Child and Adolescent Media Use, Parental Involvement, and Young Adult Outcomes

Amelia Bohan

Lauren Philbrook

Department of Psychological and Brain Sciences, Colgate University

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Abstract

Though prior research has attempted to determine the outcomes of child and adolescent media use and caregiver involvement, these studies' findings have often conflicted and few have attempted to assess more longitudinal impacts. The present study sought to clarify and extend these findings by investigating the associations between child television viewing, adolescent Internet use, parental media involvement and young adult socioemotional, cognitive, and educational outcomes. One hundred fifty-three undergraduate students completed an online survey in which they were asked to recall their child, adolescent and parental media use experiences and complete measurements of young adult prosocial skills, empathy, executive functioning, problematic Internet use, academic self-efficacy, and academic achievement. In agreement with several study hypotheses, a series of multiple regression analyses controlling for demographic and home environment variables revealed that active parental child and adolescent media involvement seemed somewhat consistently associated with improved socioemotional, cognitive, and academic outcomes in young adulthood, while restrictive child and adolescent parent involvement were conversely associated with lower outcomes. One regression analysis also depicted that higher child television viewing was associated with lower adult empathy outcomes. Several interaction analyses investigated this negative association between child television quantity and empathy outcomes and found that parental involvement appeared to moderate this relationship in complex ways that require further exploration. The present study's findings clarify prior literature, emphasize the profound importance of media and parental media involvement as child and adolescent developmental opportunities, and provide questions for further investigation into the influences of caregivers and the home environment on media's impact.

Introduction

Although many older generations attest to the sanctity of growing up screen-free, media use characterizes twenty-first century childhoods; children spend an average of 7 hours per day on media such as television, mobile devices, or computers (AAP, 2021). Since the increasing prevalence of child media use, there has been growing concern about technology's potential influence on children's social, emotional, cognitive development and subsequent life outcomes. As a predominant form of child media use, television viewing has been conflictingly criticized and praised for its influence on children's socioemotional and cognitive skills, such as empathy, prosocialness, and executive functioning. Adolescent Internet use has received similar scrutiny as a potential risk to these social outcomes and to youth's mental and physical health (Liu et al., 2011; Jeon et al., 2018; Valkenburg and Peters, 2009). Although many studies importantly acknowledge how caregiver involvement influences child media use, such as television viewing, and adolescent media use, such as Internet activity, and thus influences socioemotional and cognitive outcomes, few studies have longitudinally investigated these impacts. The present study assesses the relationships between early childhood television viewing, adolescent Internet use and later, young adult outcomes to determine the longevity, value, and impact of caregiver involvement on these media influences.

Child Media Use

As one of the earliest forms of child media use, there is an abundance of research on the impact of child television viewing. Researchers have validated the importance of television content, promoting developmentally-appropriate, educational television programs associated with positive cognitive outcomes over entertaining television associated with negative cognitive outcomes (Kirkorian et al., 2008). These developmentally appropriate television programs

promise to positively influence child development and produce improved socioemotional outcomes, cognitive outcomes, and educational outcomes. Socioemotional outcomes include qualities such as prosocialness, which involves helping and caring for others, and empathy, which involves understanding and sharing in someone else's distinct emotions and experiences (Caprara, 2005; Carre et al, 2013). Several empirical studies have assessed and affirmed the success of educational television's child socioemotional development goals. Television programs from the 2000's, such as *Blue's Clues (*Anderson et al., 2000), as well as ongoing programs in 2022, such as *Daniel Tiger's Neighborhood* (Rasmussen et al., 2016) seem to predict similar improvements in prosocial skills and empathy among child viewers. Research on child television's association with cognitive outcomes, such as executive function–a measure of task-completion abilities including attention, self-control, and planning behaviors– is far less confirmatory of child television's benefits (Van der Elst et al., 2012). In children 9-10 years-old, television viewing was associated with decreased global cognition, a measure of crystallized and fluid intelligence skills including executive function (Walsh et al., 2020). Despite these results, research on child video-watching which finds positive associations between viewing and executive functioning outcomes in a 2-year longitudinal study may attest to the potential for executive functioning benefits once different environmental variables are considered (Sauce et al., 2022).

The present literature on the educational outcomes of children' television seems to vary between cross-sectional and longitudinal studies. In cross-sectional analyses, educational programs such as *Super Why!* (Linebarger, 2015) and *Sesame Street* (Kearney and Levine, 2019) have demonstrated more immediate improvements in child viewers' literacy and elementary school performance. However, a similar longitudinal analysis found that two or more hours of

television viewing between the ages of 9-10 was associated with lower reading scores at ages 11-12 (Mundy et al., 2020). In a longitudinal extension of Kearney and Levine's (2019) *Sesame Street* analysis, no association was found between child viewership and later high school and career outcomes, suggesting that an influence on academic improvement seems to diminish over time. That short-term, two-year longitudinal findings have been observed but longer, decade separated longitudinal influences have not been found suggests that the duration of children's educational media's influence may not extend into young adulthood. As the majority of research on children's television depicts inconsistent, immediate developmental outcomes, further research is needed to clarify both the value and longevity of child media's influence.

Child Media Caregiver Involvement

Further complicating these findings is the expansive literature which analyzes how caregiver involvement influences child television viewing's developmental outcomes. Caregiver media involvement is empirically defined in three distinct forms: active mediation– discussing media content; restrictive mediation–limiting child's media use; and co-using–coviewing or engaging with media simultaneously (Livingstone and Helsper, 2008). In one study, children who viewed the educational television program *Daniel Tiger's Neighborhood* only experienced an increase in empathy when caregiver active mediation occurred (Rasmussen et al., 2016). Conversely, in another study, 1-2 year longitudinal findings of executive functioning improvements following educational television viewing diminished once caregiver active mediation was factored into analyses (Blankson et al., 2015). These adjacent caregiver influences depict how caregiver mediation may either facilitate developmental outcomes or exist as a third-variable which solely leads to these developmental outcomes. To assess either the

immediate or longitudinal socioemotional, cognitive, and educational outcomes of child television viewing, caregiver involvement must be considered and controlled for.

Adolescent Media Use

As 95% of 13 to 17-years-old use smartphones and 45% engage in prominent Internet use, research on adolescent media use outcomes focus on the risks and benefits to Internet use (Pew Research Center, 2018). Like in the literature for children's television, studies have found associations between adolescent Internet use and positive socioemotional outcomes; researchers Valkenburg and Peter (2009) found that instant messaging Internet platforms provide the opportunity for stronger social connections. Similarly, young adults who engage in Internet "overuse" have demonstrated increased empathy levels (Jeon et al., 2018). These positive socioemotional outcomes of adolescent Internet use seem to counter a breadth of literature warning against Internet "overuse." Problematic internet use (PIU), is a well-studied measurement of excessive Internet use associated with negative life experiences such as problems with sleep, mental health, and social and academic outcomes (Jelenchick et al., 2014). Further contradicting the associations between Internet "overuse" (Jeon et al., 2018) and empathy development, studies of PIU depict how this excessive Internet involvement may correspond with experiences of depression and aggression (Liu et al., 2011). A longitudinal study may clarify the influence and strength of these adolescent Internet use experiences on socioemotional outcomes such as empathy and prosocial skills, as well as on digital health such as PIU.

Adolescent Media Use Caregiver Involvement

Caregiver involvement seems to play a similarly fundamental role in adolescent Internet use PIU outcomes. Livingstone and Helsper (2008) established terms such as active co-use,

interaction restrictions, technical restrictions, and monitoring to describe caregiver Internet involvement. Active co-use includes conversations about and presence during Internet use; interaction restrictions include limitations on type and frequency of use, such as preventing children from downloading software or using email; technical restrictions, which limit access to certain websites through Internet limitation-technology, such as site filtering and censoring software; and monitoring, which involves caregiver review of child's online profiles and Internet history after their independent technology use (Livingstone and Helsper, 2008). While some studies find that interaction restrictions significantly decrease adolescent Internet use risk (Livingstone and Helsper, 2008), other studies suggest that active co-use is associated with decreased Internet use risk (Steinfeld, 2021). In a study about excessive use of the Internet (EUI), a measure like PIU, both restrictive and active mediation were associated with lower EUI, though restrictive mediation seemed to have a stronger influence than active mediation (Kalmus et al., 2015). Further research is needed to clarify these caregiver influences on PIU and address how these adolescent Internet experiences, such as caregiver involvement and PIU, predict young adult socioemotional and PIU outcomes.

Present Study

The current study intends to clarify and contribute to this mixed literature on the influence of child media use, adolescent media use, and parental involvement on the cognitive, socioemotional, and Internet use outcomes of young adults. For child media use, the present study will assess how children's educational television viewing might predict young adult empathy, prosocial skills, executive functioning, and academic outcomes. For adolescent media use, this research will investigate the influence of adolescent Internet use on young adult empathy, prosocial skills, and PIU. Finally, the role of caregiver involvement will be considered

as both a predictor variable as well as a potential moderator in these relationships between child and adolescent media use and young adult outcomes.

Based on existing literature, I expect developmentally appropriate childhood television viewing to be associated with greater executive functioning and prosocial behaviors in young adulthood. Despite some past research, I do not expect to find a longitudinal correlation between childhood television viewing and young adult learning and achievement outcomes, because I believe that other social factors, such as family, SES, and high school opportunities, will overpower this early media influence. Aligning with prior concerns, I anticipate that adolescent Internet use will be associated with decreased prosocial behaviors, decreased empathy skills, and increased PIU in young adulthood. Finally, I expect active parental mediation to strengthen the relationship between children's television viewing and greater young adult prosocial behavior, empathy skills and executive functioning. I conversely hypothesize that active parental mediation will mitigate the relationship between adolescent media use and decreased prosocial behaviors, decreased empathy skills, and increased PIU and media use in young adulthood.

Methods

Participants

Participants were recruited through Colgate University's Sona Psychological and Brain Science Research Participation System. Research participation was incentivized as .5 research credits required in several Psychological and Brain Science courses. Over a 5 week period, 153 students participated in this study. One hundred seventeen participants identified as cisgender women, 33 as cisgender men, and 1 as nonbinary. The majority of participants were freshman and sophomores, with 62 freshmen graduating in 2025 and 63 sophomores graduating in 2026, followed by 21 juniors in the 2024 class and 7 seniors in the 2023 class. The sample consisted of

a majority, 125, White/European participants, followed by 8 Black/African American participants, 1 Indigenous American/Alaska Native, 13 Asian/Asian American, 3 Native Hawaiian/Pacific Islander, 11 Hispanic/Latinx; 10 of these participants identified as Multiracial; as participants were able to select more than one racial identity, percentages do not sum to 100. The majority of participants, 143, were domestic students, while 9 identified as international students. Participants shared a mean socioeconomic status of 6.95 (SD: 1.59) on a 10 point scale. Four participants were removed from the data analysis for incomplete surveys.

Materials

Demographic Survey

Following the informed consent form, participants were asked to answer a series of demographic questions about their racial, gender and socioeconomic identity and family background. This information was recorded to control for variables in the home environment which may have influenced child and adolescent media use and caregiver involvement. Examples of these questions include: "What best describes your racial/ethnic identity? Select multiple if applicable:" with response choices such as "White or European American," and "Black or African American," or "Please mark the box that best describe your primary caregivers throughout the majority of your childhood (when you were between the ages of 3-5):" with response choices such as "Two-caregivers in one household (example- a mother and father in one household)."

Child Media Use and Caregiver Involvement Measures

Child Media Use Survey

This 7-question survey was used to measure participant's childhood television viewing habits between the ages of 3 to 5 to be analyzed as predictor and control variables for young

adult socioemotional, cognitive, and educational outcomes. Such measurements include predictor variables such as quantity of television viewing, as well as control variables like access to televisions. While based on Wartella et al.'s (2014) research on parenting behaviors and attitudes towards child media use, uestions were adapted to ask participants, not their caregivers, to recall their own television viewing, and questions about media forms other than television were omitted. Some example questions include: "Do you recall watching educational children's television (i.e., Dora the Explorer, Sesame Street, Max and Ruby)?" with 5 response options ranging from "Definitely not" to "efinitely yes,"and "To your best knowledge, for how many hours each day did you watch television?" with 4 response options ranging from "Less than 1 hour" to "More than 4 hours."

The Child Caregiver Involvement Survey

Similarly based on Wartella et al. (2014), this measure was intended to assess participants involvement in childhood television viewing between the ages of 3 to 5-years-old; this factor which will serve as a predictor variable in the analysis of child television viewing's influence on young adult outcomes. Questions were adapted to target participant's memory of television and caregiver involvement. This survey included 14 questions which asked participants how likely their caregivers were to participate in a certain media involvement behavior. Livingstone and Helsper's (2008) parental mediation terms, active mediation, co-use, and restrictive mediation, were used to analyze these behaviors. Within these Wartella et al. (2014) questions, 8 items measured active mediation, 2 items measured co-use, and 3 items measured restrictive mediation. Example questions include "How likely were your caregivers to let you watch television when they were cooking dinner or doing chores?" with a 4-point response scale ranging from "Very likely," with a score of 1, to "Not at all likely," with a score of 4, and "Did

your caregiver(s) enforce rules about how long you could watch television?" with a 4-point response scale ranging from "Not at all," with a score of 1, to "All or most of the time," with a score of 4. Discrepancies in the similarity of active co-use variable questions led to the creation of another variable named childhood parental presence, which was a measurement of passive caregiver presence, meaning parental presence during child television viewing without question-asking or coviewing.

The Child Home Environment Survey

Based on Wartella et al. (2014), this 9-question survey assessed child (ages 3-5) home environment factors which will be controlled for during data analysis. Through questions about the participant's description of caregiver's understanding of their behaviors and the frequency of interactions between participants and caregivers, this section assessed factors such as general child caregiver presence and child temperament. The 2 general child caregiver presence questions included those such as "When at home, how much time did you spend with your primary caregiver(s) on a typical WEEKDAY?" With a 5-point response scale ranging from "Less than a few hours" to "All or almost all of the day," these general child caregiver presence scores range from 1 to 5, with higher numbers depicting greater childhood caregiver presence.

The child temperament questions included 3 questions about child attention behaviors, such as "To what degree has your caregiver(s) described you as a fidgety or squirmy child" and 2 questions about child emotional regulation, such as "To what degree has your caregiver(s) described you as an easily overwhelmed or over-stimulated child." Though these questions were originally analyzed and presented as percentages, in the present study they were scored on a 5 point scale, ranging from "Not at all," with a value of 1, to "A lot," with a value of 5 (Wartella et al., 2014). Child temperament was depicted as two distinct variables: child attention, the sum of

the 3 questions, ranging from a value of 5 to 15, with higher numbers representing a more active child; and child emotion, the sum of 2 questions, ranging from a value of 5 to 10, with higher numbers representing a child with less developed emotion regulation skills.

Adolescent Media Use and Caregiver Involvement Measures

Adolescent Caregiver Involvement Survey

This 20-question survey came from Livingstone and Helspers (2008) study's and measured participant's parental Internet involvement between the ages of 12 to 18. These predictor variables–active co-use, monitoring, interactive restrictions, and technical restrictions–were scored and evaluated as predictor variables in the relationship between adolescent Internet use and young adult socioemotional outcomes. 4 items measured active co-use, 2 items measured monitoring, 5 items measured interaction restrictions, and 1 item measured technical restrictions. Questions include "Did your caregivers check your Internet history (the sites/apps you visited) after use?" with response options "Yes," "Maybe," and "No." Total scores were composed for each of these adolescent caregiver involvement behaviors: active co-use, scores ranged from 0 to 4; monitoring scores ranged from 0 to 2; interaction restriction scores ranged from 0 to 5; technical restrictions ranged from 0 to 1. Questions which referred to issues not relevant in the present study, such as pornographic media use, were omitted. Following data analysis, discrepancies in active co-use questions led to the creation of two different variables for this type of involvement, active caregiver Internet rules and active caregiver Internet watching.

The Adolescent Home Environment Survey

In an adapted form of the Child Home Environment Survey based on Wartella et al. (2014) included earlier in the study, this 9-question measure asked participants about their home environment and caregiver depictions of their temperament from the adolescent ages of 12 to 18.

These measurements of adolescent caregiver presence and adolescent temperament were analyzed as control variables in the relationship between adolescent Internet use and young adult outcomes. Questions and scoring procedures for these adolescent variables are identical to those of matching childhood variables in the prior Child and Home Environment survey section, with simple changes to ask participants about their adolescent, not childhood, experiences.

The Adolescent Problematic and Risky Internet Use Scale

To measure participant's degree of adolescent PIU as a predictor for young adult PIU, prosocial, and empathy outcomes, Jelenchick et al., (2014)'s Problematic and Risky Internet Use Screening Scale (PRIUSS) for Adolescents and Young Adults was employed. This section included 18 questions, 6 questions analyzing participant's emotional impairment, 5 questions for social impairment, and 7 questions about impulsive Internet use. These questions were adapted to a past-tense, reflective form to measure participant's adolescent experiences. Examples of these emotional impairment, social impairment and impulsive Internet use questions include: "Did you experience increased social anxiety due to your Internet use?" "Did you feel anxious when away from the Internet?" and "Did you lose sleep due to nighttime Internet use?" with 5 response items ranging from "Never," with a value of 0, to "Very often," with a value of 4. The score of each question was summed together for a total adolescent PRIUSS score between 0 to 72, with higher scores indicating increased adolescent problematic Internet use.

Young Adult Outcomes Measures

The Adult Screen Media Use Scale

This survey section measured the types and quantity of media participants used within the past seven days as adult outcome variables, such as quantity of general media use, quantity of Internet use, and quantity of overall smartphone screen. From Houghton et al.'s (2015) study,

example questions include, “Approximately how many hours did you spend playing video games on a typical day last week?” and “Think about ONE, typical day last week (Monday to Friday). Approximately how many HOURS in total did you spend recreationally on ALL screens that DAY?” with response scales from 0 to 10 hours. The final question in this survey section was an addition to this Houghton et al. (2015) survey with a more quantitative approach. Participants were asked to refer to the Screen Time measured on their cell phones: “Please record your average, weekly screen time from last week (in hours and minutes):” with a text-entry response.

The Adult Problematic and Risky Internet Use Scale

In the original form of the Jelenchick et al.’s (2014) 18-item survey adapted for the aforementioned Adolescent Problematic and Risky Internet Use Scale (PRIUSS), this section assessed participant’s present, young adult Internet use as an outcome variable of their early child and adolescent media use. This section asked participants questions about their Internet use experiences over the past six months and measured participant’s emotional impairment, social impairment, and impulsive behaviors. Scoring was the same in this survey as it was in the prior use of the PRIUSS, with example questions in a present-tense form including:“Do you skip out on social events to spend time online?” or “Do you feel you use the Internet excessively?”

The Adult Prosocialness Scale

This section employs Caprara et al.’s (2005) Adult Prosocialness Scale as a measure of another longitudinal outcome of child and adolescent media use and related parental involvement: young adult prosocialness. By asking participants to measure the frequency with which a series of statements describe their social behaviors over the past six months, this 16-item scale measures 4 adult prosocial behaviors: “sharing, helping, taking care of, and being empathetic of others and their needs or requests” (Caprara et al., 2005). Example statements

include “I am empathetic with those who are in need” and “I easily lend money or other things” with a 5-point Likert scale ranging from“Never/almost never true,” with a value of 1, to “Almost always/always true,” with a value of 5. Total young adult prosocial scores were created from the sum of these statement responses, ranging between 16 to 80, with higher scores representing higher prosocial skills.

The Basic Empathy Scale

To investigate another adult socioemotional outcome, this study included Carré et al.’s (2013) Basic Empathy Scale. This 20-item survey measured two forms of empathy, affective empathy–the ability to feel someone’s emotions when observing them– and cognitive empathy–the ability to understand someone else’s emotions. There were 11 questions for measuring affective empathy and 9 questions which measured cognitive empathy; these questions may also be broken into three subscales, with five questions measuring emotional contagion, the ability to mirror someone else’ emotions, 8 measuring cognitive empathy, and 6 measuring emotional disconnection, the ability to protect oneself from emotions. On a Likert scale of 5 items ranging from “Strongly disagree,” with a value of 1, to “Strongly agree,” with a value of 5, participants responded to how a series of statements described their behaviors over the past six months. Examples of such statements include: “Seeing a person who has been angered has no effect on my feelings” and “I often become sad when watching sad things on TV or in films.” After reverse-coding 6 of these responses, a total basic empathy score will be collected by taking the sum of the 20 answers, creating a score which ranges from 20 to 100, with higher responses indicating higher adult empathy skills. Scores for the two forms of empathy which make up this overall score, affective empathy and cognitive empathy, will also be

assessed as adult outcome variables, with scores ranging between 11 and 55 for affective empathy and 9 and 40 for cognitive empathy.

The Amsterdam Executive Functioning Scale

To assess the potential influence of child and adolescent media use on cognitive outcomes, Van der Elst et al.'s (2012) The Amsterdam Executive Functioning Scale was used. This 13-question survey asked participants to rate the degree to which they agreed with a series of 3 statements which measured attention, 5 statements which measured self-control and self-monitoring, and 5 statements which measured planning and initiative over the past 6 months. Question items included those such as "My thoughts easily wander" and "I am curious, I want to know how things work" with response items on a 5-item Likert ranging from "Disagree," to "Agree." After 9 of the responses were reverse-coded, a total executive functioning score was calculated by taking a sum of the 13 responses; scores ranged from 13 to 65, with higher scores indicating increased young adult executive functioning.

School Environment Survey and The Institutional Integration Scale

One of the final study sections measured academic variables such as institutional integration and school environment to be considered as control variables in the relationship between child and adolescent media use and young adult GPA, SAT, and ACT scores and self-efficacy learning. Based on French and Oakes's (2004) Institutional Integration Scale, the majority of this section included questions to ascertain participant's sense of institutional integration, a factor representing the degree to which students feel comfortable and confident in their academic and social environments. The 11 items from the Institutional Integration measured participants on various subscales, such as the Academic and Intellectual Development Subscale and the Peer-Group Interactions Subscale. Example items include:"Most of my courses have

been intellectually stimulating" and "I am confident that I made the right decision in choosing to attend this university," with 5 response items on Likert scale from "Disagree" to "Agree." Institutional integration scores were then summed and ranged between 11 and 55.

Two additional questions were included to assess and control for differences in high school academic environments. Examples of these questions include: "Approximately how many people were in your graduating class?" with a text-entry response and "Did your high school offer:" with several statements such as "AP courses" and "IB courses" and response items "No," "Yes, between 1-5," and "Yes, between 5-10."

Self-Efficacy Learning Scale

In this portion of the survey, Usher and Pajares' (2008) Self-Efficacy Learning Scale was incorporated to measure non-standardized forms of young adult educational outcomes through 11 questions about participant's adult academic self-efficacy, a reflection of one's educational ability in classroom settings. Measuring Self-Regulated Learning and Self-Concept, items from the Self-Efficacy Learning Scale include: "How well can you take class notes on class instruction?" and "How well can you concentrate on your schoolwork?" with a 5-point response scale ranging from"Not well at all," to "Very well." These scores were summed to develop an academic-self-efficacy score between 5 and 55.

The Academic Achievement Survey

This measure served to provide more quantitative, standardized measures of academic achievement through questions about high school GPA, SAT, and ACT scores. Questions about high school academic achievement include: "To the best of your memory, what was your SAT/ACT score?" and To the best of your memory, was your high school GPA (grade point

average) between:" followed by a range of GPAs such as "97-100 (4.0)" and "Below an 80 (2.7)." SAT scores may range from 400 to 1600; ACT scores may range from 1 to 36; GPA range from 2.7 to 4.0.

Procedure

Participants signed up to participate in this one-session, online survey on Colgate University's Sona Research Participation System. Participation recruitment and survey data collection began on October 20th, 2022 and ended on November 17th, 2022. After signing up, participants could take the survey at any time before this ending date. In this Qualtrics online survey, participants were first asked to read and sign an Informed Consent Form that explained the study's purpose to assess child and adolescent media use, caregiver involvement and socioemotional, prosocial, academic efficacy and achievement, executive functioning, and media use outcomes in young adulthood. This initial informed consent form emphasized that participants could skip any questions and refuse to participate in the study at any point. Participants then completed the study's questionnaires in a consistent order: the Child Media Use Survey, the Child Caregiver Involvement Survey, the Child Home Environment Survey, the Adolescent Caregiver Involvement Survey, the Adolescent Home Environment Survey, the Adolescent Problematic and Risky Internet Use Scale, the Adult Screen Media Use Scale, the Adult Problematic and Risky Internet Use Scale, the Adult Prosocialness Scale, the Basic Empathy Scale, the Amsterdam Executive Functioning Scale, and the Educational and Achievement Outcomes Survey. Participants took around 30 minutes to complete the study. Following the final survey, a debrief section provided resources for emotional and psychological support.

Results

Child Media Use

To investigate associations between child media use, caregiver involvement, and young adult outcomes, a series of multiple regression analyses were conducted controlling for several child media control variables, such as childhood SES, caregiver presence, and child attention and emotional temperament, and the educational control variable, Institutional Integration.

Child Media Quantity

In this regression analysis, R^2= .169 $F(5, 136)$= 5.542, $p < .001$ was found, suggesting that 16.9% of variance in affective empathy scores may be statistically significantly attributed to the influence of these aforementioned child media control variables, along with the predictor variable, quantity of child television viewing. This regression analysis revealed a near-significant negative association between quantity of child television viewing and young adult affective empathy (ß = -1.522, p =.053), suggesting that more child television viewing may be associated with lower young adult empathy.

In two separate bivariate correlation analyses between quantity of child television and active child caregiver involvement and quantity of child television and restrictive child caregiver involvement, two significant associations emerged. There was a significant, negative association between child TV quantity and active child caregiver involvement, $r(145)$= -.326, $p < .001$, and a significant, negative association between child TV quantity and restrictive child caregiver involvement, $r(141)$= -.188, p = .025; these associations seem to suggest that both active and restrictive child media involvement may be associated with lower child television viewing.

An interaction analysis (Figure 1) was conducted to assess childhood parental presence as a moderator in the relationship between child television quantity and young adult cognitive

empathy. This analysis found a significant interaction which demonstrated that low parental presence in childhood and high quantity of television was associated with the lowest cognitive empathy outcomes in adulthood, $b = .602$, $t = 2.06$, $p = .042$. With $R^2 = .200$, $F = 4.78$, $p = <.001$, this model explains 20% of the variance in young adult cognitive empathy.

Active Child Caregiver Involvement

Another regression analysis of these child media control variables and the additional caregiver variables of child media coviewing and restriction found $R^2 = .147$ $F(6, 133) = 3.832$, $p = .001$, which suggests that 14.7% of variance in young adult prosocial skills may be explained by these caregiver mediation variables, active caregiver coviewing, and restrictive caregiver mediation. This analysis found that caregiver coviewing was significantly associated with increased young adult prosocial skills (ß = .373, $p = .042$), depicting how active caregiver child media involvement, such as coviewing, may be associated with greater adult prosocial skills.

With a $R^2 = .370$ $F(7, 55) = 3.698$, $p = .003$, a regression analysis found that 37% of variance in young adult ACT scores may be explained by child media control variables, Institutional integration, and active caregiver mediation. A significant, positive association was found between active caregiver mediation and young adult ACT scores (ß = .440, $p = .004$). This association may suggest that active caregiver involvement in child television viewing may be associated with higher young adult academic achievement, such as higher ACT scores.

In an interaction analysis (Figure 2) between active child coviewing x parental presence and young adult cognitive empathy, a significant moderating relationship was found which demonstrated that for children with low TV quantity, coviewing was associated with higher cognitive empathy, but for children with high TV quantity, coviewing was associated with lower

cognitive empathy, b = -.703, t = .302, p = .021. This model had an R^2 = .198, F = 4.74, p < .001, and thus seems to explain 19.8% variance in young adult social media use.

Restrictive Child Caregiver Involvement

A regression analysis of young adult cognitive empathy found R^2= .209 F(5, 135)= 7.148, p < .001, which suggests that 20.9% of variance in cognitive empathy may be explained by these child media control variables and the additional predictor variable, disciplinary, restrictive mediation. This analysis additionally revealed a significant, negative association between disciplinary, restrictive mediation and young adult cognitive empathy (ß = -.786, p =.022), suggesting that disciplinary media restrictions of child media use may be associated with lower young adult empathy.

Another regression analysis revealed R^2= .147 F(6, 133)= 3.832, p = .001, suggesting that 14.7% of variance in young adult prosocial skills may be explained by child media control variables and active caregiver coviewing and restrictive caregiver mediation. This analysis found that caregiver child media restriction was significantly, negatively associated with young adult prosocial skills (ß = -.591, p =.030). This finding may imply that restrictive child television involvement may be associated with to lower adult prosocial skills.

With a R^2= .129 F(7, 132)= 2.649, p = .014, a regression analysis found that 12.9% variance in young adult academic self-efficacy can be explained by childhood media control variables, Institutional Integration, and restrictive caregiver mediation. A significant, negative association was found between restrictive caregiver mediation and young adult academic self-efficacy (ß = -.642, p =.030), which may indicate that restrictive mediation is associated with lower young adult learning achievement, such as academic self-efficacy.

In an interaction analysis (Figure 3) between child television quantity x restrictive child media involvement and young adult cognitive empathy, a significant moderating relationship was found which demonstrated that high restrictive caregiver involvement in childhood and high child television quantity was associated with the lowest young adult cognitive empathy outcomes, b = -.667, t = -2.47, p = .015. This model had an R^2 =.222 , F = 5.355, p < .001, and thus seems to explain 22.2% variance in young adult cognitive empathy.

Adolescent Media Use

To investigate associations between child media use, caregiver involvement, and young adult outcomes, a series of multiple regression analyses were conducted controlling for several adolescent media control variables, such as adolescent SES, adolescent caregiver presence, adolescent attention and emotional temperament, and educational control variables, such as Institutional Integration, and high school environment. No significant findings were observed for predictor Screen Time and adult PIU variables, but several associations emerged between predictor variables such as adolescent parental involvement and PIU and outcome variables such as adult media use, prosocial skills, executive functioning, and GPA.

Active Adolescent Media Involvement

With a R^2= .152 F(7, 128)= 3.279, p = .003, another regression analysis depicted that 15.2% of variance in young adult executive functioning may be explained by adolescent media control variables, Institutional Integration, high school environment, and active caregiver Internet rules. A positive association was found between active caregiver Internet rules and young adult executive functioning (ß = .567, p =.036), implying that active adolescent Internet

mediation, such as rules, may be associated with improved young adult cognitive outcomes such as executive functioning.

In an additional regression analysis with a R^2= .111 $F(7, 128)$= 2.276, p = .032, it was found that 11.1% of variance in high school GPA may be explained by adolescent media control variables, Institutional Integration, high school environment, and active caregiver Internet watching. This analysis found that active caregiver Internet watching was significantly, negatively associated with high school GPA (ß = -124, p =.029). This finding may demonstrate that this form of active adolescent media involvement, watching, may be associated with lower young adult academic achievement, such as high school GPA.

Restrictive Adolescent Media Involvement

In a regression analysis with R^2= .06 $F(5, 135)$= 1.736, p = .130, it was found that 6% of variance in adult social media use amount may be explained by adolescent media control variables and restrictive caregiver Internet monitoring. This analysis found a negative association between restrictive caregiver monitoring and young adult social media use which neared significance (ß = -.161, p =.055). This association may indicate that restrictive adolescent Internet involvement is associated with lower social media use in young adulthood.

In an interaction analysis (Figure 4) between adolescent Internet monitoring x adolescent PUI and young adult social media use, a significant moderating relationship was found which demonstrated that high restrictive Internet monitoring and high adolescent PIU were associated with the highest young adult social media use, b = -.318, t = -2.17, p = .032. This model had an R^2 = .126 , F = 2.739, p = .011, and thus seems to explain 12.6% variance in young adult social media use. While interaction analyses were run on another relationship between child TV

quantity x parental presence and academic self-efficacy, for the scope and focus of this paper, these complex analyses were not included.

Discussion

Child Media Use Outcomes

Child Media Use Quantity

Most of the notable findings for media use and caregiver involvement outcomes come from the data collected on child television viewing. As hypothesized, no associations emerged between child television viewing quantity and educational and academic achievement outcomes, such as self-efficacy and ACT, SAT, and GPA scores. Although it was hypothesized that the quantity of child television viewing would be positively associated with socioemotional and cognitive outcomes, such as prosocial skills, empathy, and executive functioning, this study found a contradictory near-significant, negative association between quantity of child television and young adult cognitive empathy, which implies that more child television viewing may lead to lower levels of adult cognitive empathy. While unsupportive of this study's hypotheses and prior research, this negative association may reveal that the positive benefits of child television viewing are limited to a certain viewing quantity, or that more television viewing may prevent more important, physical social learning opportunities (Anderson et al., 2000; Rasmussen et al., 2016). Despite these discrepancies, this is one of many findings which clarify prior literature and suggest that children's television viewing may have longitudinal outcomes (Kearney and Levine, 2019).

The significant result of an interaction analysis (Figure 1) between child TV quantity, parental presence, and cognitive empathy seems to corroborate this interpretation that negative socioemotional outcomes may result from higher children's television quantity, and a decrease in

personal parent-child interactions. This interaction analysis found that less parental presence and more TV led to lower adult cognitive empathy scores, suggesting that parental presence may lead to more personal parent-child social learning, and thus may moderate the aforementioned negative relationship between child TV quantity and young adult cognitive empathy.

Child Media Use and Caregiver Involvement

Active Caregiver Involvement

Developing the importance of the child media environment and corroborating these media quantity findings, the association between active co-viewing mediation and young adult prosocial outcomes reiterates the positive influence of caregiver-child interactions in fulfilling educational television's socioemotional goals. These findings, which suggest that active media involvement may lead to improved young adult socioemotional outcomes align with the present study's hypotheses and affirm prior findings on active TV mediation's positive influence on empathy outcomes (Rasmussen et al., 2016).

Somewhat affirming hypotheses, active caregiver child media involvement, such as coviewing or active mediation, were associated with improved adult prosocial skills and ACT scores, respectively. These findings support prior literature and further emphasize the role of active caregiver involvement in predicting the socioemotional, cognitive, and educational outcomes of children's television viewing (Blankson et al., 2015; Rasmussen et al., 2016). These longitudinal socioemotional and academic benefits contrast prior research and may indicate that active caregiver involvement allows children to better learn and retain prosocial and educational lessons presented in children's television (Kearney and Levine, 2019). Alternatively, these longitudinal findings may reflect the benefits of other caregiver or childhood variables which

may be associated with active mediation styles, such as parental sensitivity or socioemotional and educational learning resources.

In contrast to present and previous research which has asserted the consistent, positive moderating influence of active media involvement on child television's empathy outcomes, a significant interaction between caregiver coviewing, child TV quantity, and young adult cognitive empathy seems to demonstrate that the positive influence of parental involvement in child media may be limited by the quantity of child media use (Rasmussen et al., 2016). Finding that a combination of less parental coviewing and more child TV led to greater young adult cognitive empathy scores, this interaction conflicts with the interaction between parental presence, child TV quantity and young adult empathy which suggested that more active parental involvement would provide for more personal social learning opportunities which might normally be lost amongst children with high TV quantities. It may be interpreted that coviewing and parental presence have different influences on the socioemotional outcomes of child TV quantity, such that coviewing, in higher television quantities may be less beneficial in fulfilling child television's socioemotional goals, while parental presence may be more beneficial. It may also suggest that higher coviewing, or the combination of higher coviewing and higher TV quantity is a characteristic of a different family environment variable which influences children's adult socioemotional outcomes.

Restrictive Caregiver Involvement

The associations found between restrictive child media involvement and lower young adult outcomes conversely supported research and findings about the benefits of active media involvement. This study found several negative associations between restrictive child caregiver involvement and young adult socioemotional, cognitive, and educational outcomes, such as

cognitive empathy, prosocial skills, and academic self-efficacy. Unlike active involvement outcomes, these findings suggest that restrictive mediation may have a longitudinal, negative influence on one's life outcomes. They also may suggest that restrictive media involvement does not mitigate the potentially negative empathy outcomes of higher TV viewing quantity. It is also possible that there is some third variable in caregiver-child interactions of which restrictive mediation is only one facet; for instance, it may be that parents engaging in more restrictive mediation are less sensitive or more likely to implement an authoritarian parenting style which has associations with lower developmental outcomes. These findings provide ample questions for future research and attest to the previous findings of active mediation's comparative benefit to restrictive mediation's less promising influence.

An interaction analysis between restrictive child mediation and child TV quantity on adult cognitive empathy may affirm the interpretation that restrictive media involvement fails to moderate and decrease the negative empathy outcomes of higher child TV quantity found in earlier regression analyses. This finding suggests that participants who watched more television and experienced more restrictive media involvement in childhood had lower levels of cognitive empathy as young adults. Unlike the complexity which arose in a similar interaction analysis between active mediation, TV quantity and empathy, this finding demonstrates restrictive mediation's seemingly consistent, negative, or significantly beneficial influence on young adult socioemotional outcomes.

Adolescent Media Use Outcomes

Active Caregiver Involvement

significant findings emerged in analyses of adolescent Internet use, caregiver involvement and young adult socioemotional, cognitive, educational, and Internet use outcomes.

No significant findings emerged for adolescent Internet use quantity, PIU, or adult PIU. However, active adolescent caregiver mediation had differing, significant influences on cognitive and achievement outcomes. Participants who experienced active Internet mediation such as rules seemed to demonstrate higher levels of executive functioning in adulthood, while participants who experienced active mediation such as caregiver watching seem to have lower GPAs. These varying positive and negative outcomes of active mediation in adolescence may reflect an important distinction between these two active mediation behaviors. The latter influence on academic achievement may also represent a directionality problem; for example, it may also be the case that a participant's lower academic performance led caregivers to implement more active mediation and be more watchful of their Internet use.

Restrictive Caregiver Involvement

While few present findings demonstrated an influence of adolescent Internet use or adolescent caregiver involvement on young adult outcomes, an interaction analysis demonstrated a significant influence of restrictive Internet monitoring and adolescent PIU on young adult social media use. This interaction suggests that participants with high adolescent PIU and low parental Internet monitoring seem to have higher social media use habits in young adulthood. The association between these adolescent Internet use experiences and young adult outcomes posit that longitudinal influences may exist between adolescent and adult media use habits. Additionally, while adolescence PIU and active mediation were not associated with adult PIU, this finding about levels of young adult social media use may be interpreted as an assessment of Internet addiction. Demonstrating how restrictive Internet involvement may reduce adult social media use, and perhaps reduce some form of Internet addiction, this interaction may clarify prior literature and support restrictive parental involvement in predicting healthier Internet use in

adulthood (Kalmus et al., 2015; Livingstone and Helsper, 2008; Steinfeld, 2021). This finding conflicts with the prevalent negative outcomes associated with restrictive media use throughout this study; further research should investigate the boundaries or other variables which determine whether restrictive involvement is beneficial or harmful for child and adolescent media use outcomes.

Limitations

There were many limitations to this study's sample, procedure, and measures. The sample for this study consisted of a predominantly white, upper-class, female-dominated population which does not represent a true diverse population. Additionally, this research was conducted through an online, self-report survey which is inevitably fallible to influences of participant error; as much of the data relied on participant's memories, this information is also susceptible to biases. One limitation to the study design which was only considered following data collection was that the questions targeting adolescent experiences between the ages of 12 to 18 are far more broad than those of childhood, between the ages of 3 to 5. An additional problem with this adolescent age range is its proximity to the current, young adult age of participants, somewhere between the ages of 18 to 22. Finally, as is generally true of longitudinal analyses, there may be many other variables which influence young adult socioemotional, cognitive, and educational outcomes that are related to those significantly associated with parental involvement, media use quantity, and media use quality variables focused on in this study.

Future Research

Further research may strengthen and clarify these findings in several ways. First, future studies should work to increase racial, gender, and socioeconomic diversity in the research sample in order to increase these findings' external validity. Following works could also revise

the adolescent media use, caregiver involvement, and home surveys so that these questions ask about a smaller, younger age range, such as 12 to 14, and thus are more comparable to the 3 to 5 age range of the childhood questions. Additionally, the present study relied on a self-report survey design which asked participants to recall experiences from many years prior, and thus there is much room for error in these reports. A future study might replicate this research and the measures used in a more traditionally longitudinal three part study, following participants as they aged from three to five-years-old, to 12 to 18-years-old, and finally to 19, 20, 21, or 22-years-old. Further research might also investigate the complex interaction between child television viewing quantity and active media involvement to discern why these variables are associated with lower cognitive empathy outcomes. Additionally, while the majority of findings seem to caution against restrictive media involvement, its association with lower adult social media use merits further research which should consider the differences in types and applications of active and restrictive involvement.

Conclusion

Contributing to a wealth of prior research on the formative media environment, this study clarifies and extends findings about parental media involvement, children's television viewing, and adolescent Internet use. While complex and requiring further investigation, the present outcomes suggest that child and adolescent media use may be associated with long-term socioemotional, cognitive, and academic outcomes. These results additionally emphasize the important role of parental involvement in media use, finding more improved outcomes for those with active caregiver involvement than for those with restrictive media involvement across childhood and adolescence. Interaction analyses further emphasized parental involvement's influence as a moderator in child media quantity and socioemotional outcomes, as well as

contested their sole influence on the impact of media use. These confirmations and conflicts provide ample questions for future research about the related parenting, home environment factors which may determine media use outcomes, while affirming the importance of researching early media use as an impactful variable in children and adolescent's socioemotional, cognitive, and educational development.

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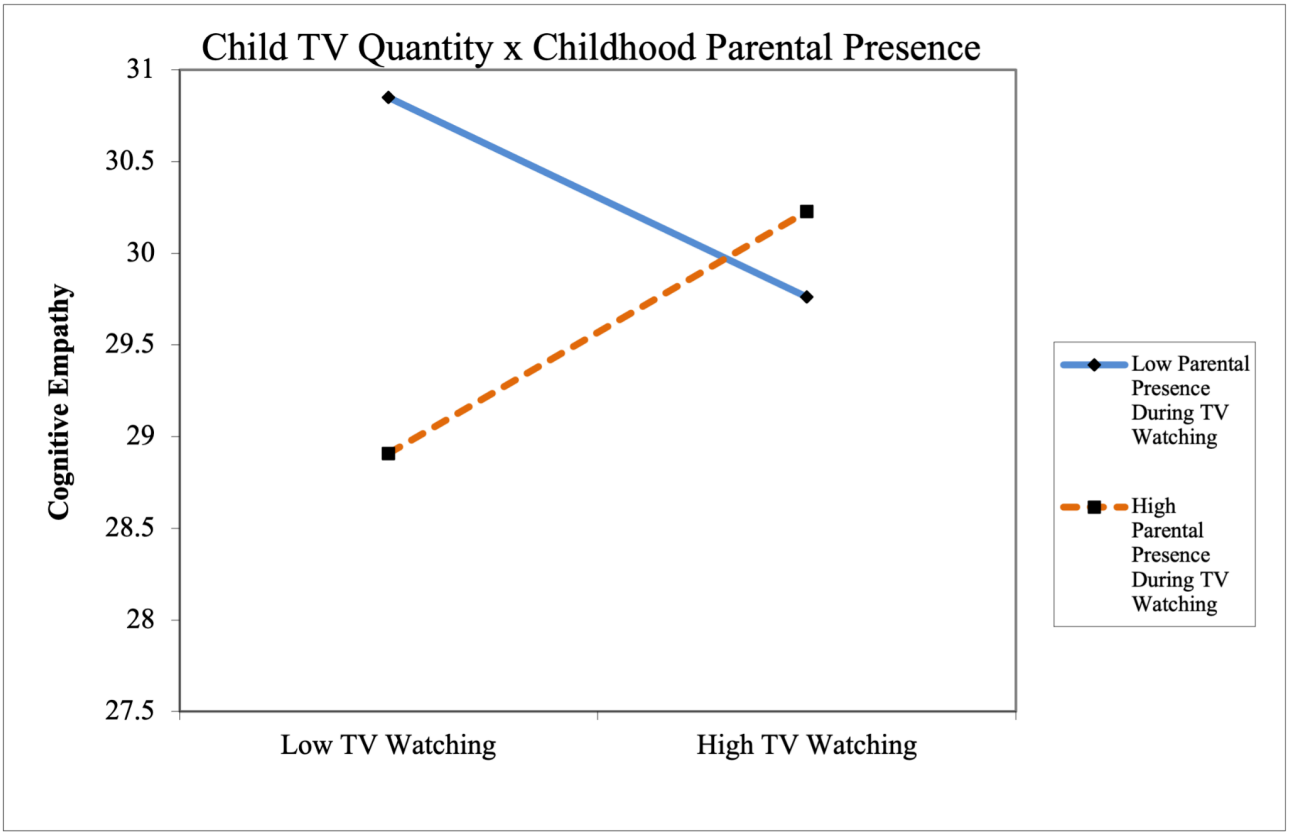

Figure 1. Cognitive Empathy scores ranged from 9 to 40. TV watching refers to the quantity of child TV viewing. Child TV watching scores were split at the median value into low and high TV watching; these two groups were not significantly different in t-test analyses, but they display a significant interaction effect of child TV viewing quantity. Parental Presence is a measure of the frequency with which the parent was present while the child was watching TV.

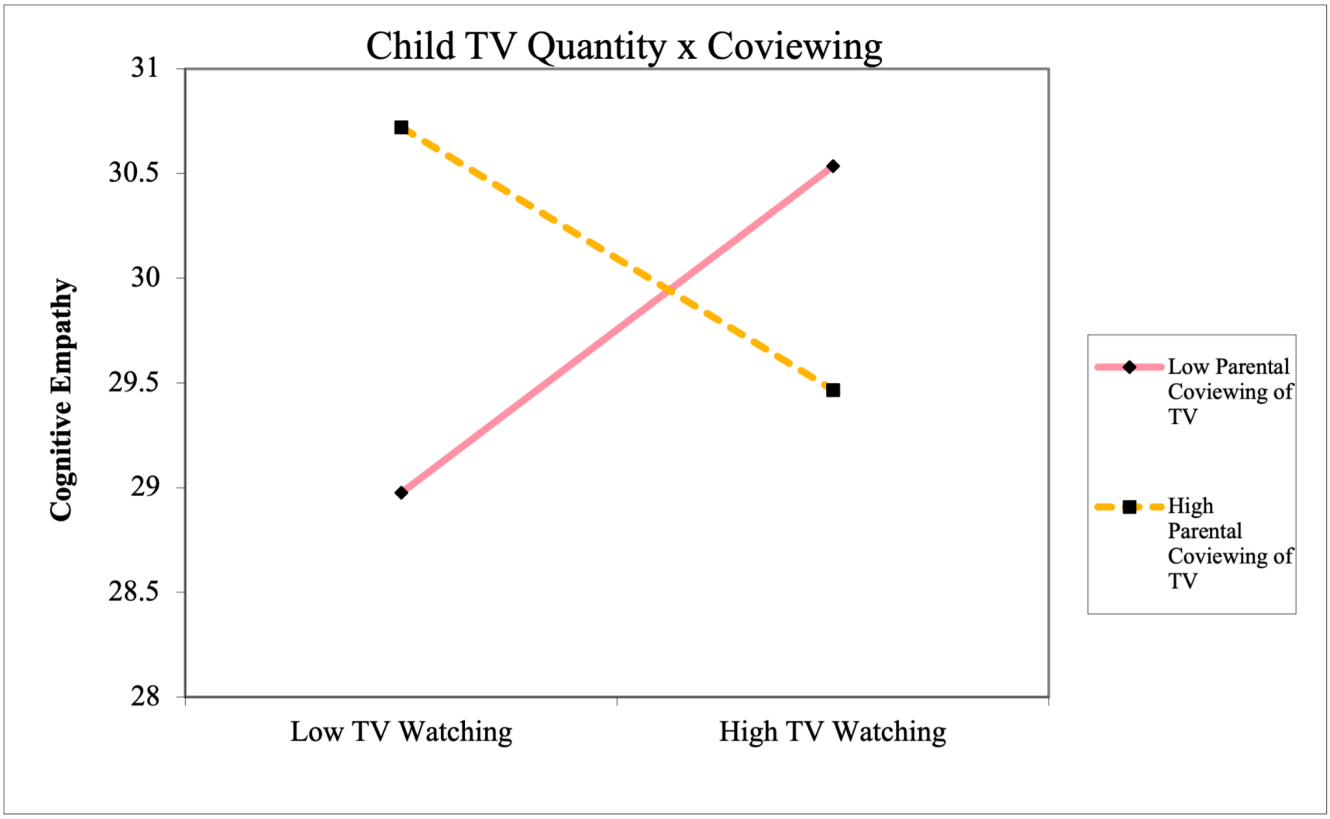

Figure 2. Cognitive Empathy scores ranged from 9 to 40. TV watching refers to the quantity of child TV viewing. Child TV watching scores were split at the median value into low and high TV watching; these two groups were not significantly different in t-test analyses, but they display a significant interaction effect of child TV viewing quantity. Parental coviewing refers to parents engaging with television with the child.

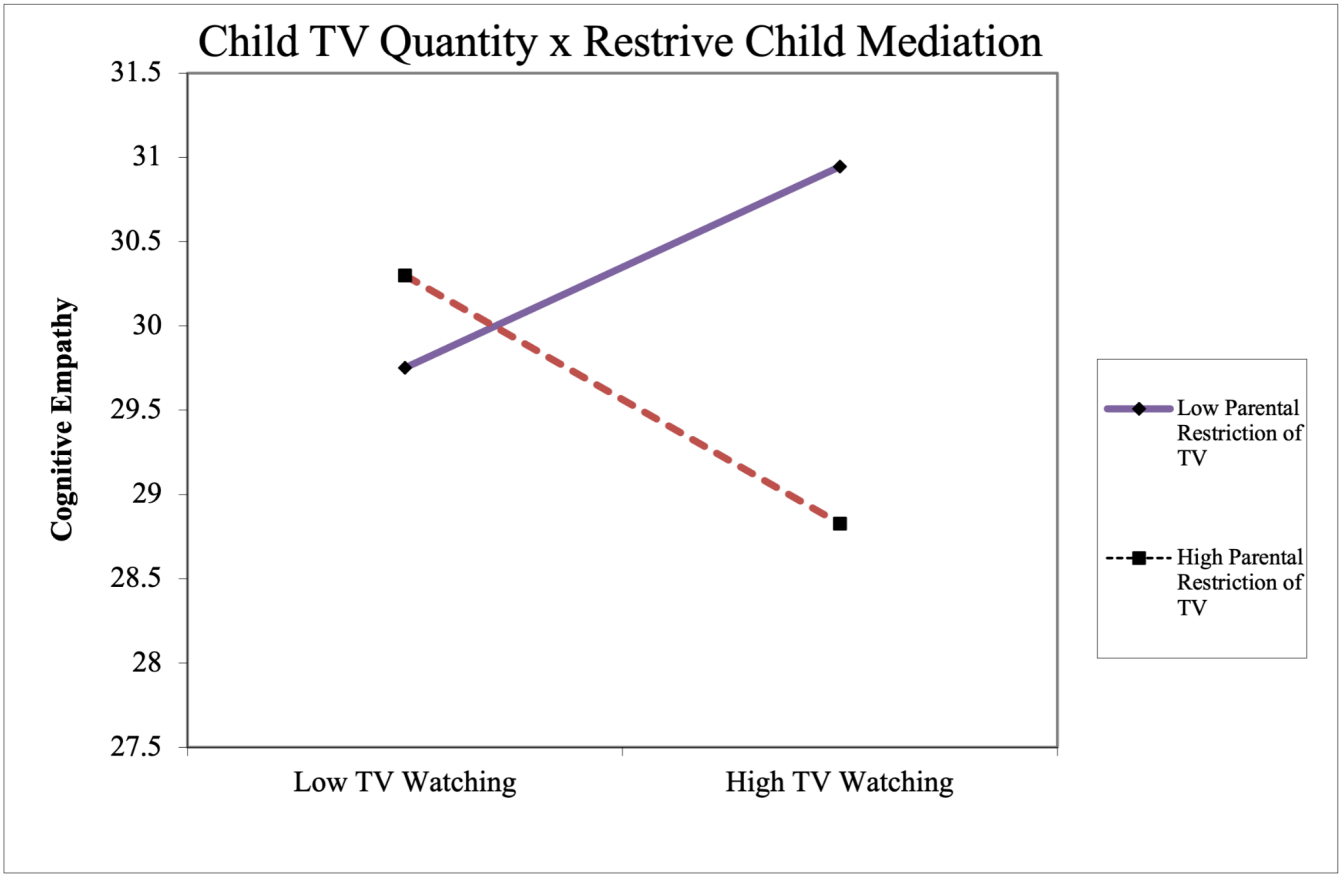

Figure 3. Cognitive Empathy scores ranged from 9 to 40. TV watching refers to the quantity of child TV viewing. Child TV watching scores were split at the median value into low and high TV watching; these two groups were not significantly different in t-test analyses, but they display a significant interaction effect of child TV viewing quantity. Parental TV restriction involves behaviors such as rules about type or quantity of child TV viewing.

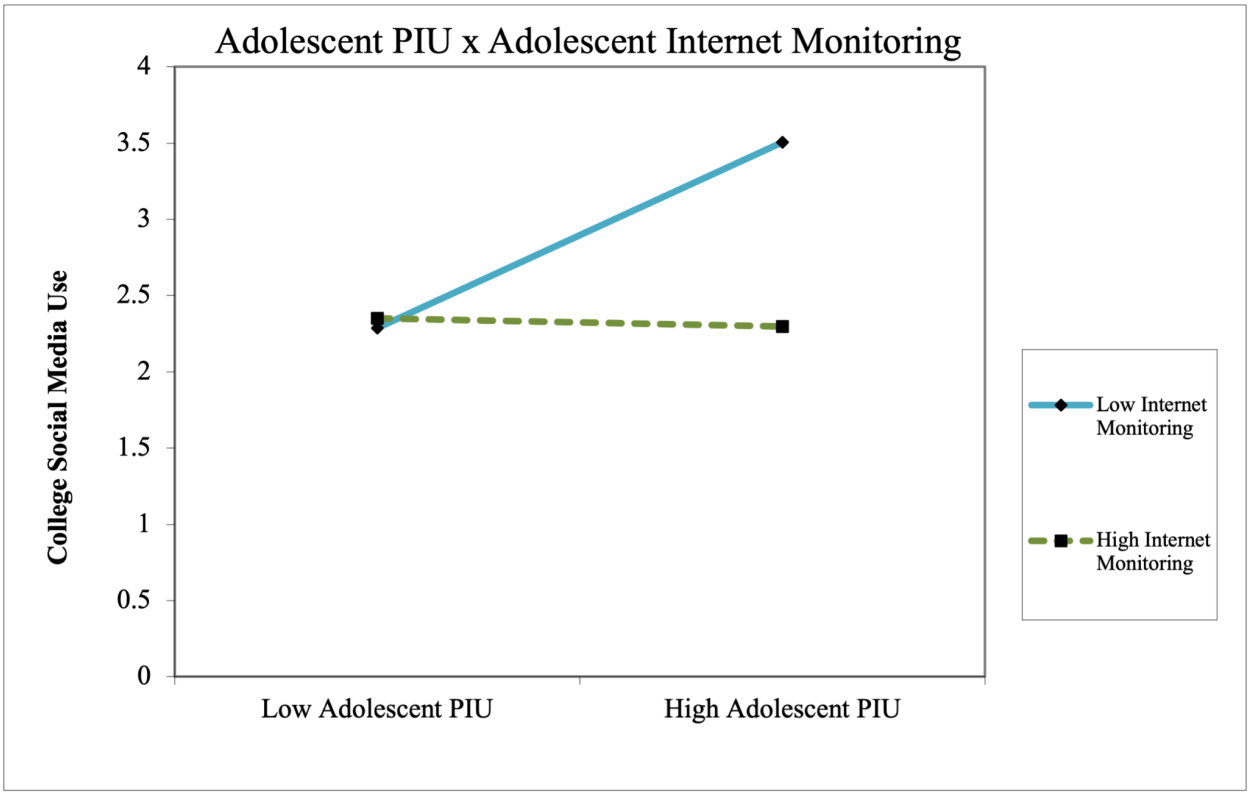

Figure 4. College social media use is a measure of participant's social media use within the past days: numbers represent hours. Adolescent PIU is a measurement of adolescent problematic Internet use. Adolescent PIU scores were split at the median value into low and high adolescent PIU; these two groups were not significantly different in t-test analyses, but they display a significant interaction effect of the degree of adolescent problematic Internet use. Internet monitoring is a form of restrictive adolescent caregiver Internet involvement which entails behaviors such as reviewing adolescent's Internet history after use.