Explorative Study on Children's Internet Usage and Parental Control in India – Using Classification Tree Model Analysis

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Abstract

In this period of innovation, the internet has spread broadly and has been utilized for various purposes by children. Particularly usage of the internet among school students increased in recent years. At the same time, researchers indicate that there is an increase in internet usage and behavioral problems. The objectives of this study are to examine the impact of internet usage and parental mediation on school children. The participants were determined with purposive sampling and conducted under different schools children in Chennai (N= 424) respondents and from the 15-17 age groups those were analyzed by CART used to describe decision tree algorithms that are used for a classification tree model and regression. These results show that most children used the internet without parental guidance. During the pandemic time, children were using more hours on the internet and social media which had an impact on their online activities. This study identified that regular monitoring can avoid psychological harm.

Keywords: Children, Internet, Parental control, Psychological

1. Introduction

Over the past decade, the growth and proliferation of new modes of digital communication and information technologies, which include personal computers, social media, cellular or mobile devices, and other devices, have been enormous changes (Lu et al., 2011). In a relatively short time, online social media has become a part of human life. Many of us can't envision a society without a quick and uninterrupted connection to the web (Gnanasambandam et al., 2012). There has been an enormous rise in usage of the internet globally and it is anticipated to remain to be an important part of daily life.

The Internet offers enormous educational value; nevertheless, overuse of the Internet can result in unpleasant outcomes such as low academic performance and public alienation (Moawad & Ebrahem, 2016). This rise in the world of technology also has expanded the number of outsiders who use it adversely, such as terrorism, cyber violence, etc. Some could use it to engage in excessive gaming, talking for long periods, pornography, and perhaps even betting. A study has, however, pointed out that certain teenagers use the internet inappropriately or in a dis-adaptive manner, in particular, to alleviate psychological

distress (Panicker & Sachdev, 2014) and negative feelings correlated to dysfunctional relationships with peers and family (Pednekar & Tung, 2017). It is also very hard to observe and track online usage and outsiders who are abusing teenagers and youngsters. In India, the use of the web is massive, particularly among young adults and teenagers. It was therefore reported that it is important to understand internet usage patterns and parental meditations.

2. Review of Literature

There seems to be a greater necessity for parental freedom and control during adolescence. As a result, teenagers have to renegotiate their relationship with their parents in these various stages (Erikson, 1994; Larson et al., 1996) and acceptance from peers has become much more impactful than it used to be in earlier times. Nevertheless, the quality of parenting continues to be a key element of teenagers' adaptation and development (Cerniglia et al., 2017; Moretti & Peled, 2004; Tafà et al., 2017) and a positive outcome of the transformation to adulthood and independence (Ryan & Lynch, 1989).

In specific, it has been shown that low affection towards parents is correlated with a greater period expended on online platforms (Moawad & Ebrahem, 2016; Richards et al., 2010) and dangerous internet actions (Yang et al., 2016). In

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addition, increased web usage has been linked with a lesser amount of time spent with the family (Lee & Chae, 2007), poorer family relationship quality (Wang et al., 2011), inferior parental relationships (Magoon & Ingersoll, 2006), and greater paternal estrangement (Lei & Wu, 2007), whereas (internet addiction)IA has been linked with the other unfavorable situations such as a conflict between adolescent and parent (Yen et al., 2007), conflict of marital (Yang et al., 2016) and low operational satisfaction of the family (Schneider et al., 2017; Wu et al., 2016).

Studies have reported that a minimum rate of peer attachment has been related to increased (Internet Addiction) IA (Reiner et al., 2017; Yang et al., 2016) and usage of the Internet (Davies, 2007), but many other researchers have indeed observed that a positive connection with acquaintances has been related to an increased usage of the Internet (Milani et al., 2009) and IA (Soh et al., 2014), particularly for amusement and social-interaction matters (Soh et al., 2014). Overall, these outcomes from the research recommend that troublesome connections with colleagues, defined by feelings of alienation, frustration, and disconnection, could result in teenagers devoting too much time on the web to take shelter in a virtual environment where they could demonstrate "falsified" social communications and alliances (Reiner et al., 2017). Most scientific researchers have studied the influence of internet usage and internet addiction. At about the same period, attachment sanctuary to colleagues, wherein the teenagers encounter believe and an excellent value of participation and social interaction with others, can denote be a potential risk for IA, for instance by taking part in actions in which ones social circle is involved (Soh et al., 2014; Yang et al., 2016).

2.1 Purpose of the Study

This study aims to examine the pattern of internet and social media usage among children between 14-17 years of age. This study's main focus is on how the digital world has influenced children's behavior during pandemic. This boom in technology has also increased the number of online strangers using it for negative aspects, such as online abuse, online bullying, terrorism, etc. It's very difficult to monitor and track online strangers who abuse children. Therefore, children should be completely literate about digital world that includes digital threats, such as online child abuse, online child exposure and many more aspects.

2.2 Objectives

This study is an analysis of children's digital usage and digital activities during the pandemic in India. To understand the digital threats faced by children. To understand if parents' monitoring can help children avoid digital threats.

3. Research Methodology

This research has been analyzed by the quantitative research methodology. The study has adopted a base on the non-probability samples were used in the survey method which was conducted in Chennai city from September 2021 to February 2022. Were selected in purposive sampling technique was adopted for this research study; the survey was conducted among children. This study analysis 424 samples of age group 14-17 years students from different schools. This research is based on the hypothesis " If parental monitoring can help avoid digital threat among children''

4. Results

Based on this, the following findings were carried out. (Figure-1) it covers the details of the demographic of both such as gender, education age, schools, and includes the internet usage pattern like the purpose of using the internet, place of access (home, cybercafé, or workplace). The time of day when the internet is accessed the most (by choosing between morning, afternoon, evening, or night), and the average duration of use per day, finally use the standard tool called the 5-point likert scale that measures use of the internet.
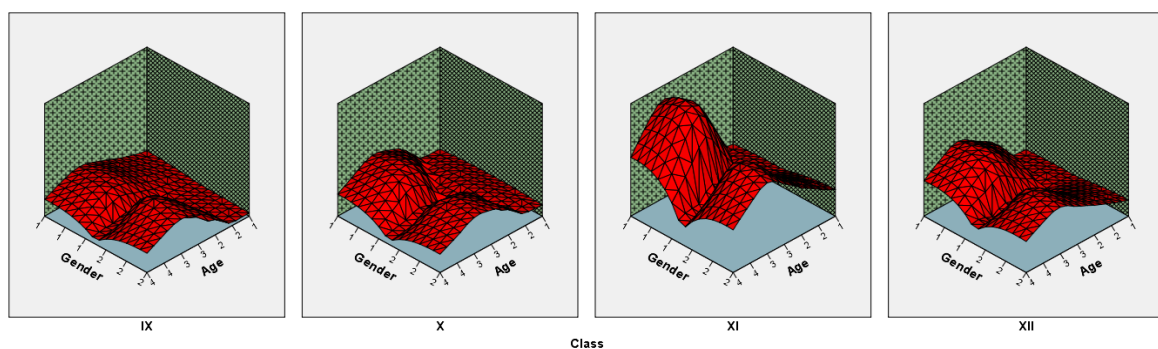

Figure1: **Different class of age Groups**

Table 1: **Respondent of demographic details**

Categorical Variable Information		N	Percent
Gender	Male	234	55.2%
	Female	190	44.8%
	Total	**424**	**100.0%**
Age	15 –Years	207	48.8%
	16-Years	107	25.2%
	17-Years	110	25.9%
	Total	**424**	**100.0%**
Education	X	207	48.8%
	XI	107	25.2%
	XII	110	25.9%
	Total	**424**	**100.0%**
Schools	Private School	207	48.8%
	CBSE School	107	25.2%
	International School	110	25.9%
	Total	**424**	**100.0%**

According to (table-1) the software helps to evaluate the gathered data based on descriptive frequencies (divided based on gender and age). This shows that the profile of survey respondents (N=234), 55.2% of children for male, and (N=190), 44.8% of females who participated in the research were women. Most samples are used by 48.8% of children under 15 years of age, and 25.0% of samples are used by 17-year-olds online. 16.1 year olds use 22.1%. Of these, 48.8% completed the 10 standard grades, and the remaining 25.9% completed school children. Eleventh graders 25.2% participated. Internet access for most school students from private schools is accessible to 48.8% of children and 25.9% of international school students. Others make up 25.2% of CBSC school children. The examining technique questions demographic information and internet use characteristics.

4.1 Classification Tree model In CRT

A tree-based model is created using the classification tree model technique. Based on the values of predictor variables, it classifies cases or forecasts the values of a dependent (risk) variable. Breiman et al. (1984) introduced CART model in tree classification it is the predictive model which helps to seek out a variable supported. The gender was the dependent variable, while independent variables included online activities, risk perceptions, safety measures, online abuse factors, and parental mediation. There was no validation and maximum tree depth was 5, and the minimum cases in the parent node were 100. Independent variables included safety precautions, node was 50.

The depth was 2, the number of nodes was 7, the number of terminal nodes was 4, and the number of nodes was 7.

4.2 Gender of Node=0

According to Figure2, the classification of regression tree CRT The root node=0, use the variable gender mean value=1.449, std Dev=0.498 and parental mediation improvement =0.035, Predicated-1.441. When compared with other complex modeling techniques, CRT requires performance. When we can see that at the root node, we have 427 which we have divided into 212 (left online actives node) and 294 (right online safety measurement node). The value is more than is parental mediation value=0.035. The first variable in the tree is gender. It is the more important predictor of high risk. Now we will explain the information about the six terminals.

Node-1: The classification and regression tree CRT The root node=1, use of the variable gender (mean value=1.276, std Dev=0.400, and online activities in improvement =0.035, Predicated-1.441. When compared with other complex modeling techniques, CRT requires performance.

Node-2: The classification of regression tree CRT The root node=2, users the variable gender mean value=1.276, std Dev=0.400, and online activities in improvement =0.035, Predicated-1.441. When compared with other complex modeling techniques, CRT requires performance. We can see that at the root node we have 427, which we divided into 212 (left online actives node) and 294 right Online safety measurement node).
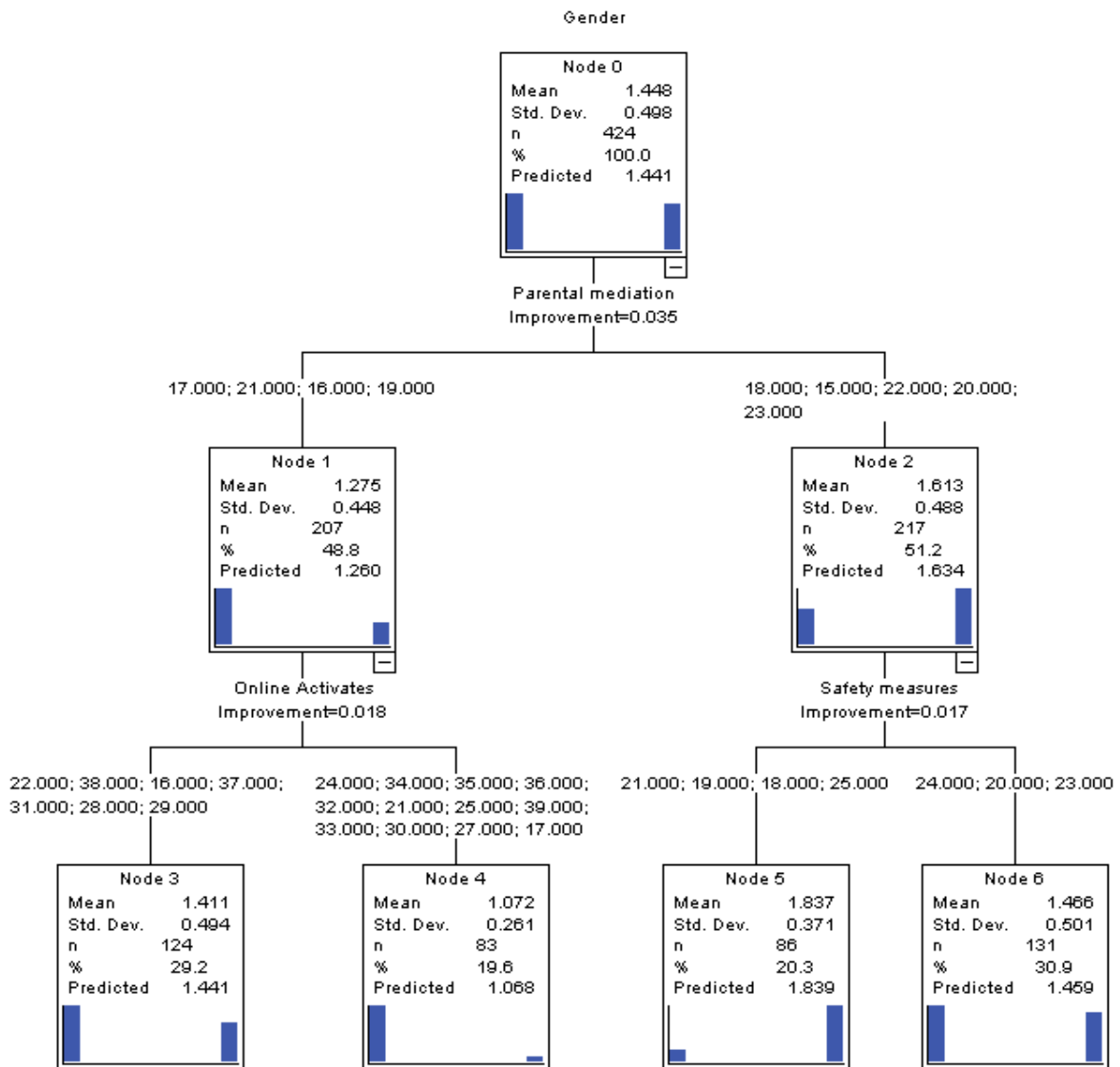
Gender

Node 0
Mean	1.448
Std. Dev.	0.498
n	424
%	100.0
Predicted	1.441

Parental mediation
Improvement=0.035

17.000; 21.000; 16.000; 19.000   18.000; 15.000; 22.000; 20.000; 23.000

Node 1
Mean	1.275
Std. Dev.	0.448
n	207
%	48.8
Predicted	1.260

Node 2
Mean	1.613
Std. Dev.	0.488
n	217
%	51.2
Predicted	1.634

Online Activates
Improvement=0.018

Safety measures
Improvement=0.017

22.000; 38.000; 16.000; 37.000; 31.000; 28.000; 29.000

24.000; 34.000; 35.000; 36.000; 32.000; 21.000; 25.000; 39.000; 33.000; 30.000; 27.000; 17.000

21.000; 19.000; 18.000; 25.000   24.000; 20.000; 23.000

Node 3
Mean	1.411
Std. Dev.	0.494
n	124
%	29.2
Predicted	1.441

Node 4
Mean	1.072
Std. Dev.	0.261
n	83
%	19.6
Predicted	1.068

Node 5
Mean	1.837
Std. Dev.	0.371
n	86
%	20.3
Predicted	1.839

Node 6
Mean	1.466
Std. Dev.	0.501
n	131
%	30.9
Predicted	1.459

Figure2: **Classification tree model with the CRT method**

Node-3: The classification of regression trees CRT the root node=3, users the variable gender mean value=1.276, std Dev=0.400, and online activities in improvement =0.035, Predicated-1.441.

Node-4: The classification of regression trees CRT The root node4, users the variable gender we can see that the root node the Subset composed by the mean value of 1.072 and the online activities improvement-0.017. The predicted value is 1.068 with performance.

Node-5: The classification and regression trees CRT The root node=5, users the variable gender we can see that the root node the Subset composed by the mean value of 1.837 and the safety measures improvement-0.017. The predicted value is 1.839 more than the high risk of the usage of children.

Node-6: The classification of regression trees CRT The root node=6, users the variable gender we can

see that at the root node we have N-131, the Subset composed by the mean value of 1.466 and the safety measures improvement-0.017. The predicted value is 1.459 more than the high risk of gender.

The splits the data into segments that are as homogeneous as possible to the dependent variable. A terminal node in which all the cases have the same value for the dependent variable is a homogeneous, "pure" node. According to table-2, shows the tree model; notice that the most important variable is Age. The root node has a total of cases: 50.4% represents high-risk patients and 49.6% correspond to no high-risk cases. Remember that cases are weighted. They will probably be interested only in the significance level, which is less than for all splits in this model.
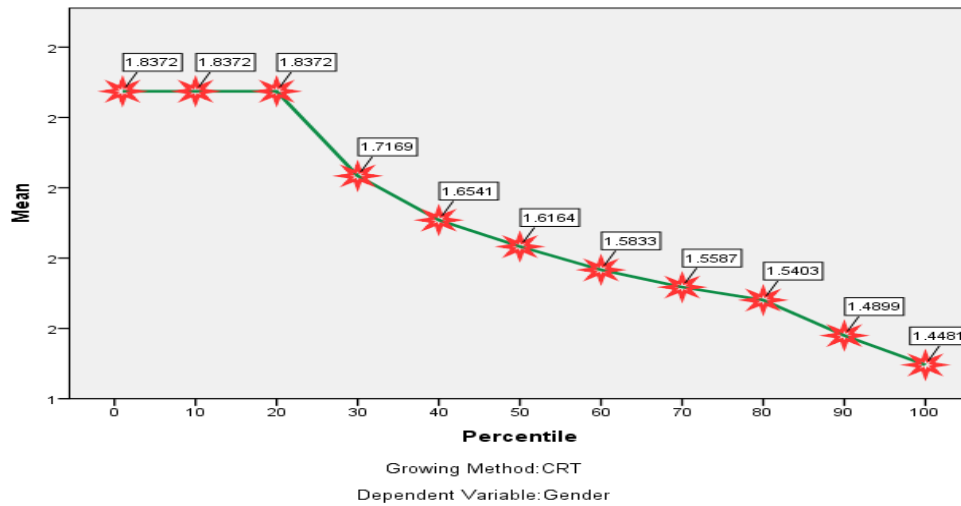
Figure 3: **Mean Value of Growing method CRT**

According to (Figure-3) shows that the model is effective. The cumulative index chart is expected to begin above 100% and steadily decrease until it reaches 100%. The index value should start considerably over 100 percent, continue on a high plate and finally fall dramatically toward 100 percent for a solid model. The line will cover roughly 100% of the field for a model that offers no information.

Table2: **Split Value of the Tree model Table**

Node	Mean	Std. Deviation	N	Percent	Predicted Mean	Parent Node	Primary Independent Variable		
							Variable	Improvement	Split Values
0	1.45	.498	424	100.0%	1.44				
1	1.28	.448	207	48.8%	1.26	0	Parental mediation	0.035	17.000; 21.000; 16.000; 19.000
2	1.61	.488	217	51.2%	1.63	0	Parental mediation	0.035	18.000; 15.000; 22.000; 20.000; 23.000
3	1.41	.494	124	29.2%	1.44	1	Online Activates	0.018	22.000; 38.000; 16.000; 37.000; 31.000; 28.000; 21.000
4	1.07	.261	83	19.6%	1.07	1	Online Activates	0.018	25.000; 39.000; 33.000; 30.000; 27.000
5	1.84	.371	86	20.3%	1.84	2	Safety measures	0.017	21.000; 19.000; 18.000; 25.000
6	1.47	.501	131	30.9%	1.46	2	Safety measures	0.017	24.000; 20.000; 23.000

Risk

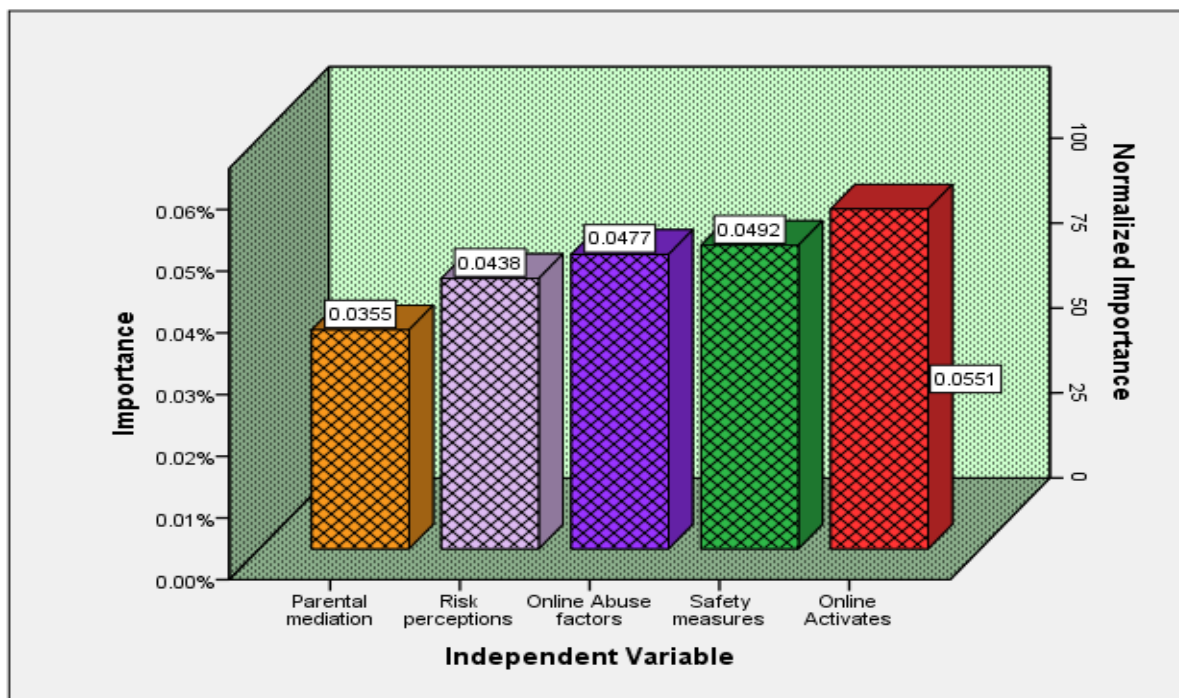| Estimate	Std. Error
.189	.008

Growing Method: CRT and Dependent Variable: Gender

Table 4: **Growing Method: CRT Dependent Variable**
Importance

Independent Variable	Importance	Normalized Importance
Online Activities	.055	100.0%
Safety measures	.049	89.3%
Online Abuse	.048	86.7%
Risk perceptions	.044	79.6%
Parental mediation	.035	64.4%

According to table-4, shows the results of the independent variable importance in online activities, its significant value of importance is 0.055 and normalized importance is 100.0%. The safety measure's significant value of importance is 0.049 and the normalized importance is 89.3%. The online abuse factor's significant value of importance is 0.048 and the normalized importance is 86.7%. The risk perceptions' significant value of importance is 0044 and normalized importance is 79.6%. Parental mediation's significant value of importance is 0.035 and normalized importance is 64.4%. This model of study may have reason to suspect that the correct classification rate for good credit cases may be overly optimistic since it's partly based on the assumption that lack of information about two independent variables (online activities level and number safety measurement) is an indication of good credit. The value of the estimate is 0.189 and the standard error is 0.008 value.

Growing Method: CRT

Dependent Variable: Gender

Figure4: **Growing Method CRT Variable**

According to Figure-4, gives a visual display of the independent variable by online activities in value of: 0.0551 importance at most of the children activities through online mode only, the safety measures of the value: 0.0492 the respondent of the children is the measure to gain approximately above the normalized. We would expect all of the cases that take the category safety measures to be online. Online abuses in through the internet. It provides another way of looking at the information in the online abuses factor of the value: 0.0477. The risk perception of the value of the scored 0.0438 is dataset at random, you would expect to approximate values. The parental mediation maximum of the percentage of the children agrees random the value of 0.0355.

Table5: **Classicization of the value of the surrogate in CRT**
Surrogates

Parent Node	Independent Variable		Improvement	Association
	Factors-1 Primary	Parental mediation	.035	
0		Risk perceptions	.023	.801
	Surrogate	Online Abuse	.025	.657
		Online Activates	.027	.639
		Safety measures	.026	.544
	Factors-2 Primary	Online Activates	.018	
1		Risk perceptions	.007	.653
	Surrogate	Online Abuse	.006	.592
		Parental mediation	.001	.476
		Safety measures	.006	.150
	Factors-3 Primary	Safety measures	.017	
2		Online Abuse	.016	.985
	Surrogate	Risk perceptions	.014	.697
		Online Activates	.010	.667
		Parental mediation	7.614E-007	.184

According to table 5, Classicization of the surrogate's value in CRT, 0 is the parent node. The improvement value for primary parental mediation is 0.035. The improvement value for surrogate risk perceptions is 0.023, and the associated value is 0.801. The improvement value for parent node online abuse factors is 0.025, while the association value is 0.657. The value for online activity improvement is 0.027, and the value for the association is 0.639. The improvement value for safety measures is 0.026, and the associated value is 0.544. The improvement value for parent node 1 primary online activities is 0.018. The improvement value for surrogate risk perceptions is 0.007, and the associated value is 0.653. Parent node online abuse characteristics have an improvement value of 0.006 and an associated value of 0.592. The improvement value for parental mediation is 0.001, while the association value is 0.476. The improvement value for safety measures is 0.006, and the association.

4. 3 Discussion

These findings of the research identified that children's online usage and resources are wonderful good tools for parents and educators to help keep their students educated and entertained. But with access to the internet comes concerns about excessive screen time, talking to strangers, social media addiction, and more. The first aim of this study was to describe patterns of response from children with internet usage and online addiction, parental mediation using. The tree analysis suggests patterns of online safety consistent with both recalibration and reprioritization. These changes in subjective assessments of might mask treatment effects if this is not taken into account when using online safety as an outcome.

4.4 Usage of Social media

The social media landscape seems to change every day with new apps, security risks, and privacy concerns and it can be tough for parents to keep up. They find out that the Independent variable importance in online activities, its significant value of importance is 0.055 and normalize 100.0%. This significant value denotes that there are many great educational tools and tracking control software that can help give parents peace of mind, the smart social media has researched. Here are some ideas for positive online activities for students of all ages. Social media sites are particularly fertile ground for online harassment, but these behaviors occur on a wide range of online sites.

4.5 Safety Measure through Online

Often these behaviors target personal or physical characteristics: although most people believe that the anonymity provided by the Internet contributes to harassment, these experiences may include acquaintances, friends, or even family members. Online abuse is any kind of abuse that happens on the internet. This can happen on any device connected to the Internet, such as computers, tablets, and mobile phones. Sexting is

when someone shares or sends sexually explicit, nude, or semi-nude pictures or videos. It is an online abuse if a child or young person is pressured or forced to create or send these types of images. Sexual abuse is the act of forcing or deceiving a child or young person into sexual activity. Internet security is very important to avoid this. The model showed that the significant value of safety measures was 0.049 and the normalized importance was as high as 89.3%.

4.6 Influence of internet security

The online abuse factor's significant value of importance is 0.048 and the normalized importance is 86.7%. Use cookies to improve the website experience. To learn about the use of cookies and how can manage their cookie settings. It seems that they will provide a lot of information like this and pave the way for people to follow their website. The significant value of risk sensitivity was 0044 and the normalized significance was 79.6%. During Lockdown, 79.6% of parents practiced mediation, while children grew up relating to the amount of time a child spends online, parental concerns, attitudes, and digital skills. Children spend the least amount of time online when parents have the most control and the least active mediation. Parental mediation practices may affect problem screen rates better or worse.

Internet security is also sometimes referred to as online security, cyber security, or e-security. Children have more information at their fingertips than the previous generation. There are several cyber security tips that parents need to be aware of, and websites should explain their privacy policies and obtain parental consent before collecting or using a child's personal information. Importantly, it restricts sites that need to provide children with more personal information to play a game. Get antivirus, resistance, privacy tools, data leak detection, home wifi monitoring, and more. Improve their password protection with a password management program that remembers personal passwords for all accounts.

4.7 Awareness of Internet safety

Playing safely online can prevent their children from being exposed to unwanted information, products, or dangers on the internet that could harm their devices, personal information, or family. However, the laws are sometimes broken online, which is why the best security practice is training in computer security and cyber security. It is wise to teach children computer security so that they do not fall prey to some common dangers of the

internet. Computer, tablets, laptops, and smartphones are common at school and at home. Internet security is the process of staying safe online. This includes being aware of the risks associated with your online activity and using certain strategies to prevent or avoid these risks. Whether they learn, watch YouTube, or play a game, children become digital citizens at a young age. Devices do not disappear at any time, which is why families need to talk about cyber security. So, with some cyber security tips, getting to know them is not too quick. Parental mediation's significant value of importance is 0.035 and normalized importance is 64.4%. The online resources on this page are wonderful tools for parents and educators to help keep their students educated and entertained. But with access to the internet comes concerns about excessive screen time, talking to strangers, internet addiction and more.

5. Conclusion

The research study provides an overview of digital usage among children. The electronic device use of children depends on various factors such as family environment or atmosphere. Most of the parents do not spend time with children and occasionally participate with children in any digital communication. So, lack of parental attention towards children also lacks in online parental monitoring. These results of the Parental mediation's significant value of importance is 0.035 and normalized importance is 64.4%. The model showed that the significant value of safety measures was 0.049 and the normalized importance was as high as 89.3%. 71% of the parents they would not monitor their child's online activities because they feel it is a hole of trust. Findings of the Parents should carefully monitor their students' activity on the internet or online and talk openly with them if they find any other information that seems inappropriate or inaccurate, because the risk of a child being subjected to online abuse is high in the virtual world. Finally, the main motivation of this research reveals the importance of educating school children in the field of internet and online safety awareness in future works.

5.1 Limitation

This study was limited to secondary and higher secondary school children in Chennai, India, Actual internet usage and the impact of safety measures were checked. These studies can be extended to find links between internet usage and the impact of safety measurements using the model of tree classification analysis.

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