IMPACT OF TECHNOLOGY AND CYBER (ONLINE) RISKS ON CHILDREN

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INTRODUCTION

Digital age presents many new challenges for kids and parents, including excessive screen time, inappropriate online content, and cyberbullying.

- About 42% of US children (4–14 years) spend over 30 hours a week.
- Media usage increased by 17% post pandemic.
- Average screen time in tweens(8-12 years) is 5.5 hrs./day and teens(13-18 years) is 8.6 hrs./day .
- Six out of ten children (8-12 years) are exposed to cyber risks.
- Cybercrimes against children increased 144% just in 2020.
- The Annual financial loss with cybercrimes against children was USD $660,000 (2020).
- According to Revised Parenting in the Age of Digital Technology: A National Survey, parent's media usage time impacts children screen time
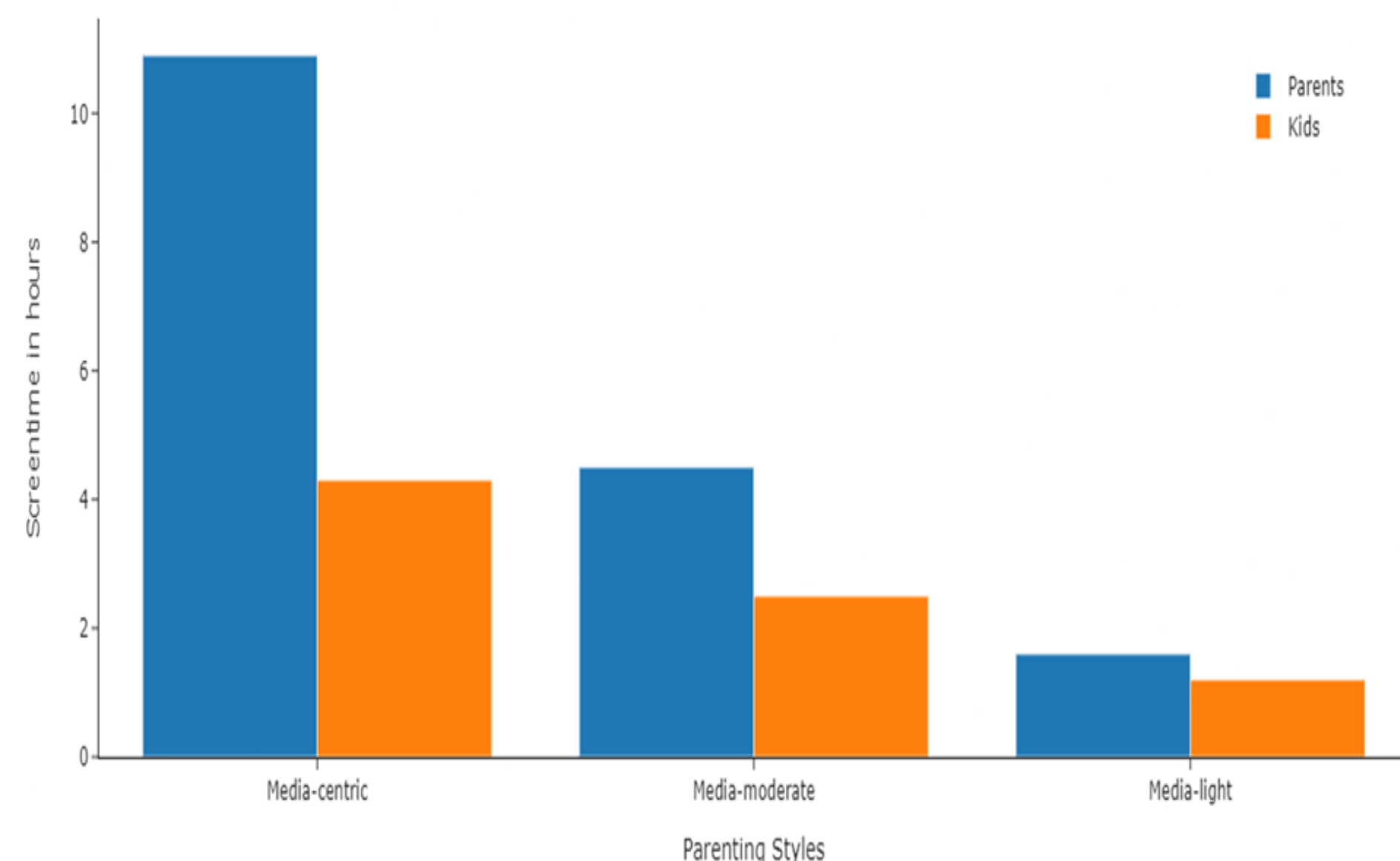

Figure 1. Parenting styles effecting Child's screen time

The objective of this research is to highlight the impact of technology on kids (0-7 years), cyber risks on children (8-18 years), and some precautions on how to minimize these risks.

METHODOLOGY

A comprehensive Literature review was performed on available peer reviewed publications approximately 60 articles [12] using the search terms "impact of technology on children", "types of effects", "cyber security for kids", "cyber risks for children". This study is an additional outcome of a more broader study Impact of technology on young children.

DEVELOPMENTAL DOMAINS IN CHILDREN

Children grow in different developmental aspects or domains. The key domains of child development are cognitive, language, physical, and social & emotional. These domains are further divided into sub-domains

COGNITIVE
- Memory
- Problem-solving and reasoning
- Mathematical Thinking
- Knowledge development
- Understanding the world around

SOCIAL AND EMOTIONAL
- Relationship with adults
- Relationships with other children
- Emotional behavior
- Self-identity and belonging

LANGUAGE
- Understanding words
- Communication and speech
- Vocabulary
- Reading and Writing development

PHYSICAL
- Perception
- Motor skills Development
- Nutrition and Health
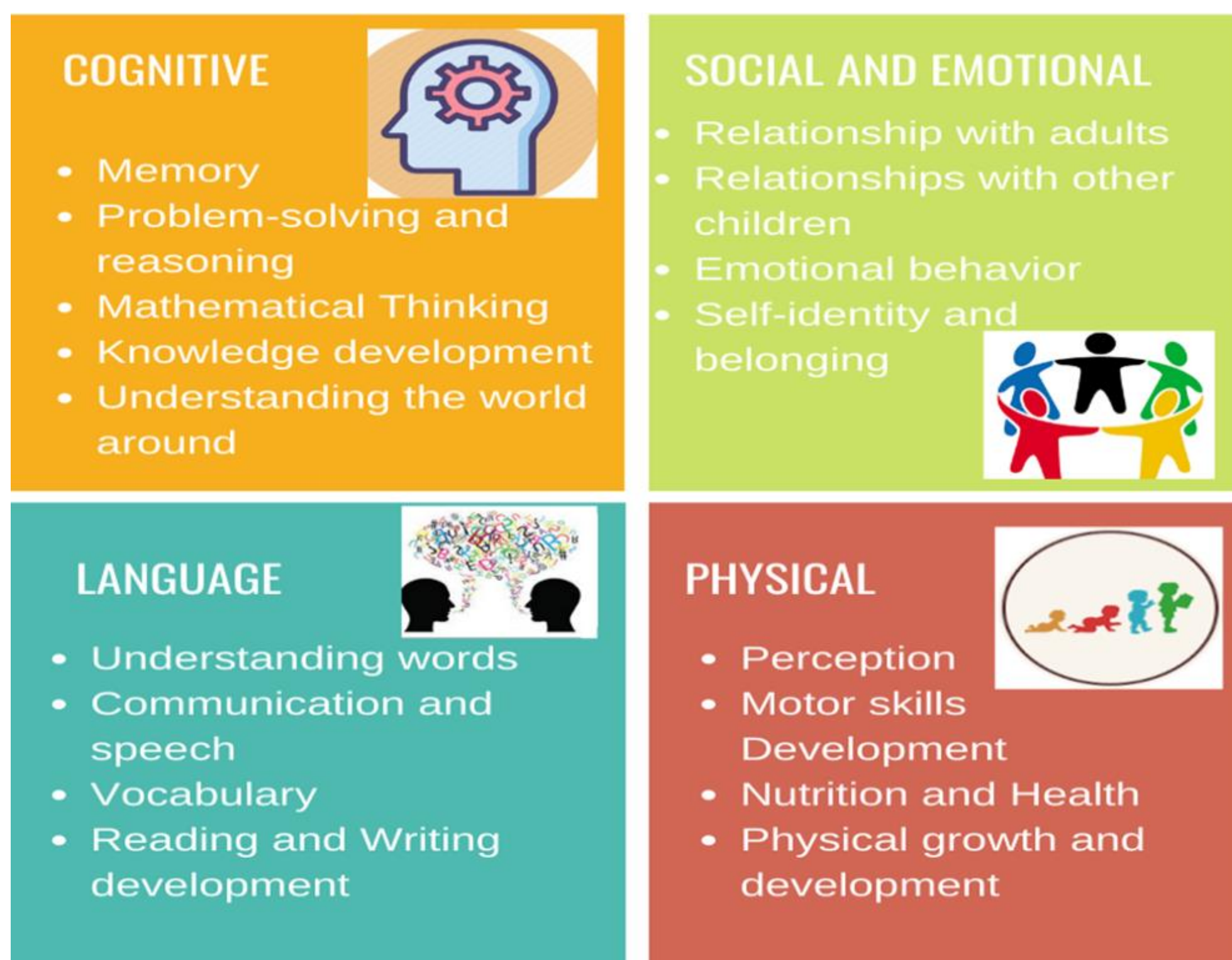- Physical growth and development

Figure 2. Child Development Domains

IMPACT OF TECHNOLOGY ON CHILDREN (0-7 YEARS)

Use of technology can have both positive and negative effects on child's developmental domains such as cognitive, physical, language, social and emotional.

Table 1. Impact Of Technology On Children

Research	Age Group	Development Domain	Impact on Child development
Ahearne et al., 2016	1-3 years	Cognitive, Physical	Acquiring skills to handle touch-screen technologies.
Cespedes et al., 2014	1-7 years	Physical	Effects sleep onset
Coyne et al., 2021	2-3 years	Socio-emotional	Emotional dysregulation and behavioral issues.
Cox et al., 2012	2-6 years	Physical	Obesity in due to inactive/sedentary activities.
Dayanim et al., 2015	15 months	Cognitive	Learn new information and acquire knowledge.
Duch et al., 2013	0- 6 years	Language	Child's language development.
McClure et al., 2015	6-24 months	Language	Enhancing communication skills.
Nathanson, 2021	0-6 years	Physical	Child's sleep.
Radesky et al., 2014	0-2 years	Socio-emotional	Emotional dysregulation problems.
Radesky et al., 2016	15- 36 months	Socio-emotional	Emotional and behavioral problems.
Tomopoulos et al., 2010	6-14 months	Cognitive, Language	Cognitive and language development.

IMPACT OF CYBER RISKS ON CHILD DEVLOPMENT

Table 2. Impact of Cyber Risks on Children

Types of Risks	Progression of Risk Variations	Impact on Children	Level of Risk by Age		
			0-7	8-12	13-18
Privacy	Social Networks, Smart Toys, Tracking	Social and emotional	Low	Medium	Medium
Online Harassment	Cyber Bullying, Stalking	Behavioral and psychological	Low	Medium	High
Stranger Danger	Cat phishing, Impersonation	Social and Emotional	Low	Medium	Medium
Content Risks	Inappropriate Content, Targeted Ads	Cognitive and Behavioral	Medium	High	High
Economics	Scam Call, Financial Scams, Gambling	Psychological and Socio-emotional	Low	Low	Low
Addiction	Excessive media use, Gaming, Social media	Cognitive and Emotional behavior	Medium	High	High

PRECAUTIONS TO KEEP KIDS SAFE ONLINE

COMMUNICATION AND BUILD TRUST

INCREASING PARENTAL AWARENESS

SETTING RULES AND BOUNDARIES

EDUCATING CHILDREN

USE OF CYBERSECURITY TOOLS AND SOFTWARE

SAFETY GUIDELINES

MONITORING KIDS ACTIVITIES

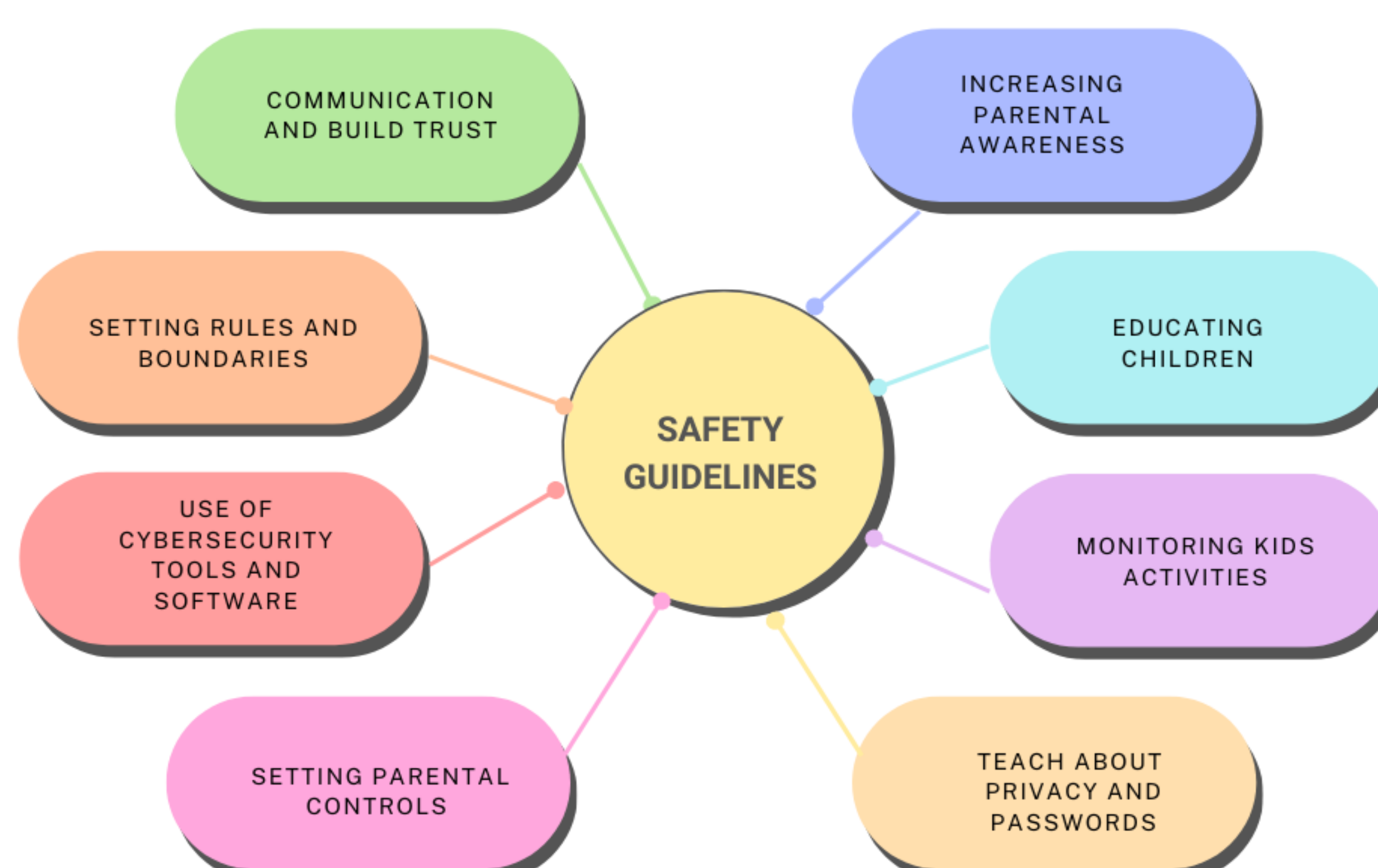SETTING PARENTAL CONTROLS

TEACH ABOUT PRIVACY AND PASSWORDS

Figure 3. Measures To Minimize Cyber Risks In Children

PROTECTING KIDS IN CYBER SPACE

Incorporating IEEE 2089-2021, IEEE Standard for an Age-Appropriate Digital Services Framework based on the 5Rights Principles for Children :offering information in an age-appropriate manner, safeguarding children's rights, extending fair terms for children, acknowledging childhood, and placing children ahead of commercial benefits and platform status can ensure safer online products for children.

This standard may help the organizations in designing their services by taking children into consideration, establishing commitment to social obligation.

CONCLUSION

- Longer exposure to screens can have adverse developmental impacts and it also exposes children to various online risks. Therefore, Parents must be aware of the potential harms of technology, cyber risks and child's excessive screen time.
- Parents need to follow certain guidelines to balance the benefits and possible harms of technology and safeguard the infant's health.
- A combined training program that involves both parents and children with real-time tasks may deliver enhanced awareness.

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