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Preschool - Aged Children's Media Use and Its Relationship to Their Prosocial and Aggressive Behavior

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Abstract

The present study, exploring media exposure of preschool age children using media diaries had three major goals. First goal was to examine whether there was a relationship between the duration of children's media use and their prosocial and aggressive behavior. Then, the second goal was to explore links between the content of media they use and children's prosocial and aggressive behavior. Finally, informed by displacement theory, we focused on exploring whether the time spent for developmentally enriching activities changed based on the time spent for media use. Parents of 52 preschool age children between the ages of 4 and 6 reported on their children's media use on a media diary filled out throughout a weekend and the teachers assessed the prosocial and aggressive behaviors of the same children. Findings showed that there is a positive correlation between the levels of aggressive behavior and the time spent for playing video games increased. Additionally, as displacement theory suggested, when children spent more time on video games, time they spent for engaging developmentally enriching activities decreased. The results of the study contributed to the field as it provided an in-depth exploration of factors associated with media use habits of children at home using media diaries providing duration, content and context of media use and their relationship to children's prosocial and aggressive behaviors.

Keywords: Children's Media, Prosocial Behavior, Aggression, Preschool Children, Digital Media

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Introduction

In today's world, media industry serves for people from all age groups including very young children. There were about 40 channels in Turkey that broadcast cartoons and other TV shows specifically targeting children as of 2017 (Özen & Kartelli, 2017). These TV channels broadcast mostly international programs or shows, dubbed in Turkish. The technology use of children aged between 6 and 15 was first researched in 2013 in Turkey by Turkish Statistical Institute (TURKSTAT) and the study was repeated in 2021 to monitor changes. In the former study carried out in 2013, results showed that while 48.7% of the children between the age of 6 and 15 years, watched television 0-2 hours a day and for 39.3% of the children within the same age group, the time doubled showing that these children watched TV between 3 and 4 hours a day. Of these children, 72.1% of them were reported to watch cartoons whereas 60.3% of them watched dramas and movies. However, because of rapid developments in technology, there are new media tools and channels such as tablets, more advanced consoles used both to play games and watch shows, or smartphones and video streaming channels such as Netflix, the later study examined children's Internet usage rather than limiting it to television use. While the Internet usage was 50.8% in 2013 for children aged 6-15, it became 82.7% in 2021. According to the statistics of 2021, 86.2% of these children used Internet for participating in online classes and 83.6% of them used it for homework or learning purposes. It is important to note however that, due to the COVID 19 pandemic, many schools continued to implement online teaching during that time. Yet the rate was still high for playing or downloading games as they were in the third place for the purpose children use the Internet with a percentage of 66.1. The statistics also showed that 61% of the children used Internet to watching videos on websites (TURKSTAT, 2021).

Children's media viewing, commonly defined as either viewing or playing by using a media device, have entered, and taken a major part of children's lives either by children actively choosing them or because adults around them are using them and children are being exposed (Calvert, 2015; Stiglic & Viner, 2019). As a result, in more recent years, media use, its causes and consequences have started to receive greater attention (Mares & Woodard, 2005; McHarg & Hughes, 2021). Although these studies all point to several key factors that should be considered while exploring the links between children's media viewing and child developmental outcomes, the effects of media cannot be explained by solely looking at the device or the amount of time spent without focusing on the content and the context the media device is used such as whether the content is violent and that promote aggressive behavior. Furthermore, the media acts as a replacement for other activities children could engage by taking time away from them. While there is research in this realm, because of the rapid growth of new technology, and the need to explore the complex dynamics of factors that lead to certain outcomes, it is possible to argue that research on the effects of media tools is "slow to catch up" (Hofferth, 2010) and lacks tapping into the dynamic effects of the factors associated with media usage on young children. Additionally, even though there is still not much consensus on the effects of media, much research focuses on the harmful effects, and more needs to be explored in terms of prosocial media content (McHarg & Hughes, 2021). Currently however, a growing body of research focuses on how parents monitor and regulate children's media viewing experiences, in other words, parental mediation, indicating that parent presence is very low in the context of young children's media use (Gözüm & Kandır, 2021).

Child media studies suggest that the time children spend using media plays a crucial role in child developmental outcomes (Anderson & Hanson, 2009; Bender et al., 2018; McHarg & Hughes, 2021; Gottschalk, 2019; Madigan, Browne, Racine, Mori, & Tough, 2019). The interest in examining how media influences developmental outcomes led brain researchers to examine the pathways and the studies suggested that the effects of media on the developing brain are complex and there is more to be understood. However, there is still evidence that excessive screen time impairs brain structure, its functions and executive functioning which plays a crucial role in problem behavior control (Dong & Lin, 2013; McHarg & Hughes, 2021; Paulus et al., 2019). These studies point that the damage is often found to be on the frontal lobe creating a major risk and perhaps deuteriations in the use of executive functions. Thus, the executive functioning skills that include controlling impulses, problem solving, recognizing emotions, and capability for empathy may all be negatively affected by excessive media use. Supporting these claims, Corkin et al. (2021), explored the effects of media use on young

children's executive functions and concluded that total exposure when children are two years of age is linked to poor executive functioning skills at the age of four and a half. Other studies provided evidence to support the claim that amount of media exposure is a risk factor for undesired developmental outcomes independent of the content or other factors. Tamana et al. (2019), based on their cohort study, argued that there is a positive relationship between increased screen time and inattention problems among preschool children. In another study, focusing on 3-year-old children and their parents, Manganello and Taylor (2009) reported that there was significant positive relationship between children's TV exposure and childhood aggression even after other factors such as maternal health and demographic characteristics were controlled. Similarly, Bender et al. (2018) reviewed studies using a range of methodological approaches and concluded that the amount of time children spends viewing media is associated with the increased levels of aggression.

Although the evidence suggested that the amount of media exposure was associated with aggression in children, and many studies focus on the negative effects, other studies in the area focused on exploring whether the content of the media children were exposed to was associated with some developmental gains and positive outcomes (Anderson & Bushman 2001; Gözüm, 2022; Rasmussen et al., 2016). Although evidence suggests that violent media was linked to increased levels of aggressive behavior (Huesman, Moise-Titus, Podolski, & Eron, 2003), other studies on the other hand found that there were positive effects of educational cartoons on children's cognitive development (Baydar et al., 2008; McHarg & Hughes, 2021) and positive effects of the prosocial media on children's positive social behaviors (de Leeuw & van der Laan, 2018; Mares & Woodard, 2005). For example, Greitemeyer and Mügge (2014) reported that playing violent video games increased aggression while playing video games with prosocial content increased prosocial skills.

Another question which has been investigated in the child media literature is whether children "miss" or are "deprived" while they spend time in front of the screen. *Displacement theory* proposes that the total amount of time children have is divided between media and other activities children have and when children spend time with media tools their time spent for developmentally enriching activities is reduced. These developmentally enriching activities are essential to foster children's development yet, engagement with media devices takes time away from other more stimulating activities (Huston, Wright, Marquis, & Green, 1999). Based on this perspective, the focus on media cannot be solely on what media introduces to the children or what the effects would be when the inappropriate media is consumed in amounts that produces negative effects. Rather, the focus should be on how much time is taken away from more developmentally stimulating engagements such as play, literacy, peer interaction, outdoor play, family time or cognitively stimulating activities In Turkish Statistical Institute's study (2013), 35.9% of the children in the 6-15 age group reported that they spent less time reading books because they spent more time in front of the screen. Also 27.7% of these children stated that they spent less time with their family and 25.4% of them stated that they spent less time with their friends to meet face-to-face or play games because they spent more time for media use.

Children's Prosocial and Aggressive Behavior

Social cognitive theory explains how an individual learns in the context of social relationships by exposure and observation (Bandura, 2001). Considering that media use includes elements of exposure, observation, and engagement, it provides a unique setting to understand and explain how media influences children's behaviors in the light of social cognitive theory. As a result, many media studies implemented social cognitive theory and found it to be suitable to explore the links between media use and children's prosocial and aggressive behaviors (Bandura, 2001; Huesmann & Taylor, 2006). Social learning theory focuses on how learning of certain behaviors occurs as children develop an understanding of and acquire knowledge of rules, skills, beliefs, strategies, and attitudes by observing others and reproducing similar or novel behaviors based on learned content (Bandura, 1986). As illustrated in the classic BoBo Doll Experiments, Bandura and his colleagues reported that after observing adult models acting aggressively, young children would show aggressive behaviors (Bandura, Ross, & Ross, 1961). Intriguingly, the children would not be simply triggered to act aggressively or imitate the modeled behaviors, these children, when exposed to adult models acting aggressively would go beyond simply imitating the observed adults. They would demonstrate novel and sometimes even more complex aggressive behaviors. The findings of this famous BoBo doll

study improved our understanding of learning mechanisms of aggression and violent behaviors in a social context. Furthermore, media provides the perfect set up for modeling aggressive behaviors as it catches the "attention" of children, allows for "retention" as the children have many opportunities for repeated exposure, "production" because children play observed behaviors either with peers or on video games and finally "motivation" because games or videos can be stimulating and rewarding (Nabi, et al., 2021). More studies illustrating how observation, and in this case media viewing, is linked to aggressive behaviors following the original experiments of Bandura and his colleagues probably because of the increasing rates of aggressive behaviors in schools and in media over the past decades (Anderson & Dill, 2000; Neumann & Herodotou, 2020).

Violent media depicts individuals, including nonhuman cartoon characters, with intentional attempts to inflict damage on others (Anderson & Bushman, 2001). Consequently, all media components and outlets, including video games, TV programs, computer games, shows and movies have potential risks to increase the level of aggression as they can all include violence. In fact, years of research in the field, showed at least some evidence that even brief exposure to violent media, particularly violent video games, can be related to increases in aggressive behaviors, and that violent media is possibly a significant risk factor for violence among young children and youth (Anderson et al., 2003, Burkhardt & Lenhard, 2021; Prescott et al., 2018). In fact, other studies showed that there was a link between preschool children's media viewing habits and their social behaviors in the classroom. For example, Conners-Burrow et al., (2011) found that children who watched age-inappropriate content showed lower levels of social competence and illustrated poor social skills rated by their teachers.

In addition to the focus on aggressive behaviors, how media viewing influences children's positive behaviors is also examined in child media literature. Of these positive behaviors, prosocial behavior has received considerable attention and broadly defined as "any voluntary behavior intended to benefit another person" (Eisenberg et al., 2006). Prosocial behaviors include behaviors with altruistic intentions, delaying gratification in the benefit of others, friendly acts towards others, sharing, cooperation, sympathy, acceptance of others belonging in different groups, and higher capacity to imitate such positive behaviors (Bar-on, 2000; Wilson, 2008). If the content of media includes prosocial elements, called prosocial content, it is defined as having "the potential of fostering social interactions that are nonviolent and positive in tone" (Mares & Woodard, 2001). According to Mares and Woodard (2005) the amount of time spent engaging in prosocial media matters and when children watch more hours of TV programs with prosocial content, they behave more positively and have more positive attitudes than others who watch fewer hours of similar content. Similarly, in another study, De Leeuw and van der Laan (2018) found in their experimental study that children who watched a Disney clip in which the main character was illustrated to help a friend were more likely to help their own friends compared to the children who did not watch the clip. Thus, the researchers suggested that television viewing did not have to be only linked to violence and that given the right content and positive models, such as characters in the media helping others, would allow children to develop prosocial skills including helping others and understanding others' feelings.

Developmentally Enriching Activities and Media

Social learning theory helps explain the dynamics of how media tools promote prosocial behavior or expose and encourage children for aggressive behaviors depending on the content that the children are exposed of. However, the media takes time away from children to engage in more age appropriate and developmentally stimulating activities that are traditionally part of their everyday play. *Displacement theory* focuses on the risks that are brought onto children's lives when media steals time away from developmentally enriching activities including play and social interactions. In her book, Winn (1977), assumes that television viewing interferes with positive family and peer interactions of children and thus, it interferes with the healthy development of positive social behaviors and successful human relationships (Winn, 1977). Despite these assumptions, studies on the displacement hypothesis seem to be lacking and the little evidence is inconclusive as it is true that while people spend more time on media outlets, they spend less time on other activities; yet it is unclear if the media is not used, the alternatives people turn to would be high quality traditional engagements (Hall, Johnson, & Ross, 2018).

To conclude, this study focused on examining children's media use engagement and other activities at home over a period of a weekend where the children were at home with their parents. Because the focus was to capture media use in detail media diaries that also included time spent on other activities were used. Current studies suggest that media's presence in children's lives is undeniable and more comprehensive approaches need to be implemented capturing its negative and positive influences when studying its effects on children (Fitzpatrick et al., 2023). Thus, to explore both negative and positive aspects of media use to capture the dynamics of media use and how young children are influenced, the focus was on both aggressive and prosocial behaviors using teacher reports. It was expected that the teacher reports would be accurate sources to examine prosocial and aggressive behaviors of children as young children have opportunities at preschools to interact with their peers throughout the day during a week. Additionally, media use needs to be considered in context and how children may be lacking developmentally enriching activities in their home lives due to increased media exposure (Hurwitz et al., 2020).

Although there are several research questions explored in the study, the first goal of the study was to describe the media use behaviors of the parents and the children and to see whether boys and girls differed in their media habits. Additionally, even though the focus of the current study is not on age or gender related differences, their effects were explored for explorative and descriptive purposes as for young children, the content and the amount of time spent on media may vary based on age and child sex (Kucirkova et al., 2017). Following the descriptive explorations, the first research question of the present study was to investigate if there was a relationship between children's total screen time, which means total time spent engaging in media activities, and their prosocial and aggressive behaviors. Using diaries parents filled out over the weekend, the media children used were coded whether the content was prosocial or aggressive and the time spent by children on them was noted. Thus, the second research question in the study was to explore the links between children's aggressive and prosocial behaviors and the aggressive and the prosocial media that they viewed. Specifically, in this study, we proposed that while prosocial content would be associated with positive behaviors; aggressive or violent content would be associated with more aggressive behaviors. Finally, preschool children are still young and much of their time at home is spent for routine activities such as feeding, sleeping and bath. As a result, they have relatively fewer hours at home to be active, alert and engaging. In the light of displacement theory, we believe that media use will take time away from more developmentally appropriate activities such as play, arts and crafts, reading and social interactions with peers and family members. Therefore, the third research question focused on whether the time children spend for media use was related to the time they spend for developmentally enriching activities. We expected that the relationship would be negative and that while children spend more time engaging in screen either watching shows or playing video games, children would spend less time engaging in enriching and developmentally appropriate activities such as play, reading, interacting with others or outdoor play.

Methods

Design and Procedure

Integrating a mixed method approach, the current study incorporated both questionnaires, surveys and detailed diaries parents completed reporting on children's media viewing behaviors and their engagements in other activities. In the preparation phase of the study, although there would be concerns with generalizing the results, the authors carefully considered the options and implemented convenience sampling method as the data collection required somewhat rigorous involvement of the participants (Kanaki & Kalogiannakis, 2023). Additionally, as an exploratory study, two of the main purposes was to effectively rate all the media content and get a detailed picture of how the participating children were spending their time at home, rather than generalizing the results. Furthermore, ethical issues highlighted by Petousi and Sifaki (2021) were carefully followed. After receiving the ethical approval, directors of two preschools that the researchers had contact were contacted and data were collected in 2015. School staff including guidance teachers helped disseminate the announcements for the study at the participating schools. However, to protect the rights of the parents and not to burden them, the information for the study was sent over via routine announcements and those parents who were interested were contacted and the procedure was

explained to them in detail. Parents were given the opportunity to complete the media journals over a typical weekend, spanning two and a half days, from Friday evening through Sunday evening because children were at school and parents were at work during the weekdays. Each set of questionnaires was sent out in an individual envelope, and a unique identification number was assigned to each child to match the envelope with the Child Behavior Scale (CBS; Ladd & Profilet, 1996) form that teachers would later complete.

Parents of 90 children, all between the ages of 4 to 6 received the questionnaire packages in one of the schools and 34 complete sets of data were obtained during the data collection period of four weeks. In another preschool, parents of 55 children aged 4 to 6 were contacted via email to inquire about their interest in participating in the present study. Twenty-six parents agreed to participate, and the same data collection procedures were followed (announcements, reminders, fliers etc. for a period of 4 weeks). Eighteen of these participants fully completed the questionnaires and returned them to the school, using the provided envelopes. Subsequently, the teachers of the kids, whose parents participated in the study completed the CBS for all the children. In the end, data from 52 children were examined for the present study. The low return rate was attributed to the demanding nature of the study requirements as it necessitated a significant commitment from parents over a weekend filling out the media journals.

Participant Characteristics

The data for the present study came from an unpublished master's thesis of the first author advised by the second author (İnanlı, 2015). The study involved 52 preschool children between the ages of 4 and 6 to examine their media viewing habits through parental reports (media journals). Among these children, 28 were girls with an average age of 5.13 (SD = 0.70), and 24 were boys with an average age of 4.91 (SD = 0.69). These families were selected from two preschools located in the same district in Istanbul. The first school, 65.4% of the participants, was a public school where children attended full-day classes. The second school, constituting 34.6% of the sample, was a private school, and children attended either half-day or full day. Out of the parents who completed the questionnaires, 46 were mothers (88.5%), and 6 were fathers (11.5%). The age of the parents ranged from 28 to 47 years, with an average age of 37.4 (SD = 5.02).

Of the parents, 21 (40.4%) had graduated from a four-year university, 14 (26.9%) held a master's or doctorate degree, 13 (25%) had completed high school, and 4 (7.7%) were primary school graduates. Additionally, 32 of the parents (61.5%) were employed, while 20 (38.5%) were not working. Parents indicated their socio-economic status (SES) on a 5-point Likert-type scale, answering the question, "How would you describe your income level considering Istanbul, the city you currently live in?" Most parents (48.1%) selected "Average," while 18 (34.6%) chose "Above average." Seven (13.5%) rated their SES level as either "Below average" or "Low," and only two parents described their SES level as "High."

Measures

Children's Media Use

The study assessed children's media usage behaviors using a package that included a questionnaire on demographic characteristics, a survey of media devices at home, parental media use, and a media diary, which were completed by one of the parents over a weekend.

The media diary was employed to collect detailed data about the content, duration, context of media usage, and other activities children were involved in over an entire weekend, from Friday night to Sunday evening. This media diary is based on an adapted form of a time diary, where participants record their media-related activities for a specific period (Vandewater & Lee, 2009). The Child Development Supplement (CDS) utilized a modified time diary approach in the Panel Study of Income Dynamics, where participants completed a 24-hour time diary for one randomly selected weekday, and one randomly chosen weekend day. Present study implemented a similar methodology and covered the entire weekend because one of the primary objectives was to gather descriptive data on how children spent their time when they were at home with their parents.

For each day, starting from Friday after school until Sunday bedtime, parents used a timetable to record their children's media-related activities. They documented the program or activity name, the time spent on it, and the type of media device used. Notably, the choice of media device did not determine the type of media activity. For example, if a child watched the program "Caillou" on an iPad, it was categorized as "TV watching" since it was a form of "viewing" activity independent of what it was viewed on. Additionally, parents recorded information about sleep and nap time, as well as other activities in which children participated during the weekend and their respective durations, such as reading a book or doing puzzles. These details were collected through open-ended questions to allow parents to provide specific and detailed information about the other activities in which their children engaged.

Children's Prosocial and Aggressive Behavior

The study assessed children's prosocial skills and aggression using the Turkish version of the Child Behavior Scale, as adapted by Gülay and Önder (2009). This scale comprises six subscales yet, for the purpose of the current study, only the "aggressive with peers" and "prosocial with peers" subscales were employed. The "aggressive with peers" subscale consisted of 7 items, while the "prosocial with peers" subscale included 10 items. Teachers assessed children's levels of aggressiveness and prosocial skills using a 3-point Likert scale, where 0 represented "doesn't apply," 1 denoted "applies sometimes," and 2 signified "certainly applies." The internal reliability of both subscales was evaluated using Cronbach's Alpha, resulting in a coefficient of .80 for "aggressive with peers" and .89 for "prosocial with peers. "It's worth noting that in the original version of the Child Behavior Scale, the reliability coefficients were .92 for aggressiveness and .88 for prosocial behavior, while in the Turkish version, they were .87 for the aggression scale and .91 for the prosocial scale.

Coding Strategies

Media Content

Child media researchers have historically utilized the rating systems of non-governmental organizations to categorize the type of media children watch or play (Tomopoulos et al., 2007). Common Sense Media Rating System was used as a guide to categorize international TV programs to examine age-appropriateness, content, and educational value. For TV programs, it provides further information regarding age-appropriateness and assesses various content related aspects, including educational value, positive messages, positive role models, violence, scariness, sexual content, language, consumerism, and substance use. Each subcategory is rated on a 5-point scale, with a 3-point rating indicating a fair amount of that type of content.

Out of the 61 TV programs mentioned in parents' media diaries, 56 were cartoons, with 38 of them already assessed by Common Sense Media. To categorize these cartoons, the study first considered age-appropriateness. If Common Sense Media suggested an age range above that of the study's participants (4-6), such as 8, the cartoon was categorized as having content suitable for school-aged children. In cases where a program was both age-inappropriate and received a 3 or more-star rating for violence, it was categorized as having aggressive content, examples being "Ben 10," "Ben 10: Ultimate Alien," and "Tom & Jerry."

If a cartoon was deemed appropriate for the target age group, the study assessed subcategories like educational value, positive messages, and violence. A cartoon was categorized as having educational content if it received at least 3 stars in the educational value subcategory. If it received at least 3 stars for positive messages, it was categorized as having prosocial content. If the cartoon received at least 3 stars for both educational value and positive messages, it was classified as a program with both prosocial and educational content. If it had at least 3 stars only for its violence, it was categorized as a program with aggressive content, such as "Scooby-Doo." Cartoons for which parents didn't provide the program's title were labeled as unnamed program.

For the 18 programs not covered by Common Sense Media reviews, two early childhood educators assessed them based on the same rating system. They watched at least three episodes of each cartoon, initially determining whether it was suitable for preschool children. They then rated the cartoons for

educational value, positive messages, and violent content. In most cases, their assessments were aligned, with only one requiring further evaluation.

In summary, the study identified 24 programs with prosocial content, promoting positive behaviors like sharing, kindness, conflict resolution, and the use of polite language such as "please" and "thank you." Three programs had high educational value and aimed to teach specific subjects, like shapes or the law of buoyancy. Fourteen programs had both prosocial and educational content. Five programs were deemed aggressive, with themes of violence, scariness, and occasional use of inappropriate language. Eight programs were considered to have content suitable for school-aged children, featuring advanced language and topics. Five programs were categorized as adult content due to intense violence or sexual material. Lastly, two programs were labeled as unnamed, as parents didn't specify their titles.

Movies categorized based on the Motion Picture Association of America's rating system, which includes categories like "General Audiences (G)" and "Parental Guidance Suggested (PG)." Video games played by the children were categorized using the Entertainment Software Rating Board (ESRB) system, with most games falling under the "Everyone" category, suitable for all ages, and one in the "Everyone 10+" category, appropriate for ages 10 and up.

Time Spent for Media Use

The study calculated the cumulative time that children spent watching or playing on screens for each type of program daily. Subsequently, the total amount of time spent watching TV, the combined screen time (including both TV and movies), and the total time spent playing video games over the entire weekend were computed.

Developmentally Enriching Activities

The various activities in which the children participated were categorized into 11 distinct groups. These were: Literacy, art, role-play, Legos/blocks/cars, puzzle and math, outdoor activities, music, branch activities (e.g., ballet, swimming lessons), shopping malls, family activities (e.g., playing football or cooking together), unnamed play (for cases where parents simply noted "s/he is playing games"). These categories were used to help organize and understand the diverse range of activities in which the children engaged over the period of a weekend the journals were completed by the parents.

Results

Descriptive Statistics

Among the entire sample, 40.4% of households had two televisions, 36.5% had only one TV, and 15.4% had three or more TVs. In 61.5% of households, there was at least one DVD player. When considering both computers and tablets, 36.5% of parents had two devices, and 34.6% had three or more devices in their households. Most of households (90.4%) had at least one satellite connection, while only 19.2% had at least one game console.

When parents were asked about their media use for a typical weekday, they reported that they spent an average of 91.6 minutes watching TV (*SD* = 80.86), whereas they spent an average of 106.8 minutes watching TV (*SD* = 92.74). Approximately 13.5% of parents reported that they did not watch TV on either weekdays or weekends. The maximum reported TV-watching time was 480 minutes.

Parents also provided information about the time they spent in front of computers, excluding work-related time. On a typical weekday, the mean time spent in front of computers was 40.1 minutes (*SD* = 37.80), and on a typical weekend day, it was 30.7 minutes (*SD* = 29.04). Approximately 21.2% of parents reported not spending any time in front of computers on weekdays, while 32.7% reported the same for weekends. The maximum reported duration for weekdays was 180 minutes, and for weekends, it was 120 minutes.

Regarding the type of TV programs that children spent the most time watching, programs with both prosocial and educational content, such as "Dr. McStuffins," "Kabarcık Çocuklar," and "Barney," ranked as the top choice. The second most-watched type of program was those with prosocial content, including "Max & Ruby," "Gürültücü Aslan Ra Ra", and "Damla'nın Dolabı." The third most-watched

category was programs with aggressive content, such as "Ben 10" and "Mixels." These were the programs that children spent the most time viewing (See Table 1).

Table 1.
Total Time Spent for Television Programs in Minutes

	N	Minimum	Maximum	Mean	Std. Deviation
Prosocial TV	52	0	300	28.75	58.41
Prosocial TV*	52	0	300	77.12	74.40
Educational TV	52	0	195	15.77	39.32
Educational & Prosocial TV	52	0	280	48.37	57.50
Aggressive TV	52	0	120	19.90	36.74
School Age TV	52	0	120	10.67	27.11
Adult TV	52	0	180	13.85	44.24
Unnamed TV	52	0	150	16.15	38.59

*Including programs with both prosocial and educational content.

Children primarily engaged with video games and apps falling under the "everyone" category, including titles like "Hay Day," "Subway Surf," and "Candy Crush." The movies they watched belonged to the "general" category, featuring titles like "Kar Patileri," "Prenses Okulu," and "Impy's Island." These choices reflected the preferred media content for the children in the study (Table 2).

Table 2.
Total Time Spent for Video Games and Movies in Minutes

	N	Minimum	Maximum	Mean	Std. Deviation
Games for Everyone	52	0	270	30.00	53.22
Games for 10 above	52	0	180	5.87	26.58
Unnamed Video Games	52	0	180	9.42	30.57
General Movies	52	0	120	11.15	25.62
PG Suggested Movies	52	0	120	5.48	22.03

When the data were analyzed separately for boys and girls, looking at the time they spent on screens, descriptive analyses revealed that girls had slightly higher total screen time compared to boys. However, boys spent more time than girls on playing video games. This analysis highlights gender differences in screen time and video game usage among the study participants (Table 3).

Table 3.
Time Spent for Media Activities According to Children's Gender in Minutes

		Total TV Time	Total Screen Time	Total Video Game Time
Girls	Mean	185.54	225.36	38.93
	N	28	28	28
	Std. Deviation	119.128	147.101	61.012
Boys	Mean	159.63	213.75	54.54
	N	24	24	24

Table 3 continuing

	Std. Deviation	115.010	135.841	64.745
Total	Mean	173.58	220.00	46.13
	N	52	52	52
	Std. Deviation	116.827	140.754	62.634

Research Question 1: The Relationship between Children's Time Spent for Media Use and Their Prosocial and Aggressive Behaviors

The first research question of the study focused on investigating whether the children's prosocial and aggressive scores changed in relation to the time they spent on media, regardless of the content.

The results indicated a significant positive relationship between children's aggression scores and the time they spent on video games, r (50) = .32, p < .05. This suggests that as children spent more time playing video games, their aggression scores increased, indicating a potential link between increased video game usage and elevated aggression levels.

In addition, although not statistically significant, there was a potential negative relationship between children's prosocial scores and the time they spent on both screen time and video game time. However, the lack of statistical significance means further research is needed for further examination (Table 4).

Table 4.
Correlation Between Time Spent for Media Use and Aggression and Prosocial Scores of the Children

		Aggression Scores	Prosocial Scores	TV Time	Video Game Time	Screen Time
Aggression Scores	Pearson Correlation					
	Sig. (2-tailed)					
	N					
Prosocial Scores	Pearson Correlation	-.367(**)				
	Sig. (2-tailed)	.007				
	N	52				
TV Time	Pearson Correlation	.019	.045			
	Sig. (2-tailed)	.892	.749			
	N	52	52			
Video Game Time	Pearson Correlation	.328(*)	-.192	.160		
	Sig. (2-tailed)	.018	.173	.256		
	N	52	52	52		
Screen Time	Pearson Correlation	.163	-.044	.898(**)	.576(**)	
	Sig. (2-tailed)	.248	.759	.000	.000	
	N	52	52	52	52	52

** Correlation is significant at the 0.01 level (2-tailed).

* Correlation is significant at the 0.05 level (2-tailed).

Further examination of the data revealed an association between screen time and the age of the children, r (50) = .40, p < .01. This indicates that as children grew older, they tended to spend more time on screens. Compared to younger children, older children devoted more time to screen-related activities.

Research Question 2: The Relationship between Media Content and Children's Prosocial and Aggressive Behaviors

The second research question of the study asked whether children's prosocial and aggressive behavior was influenced by the time spent on specific types of programs or video games. To explore this relationship, a series of Pearson correlations were conducted.

The study included seven types of TV programs: prosocial content, educational content, both prosocial and educational content, aggressive content, school-age content as well as programs for adults, and unnamed programs. However, the results revealed that there was no significant relationship between the children's prosocial and aggressive scores and the specific type of content they watched or played on the screen.

Specifically, there was no significant relationship between the time children spent on programs with prosocial content, including those with both prosocial and educational content, and their prosocial scores, r (50) = -.13, p > .05. Similarly, there was no significant relationship between the time children spent on programs with aggressive content and their aggression scores, r (50) = .06, p > .05.

To assess the impact of gender on the time spent on various TV contents, independent samples t-test was conducted. The categories of programs with school-age content and unnamed TV programs were combined under the label "All Others" to reduce the number of t-tests. The prosocial TV category also included programs with both prosocial and educational content. However, the study found that gender had no significant effect on the time spent on TV programs with any type of content.

Research Question 3: The Relationship between Children's Time Spent for Media Use and Their Time Spent for Developmentally Enriching Activities

The last research question of the study aimed to investigate the displacement hypothesis suggesting that as children spend more time on media activities, they may allocate less time to developmentally enriching activities. The study grouped parents' answers into 11 categories, including literacy, art, role-play, lego/blocks/cars, puzzle, and math, outdoor, music, branch (e.g., ballet, swimming lessons), shopping malls, family activities, and unnamed play. The total playtime was calculated as the sum of the time spent on these activities during the weekend, excluding family activities and shopping malls, which only encompassed visiting relatives and shopping. Pearson correlations were employed to explore whether the amount of time spent on play decreased as the time spent on media activities increased. The results indicated a significant negative relationship between the time spent on video games and developmentally enriching activities, r (50) = -.44, and p < .01. This suggests that as children spent more time playing video games, they tended to allocate less time to other forms of play.

Furthermore, the results also suggested that as children spent more time watching TV and movies, there was a tendency for them to spend less time on family activities. However, these results were not statistically significant, implying that further research might be required to establish a clear relationship in these cases (Table 5).

Table 5.
Correlation between Time Spent for Play, Family Activities, and Media Use

		Family Activity Time	Play Time	TV Time	Video Game Time	Screen Time
Family Activity Time	Pearson Correlation					
	Sig. (2-tailed)					

Table 5 continuing

	N	52			
Play Time	Pearson Correlation	-.18			
	Sig. (2-tailed)	.19			
	N	52			
TV Time	Pearson Correlation	-.17	-.10		
	Sig. (2-tailed)	.24	.50		
	N	52	52		
Video Game Time	Pearson Correlation	-.08	-.44(**)	.16	
	Sig. (2-tailed)	.60	.001	.26	
	N	52	52	52	
Screen Time	Pearson Correlation	-.17	-.26	.90(**)	.58(**)
	Sig. (2-tailed)	.22	.06	.000	.000
	N	52	52	52	52

** Correlation is significant at the 0.01 level (2-tailed).

The primary activity that children engaged in during the entire weekend was family activities, with an average of 234.10 minutes (SD = 127.54). Following that, the second most time-consuming activity was the total screen time, including TV and movie watching, with an average of 220 minutes (SD = 140.75). The third activity in terms of time spent during the weekend was unnamed play, encompassing activities that parents didn't specify and simply noted as "Playing games" in the media diaries (Table 6).

Table 6.
Time Spent for Developmentally Enriching Activities and Media Activities in Minutes

	N	Minimum	Maximum	Mean	Std. Deviation
Literacy Time	52	0	360	49.04	71.04
Art Activity Time	52	0	170	38.94	47.11
Role Play Time	52	0	300	27.12	61.60
Cars Blocks Time	52	0	330	30.10	59.69
Puzzle Time	52	0	130	9.52	25.90
Family Activity Time	52	0	540	175.58	150.33
Outdoor Time	52	0	390	86.83	90.51
Music Time	52	0	20	1.06	4.35
Unnamed Play Time	52	0	480	88.75	109.87
Branch Time	52	0	180	10.96	33.62
Mall Time	52	0	180	14.62	43.41
TV Time	52	0	510	173.58	116.83
Movie Time	52	0	180	16.63	36.05
Video Game Time	52	0	270	46.13	62.63

Discussion

Media is an inescapable part of life today. Instead of constantly engaging in a battle against it that parents often lose, it is important to find ways in which parents can live with it and use it effectively without harming or altering the pathway to healthy growth for young children. Obviously, parents, policy makers, educators and researchers have challenging yet a crucial role to play in a quest to find ways in which this is possible. Children learn, have fun, be moved, teach, express, protest, and share via media tools. In short, it is the new normal for today's children as they are born into a digital world now. Therefore, all involved in children's development and care look for the answers to questions such as when to start introducing media, which programs are good for them, how much media is too much exposure and whether media has any positive or negative effects on children's development. Although these questions will probably be asked for a long time, presently, there are various conclusions and responses to then when the results of the child media studies are considered (Kucirkova et al., 2017). One important conclusion is that media viewing is not all good or bad for children and evidence suggests that the content of media, the amount of exposure either by playing games or viewing media, and the context in which media viewing takes place are all crucial factors that need to be considered to understand the effects of media on young children. Although included in this quest for media use to an extent, it is worth exploring the expense of including media into the lives of children. Thus, present research was designed to contribute to existing studies on media literature by exploring whether the amount of time spent with media devices, the content quality (aggressive or prosocial) contributes to children's prosocial and aggressive behaviors rated by teachers. Furthermore, by describing the home environment in terms of media use and other engagements at home, the goal was to also explore whether children's time spent on traditional activities such as play, family time and outdoor activities lessen. By combining survey questions, media diaries, and questionnaires, another goal was to incorporate a range of techniques to obtain more insight, as some techniques such as media diaries, although very useful, are often not preferred as much since they require more resources.

Turkish Statistical Institute (TURKSTAT, 2013) reported that children 50.6 % of children aged 6 to 15 spent 1 hour 55 minutes watching TV on average on a typical day in 2013 Currently, however, a newer report for 2021 showed that 82.7% of the children in the same age group use media. Social media use among children using all digital media has risen and majority of them use the internet. Although the data were collected in the academic year of 2014 and 2015, long before the pandemic hit the world in 2019, the media use among children were on the rise and there were many easily accessible alternative media outlets at home for children. Then the 2019 pandemic has certainly affected the rise of digital media use significantly, yet, although life has seemed to resume its regular course as the restrictions were lifted after the pandemic subsided (e.g., school closures, after school activities etc.), and children are still using digital media much more than ever before with digital media use affecting all aspects of life. In fact, statistical reports (TURKSTAT, 2021) suggest that many aspects of children's lives, including time spent reading books, physically interacting with friends and playtime have all decreased such as social media, online games, watching videos have become routine activities for children. The data for the current study were collected prior to pandemic, so results do not reflect on current developments in media use, yet they give perspectives as to the role and power of media use and its effects on young children. Studies have found that overuse of media is related to many health risks including behavioral problems (Bozzola et a., 2022). Similarly current study showed that increased media use puts children at risk for aggressive behaviors. Similar findings were reported by other studies that increased screen time was risking children's well-being and putting them at risk for higher levels of aggression (Supanitayanon et al., 2020) and problems with executive functioning (Corkin et al., 2021).

Although there are studies focusing on assessing the content quality of video games in Turkey (Gözüm & Kandır, 2021), evaluating the quality of media content children watch seem to be challenging. As it happens, assessing the content quality of the digital media including shows, movies or even games, there is no clear guide easily available in Turkey for evaluation purposes. This provides extra challenge for parents and researchers to assess the content quality and the appropriateness of the media for young children. Having said this, in the current study, existing

evaluation criteria were combined and used as a guide to classify the content as prosocial or aggressive/violent. In one study, Bushman et al. (2015) explored the opinions of media researchers and found that aggressive media content increased violence in children. Similarly, in their meta-analysis, Coyne (2018) reported that prosocial media increased prosocial behaviors despite several moderators. However, we found no evidence that prosocial video content increasing prosocial behaviors or aggressive content increasing aggressive behaviors among young children. Further studies assessing the content quality of media tools more in depth would be valuable for an examination of the dynamics of the messages in them, and their effects on children.

Contrary to the expectation, findings of the present study did not reveal a positive relationship between prosocial content and prosocial behaviors of the children. Similarly, there was not a positive relationship between children viewing more aggressive content and more aggressive behaviors. Yet the total media viewing was associated with more aggressive behaviors. One reason for this might be that, when the program is rated as prosocial or aggressive, the detailed picture of the content could not be produced. It is possible that an aggressive show has prosocial elements, or the prosocial show has aggressive elements. Perhaps when a show is evaluated for its prosocial or aggressive content, it is possible to focus on prosocial or aggressive act counts or explorations of children's perceptions of the nature of the show, or what children's take away messages are watching these shows. In the current study, the average media use for children between the ages of 4 and 6 was 1 hour 50 minutes over a weekend somewhat lower than national statistics and higher than that of studies using US samples. One of the reasons of why national statistics in Turkey reported higher amounts of time might be related to the age of the target group. It is possible that the reason for why the average time was higher in national statistics might be because they used an older and wider age group as a sample. In the current study, it was found that time spent viewing media had increased with age, suggesting that age is a contributing factor for increased media use. As expected, parents have more control in younger children's media usage than that of older children's (Kucirkova et al., 2017). It is also possible that parents might think that as children get older, they grow a better insight about what is appropriate or not for them on the screen. Another possible explanation for this might be that the media market offers more content for school age children including movies, cartoons, TV shows and games. The content that is appropriate for school age children may receive the attention and interest of older preschool children, exposing younger children for content that is more ambiguous or more difficult to interpret and understand prosocial content. Further research needs to explore more in detail for how age influences children's media viewing and the reasons for parents to use media outlets for young children. It is also important to explore how the decisions are made for young children's media viewing.

Research in the field of children's media use suggested that there was a link between violent media exposure and aggressive behaviors as violent media being a predictor of aggressive behaviors among children (Bushman, Gollwitzer, & Cruz, 2015). In the present study, we found that the children who played more video games were reported by their teachers to show more aggressive behaviors. This finding was evident even though parents reported these video games to be in the category of "video games for everyone" based on the guidelines of Entertainment Software Rating Board. Thus, this shows that frequent use of video games may be related with aggression in children, regardless of the content, like other studies such as Manganello and Taylor's (2009) study suggested. Specifically, Manganello and Taylor (2009) argued that no matter what the content is, there is a positive relationship between direct TV exposure and children's aggressive behavior. As the displacement theory suggests, it is possible that children spend less time with their peers when they spend more time on screens similar to what Bickham et al., 2003 argued. It is possible to speculate that children learn to negotiate social relationships and find more efficient strategies to express themselves while spending time with their peers. Yet, when they are in front of screens, there is not much time left to socialize with peers perhaps there is even a risk for deprivation in terms of social interactions with peers. Furthermore, video games allow for more acting out as children in these games actively engage in act of violence possibly leading to aggression. Even though it was not significant at the conventional levels, we found that there was a tendency for a negative relationship between time spent for video games and children's prosocial behaviors suggesting less media viewing could be linked to better prosocial behaviors. It is possible to state that children, during the crucial time of their

development, children might experience a lack of developing social skills while playing video games even if the content is harmless or not considered to be harmful. It is also possible to conclude that children who lack prosocial skills and are more aggressive may play more video games. Further research needs to focus more on exploring the factors associated with why children spend more time on video games and how increased time on video games are more harmful. While exploring such factors it would be inspiring and valuable to explore children themselves perceive the issue. Yazıcı Arıcı, et al. (2023) conducted a study with young children playing video games and reported that metaphors were used by children to express their feelings and these metaphors were useful providing insight into children's learning and understanding. Similarly, allowing children to express their own minds and understanding can be used to explore why children use media tools more and even in the expense of conventional games and play. Perhaps children can better express themselves and help us understand how they feel their needs are fulfilled by the media tools and media interaction.

Our results showed that there is an inverse relationship between the time spent playing video games and the time spent for engaging in developmentally enriching activities, such as doing puzzles or role-playing. Keeping in mind that children's aggression levels increased when they spent more time playing video games, we can argue that when children spend less time playing traditional games or engage in stimulating and developmentally appropriate activities and when they used more media, particularly spend more time playing video games, their aggressive behaviors at school increase. Similarly, not significant at the conventional levels, the tendency emerged to suggest that TV watching seemed to take time away from spending time on developmentally enriching activities. Although bound to be tested by further research, it appears that watching TV or online videos as well as playing video games all crowd the home environment and children's immediate contexts in a sense and preschool children spend less time playing traditional games, doing arts and crafts, or engaging in family activities. In one study conducted by Gözüm and Kandır (2020), researchers focused on children's concentration levels and their desire for play in relation to how much time they spend playing video games and found that time spend for video games has a negative influence on them. It is reasonable to conclude that too much media use by means of playing video games or watching videos deprive children of rich learning and development opportunities that traditional games or developmentally enriching activities provide such as role playing, perspective taking, language rich and emotionally fulfilling interactions as well as building skills to enhance focus, attention, and inhibitory skills. In the literature there is some evidence suggesting that higher levels of media exposure are linked to lower levels of self-regulation skills among young children (Cliff et al., 2018). Furthermore, there are other studies providing evidence that improved self-regulation skills are linked to lower levels of aggression and other problem behaviors as well as positive developmental outcomes such as social competency (Robson et al., 2020). Given that child development is a dynamic process, future research can focus on the dynamic relationships among media use, self-regulatory skills, and aggression to explore the pathways for aggressive behaviors.

In an experimental study with adult participants, Hall et al. (2018) found that high amounts of social media use were associated with perceptions of lower life quality. When the participants were introduced study conditions where social media use was restricted, the participants spent more time for work and house chores. However, these activities were also associated negatively with perceptions of low quality of life. Hall et al. (2018) argues that social media displaces other activities in individuals' lives, however, assuming people engage in more social, or personally fulfilling activities when social media use is absent, would be misleading. It is the case that engaging in with media use in general for adults or children do take time away from other activities. However, perhaps more media use is a result of lacking more pleasant activities in life. Similarly, perhaps children are turning to use of media because there is a lack of more exciting, stimulating, rich and developmentally appropriate activities in their lives. Considering that in today's world, particularly for children and youth, digital media is a part of everyday life, there is a need for a change in the mindset. Instead of viewing media as simply taking time away from more developmentally enriching activities, it is important to accept that media usage is part of children's everyday lives, and the efforts need to be placed on generating and providing more quality activities that can serve as alternatives of media for children.

Having participants with higher socioeconomic level than the average socioeconomic level of Turkey was one of the limitations of this study. Although much lower in Turkey (11%) the approximate percentage of the university graduates was 67% in the current study suggesting that the study sample was composed of families with higher socioeconomic levels. Furthermore, there was a high percentage of children with personal tablets or game consoles. Studies show that higher levels of media use among children is associated with lower levels of parental education (Anand & Krosnick, 2005). Therefore, results of the present study need to be interpreted with caution and further studies should include more diverse families in terms of parental education and income. It would be interesting to see whether the children's media viewing habits are influenced by the number of media devices at home among families with lower and higher socioeconomic backgrounds.

Currently, some researchers argue that young children can benefit academically and cognitively when media devices are implemented in developmentally appropriate activities and games (Kanaki, & Kalogiannakis, 2022). Although we do agree that media tools can be very useful when used appropriately, nonetheless, the results of the present study suggested that it is a cause for concern when children use too much media at young ages. Therefore, a thorough public policy work educating the parents about the effects of media on children, and guiding parents to provide alternative activities with and for children is needed. Currently, number of studies focusing on parental mediation are on the rise (Gözüm & Kandır, 2020, 2021). It is important that further research focusing on parental mediation and effects of media on children focus on how parental strategies are used to regulate children's media related activities along with their own and perhaps explore the pathways for more regulated media engagements for young children. Moreover, use of smart technologies and engagement with media is now possible with one single finger stroke and many interactive games are introduced as suitable for young children in digital stores (Papadakis, 2023). When the content is labeled as educational, parents tend to think that the content is beneficial for their very young children although how these apps and digital games are rated as suitable for young children are unclear (Papadakis, 2023). Furthermore, because young children, and even infants, can manage to use many of the smart devices with interactive screens, adult presence and monitoring for much younger children are not a necessity to navigate through pages and skip through apps. Therefore, these ratings and what they mean become a central challenge for families and young children. In fact, a major the challenge we faced in the present study was rating the content of the media. There was no systematic and a detailed rating system to assess the media content for young children that could guide parents to decide whether the content was developmentally appropriate or the content could be inappropriate or harmful. Hence there is a need to develop a rating system that is thorough, user friendly and provides simple tools to assess both positive and prosocial content as well as harmful content including violence and aggression. Furthermore, since we are now in a post pandemic era and during the pandemic and thereafter games, leisure activities and even socializing with friends and family became online, more studies are needed to explore the effects of sudden and rapid increase of digital media use and its effects longitudinally. Lastly, qualitative studies may be helpful to explore the reasons for parents to leave children alone in front of screens, their beliefs regarding the effects of media and how they interact with their children when they use the media together. It would be helpful to explore what strategies parents use to mediate their children's media use, how they monitor the content in the media and their views on traditional games and developmentally appropriate activities as alternatives for media. Considering that today's children and adults are using media more than ever before, and children are at much younger ages are interacting with media, we need to better understand the expense of media use in children's lives.

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Ethics statement: In this study, we declare that the rules stated in the "Higher Education Institutions Scientific Research and Publication Ethics Directive" are complied with and that we do not take any of the actions based on "Actions Against Scientific Research and Publication Ethics". At the same time, we declare that there is no conflict of interest between the authors, which all authors contribute

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