in their curricula." In more recent years, global efforts have increasingly focused on understanding both the risks and benefits of digital technology. As UNICEF (2022) emphasizes, "While global efforts to deepen our understanding of the prevalence and impact of digital risks of harm are burgeoning... less attention has been paid to understanding and optimizing the benefits that digital technology can provide in supporting children's rights and their well-being." This historical evolution in media research underscores

the dual responsibility of mitigating risks and fostering opportunities. Addressing these challenges requires a comprehensive framework that equips children, educators, and families to navigate the digital age responsibly.

A considerable amount of the current research done on media usage within early childhood development has shown that technology can either be beneficial or detrimental to the development of children. According to Schawarzer, Grafe, et al (2021), excessive or improper media usage during early childhood development can lead to lower levels of cognition, language skills, and social/emotional skills. These deficits are largely due to digital media displacing a child's opportunity to communicate, interact, and play which leads to conduct problems such as hyperactivity and inattention. Other problems that have arisen and studied due to excessive or improper media usage within early childhood include anxiety, depression, academic inadequacy, materialism, parent-child conflict, childhood obesity, and aggressive behaviors (Pinar & Unal, 2018; Vossen, et al, 2014). However, current research has also shown that integrating media into different aspects of a child's early life can enhance instruction through technology-based learning programs such as ABRACADABRA, support equity and inclusion through diverse and culturally rich content, and promote engagement and motivation by targeting children's interests within the content (Silveran & Keane, 2021. p 21-23).

A child's parents play a pivotal role in ensuring that media usage does not affect their child's development in a potentially harmful way. Parental mediation is a key strategy enlisted in developing a child's skills in using and interpreting media, promoting positive outcomes, and preventing negative effects from media usage (Nikken & Schols, 2015). However, families who have been introduced to technology at an advanced age tend to focus more on the benefits of technology and media while not considering the risks that are associated with improper use

(Gundogmus, 2024. p 86). Without the proper knowledge and understanding of how media usage affects young children, parents can potentially be harming their children and promoting lifelong problems.

There is currently not any major legislation or governmental programs that fully address the issue of media usage within early childhood. Much of the legislative focus in relation to media usage is currently centered around the health, privacy, and safety of kids who use social media. However, there are many non-profits and other organizations that provide resources to schools or parents who wish to understand more about the effects of media usage on early childhood development. While these programs may be effective in a vacuum, actual legislation or government issued programs would be more effective in reaching a larger audience.

Executive Summary

The increasing prevalence of digital media in early childhood raises concerns about its potential impact on cognitive, social, and emotional development. Policymakers and educators seek to understand how media usage patterns, demographic factors, and parental attitudes influence these outcomes.

This research leverages the Common Sense Census dataset to analyze media usage patterns, developmental outcomes, and parental behaviors among children aged 0-8. It employs a quantitative approach, guided by the positivist research paradigm, to identify relationships between media consumption, demographic factors, and developmental indicators.

The study revealed significant findings regarding children's media consumption patterns and parental attitudes. Notably, a substantial portion of children (24.8%) were found to spend over an hour daily on various media devices. Parental attitudes towards media use varied, with 30.9% prioritizing educational apps and 29.5% opting for a blend of educational and

entertainment apps. Additionally, the dataset highlighted diverse demographic factors, including income, education levels, and racial/ethnic backgrounds, which may influence media usage and its impact on children's development.

To effectively address the challenges and opportunities presented by digital media, a multifaceted approach is necessary. Key recommendations include: promoting media literacy and digital well-being through parental education programs and developing age-appropriate digital content; expanding access to educational technology, particularly in underserved areas, and supporting the development of interactive learning tools; and fostering collaboration among policymakers, educators, and technology developers to create evidence-based solutions and conduct ongoing research to monitor evolving media trends and their impact on early childhood development. By implementing these recommendations, policymakers and educators can work together to create a media environment that supports healthy development and equitable opportunities for all children.

Research Paradigm

This research was guided by the positivism research paradigm. This approach to research was chosen due to positivist research having a focus on quantitative data and an emphasis on explanation, prediction, and control. According to Major Research Paradigms, the purpose of positivist based research is to explain how things happen in order to predict what comes next and be in a position to control what happens… Generalizations are derived from examination of the specific and applied to all occurrences of the incident (Pickard, 2017). The positivist approach enables our consultant group to gather the statistics and external research and create generalized findings that apply to all individuals. These generalized findings then can be used by policy and

lawmakers to create evidence-based policies that affect the children, parents, and education institutions of the United States.

Research Questions

Hypotheses:

1. The type of media consumed, frequency of media use, and duration of media exposure directly relate to cognitive, social, and emotional development in children.
2. Demographic factors such as household income and parent education level negatively relate to media usage patterns in children.
3. Race/ethnicity alone does not have any direct impact on media usage patterns in children.
4. Parental attitudes and behaviors towards media usage directly relate to early childhood media usage.

Research questions used to guide literature review:

1. How does the type of media consumed, frequency of media use, and duration of media exposure relate to cognitive, social, and emotional development in children?
2. How do demographic factors such as household income, parent education, and race/ethnicity relate to media usage patterns in children?
3. How do parental attitudes and behaviors positively or negatively affect early childhood media usage?

Our consultant group decided to employ a set of hypotheses, guided by other research questions, to fully understand the scope of the issue and deliver actionable insights and recommendations to the policy and lawmakers. Our group decided to use hypotheses to guide

our analysis due to the quantitative nature of the dataset provided to us and for the alignment of our chosen research paradigm and research approach. The hypotheses created were based on our current understanding of the issue and allow us to test the relationships between different variables such as race/ethnicity and media usage patterns. These hypotheses allow our team to really focus on the variables that actually make a considerable difference in early childhood development. On the other hand, the research questions were primarily used within the literature review and initial research to provide our consultant group with the knowledge of the relationships between media usage factors and early childhood development. Our team needed to understand how children are positively or negatively affected by media usage to appropriately apply the statistics to specific case scenarios. For example, the statistics show that 24.8% of parents reported that their children spent more than an hour a day with some form of media-based device. Without the employment of the research questions and external literature review, our consultant group would not fully understand how the excessive media usage affects early childhood development. The hypotheses and research questions work together to provide our consultant group with a full picture of the issue. It is important for us to not only understand the statistics, but also understand how and where the statistics apply to provide evidence-based recommendations that appropriately address the issue.

ICT Related Discipline

The ICT-related discipline in our team's research is Human-Computer Interaction (HCI). Human-computer interaction (HCI) is a multidisciplinary field of study focusing on the design of computer technology and, in particular, the interaction between humans (the users) and computers. While initially concerned with computers, HCI has since expanded to cover almost all forms of information technology design (Interaction Design Foundation, 2023). The research

problem, focused on understanding the impact of media usage on early childhood development, is highly relevant to the field of Human-Computer Interaction (HCI). HCI is concerned with designing usable, effective, and enjoyable technology for humans. In the context of this research, HCI can provide valuable insights into how children interact with digital media, the design of media platforms, and the development of technologies that support healthy childhood development. For example, user experience researchers can study how children interact with different types of media and identify factors that contribute to positive or negative user experiences (e.g., Silveran & Keane, 2021). This information can inform the design of media platforms that are more appropriate and engaging for young children. HCI principles can be applied to developing educational media and tools that support children's learning and development. For instance, HCI research can help identify design elements that promote cognitive engagement, social interaction, and emotional well-being (e.g., Domingues-Montanari, 2017). Along with design, HCI methods can be used to evaluate the effectiveness of media interventions and educational technologies. By conducting user studies and collecting feedback from children and parents, researchers can assess the impact of these interventions on children's development and identify areas for improvement. There are also ethical considerations. HCI is concerned with the ethical implications of technology design and use. In the context of this research, HCI can help address ethical questions related to the impact of media on children's privacy, safety, and well-being. By applying HCI principles and methodologies, this research can contribute to the development of more responsible and beneficial digital media experiences for young children (e.g., UNICEF, 2022).

Ethical Considerations

The research involved in this project involved the sensitive information and data of multiple children including their behavior, demographics, usage patterns, and parental attitudes. In order to protect the people involved as well as the information, the data has been anonymized to ensure that the individual families can't be identified by their responses. The data has been stored securely and the only people with access to the raw sensitive data are team members within the consultant group. Consultants of this group have taken extra steps to ensure that data was not accessible on their devices by outside individuals. To ensure data security after analysis and recommendations, everyone in the consultant group plans on removing the data from their devices in totality. The study involved children, so consent from parents or guardians was mandatory. Those involved knew the nature of the study and the type of data being collected. The data collection was done ethically, and any further information was collected through said parents/guardians. For younger children of the study who were unable to comprehend its nature, we deferred to the parents for consent. When presented in the future the identities of the participants remain confidential. The data from this study has been archived by the KidFocus team and will be saved and disposed of as the team sees fit.

Methodology

The methodology for this research adopts a quantitative approach, focusing on analyzing the Common Sense Census dataset, which provides detailed information on children's media usage patterns, developmental outcomes, and parental behaviors. This dataset includes variables such as screen time, types of media consumed, parental attitudes, socioeconomic status, and educational attainment. These variables will allow us to explore the relationship between media usage and child development, while also considering other relevant factors that may influence these outcomes. Descriptive statistics will summarize key data points, followed by correlation

analysis to identify potential relationships between media consumption and developmental factors like attention span and language skills. It's important to note that correlation does not imply causation. To further explore the nature of these relationships and to predict outcomes, regression analysis will be conducted. We will examine how different media usage patterns, such as the frequency and duration of screen time, are associated with specific developmental outcomes. Additionally, comparative analysis will explore variations in media usage and developmental outcomes across different demographic groups, such as age, gender, and ethnicity. This will help us identify potential disparities and inform targeted interventions. To gather more specific insights into household media rules and their impact on children's media habits, additional online surveys targeting parents may be conducted. These surveys will include questions about media rules, parental mediation strategies, and perceptions of their children's media use. This structured approach, guided by the positivist research paradigm, will provide valuable, evidence-based insights to support policy recommendations aimed at promoting healthy media consumption and childhood development.

Data Analysis

The data analysis section will examine the relationship between media usage and early childhood development using the Common Sense Census dataset. This dataset provides insights into children’s media consumption patterns, developmental outcomes, and parental behaviors, allowing for a detailed exploration of various factors influencing childhood development. The analysis employs descriptive statistics to summarize key data points, including average screen time, media types consumed, and parental attitudes. From this baseline, correlation analysis is conducted to identify potential relationships between media usage patterns and developmental indicators such as cognitive skills, attention span, and emotional well-being.

To better understand these relationships and predict potential outcomes, regression analysis is used to explore how specific variables, such as screen time duration and media type, affect developmental factors. Additionally, demographic comparisons are made to assess variations across age, gender, and socioeconomic groups, helping to identify disparities that may require targeted interventions. This quantitative approach is complemented by insights from external literature, enhancing the interpretation of findings and their relevance to real-world scenarios.

The analysis also considers parental mediation strategies and their impact on children's media habits, as gathered through supplemental online surveys. These surveys provide qualitative context to the quantitative findings, offering a more comprehensive understanding of the factors influencing early childhood development. By integrating these methods, the analysis aims to deliver actionable insights that can inform evidence-based recommendations for promoting healthy media consumption habits and supporting legislative efforts to enhance early childhood development.

Findings

Descriptive Analysis

The data collected was from the "Common Sense Census: Media Use by Kids Age Zero to Eight in America" study by Vicky Rideout at the Inter-university Consortium for Political and Social Research. Both the 2013 and 2017 data sets were used for the analysis. Both of these studies surveyed approximately 1,450 parents on the media habits of their 0-8 year old children and general household information. The survey required participants to answer a multitude of different questions. The types of questions asked on the survey included dichotomous questions (yes or no/agree or disagree), demographic questions, and multiple-choice questions. The

answers to these questions were then compiled into data tables (one for each question) that displayed the value, label, unweighted frequency, and percentage of responses for each label. Both sets of data provide a substantial amount of useful information such as the age of the child, the devices and media services that are owned or used in the household, the location of devices, the activities done on the devices by the child, the time spent on the devices by the child, the education level of the parent, the race/ethnicity of the parent, household income, etc.

During our initial analysis of the data, our consultant group came across several data points and tables that aided in our recommendations:

First, 30.9% of the respondents reported that most or all of the apps downloaded for their children were educational, while 29.5% reported that half or less of the apps downloaded were for educational purposes. 39.2% of the participants left the question blank or chose not to respond leading to missing data.

Second, 39.3% of participants reported that their TV was on most or all of the time, while 57.5% of respondents reported that the TV was only on sometimes, hardly ever, or never. This question had 42 participants not respond, leading to a 2.9% missing data value.

Third, the data compiled for hours spent using different types of media (TV, Game Consoles, Phones, DVD players, & Computers) resulted in 24.8% of participants reporting that their child/children spent more than one hour (60 minutes) using some form of media.

Fourth, we observed that the study had a fairly distributed range of income values with approximately 58.4% of participants making more than the average income in 2013 (Miller & Madland, 2024), a predominantly white/Caucasian participant group (49.1% white compared to 50.9% all other races combined), and a wide range of education levels that leaned towards

completed college degrees of any level (51.4% completed degrees compared to 48.6% no college degree).

Summary of Key Results

The study revealed significant insights into children's media consumption and its potential impact on development. A substantial portion of children were found to spend excessive time on screens, exceeding an hour daily. Parental attitudes and behaviors, such as setting media rules and co-viewing, emerged as crucial factors shaping children's media habits. Additionally, demographic factors like income, education, and race/ethnicity were found to influence media access and usage patterns. While excessive media consumption can negatively impact cognitive, social, and emotional development, media, when used appropriately, can be a valuable tool for learning and development.

Visualizations

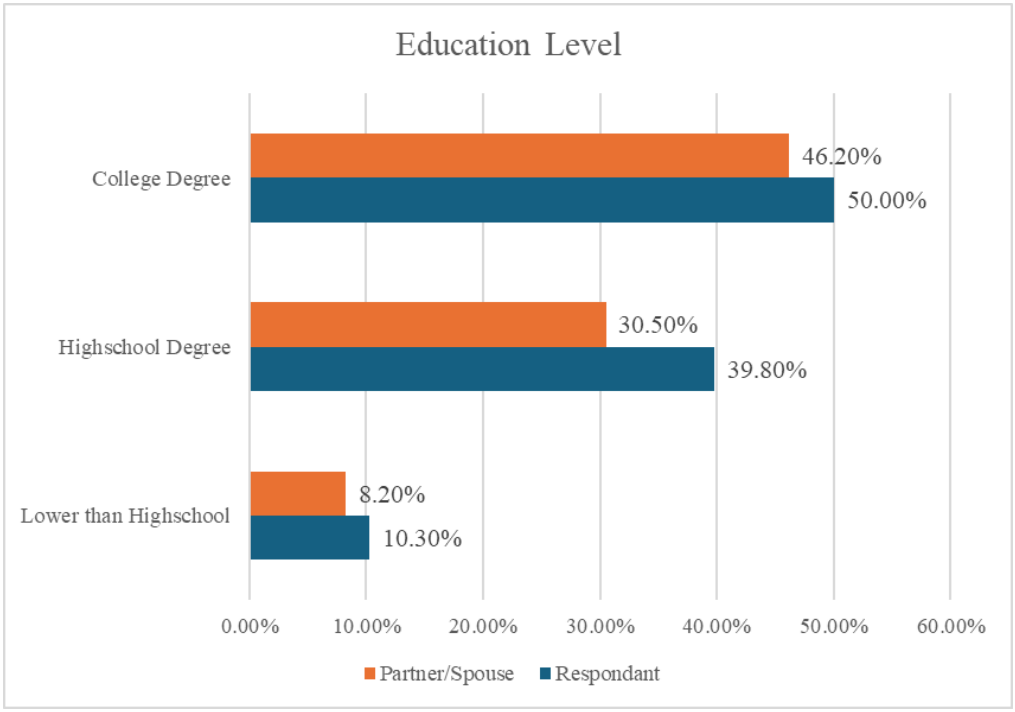

Figure 1: Showing education levels of respondents and partners/spouses

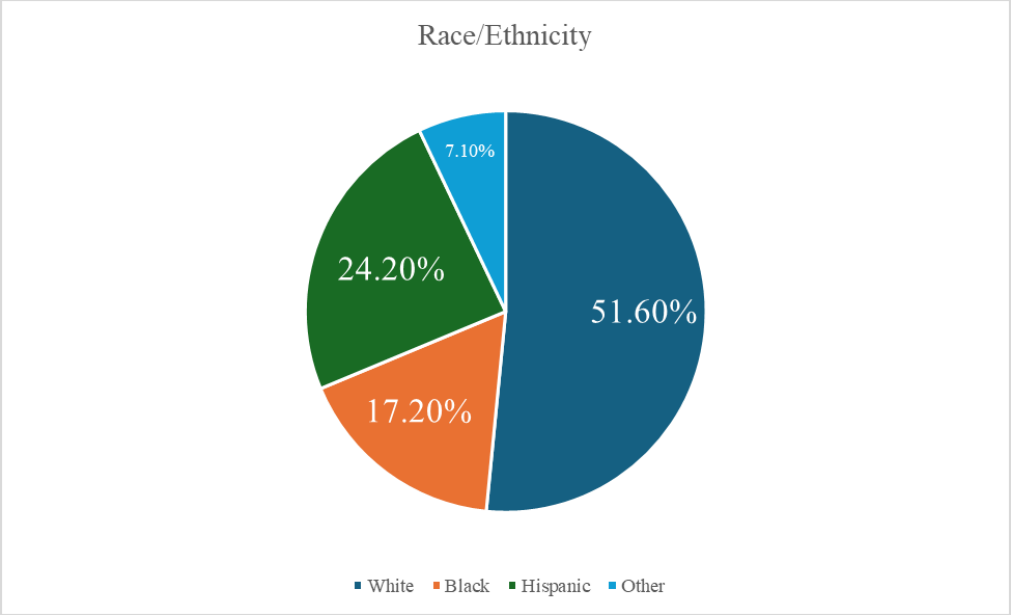

Figure 2: Showing percentage of each race/ethnic group in the study

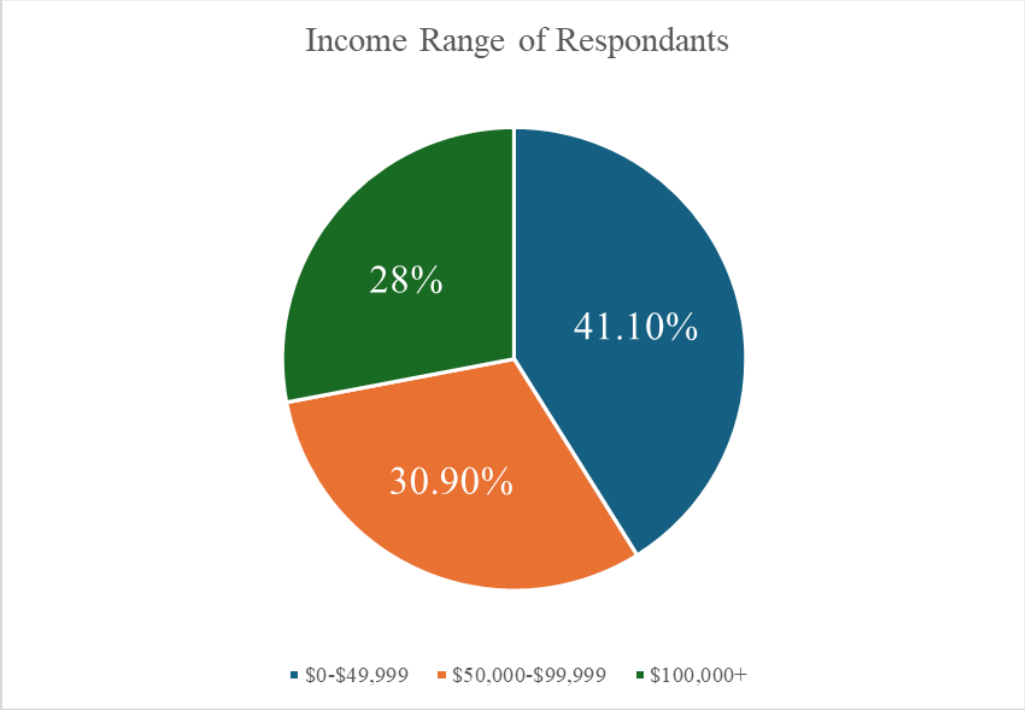

Figure 3: Showing income ranges of all respondents

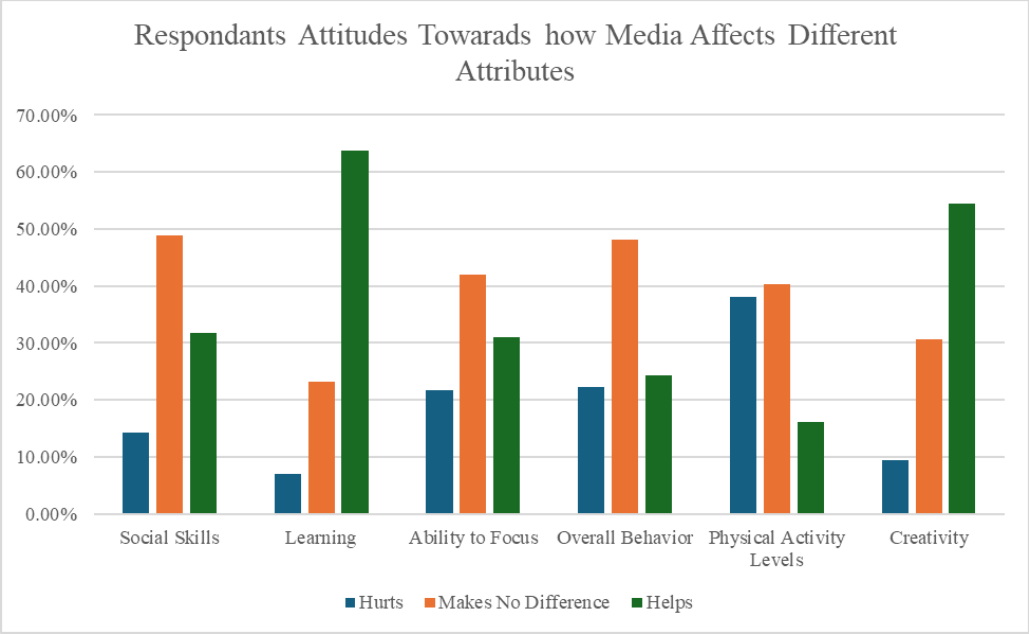

Figure 4: Showing how respondents believe media affects attributes of their children

Client Recommendations

To address the effects of media usage on early childhood development, we recommend a multifaceted approach focused on education, accessibility, and evidence-based practices. Policy initiatives should promote media literacy and digital well-being by funding parental education programs. These programs would provide parents with tools to balance screen time and understand the developmental impacts of digital exposure, addressing concerns that children aged 2-5 spend an average of 2 hours per day on screens.

Additionally, legislation should prioritize funding for accessible, technology-based learning tools, particularly in underserved areas. Interactive programs such as ABRACADABRA have demonstrated significant benefits in developing cognitive skills like reading and problem-

solving. Allocating resources to expand access to such tools ensures all children can benefit from educational media, narrowing gaps in early childhood development outcomes.

We also recommend stronger collaborations between policymakers, educators, and technology developers to create age-appropriate digital content. With evidence linking excessive media use to social-emotional challenges, new digital tools should emphasize educational content, reduce exposure to advertising, and adhere to ethical design standards that protect young audiences.

Finally, enhanced research and data collection on evolving media trends and their impacts are essential. As technology increasingly integrates into early education, ongoing monitoring will enable stakeholders to adapt strategies to maximize the benefits of digital tools while mitigating risks. Together, these recommendations aim to foster healthier development and equitable opportunities for young children in an increasingly digital world.

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