



Effect of Digital Devices and Parental Regulations on Adolescents' Achievement Motivation: A Quantitative Study

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HIGHLIGHTS

- Exposure to digital gadgets have significant impact on the achievement motivation
- Parental rules set by the family at home for mindful usage of screens, also influence achievement motivation
- No gender difference was found in the achievement motivation and use of digital devices among participants

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ABSTRACT

The increasing reliance on digital devices presents both benefits and challenges, particularly during adolescent years. The present study was conducted from January to December 2024. A sample of 300 adolescents aged 14-16 years was selected. Quantitative research design, self-structured close-ended questionnaires were administered through surveys. The study aimed to investigate the impact of digital devices and parental rules on the achievement motivation of adolescents. Participants reported that the use of digital devices for educational purposes and the time spent on these devices for school assignments significantly influenced their motivation. The findings indicated that distractions and lack of concentration in the classroom, attributed to digital devices, adversely affected the participants' achievement motivation. Results also demonstrated that digital devices offer opportunities for personality development, which in turn influences achievement motivation. Parental regulations on screen time played a crucial role in shaping adolescent motivation, emphasising the importance of structured digital habits. The findings can assist teachers, educational institutions, policymakers, and counsellors in promoting mindful digital habits. Encouraging balanced screen exposure and reinforcing achievement motivation can contribute to healthier academic and psychological development among adolescents.

INTRODUCTION

The widespread adoption of digital devices has significantly transformed the landscape of adolescent development and education in recent years. COVID-19 pandemic necessitated intrusion of technologies in both teaching and learning methods that provide opportunities to both students and instructor to achieve their targeted millstones. College students had positive perception towards e-learning (Singh et al., 2024). If new education policy 2020 is applied with its set objectives, it can help children to develop creative and abstract thinking that will be crucial in the achievement

of their goals. Pandey et al., (2020) explored social media usage among college students and highlights rampant usage of social media in which WhatsApp and Facebook are the most used social platforms. Students spent significant amount of time on these platforms and perceived various health issues due to engagement in irrelevant activities on digital devices. Research indicates that adolescents with higher digital skills tend to take more online opportunities, which can potentially enhance their achievement motivation (Rodríguez-De-Dios et al., 2018). However, these digitally skilled adolescents also experience more online risks, highlighting the need for balanced digital engagement.

Parental involvement plays a crucial role in shaping adolescents' digital habits and academic attitudes. These rules can range from setting time limits and content restrictions to monitoring online activities and promoting a balance between screen time and other activities. Parental mediation plays a crucial role in this context, with restrictive mediation negatively affecting online opportunities and risks through digital literacy (Rodríguez-De-Dios et al., 2018). Interestingly, parental involvement and monitoring strategies have shown mixed results in influencing adolescent behavior and achievement motivation. While parental knowledge and family rules about dating were found to decrease the likelihood of early sexual initiation (Ethier et al., 2016), excessive parental control can have negative effects on adolescents' autonomous motivation and achievement (Lowe & Dotterer, 2013; Suizzo et al., 2015). The study on parent-adolescent career congruence demonstrates that alignment with parents' wishes positively affects academic motivation and work hope (Fantinelli et al., 2023). The impact of digital devices and parental rules on adolescents' achievement motivation is complex and multifaceted. Strategies that enhance parent-child relationships, such as open communication and mutual understanding, are more likely to positively influence adolescents' achievement motivation in the digital age (Lowe & Dotterer, 2013; Suizzo et al., 2015).

Motivation is crucial for survival of a human being and that affect behavior of a person. Motivation affects an individual's whole performance besides perception and learning capabilities in a nurturing atmosphere. Human beings strive on some needs and want which needs to be satisfied. It encompasses various aspects such as intrinsic and extrinsic motivation, self-efficacy, and goal orientation.

This research paper seeks to explore the intricate interplay between digital device usage, parental rules, and achievement motivation in adolescents. By examining these relationships, the researcher aims to contribute valuable insights to the ongoing discourse on technology's role in education and provide evidence-based recommendations for parents, educators, and policymakers to foster positive academic outcomes in the digital era.

METHODOLOGY

For the present study Rewari district was selected based on its demographic characteristics and relevance to the research objectives. A single block was chosen using purposive sampling which consisted of 39 villages. The chit system was employed to ensure a random selection of villages from where schools were selected again by the chit system to ensure an unbiased selection process.

Adolescents in the age group of 14-16 years were approached from the schools. Prior permission was taken from the Principals of schools and students who expressed willingness to participate were included in the study, ensuring voluntary participation. Informed consent was obtained from the respondents and their guardians. The study adhered to ethical research guidelines, ensuring the anonymity and confidentiality of participants. Ethical approval was also granted by the department ethical committee with its Ethics Committee number H.Sc./EC/027/24.02.2023.

Data was collected using both self-made and standardized tools. Participants were directly contacted in their respective schools as part of the data collection process. The academic achievement motivation test (revised version) (AAMT-ST) by Sharma, 2014) was used to assess the achievement motivation of the respondents. It contains 38 statements each statement with two response situations A & B. The respondents had to select either A or B situation as a response based on their thinking. The correct answer shows the situation of motivation. The total scores received by the respondent's measure the level of academic achievement motivation.

To evaluate the digital gadget usage and parental regulation, a self-structured, close-ended questionnaire was developed. The tool was used to assess the extent of digital gadget usage among adolescents and parental regulations regarding their usage. The reliability of this tool was tested using Cronbach's alpha formula, yielding a score of 0.8, which is considered excellent for internal consistency. The items covered dimensions such as: Where/physical-space, When/timings, What /type of content and How much/duration to watch and adult Supervision during screen time. Participants were given clear instructions as to how to fill the items and doubts if any were clarified before they proceeded. Approximately, half an hour was given to each participant to complete the survey. The results of the study were interpreted using Statistical Packages for Social Sciences (SPSS 16.0).

RESULTS

The results in Table 1 depicts that not a single participant either girl or boy scored extremely high on academic achievement motivation scale. It shows that 6 percent girls and 4.7 percent boys had high academic achievement motivation level. Two percent girls and twelve percent boys had above average level of achievement motivation. Out of total respondents, 24.7 percent girls and 30.7 percent boys were average. About 17.3 percent girls and 18.7 percent boys came into the category of below average. Girls and boys accounted as 16.7 percent and 15.3 percent respectively were scored low. Lastly, 15.3 percent girls and 18.7 percent of boys were extremely low level of motivation regarding their academic achievement.

Figure 1 displays the distribution of Z- scores ranging from -2 & below to +2 to above. It indicates that more than half of the scores obtained by the adolescents lie between -0.50 to +0.50 followed by -1.25 to +1.25, -1.26 to +1.26 and -2.01 to +2.01. a smaller number scores are concentrated at the extreme ends of the Z-score range. Overall, the graph suggests the normal distribution.

Table 1. Level of Achievement Motivation among Adolescents

Category	Girls (n=150) (%)	Boys (n=150) (%)
Extremely high	Nil	Nil
High	6.0	4.7
Above average	2.0	12.0
Average	24.7	30.7
Below average	17.3	18.7
Low	16.7	15.3
Extremely low	15.3	18.7

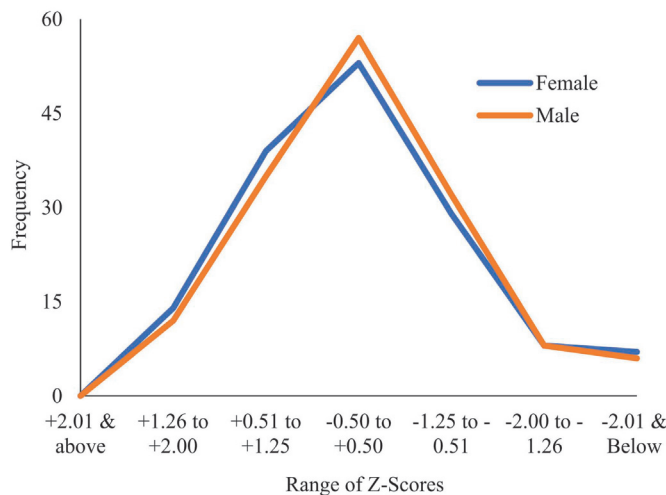


Figure 1. Z-Scores of achievement motivation among adolescents

Table 2 shows the differences in the use of digital gadgets in academics among girls and boys. It highlights that there was significant difference as per gender of the respondents, regarding amount of time adolescents spend on digital devices to complete their school assignments ($F=20.701$, $p<0.01$), lack of concentration in classroom due to prolonged exposure to screens ($F= 5.129$, $p<0.01$) and time spent on devices for entertainment ($F=0.325$, $p<0.05$). The other variables including, digital gadgets cause distractions in academic activities ($F=0.05$, $p>0.05$), use of these devices for educational purposes ($F= 0.498$, $p>0.05$) digital gadgets provides opportunities to improve personality ($F= 0.261$, $p>0.05$) and encouraged by other's success stories expressed a slight or negligible differences among girls and boys.

Table 3 explains the parental regulations regarding digital devices usage at home. The results found that 42.67 girls and 44.67 boys had rules at home regarding when to watch screen, whereas 57.33 girls and 55.33 boys reported that they do not have rule about when to watch screens. Findings revealed that 26.67 girls and 42.00 boys said that their parents set rules regarding where to watch screen. Seventy three percent girls and 58 percent boys reported they do not have any rules regarding where to watch screens. The outcomes of the study demonstrated that 47.33 percent girls and 66 percent boys had rules about what to watch on screens while 52.67 percent girls and 34 percent boys accepted that their parents did not set regulations for the type of content exposed on screens. It showed that 44 percent girls and 38.67 percent boys had rules like how much time spent on digital devices, 28.67 girls and 41.33

percent boys reported that their parents sometimes set rules about how much time to watch on screens and remaining 27.33 percent girls and 20 percent boys said their parents do not set time limits for screen usage. When the respondents were asked about how often they follow these rules then half of them reported that they always follow rules and regulations regarding screen usage set by their parents at home whereas 27.33 percent girls and 29.33 percent boys rarely follow these rules. The respondents who do not follow these rules were 16.67 percent girls and 20.67 boys respectively. The above table highlights that 34.67 percent girls and boys were allowed to watch digital devices under the supervision of adults, 31 percent girls and 38 percent boys reported that they are sometimes allowed to watch screens only under adult supervision. It indicated that 34 percent girls and 27.33 percent boys do not have rule of screen usage only under adult supervision.

Table 3 explains one-way between- groups analysis of variance that was evaluated to explore the impact of rules at home regarding digital devices usage on level of achievement motivation among adolescents. There was a statistically significant difference at the $p<0.05$ level of academic motivation due to screen time rules at home: $F = 1.94$, $p = 0.034$. Therefore, it can be concluded from the above table that rules regarding screen time such as where to watch digital devices, what to watch on these devices, how much time, and frequency of following these rules influence achievement motivation among young generation.

Table 3. Parental regulations regarding screen usage

Statements	Category	Girls (n=150)	Boys (n=150)
When to watch screen	Yes	42.67	44.67
	No	57.33	55.33
Where to watch screen	Yes	26.67	42.00
	No	73.33	58.00
What to watch on screen	Yes	47.33	66.00
	No	52.67	34.00
How much time to watch screen	Yes	44.00	38.67
	Sometimes	28.67	41.33
	No	27.33	20.00
How often do you follow the rules	Never	16.67	20.67
	Rarely	27.33	29.33
	Always	56.33	50.00
Allowed only to watch screen under adult supervision	Yes	34.67	34.67
	Sometimes	31.33	38.00
	No	34.00	27.33

Table 2. Gender differences in the use of Digital gadgets

Digital Gadgets usage	Girls (n=150) Mean $\pm$ SD	Boys (n=150) Mean $\pm$ SD	Std error	F-Value	Sig. (2-tailed)
Digital gadget cause disturbances in academic activities	1.93 $\pm$.733	1.85 $\pm$.717	0.041	.055	P=0.05
Use for educational purposes	2.16 $\pm$.584	2.06 $\pm$.61	0.034	.498	p>0.05
Hours spent on digital devices to complete school assignments	1.26 $\pm$.586	1.51 $\pm$.75	0.04	20.701	P<0.01
Digital addiction cause lack of concentration	3.086 $\pm$ 1.23	3.56 $\pm$ 1.40	0.07	5.129	P<0.01
Provide opportunity to improve personality	3.45 $\pm$ 1.13862	3.24 $\pm$ 1.14	0.06	.261	p>0.05
Encouraged by others' success stories	3.77 $\pm$ 1.19	3.54 $\pm$ 1.14	0.06	.022	P>0.05
Time spent on digital devices for entertainment	10.15 $\pm$ 2.15	10.65 $\pm$ 2.28	0.12	.325	P<0.05

Table 4. Effect of parental regulations regarding digital gadgets usage on achievement motivation of adolescents

Achievement motivation	Sum of Squares	df	Mean Square	F	p-value
Between Groups	44.009	11	4.001	1.941	.034
Within Groups	593.578	288	2.061		
Total	637.587	299			

A multiple regression was conducted to predict achievement motivation from the variables digital gadget cause disturbances in academic activities, use for educational purposes, hours spent on digital devices to complete school assignments, excessive screen time cause lack of concentration in classroom, provide opportunity to improve personality and encouraged by success stories of others. All the useful assumptions, including normality, multi-co-linearity and linearity were met. Overall, the regression model was significant, $F = 4.001$, $p < 0.001$, $R^2 = 0.76$. Of the independent variables (predators) investigated, disturbances in academic activities due to digital devices ($\beta = -0.127$, $t = -2.23$, $p < 0.05$), use of gadgets for educational purpose ($\beta = 0.132$, $t = 2.314$, $p < 0.05$), time spent on digital devices for school work ($\beta = 0.113$, $t = 2.25$, $p < 0.05$), lack of concentration in classroom because of screen addiction ($\beta = 0.113$, $t = 2.00$, $p < 0.05$), and gadgets provide opportunity to improve personality ($\beta = 0.110$, $t = -2.00$, $p < 0.05$), were significant. The remaining predator such as and encouraged by success stories of others ($\beta = 0.012$, $t = -0.190$, $p < 0.05$), was not significant. Therefore, it can be concluded achievement motivation of adolescents depends on the use of digital devices.

DISCUSSION

The findings reveal that parental rules regarding digital device use for academic and leisure activities significantly influence adolescents' motivation to achieve. Kali (2015) emphasised the importance of parental involvement during adolescence, noting that engaged parents positively impact their children's motivation compared to those with minimal parental guidance. Parent's involvement with their children assists them to be highly motivated

to achieve on life as compared to children whose parents do not involve. The study indicates that parental regulations regarding digital device usage at home influence adolescents' achievement motivation. Specific rules were commonly enforced, such as restrictions on where screens can be used, the type of content consumed, and time limits for screen exposure. The findings highlight the frequency with which adolescents adhere to these regulations and their effect on academic motivation.

The study indicates that participants had regulations set by their parents about type of content they exposed to at home. Findings revealed that the parents of the respondents set time limits for screen usage and also highlights how frequently the respondents follow these rules and regulations handed down by their parents. Digital devices help students by providing a wide range of learning opportunities that shape life however; excessive screen time can hinder learning abilities and overall achievement rates. This needs parental rules about screen time that benefit adolescents to focus on their goals without any distraction on these digital media. Parental mediation plays a crucial role in this context, with restrictive mediation negatively affecting online opportunities and risks through digital literacy (Rodríguez-De-Dios et al., 2018). Parental control can help to overcome the harmful impact of prolonged exposure to digital devices. Restrictions on digital devices usage and stimulating relationship with family members when mixed with guidance about age appropriate content can develop a healthy association with digital devices. A study conducted by Rosen et al (2013) suggests that consistent monitoring of adolescents by parents results into better management of their time and goals prioritization. By minimizing distraction on digital platforms, adolescents are able

Table 5. Effect of digital gadgets on the achievement motivation of adolescents

Model	Sum of Squares	df	Mean Square	F	Sig.	R ²	Adjusted R ²
1 Regression	49.313	6	8.219	4.001	0.001 ^a	0.076	0.057
Residual	601.924	293	2.054				
Total	651.237	299					

^aPredictors: (Constant), Encouraged by success stories, Disturbances in academic activities, Lack of concentration, Educational purposes, Hours spent on digital devices to complete school assignments, Improved personality, b. Dependent Variable: Achievement Motivation

(b) Coefficients

Model	Un-standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. error	B		
(Constant)	4.762	.546		8.727	.000
Digital gadget cause disturbances in academic activities	-.258	.115	-.127	-2.235	.026
Use for educational purposes	.326	.141	.132	2.314	.021
Hours spent on digital devices to complete school assignments	.285	.126	.133	2.257	.025
Excessive screen time cause lack of concentration in classroom	.125	.062	.113	-2.00	.046
Provide opportunity to improve personality	.124	.063	.110	2.001	.046
Encouraged by success stories of others	-.015	.081	-.012	-.190	.849

to concentrate on their academic activities, which may lead to enhance their achievement motivation level. Parental control regarding digital devices usage and achievement motivation also varies with different styles of parenting. Padilla Walker and Nelson (2012) in their study conclude that authoritative is one of the most effective parenting style promoting mindful usage of digital devices and achievement motivation among adolescents. As authoritative parenting style is a mixture of love, warmth, responsiveness and clear rules. Authoritarian parenting style is associated with less achievement motivation and high level of digital device addiction (Lilard, 2015).

The study also found that excessive digital device use disrupts academic activities, leading to reduced concentration in classrooms and lower achievement motivation levels. The findings of Kwong & Fong (2019) support the results of the study that the excessive use of electronic devices can lead to academic failure and behavioural problems, negatively impacting adolescents' achievement motivation. Issues such as poor academic performance and interpersonal relationship problems arise from internet addiction, affecting their drive to succeed academically.

Results demonstrate that digital devices used for educational purposes and amount of time spent devoted to finish school assignments significantly affects achievement motivation of adolescents. Consistent with the present outcomes, Baker et al., (2011) highlights that digital device can be beneficial for better learning outcomes when used appropriately. Results show that digital devices provide opportunities to improve personality which in turn influence achievement motivation of participants. Supporting the present study Rodríguez-De-Dios et al., (2018) explored that adolescents with higher digital skills tend to take more online opportunities, which can potentially enhance their achievement motivation. However, these digitally skilled adolescents also experience more online risks, highlighting the need for balanced digital engagement. Digital tools provide a wide range of applications including educational apps, online learning websites and distance education that help in improving academic scores of individuals. These improved intrinsically motivate adolescents to achieve more. Granic et al., (2014) support the results of the present research and suggest that well designed educational games can elevate their motivation level by making learning more cheerful and rewarding. Conversely, Gentile et al., (2011) note that excessive and violent games may lower motivation by withdrawing from academic pursuits. Adolescence is the transitional period of life and adolescents are easily distracted on these platforms which negatively affect their achievement motivation. The influence whether positive or negative depends on the use of these devices, type of content they expose, duration of digital activities and so on. Results reveal that there are no significant differences in the achievement motivation and digital devices usage among adolescents as per their gender. Research by Murthy & Tauro (2024) explains that a notable association between socio-demographic profile and addiction to smart phones among adolescents but the study does not provide any evidence of gender differences in the use of these devices that support the present study. Contrary to the findings of the present study, Lee et al., (2018) showing gender differences in the use of digital media. These differences may be due to

biological, psychological and socio-cultural factors that affect their use of digital devices. Gender specific activities are also present in the use of digital devices. It is observed that males use digital devices for gaming; movies, romantic relationships, and shopping etc while female use these gadgets for conversation with their female friends, fashion and for information purposes. The present study is gender neutral in the aspect of achievement motivation. Wani & Masih (2015) supported these findings, indicating average level of achievement motivation among adolescents irrespective of their gender, type of school and streams they adopted. Bhavna & Kaur (2015) conclude that girls have high level of achievement motivation than boys however, there is less differences in the mean scores.

CONCLUSION

The study highlights the critical role of digital device usage and parental regulations for screen exposure in shaping the achievement motivation of adolescents. The findings suggest that prolonged exposure to digital gadgets can have a destructive effect on adolescents' motivation to achieve something in their lives. Structured time table and consistent parental rules that foster balanced digital exposure enhance achievement motivation among adolescents. Further research should be conducted to explore the long term consequences of digital tools usage and importance of parental interventions in propagating achievement motivation. By understanding the inter-relationship between these factors educationists, parents, policy makers can organize workshops, brainstorming activities, strategy programs for both parents and adolescents that support them to overcome the hurdles of this digital era.

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