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Digital Technology, Perceived Parental Mediation, and Adolescents' Academic Performance

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ABSTRACT

The intricate relationship between the use of digital technology and academic performance has been a long-standing topic of debate. This study employs a phenomenological approach to investigate adolescents' lived experiences with digital technology, the role of parental mediation, and the corresponding impacts on their academic performance. Participants included adolescents aged 11 to 18 years (M = 13.5, SD = 3.67) who attended a Boys & Girls Club after-school program in the Southwestern region of the United States. To enhance data triangulation, the study employed a multidimensional qualitative research design that included *focus group interviews*, *individual interviews*, and *time-use diaries*. Results revealed that adolescents' perceptions and internalization of parental mediation strategies were linked to time management efficacy in digital technology usage. Adolescents with perceived parental coviewing strategy spent more time using digital technology, followed by active strategy, and restrictive was the third. However, restrictive mediation was found to be a more effective strategy in reducing the potential adverse effects of media technology use on academic performance compared to active and coviewing strategies. Parental mediation strategies influenced the amount of time adolescents spent on technology, leading to the development of discretionary technology conduct (DTC) and enhancing their academic performance to varying degrees. This study also demonstrates that the timing of technology usage is essential in rendering the existential effects on academic performance inconsequential. Consequently, digital technology neither displaces time for educational activities, as suggested by the displacement hypothesis, nor undermines the academic performance of adolescents.

Keywords: Adolescents, digital technologies, academic performance, parental mediation, displacement hypothesis.

INTRODUCTION

Adolescents live in a rich milieu of electronic and social media. Digital technology is described in this study as a network of electronic devices used for entertainment, communication, data processing, and social interaction. It is estimated that adolescents' digital technology usage averages nearly 5 to 8 hours per day [1, 2], and a total of 10.75 hours when multitasking is considered [1]. Regarding social media platforms like Facebook, Instagram, and Twitter, research findings indicate that approximately 90% of adolescents use them daily [3], with an estimated daily usage time of 3 hours [4]

The influence of digital technology usage on academic performance is complex and multifaceted. As the use of today's digital technologies varies, the results of previous studies have shown inconsistency regarding their effect on academic performance. For example, some studies have shown negative relationships between digital technologies, such as video games and cell phone use, and adolescents' academic performance [5, 6, 7, 8, 9, 2]. Conversely, others have noted positive associations between adolescents' use of digital technologies, such as educational video games and home computers, and their academic performance, including success in the contemporary job market [10, 11, 12]. Other studies have found either no relationship or insignificant relationships between digital technology use and academic performance [13, 14, 15].

Given the amount of time that adolescents spend on digital technology each day raises concerns about the adverse effects on school performance. Accordingly, the displacement hypothesis proposes that adolescents' time on digital technologies displaces homework time, negatively impacting their academic performance [16, 17]. However, some research findings suggest that parental mediation is a practical approach to mitigating the adverse effects of digital technologies on adolescents' academic performance [18, 19, 20, 21]. Parental mediation appears to be an effective means for parents to exert some control over their adolescent children's use of digital technology by setting clear guidelines. For example, parents can set a time frame when digital technology can be used, the type of technology consumed, and the total amount of time to be invested daily, thereby minimizing the detrimental effects of digital technology on adolescents' academic performance.

Displacement Hypothesis

The displacement hypothesis suggests that time spent consuming digital technologies displaces the time necessary for educational activities, such as studying, reading, and doing homework, negatively affecting academic achievement [16, 17]. The assumption is that adolescents spend an inordinate amount of time in non-academic activities, which prevents them from engaging in educational activities. This hypothesis posits that the dyad relationship between the use of digital technologies and academic achievement is symmetrical, suggesting that one change produces a simultaneous change in the other. Several studies have demonstrated that the amount of time spent on digital technologies is related to adolescents' academic performance. For example, adolescents who spend 2 to 3 hours per day watching TV have lower academic achievement than those who watch TV for fewer hours [22, 14]. Similarly, another study found a negative relationship between the use of digital technology, such as smartphones, and academic performance for adolescents who spent more than 5 hours daily [23]. Increased screen time among adolescents may reflect a lack of parental monitoring of technology use. Previous research has highlighted the importance of parental mediation in mitigating the adverse effects of technology on children's and adolescents' academic performance [24, 25, 20, 26].

Parental Mediation

Parental mediation in this study refers to parents' stance on their adolescents' use of digital technology and their efforts to direct, set boundaries, monitor, and assist their adolescents in becoming disciplined digital technology consumers. Theorization of parental mediation has been framed into three distinct constructs, namely *restrictive mediation*, *active mediation*, and *coviewing*, with contrasting scales of reported influence and effectiveness [19, 27, 28].

Restrictive mediation occurs when parents set rules and limitations regarding the time and type of digital device to use [29, 28, 30]. In this approach, parents establish a specific time for their children's media technology use and limit them from consuming certain programs or media. The optimal goal of restrictive mediation is to employ various strategies to limit adolescents' access to media technology [31]. The use of restrictive mediation by parents is age-related; for example, parents are more likely to monitor and impose rules and limitations concerning the use of technology devices on their younger children than on their older children [32, 2, 28]. Restrictive mediation is primarily used by U.S. parents [2], those who aim to limit their children's media consumption [33, 29, 27], and college-educated parents [28]. Research findings show that Restrictive mediation is more effective at reducing children's time spent on technology use than active mediation [34, 35].

Active mediation, also known as instructive mediation, involves parent-child dialogue about digital technology content, either during or after the use of digital devices [36, 27, 28]. In this approach to mediation, parents make comments about digital messages, with the primary purpose of helping their children develop critical thinking skills, enabling them to distinguish between facts and fiction. More research has been done on active mediation than on any other parental mediation strategy [37], and the outcomes have been encouraging [27]. For example, research findings have suggested that children and adolescents whose parents used active mediation exhibited better judgment in digital media consumption [37] and have been positively linked to interpersonal intelligence [20]. In addition, children whose parents use active mediation and coviewing experience less influence from technology-related risks than those who use restrictive mediation [34].

Coviewing involves parents and children engaging in digital activities together without discussing the content of those activities [38, 28]. With this approach, digital technology is viewed as a means for families to spend quality time together. Coviewing, however, has been linked to several unintended adverse social outcomes. For example, adolescents whose parents watch programs featuring less desirable television characters with them tend to misinterpret their parents' passivity as an endorsement of the characters, and repeated parental coviewing encourages the adolescents to mimic the media characters [27]. Conversely, not all coviewing has produced an unintended contrary effect on adolescents; for example, parental coviewing has been positively linked to higher academic achievement [20], and students tend to learn more when their parents view educational programs with them [39]. In a broader context, researchers have found that coviewing encourages parents and children to spend leisure time together, thereby strengthening family ties and emotional connections [40, 21]. Generally, all parental mediations have a subjective positive influence on adolescents' use of media technology.

The Present Study

The central focus of this qualitative study was to explore, from a phenomenological vantage point, how adolescents perceive and internalize their parents' mediation and how this influences their use of digital technologies and academic performance. This exploration was conducted during focus groups and individual interviews, in which participants answered questions assessing the types of mediation strategies their parents used and how these strategies affected their media technology consumption. Several studies on parental mediation and its impact on children's and adolescents' academic performance have yielded mixed

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results. This study aimed to provide additional insights into the findings of previous studies through a predominantly qualitative research analysis. This study was guided by the following research questions to explore how parents' mediation strategies regarding adolescents' use of digital technology can alleviate the harmful effects on academic performance.

- Research Question 1: What impact do adolescents' perceptions of parental mediation strategies have on their patterns of digital technology use?
- Research Question 2: Do perceived parental mediations assist adolescents in maintaining good grades in school, thereby reducing the adverse effects associated with technology use?

METHOD

Participants

The sample of this qualitative study consisted of 24 adolescents between the ages of 11 and 18 years old (M = 13.5, SD = 3.67). Participants were 58% boys and 42% girls, and their racial and ethnic backgrounds included Black (33%), Hispanic (29%), White (21%), Asian (13%), and mixed-race (4%). Although this study aimed to recruit an even number of boys and girls, the gender imbalance in the sample resulted from fewer girls returning signed consent forms before the study began. The sample was drawn from a middle-class neighborhood, with a median household income of $85,000 and a median house value of $250,000. A purposive sampling method was employed to select the research participants, who attended a Boys & Girls Club after-school program located in the Southwestern region of the United States. The club is not affiliated with any school or school district. Data was collected using a multidimensional approach that consisted of *focus group interviews, individual interviews,* and *time-use diaries*. There were five focus groups, each consisting of five adolescents in the first four groups and four adolescents in the fifth group. Participants in the focus group interviews were grouped with adolescents of approximately the same age, while participants in the individual interviews and time-use diary were randomly selected by drawing assigned numbers from a fishbowl. Twelve participants completed the time-use diary phase, which consisted of Hispanic (33%), Black (25%), White (25%), and Asian (17%) participants; the gender composition was boys (58%) and girls (42%). The individual interviews phase involved 10 participants, whose racial and ethnic backgrounds were as follows: Black (40%), Hispanic (30%), White (20%), and Asian (10%). The use of subsets of 10 participants in the individual interviews and 12 participants in the time-use diary was to enhance the credibility of the qualitative data from the focus groups, as well as to capture different dimensions of adolescents' technology use habits. While the data from the focus groups of 24 participants was sufficient for this study, the individual interviews and time-use diary served as additional components for data triangulation. Data triangulation in a qualitative study involves using different data collection methods to corroborate findings. As such, previous studies have emphasized the merits of data triangulation as a means to test and enhance the validity and consistency of research findings [41, 42].

Methodology

The use of descriptive statistics in this study was necessary to generate quantifiable and measurable data, which facilitated the examination and comparison of two or more social phenomena. For example, numerical data from the time-use diary helped assess the amount of time the adolescents spent on digital technologies, the type of digital technologies used most frequently, and the days of the week that attracted the most technology activities. This

approach enabled the reporting of some study findings in a more objective and unbiased manner.

Materials

In this study, both the focus group and individual interviews enabled the researcher to gain insights into adolescents' daily media technology use behaviors and the meanings they attached to them [43]. Both approaches were practical in collecting data in a more relaxed setting, as well as seeking different points of view from the participants, which led to further discussions. In general, focus group interviews, as well as individual interviews, were designed to assess adolescents' levels of exposure to different types of digital technology. Academic performance was measured using self-reported school grades and GPA from the previous semester report. Before the interviews, participants completed a demographic data form that asked for information on age, race, sex, school classification, extracurricular activities, and other relevant details. Participants' knowledge about different types of digital technologies was assessed by asking questions that allowed them to list the names of digital technologies they use most often. The level of digital technology exposure was also measured with questions relating to the number of hours spent using different types of technology per day. In addition, a subset of 12 participants completed a time-use diary, in which they provided detailed accounts of their digital technology use for four consecutive days (two weekdays and two weekend days). This approach enabled the comparison of time differences spent on digital technology use during weekdays and weekends, in relation to the displacement hypothesis on academic performance.

Furthermore, the focus group questionnaire included discussion points that elicited questions related to the interference of digital technology in adolescents' educational activities. For example, "How often do you use your cell phone to talk or send text messages while doing your homework?" "How often do you use your cell phone to send text messages in the classroom during lectures?" "What kind of rules do your parents have concerning when you can use your cell phone, internet, watch TV, or play video games, and also do your schoolwork?" The same set of questions that were asked during the focus group interviews was also asked in the individual interviews; however, some of the questions were structured slightly differently, while maintaining the same meaning. Examples of some of the questions asked during the individual interviews are as follows: "On what condition will your parents refuse to let you use your cell phone, internet, watch TV, or play video games?" or "How often do you watch TV or play video games with your parents?" Both the focus group and the individual interviews included a set of open-ended questions, along with a set of primers designed to guide adolescents' responses to the research questions. Adolescents were also given opportunities during the interviews to clarify or elaborate on their responses. Data saturation was reached by using a series of probing questions during the interviews. Finally, the participants were asked specific questions regarding their experiences with parental mediation and their school's policies on the use of digital technology.

Procedure

Participants were informed about the study through recruitment flyers distributed at a Boys & Girls Club located in the Southwestern region of the United States. Flyers contained information regarding the study's requirements, and adolescents who met these requirements, along with their parents, underwent the informed consent process. Adolescents who assented to participate in the study and, along with their parents, signed the consent form were recruited.

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The data collection process consisted of three phases: the first phase involved focus groups (N = 24), the second phase included individual interviews (n = 10), and the third phase involved a time-use diary (*n* = 12). This approach enhanced data triangulation. Both the focus groups and individual interviews were audio-taped and took place in a reserved room at the Boys & Girls Club. Seventeen participants received time-use diary charts to record their digital technology use from Saturday morning to Tuesday night, but only 12 participants returned a completed time-use diary. The author collected data in all three phases, and each participant received a $10 gift card for their participation.

Data Analysis

Both the focus group and individual interviews were audio-recorded. Each interview was transcribed verbatim by the researcher, in which the participant's pauses and compelling nonverbal expressions were also noted. For the sake of confidentiality, each participant was assigned an identification number. To increase data triangulation, the researcher retained the assistance of two doctoral candidates as research assistants [44]. The researcher and the two research assistants independently read and coded the transcripts multiple times until consistency was achieved. Significant statements that reflected participants' experience with technology use were highlighted on each transcript. After the coding phase, the researcher met regularly with the research assistants to discuss, analyze, and corroborate emerging themes, resolving issues of disagreement and inconsistencies. This iterative deductive and inductive process led to the development of major themes. The researcher also conducted two group discussions with ten participant volunteers to verify the accuracy of data transcription and interpretations, ensuring that they accurately reflected participants' perspectives [44]. The first group consisted of five participants, and the second group consisted of another five participants. The use of member checking was significant in enhancing the credibility of the data analysis process.

RESULTS

The results section presents themes that emerged regarding adolescents' media technology use patterns. A multidimensional approach was used in both data collection and analysis. Data collected from the focus group and individual interviews were qualitative, offering detailed information regarding parental mediation strategies, digital technology usage, and academic performance. While the data collected through time-use diaries were quantitative and provided insights into the average amount of time adolescents spent on digital devices daily, they also revealed the types of digital technology most utilized, age differences in media technology consumption, and the days of the week that saw the highest levels of digital activity. Therefore, both qualitative and quantitative research approaches informed the presentation of the findings. Table 1 concisely displays some of the key results generated from the three different methodologies.

Table 1: Information Derived from Each Data Collection Method

	Focus Group Interview	Individual Interview	Time-use Diary
Parental mediation	Participants provided detailed info about their parents' mediation styles.	Participants reaffirmed the mediation strategies their parents had used.	N/A
Digital technology	Participants indicated that their use of digital devices did	Participants in the individual interviews reiterated that	N/A

interfering with academic activities	not interfere with their schoolwork because their parents prohibited them from using devices until they had completed their homework and household chores. Additionally, 83% of them stated that their school forbids cell phone use in the classroom.	using digital devices did not interfere with their schoolwork because their parents prohibited them from using media technology until they had finished their homework. They also noted that they were not allowed to use cell phones at school.	
Discretionary Digital Technology Conduct (DDTC)	Participants explained how their parents' mediation strategies influenced their digital device usage habits and academic performance.	Participants confirmed that their parents' mediation strategies influenced how they balanced technology and study time, ultimately helping them perform better academically.	N/A
School grades	Participants reported their school grades during focus group interviews.	Participants also provided their school grades during the individual interviews.	N/A
Types of digital technology used	Participants mentioned the types of technology they used, such as cell phones, TV, and video games.	Participants stated the type of technology used during individual interviews.	Data from the time-use diary showed the types of media the adolescents used.
Average time spent on digital devices per day	N/A	N/A	Time-use diaries revealed that, on average, adolescents spent 4.9 hrs. /day on digital media consumption.
Digital technology used most frequently.	Participants in the focus groups reported that they spent more time playing video games than any other technology, averaging 3.00 hrs./ day.	Participants stated that they invested more time playing video games than any other form of technology. They spent 2-3 hrs./day.	The analysis of time-use diaries indicated that the participants spent 2.33 hrs. /day playing video games.
Day of the week with the most technology activities.	Participants stated that they spent more time using media on Saturday than on any other day.	During the individual interviews, participants also stated that they used digital devices most on Saturdays.	Analysis of the time-use diary showed adolescents' technology use on Saturday was 6.42 hours.

Table 2: Participants' Demographic Characteristics

Variable	N	n	%	M	SD	Range
Age of the focus group participant	24			13.5	3.67	11-18

Gender	24					
Boy		14	58.3			
Girl		10	41.7			
Race/Ethnicity	24					
Black		8	33.3			
Hispanic		7	29.2			
White		5	20.8			
Asian		3	12.5			
Mixed		1	4.2			
Age of time-use participant	12			13.7	3.70	11-18
Gender						
Boy		7	58.3			
Girl		5	41.7			
Race/Ethnicity						
Hispanic		4	33.3			
Black		3	25.0			
White		3	25.0			
Asian		2	16.7			
Age of the individual participant	10			14.3	2.17	12-18
Black		4	40.0			
Hispanic		3	30.0			
White Asian		2 1	20.0 10.0			
Living with a parent	24					
Yes		24	100.0			
No		0	0.0			
Parental Mediation	24					
Restrictive mediation		17	70.8			
Active mediation		4	16.7			
Co-viewing		3	12.5			
School has a policy about digital use	24					
Yes		20	83.3			
No		4	16.7			

Perceived Parental Mediation

During the focus group and individual interviews, participants reported that their parents employed various mediation strategies to regulate their digital technology usage and its perceived impact on their digital lifestyle. (See Table 2). However, nearly 71% of adolescents stated that their parents applied restrictive mediation techniques, while only 12% reported that their parents employed the coviewing strategy. Approximately seventeen percent of the participants reported that their parents employed an active mediation technique to monitor their use of digital technology. Participants were asked to describe the type of mediation strategies their parents used to control their digital activities. One participant said: "My parents gave me a list of things I will have to do when I get back from school, and how much time I will spend playing video games after I finish my homework" (Boy, 14, Focus Group). During individual interviews, a participant stated that "I have to show my mother that I finished my homework before she will let me watch TV or use my cell phone" (Girl, 12, Individual Interview). Another participant said, "After watching the 'Good Will Hunting' movie with my

parents, and they had a talk with me, it motivated me for personal growth and to take my education seriously" (Boy, 17, Individual Interview).

During the discussions, the adolescents whose parents used restrictive mediation described potential consequences for violating their parents' rules and regulations regarding their use of digital technology. For example, one adolescent said, "My parents will take away my Xbox and video games if I do not finish my homework first before playing my video games" (Boy, 14, Focus Group). The statement was echoed by another participant, who said that his parents took away his cell phone because he was always using it when he was supposed to be doing his homework (Girl, 12, Focus Group).

Discretionary Technology Conduct (DTC)

A unique and original finding of this research is the concept of discretionary technology conduct (DTC), which refers to the capacity for self-discipline and self-regulation in digital technology usage to minimize the potential negative influences of technology on academic performance. Parents of adolescents in the study employed several mediation strategies to moderate their adolescents' use of digital technologies. There is a strong relationship between parental mediation strategy and adolescents' overall habits of technology use. Approximately 88% of the participants reported that their parents' mediation strategy helped them balance their time between technology use and schoolwork more effectively. Some adolescents voluntarily adopted self-discipline to prioritize schoolwork over technology. They were aware of their parents' expectations; therefore, they did not need to be reminded by their parents every time, as they willingly did what their parents expected of them. One participant described how her parents helped her develop time management skills by saying:

> *I used to spend a lot of time on the phone talking with my friends and watching TV, so I would forget to do my homework. But after talking with my dad, I spent less time watching TV or talking on the phone and more time doing my homework, and my parents did not have to remind me to do my homework before watching TV. (Girl, 15, Focus Group)*

For adolescents who struggled to conform to their parents' expectations, they noted that their parents would deny them the privilege of using their favorite media technology as a means to enforce a change in their technology use conduct. Several boys reported that their parents used this strategy to achieve compliance with them. For example, one stated:

> *I used to play video games a lot before, and I was messing up in my school grades. Then my parents took away my PlayStation and video games for three weeks. But now I kind of know better because I have to do my homework first before playing video games or watching TV. (Boy, 12, Focus Group)*

Table 3: Parental Mediation and Self-Reported Academic Performance Participants' GPAs

Mediation Strategy	4.0-3.5	3.4 - 3.0	2.9 -2.5	2.4 -2.0	1.9 - 1.5	1.4 -1.0	< 1.0	Total
Restrictive	13	2	1	1	0	0	0	17
Active	1	2	0	0	1	0	0	4
Coviewing	0	1	1	1	0	0	0	3

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Total	14	5	2	2	1	0	0	24

Academic performance was assessed using self-reported grade point averages (GPAs) from the previous semester. For participants still in elementary and middle school, their letter grades were converted to GPAs on a 4.0 scale. For example, A corresponds to 4.0, B to 3.0, C to 2.0, D to 1.0, and F indicates a GPA below 1.0. If a participant's previous semester's letter grades for five courses were two As, two Bs, and one C, the GPA will be (4+4+3+3+2) ÷ 5 = 3.2.

Perceived Parental Technology Monitoring and School Grades

Table 3 displays the percentage of each perceived parental mediation strategy and the corresponding influence on adolescents' academic performance based on self-report. The most commonly used mediation strategy was restrictive, accounting for approximately 71%, followed by active, which accounted for approximately 17%, and co-viewing, at 12%. The majority of students reported that their school grades improved after discussing their academic progress with their parents and adopting their parents' rules and discussions regarding technology use and homework. Fifty-eight percent of the participants reported that their GPAs were between 3.5 and 4.0, approximately 21% reported that their GPAs were between 3.0 and 3.4, 8% reported their GPAs to be between 2.5 and 2.9, another 8% reported their GPAs to be between 2.0 and 2.4, and 4% reported their GPAs to be between 1.5 and 1.9. Adolescents attributed their improved grades to their parents' mediation strategies. For example, one girl said: "Two years ago, I was failing my classes, then my mom took away my cell phone and will not let me watch TV unless I finish my homework, but since last year I have been making B's and C's" (Girl, 16, Focus Group). There was a general consensus among adolescents that their parents' mediation strategy taught them the importance of education and the value of achieving good grades in school. One participant said:

> *I was not serious about school before or making good grades, because all I wanted to do was watch TV. But now, since my parents do not let me spend a lot of time watching TV, it has helped me to spend more time doing my homework and making As and Bs. (Boy, 14, Individual Interview)*

Another participant talked about the measures his parents took to help him improve his grades: I have been spending a lot of time to study and do my homework this year than last year, and my grades have been much better than before since my parents sat me down and explained to me why I will not be allowed to go to my friend's house to play video games until my grades are better. In my last progress report, I made two A's and the rest were B's. (Boy 15, Focus Group)

Descriptive Analysis

Figure 1 provides the platform for analyzing the day of the week that elicits the most significant digital technology activities among adolescents. By all accounts, the activity level in technology was higher on Saturday than on any of the four days the participants completed the time-use diary. This result is consistent with the data from the interviews in which the adolescents stated that they spent more time using digital devices on Saturday than on any other day of the week. One participant stated, "When I [wake] up on Saturday, I will play "Assassin Creed" and "Call of Duty" with my brother. Then later, we go to our friend's house, and we play more video games with him for some time" (Boy, 14 Focus Interview).

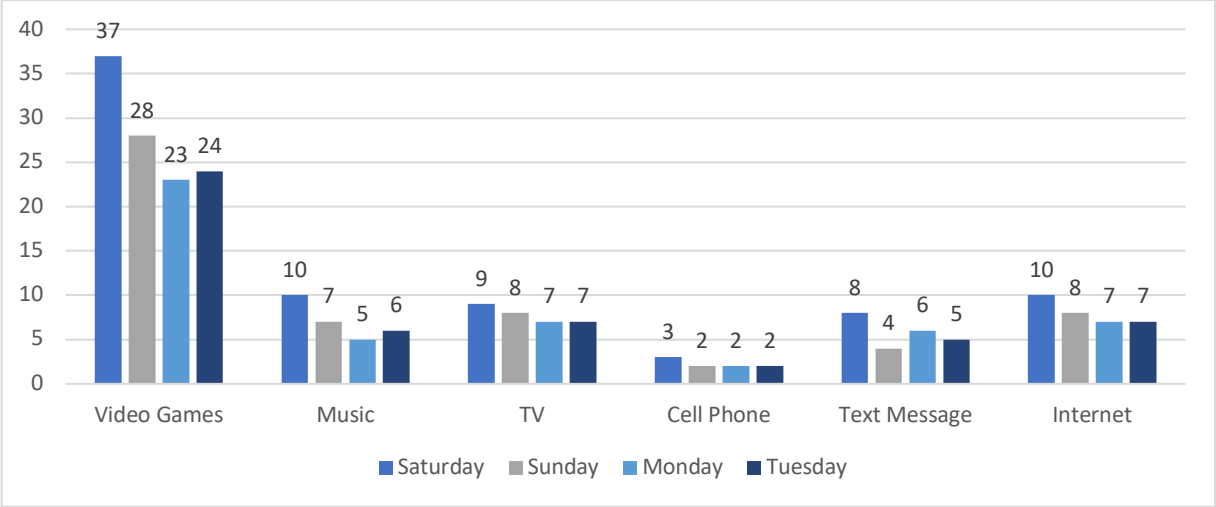

Figure 1: The total hours adolescents spent using different types of technology during the four days the time-use data were collected.

In every category of digital technology use, such as playing video games, listening to music, watching TV, talking on the cell phone, text messaging, and internet surfing, there were greater technology activities on a Saturday than on any of the four days that the adolescents recorded their digital technology activities. The average amount of time spent on technology activities on a Saturday was 6.42 hours. Sunday may involve religious services for some adolescents, but they still have substantial free time to invest in technology use. Thus, Sunday came second after Saturday in generating high levels of technology activities, with an average time of 4.75 hours. Tuesday had slightly greater technology activities, averaging 4.25 hours, compared to Monday, which averaged 4.17 hours. Overall, weekend media engagement averaged 5.67 hours, while two weekday technology activities averaged 4.21 hours.

Table 4: Time-use Analysis of the Number of Hours Spent on Technology as Influenced by Parental Mediation, Gender, and Weekday

	Mediation			Gender		Weekday					
Activity	**Restrictive**	**Active**	**Coviewing**	**Boy**	**Girl**	**Sat**	**Sun**	**Mon**	**Tue**	**Total**	**%**
Video games	2.52	3.31	3.50	5.88	3.45	3.08	2.33	1.92	2.00	9.33	47.5
Music	0.61	0.87	0.85	1.02	1.31	0.83	0.58	0.42	0.50	2.33	11.8
TV	1.01	0.80	0.77	1.21	1.37	0.75	0.67	0.58	0.58	2.58	13.3
Cell phone talk	0.15	0.29	0.32	0.22	0.54	0.25	0.17	0.17	0.17	0.76	3.9
Text message	0.34	0.73	0.85	0.91	1.01	0.67	0.33	0.50	0.42	1.92	9.8
Internet surfing	0.82	0.89	0.95	1.24	1.42	0.83	0.67	0.58	0.58	2.66	13.7

Adolescents' Media Use Patterns

The media technology that adolescents used most was video games, with an average time spent of 2.33 hours per day (see Table 4). This outcome closely aligns with the reported time (2-3 hours) spent on video gameplay during the individual and group interviews. Analysis of time-

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use diaries revealed that adolescents spent an average of 3.08 hours per day on video games on Saturdays. Additionally, during the interviews, some boys expressed a preference for video gameplay over other forms of digital technology. For example, a boy (15) said, “I like to play video games the most. Once I finish my homework, I check with my mom, then I play video games for about 2 hours and watch TV for about one hour.”

DISCUSSION

The present study examines adolescents' lived experiences with digital technology use, parental mediation strategies, and their impact on adolescents’ academic performance through a phenomenological approach. This study demonstrates that technology usage is an important aspect of adolescents’ daily lives. Results indicated that, on average, adolescents spent about 4.9 hours daily using digital technology. This finding suggests that the adolescents were neither excessive nor low users of digital technology, which helped to mitigate potential adverse effects on their academic performance. Previous studies and surveys suggest that, on average, adolescents’ technology and/or social media usage is nearly 5 to 8 hours per day [45, 2, 1].

To examine the extent of perceived parental mediation on adolescents' technology use habit, research question 1 states, “What impact do adolescents' perceptions of parental mediation strategies have on their patterns of digital technology use?” Results show that adolescents whose perceptions of their parental mediation strategy were restrictive spent less time on technology use than adolescents whose parents used active and coviewing strategies. The analysis of data reveals that adolescents invested a total of 19.58 hours in digital media consumption over the four-day time-use diary period. Adolescents with a perceived restrictive parental mediation style spent 5.45 hours (28%), adolescents with a perceived active parental strategy spent 6.89 hours (35%), and adolescents with a perceived coviewing parental method spent 7.24 hours (37%). This finding differs from a research study that suggests a lack of clear evidence that restrictive mediation helps adolescents limit their digital media use [46]. The results of this study show that restrictive mediation is influential in limiting the amount of time adolescents spend on technology use. This finding is consistent with another study, in which 18,709 children were randomly selected from 25 European countries along with their parents, and restrictive mediation was associated with lower levels of digital media use [35]. Additionally, during the focus group and individual interviews, adolescents who reported that their parents' mediation approach was restrictive indicated that they were allowed only a limited amount of time by their parents to use digital media on weekdays. For example, one participant said: “My parents allowed me only two hours to use my cell phone, surf on the internet, or watch TV after I have done my school assignments and house chores” (Girl, 15, Focus Group). Due to the mediation strategies used by some parents, the time adolescents spent on technology was limited, enabling them to devote more time to schoolwork and studying.

The type of mediation strategy used by parents often influences children's and adolescents' technology use habits and produces different outcomes in their lives. In this study, another central goal was to explore the notable impacts of adolescents’ perceived parental mediation strategies on their academic performance. Thus, research question 2 states, “Do perceived parental mediations assist adolescents in maintaining good grades in school, thereby reducing the adverse effects associated with technology use?” Examining responses from adolescents in focus groups and individual interviews revealed that adolescents viewed parental mediation as having a positive influence on their academic performance at various levels. Analysis of self-

reported academic performance data reveals that adolescents' perception of restrictive parental mediation is associated with higher academic performance compared to active and coviewing mediation strategies. For example, among 58% of participants who self-reported GPAs between 3.5 and 4.0, 93% had parents who employed a restrictive mediation strategy, while only 7% used an active mediation strategy. This outcome indicates the influence of restrictive mediation on adolescents' academic performance.

Research findings on the impact of digital technology and social media on academic performance have been inconsistent; however, this study's findings align with recent research, indicating that higher levels of media technology use are associated with lower academic performance [47, 9, 48]. While the amount of time spent using technology affects adolescents' academic performance, this study reveals that the timing of technology usage has a significant impact on the extent of its adverse effects on academic performance. Therefore, alongside a restrictive parental mediation strategy, an essential factor that helped mitigate the negative impacts of technology use on academic success in this study is the practical time management skills demonstrated by some adolescents. For instance, if we compare two adolescents, each spending an average of thirty-five hours per week using technology, one may utilize most of that time after completing their schoolwork and on weekends, while the other may primarily use technology on weekdays, when they should be studying and doing homework. As a result, their academic outcomes will differ; the adolescent who prioritizes technology use over schoolwork is likely to experience negative academic consequences, whereas the other may not suffer any adverse effects. Hence, the importance of effective time management in relation to technology use in mitigating potential adverse effects on academic performance is one of the key takeaways of this study, which previous research has overlooked.

Participants' dominant digital technology usage was video games, which accounted for 47.5% of all time spent using technology. Data analysis of the four-day time-use diary reveals that adolescent boys spent more time playing video games than girls, averaging 5.88 hours compared to girls' average of 3.45 hours. The finding is consistent with other studies' findings that boys devoted almost twice as much time to playing video games weekly as girls [49, 50]. Internet surfing was the second most used digital media for adolescents. More girls spent more time (53%) surfing the internet than boys (47%). Music was the third most consumed digital media in this study. Other studies have shown that listening to music is a popular media activity among adolescents and is associated with reduced stress and improved mood states [51, 52]. Given that music paraphernalia is omnipresent in today's pop culture, adolescents can listen to music anytime and anywhere, including the use of their cell phones. Fifty-six percent of the time spent on digital music consumption was by girls, and 44% was by boys. Some adolescents noted that music helped them stay focused and calm, while for others, it induced a state of euphoria.

Cell phone conversations were ranked as the least common digital activity in this study; however, cell phones remain a popular form of communication among adolescents today. Analyses of time-use data indicate that adolescents spent more than twice as much time texting as they did talk on cell phones. It is essential to acknowledge that cell phones are an integral part of adolescents' daily digital lives; life would not feel normal without them. Participants reported that cell phones help them stay connected with friends and family members. A girl (15) in a focus group stated: "In the morning, they [friends] say 'good morning,' I will text them back 'good morning.' After school, I spent about 1-hour texting. Sometimes texting during

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dinner, but my mom will say, 'you cannot text at this time.'" For adolescents, cell phone functionality extends beyond being merely a communication tool; it also serves as a calculator, planner, alarm clock, music player, camera, video recorder, and a means to search the Internet for information. Additionally, cell phone use is gender-related; girls spend more time talking on their cell phones than boys, averaging 0.54 hours compared to boys' 0.22 hours.

To some extent, this study revealed the importance of parents' efforts to socialize their children into a more desirable lifestyle. During the interviews, several adolescents reported that they initially resented their parents' attempts to impose certain restrictions on their technology use. For some, this caused a significant conflict with their parents, which was particularly common among boys rather than girls. The older adolescents expressed higher levels of resentment toward their parents' rules and regulations compared to the younger adolescents. However, their parents' persistence, along with the secure relationship that exists between them and their parents, helped moderate the conflicts. Adolescents acknowledged that their parents' mediation strategies provided structure in their lives and helped them to invest their time in more important tasks.

Furthermore, restrictive mediation proved to be more effective than other mediation strategies, as adolescents whose parents employed restrictive mediation techniques effectively managed to separate their time for technology from their time for schoolwork. A majority of the participants (83%) reported that their school prohibited them from using their cell phones during lectures. Thus, instructions received at home regarding technology use were reinforced at school, further facilitating the development of digital technology conduct (DTC). The adolescents modestly embraced self-discipline to prioritize schoolwork over technology without needing to be repeatedly reminded or chastised by their parents or school staff.

Consequently, DTC entails self-discipline, self-control, and self-regulation in the efficient use of digital technologies, along with the ability to differentiate between time spent on technology and time dedicated to academic work, thus helping to mitigate potential adverse effects on academic performance. The DTC skills illustrate why adolescents spent more time consuming digital media on weekends when they had little or no homework, which may suggest that the majority of the time spent on media use had little or no effect on their ability to complete school assignments. For the participants, the use of technology was mainly for entertainment and did not substitute for time spent on schoolwork.

LIMITATIONS

The present study has its limitations. While focus group interviews can create an environment conducive to open interactions among participants, it is not always clear how much a group response reflects the opinion of every individual member. At times, fearing the stigma of being different, participants may feel pressured to align their responses with those of the group. Similarly, participants' responses may be biased by providing answers they deemed to be socially acceptable or appealing to the moderator. Due to the small sample size of this study, the results are not generalizable to a larger population without the confirmation of a quantitative study with a larger sample. Lastly, the study's reliance on the self-report method of data collection raises concerns about credibility issues. Future studies may seek corroborative reports from both teachers and parents to validate data triangulation.

CONCLUSION

The findings of this study underscore the importance of the qualitative research approach in data collection and the quantitative approach in analyzing certain data. While quantitative data facilitates the identification of statistically significant relationships, the qualitative approach is valuable for gathering comprehensive information that unveils participants' perceptions, emotional states, and lived experiences. This study utilized a multidimensional approach for data collection and analysis, marking a first in its field. This approach was undertaken to enhance the credibility of the data, which is often a challenge with qualitative research designs. It also enabled the exploration of various dimensions of participants' technology use, along with parental mediation, and its impact on academic performance. Additionally, it facilitated the triangulation of data and the enhancement of the research outcomes' validity.

The practical implications of this study illuminate how parental mediation strategies aid adolescents in developing the skills of discretionary technology conduct (DTC). The application of time management skills indicates that the time of day and days of the week when digital technology is used are equally crucial as the number of hours invested in technology use in mitigating the potential adverse effects on adolescents' academic performance. Additionally, restrictive parental mediation proved to be an effective strategy in this study, highlighting the importance of parents' involvement in effectively regulating their adolescents' technology use, as genuine concern for adolescents' success and well-being comes with accountability. Additionally, this study highlights the importance of school policies that prohibit the use of technology in classrooms, particularly during lectures. They can reinforce some parents' restrictive mediation strategy by conveying to children and adolescents that using technology instead of studying is inappropriate. Eighty-three percent of the adolescents in this study reported that their schools prohibited them from using their cell phones during lectures. As a result, the use of digital technology in this study did not displace time allocated to educational activities, as predicted by the displacement hypothesis, and it did not have detrimental effects on adolescents' academic success.

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