The Relationship Between Parental Education and Social Media Usage on Adolescent Happiness and Aggression

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Contents

Abstract

As individuals reach the adolescent age range (ages 10 to 19), they begin to transition from seeking parental validation to seeking validation from their peers through social media and social networking sites such as Facebook, Instagram, and Twitter. Previous research has suggested media could provide immediate stress-relief and aid in identity-seeking or increase problematic behaviors and conflict with others. Studies have demonstrated similarities between poverty-related stress and parental education, such that adolescents reported experiencing lower general well-being and changes in neurodevelopment. Due to parallels, parental education functioned as a measure of socio-economic status in the current study. Therefore, the aim of the present research was to investigate media usage relating to two main outcome measures (adolescent happiness and aggression) and analyze whether those relationships differed based on parental education level (mothers and fathers). Participants were recruited in 2018 by Miech et al. (2018) where one of six surveys were administered to 12th grade students throughout the United States. Two of the six surveys were used in the current study when evaluating predictor variables (media usage and parental education) as well as outcome variables (happiness and aggression). A series of Spearman rank-order correlations as well as ordinal logistic regressions were conducted to analyze the association between variables and locate which variable was then predictive of either happiness or aggression. Results demonstrated that parental education positively predicted adolescent happiness. Frequency of television viewing positively predicted adolescent happiness, as well. However, time spent watching videos on the weekend was negatively related to and predictive of happiness. Neither parental education nor media usage significantly predicted aggression.

The Relationship Between Parental Education and Social Media Usage on Adolescent Happiness and Aggression

In 2015 all member states of the UN stating their intent to implement 17 sustainable development goals for adolescents (Ross et al., 2020). All goals aimed to promote general health and well-being for adolescents (those of ages 10 - 19 years old). The 17 goals were divided into the following five domains to define adolescent well-being: good health and optimum nutrition, connectedness and contribution to society, safety and a supportive environment, learning competence and education, and agency and resilience. While defining well-being has proved challenging, these domains consider adolescents' multidimensional lives using both subjective and objective measures. For the current study, the outcome variables of self-reported happiness and aggression were the domains representing adolescent well-being. Media usage—particularly social media usage as well as time spent watching television and videos—and parental educational levels served as predictors of those outcome variables.

Social Media Usage and Adolescents Outcomes

During adolescence, individuals transition from seeking parental validation to searching for understanding and identity through their peers (Hartup, 1996). Many youths have turned to social media and social networking sites (SNS) to do so. Social networking sites consist of social media platforms such as Facebook, Twitter, and Instagram. Antheunis et al. (2016) administered surveys to early adolescents in the Netherlands (ages 11-14) measuring the intensity and connectedness when using a social networking site known as Hyves (n = 3,068; M age = 13.46). The population targeted was among those living in disadvantaged neighborhoods (yearly income of approximately $19,000 or below; Santiago et al., 2011). The surveys measured quality of friendships and relationships when using SNS. Questions regarding time spent on SNS

throughout the week were asked, and five Likert-type items were used to pose questions about how individuals felt when using SNS. Antheunis et al. (2016) found that social media helped individuals communicate and connect with each other, grow in peer relationships, and develop their personal identity. Stevens et al. (2017) also found that adolescents placed a lot of importance on others' points of view when using social media. Similarly, in a longitudinal study, Steinfield et al. (2008) found that Facebook reduced barriers to help increase social relationships with others.

Previous research indicated that positive friendships gained through SNS allowed adolescents to expand from their immediate group of peers and bridge the gap between races, genders, classes, and/or religions (Antheunis et al., 2016). Moreover, Antheunis et al. (2016) found that relationships built on social media platforms allowed individuals to connect with others who shared similarities in demographics, resources, beliefs, and attitudes. Adolescents who were consistently using social media reported higher quality of friendships and relationships when using SNS, and their quality of social life was higher compared to those who did not constantly use social networking sites. A positive relationship was also found between SNS and the ability to form connections with those who had similarities.

In a parallel study (Weinstein, 2018), social media apps were analyzed in relation to teenagers' well-being in the United States (n = 568). In two phases, participants (M = 15.26 years) took a survey anonymously and were then asked to indicate if they were open to be interviewed as well. Those who were interviewed were re-randomized and assigned new ID numbers to remain anonymous. The survey posed questions regarding oneself and regarding others—for example, which SNS they felt was most important to them, what emotions they felt while using their favorite SNS, and their perception of how others felt while using their highest

rated SNS. When referring to oneself, the males in the study reported feeling significantly irritated and upset when using SNS. The females did not report any significant emotions when answering questions about themselves or others. Throughout the interview process, teenagers reported positive and negative interpersonal interactions with peers and/or individuals on social media platforms. This study demonstrated mixed results—although SNS helped individuals communicate with one another, males specifically experienced more negative emotions. These results differed from those of Antheunis et al. (2016), who found that social media provided a positive experience for adolescents seeking to connect with others and cope with the added pressure of living in a disadvantaged neighborhood. However, Weinstein (2018) demonstrated that there are both positives and negatives to social media in the form of social networking sites.

Stevens et al. (2017) implemented interviews in their study to understand how social media impacted individuals between the ages of 13 to 24 years old (n = 60). The qualitative study primarily included those who were African American and Hispanic (43.3% African American, 43.3% Latino and 13.3% African American and Latino mixed). One brief survey was given to record demographics and an interview was conducted to collect information regarding the participants' neighborhoods as well as their relationship with social media. Facebook, in particular, was associated with heightened negativity and drama among young individuals because most individuals reported using it to disagree, argue, and/or create conflict. Overall, social media and SNS were reported to exacerbate problems. Boys reported experiencing higher levels of social rejection, while girls indicated a propensity to compare themselves to others on social media, specifically regarding body image.

Other research has also found negative effects of social media among adolescents (Hawk et al., 2019). A study was conducted (n = 495; M age = 12.87) in the Netherlands to measure

adolescent narcissism, feelings of social rejection, attention seeking, social media disclosure, problematic social media use, and smartphone stress. Participants were Dutch adolescents who completed the 10-item Childhood Narcissism Scale (Thomaes et al., 2008) to measure their level of narcissism. The Self-Perception Profile for Adolescents (SPPA; Harter, 1988 as cited by Hawk et al., 2019) was used to measure feelings of social rejection. Attention seeking, social media disclosure and smartphone stress were measured using self-developed scales. Lastly, problematic social media use was measured using the Social Media Disorder Scale—a 9-item scale which measured level of addiction to social media (Van den Eijnden et al., 2016). They found that social media usage and SNS predicted prevalence of drama and higher levels of social rejection and narcissism in youth. Hawk et al. (2019) found that not only did individuals look online to find their identity, but they also sought to be validated through their online connections. These behaviors led to an increase in attention seeking behaviors and narcissistic tendencies.

Although some research has indicated positive effects of SNS—such as building connections with others (Antheunis et al., 2016; Weinstein, 2018)—more research has found negative results (Hawk et al., 2019; Stevens et al., 2017; Thomaes et al., 2008; Van den Ejinden et al., 2016). The overwhelming adverse effects of social media—such as disengagement coping, ineffective coping, avoidance, narcissism, and conflict—indicate that developing healthy relationships through social networking sites is not an easy task for adolescents.

Stresses of Poverty and Adolescent Outcomes

From 1998 to 2013, the national rate of students who qualified for free lunches rose from 32 to 48% (Ihlanfeldt & Mayock, 2019). Families residing in low SES neighborhoods typically had yearly income of approximately $19,000 or below (Santiago et al., 2011; Santiago et al., 2012). Low socioeconomic status (SES) was found to greatly contribute to daily stress in

adolescents (Santiago et al., 2011). The strain faced in lower SES communities was called "neighborhood disadvantage," or poverty-related stress—these terms are used interchangeably. Children who lived in socioeconomic disadvantage and experienced poverty-related stress did not perform as well as their peers in classes, which led to higher dropout rates. Family income and poverty status impacted academic outcomes of five-year-old students specifically regarding their IQ scores—among those living in areas of greater poverty, scores were lower (Duncan et al., 1994). Those experiencing day-to-day stress from their home lives were more likely to experience symptoms of anxiety and depression and have difficulty in social and learning settings. For example, young individuals who experienced poverty-related stress typically had more difficulty paying attention in class and were more likely to engage in delinquent and reckless actions (Santiago et al., 2011). They were also more likely to show greater levels of helplessness when experiencing more poverty-related stress (Brown et al., 2016).

Depending on the age of an individual, poverty-related stress may predict coping styles (Santiago et al., 2012). In a study of 98 low-income families (*M* monthly income = $1,615; *n* = 300; 20% African American, 33.7% European American, 38.3% Latino, 2% Native American, and 5.3% Multi-racial/Other), parents completed the Responses to Stress Questionnaire (RSQ)—a 57-item measure—to assess both how they and their child/children responded to stress. The RSQ was given to parents before going into a lab and was used to evaluate five factors: primary and secondary control coping, disengagement coping and involuntary engagement and disengagement. Primary control coping was defined as the thinking of solutions to problems. Secondary control coping was defined as a realization that things will not change. Disengagement coping was defined as avoiding people and/or things that made an individual upset or reminded them of a problem. Involuntary engagement was defined as the inability to

stop thinking about one's emotions. Involuntary disengagement was defined as inability to experience emotions when problems arise. Santiago et al. (2012) found that involuntary engagement was predicted by age of child, such that lower involuntary engagement was associated with younger children. Contrastingly, in older children, higher involuntary engagement responses, or the inability to stop thinking about one's emotions, were positively associated with increased stress. When children experienced stress, parents' influence on how their children responded was crucial in managing negative emotions. Therefore, a child's response to stress would be contingent on that of their parents as well as their age. Early interventions from the parents were found to be necessary to aid children's growth.

Previous studies have linked the negative impacts of stress in children to changes in neurodevelopment. McEwen and Gianaros (2011) reviewed research analyzing how a history of childhood poverty and stress impacted an individual's ability to adapt to change and respond well to challenges at the neurological level. Neuroimaging of brain plasticity and allostatic systems—the network in the brain which helps individuals process and adapt to change—were examined. They focused on individuals experiencing chronic stress and high neighborhood disadvantage. Reoccurring strain desensitized individuals to fear-inducing situations due to the frequency in which taxing situations occurred. Therefore, chronic stress led individuals to have an increased allostatic load. Allostatic load, in this case, was the wear and tear individuals' bodies and brains were enduring when constantly adjusting due to stressful events. This eventually led to dysregulation and impairment in overall mental and physical well-being. Children who were living in low SES areas had interrupted functioning in certain brain regions associated with emotion and threat processing. In addition, individuals with impaired allostatic systems had increased difficulty with decision making and cognitive flexibility. When one's

allostatic processes were compromised then the amygdala, or the area in the brain which allowed someone to recognize her/his emotions, would not work properly. When allostatic systems were overloaded, they noticed higher risk for physical and mental illnesses that were comorbid with one another.

Other research compared the stress responses of children living in lower-income neighborhoods with those living in middle-income neighborhoods by implementing the Trier Social Stress Test (TSST) (Sripada et al., 2014). A total of 52 participants were split into two groups of 26—middle-income and lower-income. Participants (*M* age = 9) were asked to complete the stressful task in front of a group of people without receiving any feedback for 15 minutes. Saliva samples were collected three times—immediately before the TSST, 15 minutes after and 1.5 hours after—and one self-report scale was completed to measure perceived stress after the TSST. A third, separate measure included structural (sMRI) and functional (fMRI) MRI data in order to analyze how the brain's hippocampus functioned while completing emotion regulation tasks. When administering the emotion regulation task, participants were assessed for their ability to problem solve and regulate emotions while stressed. The Perceived Stress Scale was the fourth measure completed by the participants— it was a 10-item self-report scale used to measure stress in one's life. The self-report measure, fMRI data and SMRI data were not administered or recorded during the TSST.

Findings indicated that children living in low SES environments had significantly higher cortisol levels compared to those in the middle-income group immediately before completing the TSST (Sripada et al., 2014). However, after, there were no significant differences in cortisol levels 15 minutes or 1.5 hours after the TSST was completed. The middle-class group had a greater rise in stress/cortisol levels after completing the TSST. Regarding the MRI data, findings

suggested childhood poverty was associated with reduced levels of connectivity between the posterior cingulate cortex (PCC) and the hippocampus, both implicated in long-term memory. The PCC, in the brain, activates during cognitive tasks and is a part of the default mode network—the area that coordinates complex behaviors and cognitive functions. Therefore, when the PCC's connectivity to the hippocampus was impaired among those who experienced childhood poverty, there was a decrease in ability to learn, memorize and stay focused. In connection with the findings of McEwen and Gianaros (2011), Sripada et al. (2014) demonstrated that the pre-test TSST cortisol levels measured were associated with lower activity in the PCC; thus, the lower an individual's ability to learn, think and process information, the higher cortisol levels were.

The findings of a literature review by Dike (2017) matched that of Sripada and colleagues (2014), finding that the hippocampus and PCC were negatively impacted by poverty. Dike (2017) cited O'Connor's (1997) study showing that children who lived in lower SES had less diverse functioning in learning and memory compared to those in the middle-income group.

Parental Education and Adolescent Outcomes

Parental education—specifically the level of education attained—has been found to greatly impact children's well-being (Sutin et al., 2018). In a study of 10,827 participants (*M* age = 63.28), childhood socioeconomic environment had an enduring impact on life satisfaction, anxiety, hopelessness, and anger. Overall, the following outcome variables were measured: subjective childhood financial situation, childhood financial difficulties, life satisfaction, subjective social status, satisfaction with life domains, and anger. Participants were asked to indicate both their education level and their parents' education level. Findings indicated that children's well-being in adulthood was greatly associated with higher parental education. Sutin

et al. (2018) noted that parents who received more education were able to learn more effective coping strategies and ways to regulate emotions, thus enabling them to pass on those tools to their children—the participants of the study—which they could then carry into adulthood. Additionally, those who reported growing up in poverty reported feeling higher levels of helplessness and an inability to regulate their emotions well.

A similar study looked at three forms of SES— parental education, household income, and neighborhood income—and adolescent (ages 8 – 11 years old) hippocampus functioning specifically regarding memory, learning and emotion (Assari et al., 2020b). The main goal of the study was to gain a better understanding of the hippocampus by using the N-Back task – a memory task that largely engages the hippocampus by asking participants to recall a specific sequence presented *n* items ago. In this study, participants were asked to recall 2 items previously than the one currently shown. A total of 3,067 participants (71.2% non-Hispanic White; 28.8% non-Hispanic Black) were given the N-Back task as well as the Child Behavior Checklist (CBCL) to measure memory and the following 8 sub-scores: anxious and depressed mood, withdrawn and depressed affect, somatic complaints, social and interpersonal problems, thought problems, rule-breaking behaviors, attention problems, and violent and aggressive behaviors—with higher scores indicating more problematic qualities. Findings suggested that scores on the N-Back memory task were associated with over-active hippocampal functioning, which was also associated with higher CBCL scores. This over-functioning indicated that one's hippocampus was positively associated with the following specific CBCL sub-scores: social and interpersonal problems, violent and aggressive behaviors, and rule-breaking behaviors. Moreover, hippocampal sizes varied depending on socioeconomic status and stress, such that individuals with a smaller hippocampus were more likely to come from low SES. Most

importantly, these results indicated that adolescents in families who have lower income as well as less education were at risk of developing an overactive hippocampus. This could further lead to poor memory, educational challenges, problematic behaviors, and difficulty regulating emotions.

Other studies also found an association between parental education and reward responsivity (RR), as well as parental education and inhibitory control (IC) (Assari, 2020; Assari et al., 2020a). Reward responsivity refers to how impulsive or risk-taking someone's behavior is, while inhibitory control signifies how much self-control and discipline to eventually reach a goal (Assari, 2020; Assari et al., 2020b). Both studies compared non-Hispanic White and non-Hispanic Black adolescents ranging from 9 to 10 years old. However, Assari et al. (2020b) looked closely at reward responsivity (RR) and defined it as a psychological and cognitive construct. Those who had higher levels of RR were found to also have a higher drive of alcohol and tobacco use, emotional eating, obesity, aggression, and sexual risk. Overall, higher parental education was associated with lower RR and higher IC rates for non-Hispanic, White individuals only, signifying that more education led to lower rates of impulsive and problematic behaviors among non-Hispanic Whites. There were no significant effects on these outcomes for Hispanic and Black individuals.

Summary

Studies on social media demonstrated mixed results (positive and/or negative impacts) on adolescents who frequently use SNS. Some research demonstrated positive effects of SNS—such as building connections with others (Antheunis et al., 2016; Weinstein, 2018). However, other research found negative effects (Hawk et al., 2019; Stevens et al., 2017; Thomaes et al., 2008;

Van den Ejinden et al., 2016). These contradictory findings make it difficult to conclude whether there were benefits to using social media.

Poverty-related stress directly led to anxious and/or depressive symptoms, stress reactivity, attention and social problems, and poor overall well-being and health outcomes (Casey et al., 2000; McEwen & Gianaros, 2011; Santiago et al., 2011; Wadsworth et al., 2011). Given how prevalent SNS usage was among adolescents, it stood to reason that there were potential negative effects for many of the adolescents who used it, especially those who lived in low SES areas.

Those living in low-income households were shown to have greater stress levels, and because of that learning and memory functioning in the brain was impaired (Assari et al, 2020b; Sripada et al., 2014). Hippocampus size and function—which jeopardized school performance—was shown to be smaller for those with parents who received less education and had lower income (Assari et al., 2020b). Assari et al. (2020b) used parental education as a measure of socioeconomic status, and Santiago et al. (2011) found that those experiencing poverty-related stress were found to have higher levels of anxiety and depression. Moreover, those whose parents received less education were more frequently impulsive and aggressive, and had lower general well-being (Assari et al., 2020a; Assari et al., 2020b).

Parental education levels were found to set the stage for psychological well-being in older adulthood (Sutin et al., 2018). Individuals with parents who received less education had more difficulty regulating emotions and reported lower levels of life satisfaction. Non-Hispanic White individuals whose parents received more education also had lower reward responsiveness and lower inhibition control, demonstrating the significant relationship between education and adolescent behaviors (Assari, 2020; Assari et al., 2020b).

Present Study

The aim of the present study was to investigate media usage relating to two main outcome measures (happiness and aggression) and whether the relationship between media usage and these outcomes were influenced by parental education level. Due to the ties between parental education and poverty-related stress among adolescent well-being, parental education functioned as a measure of socioeconomic status. Previous research not only showed that parental education greatly impacted offspring in the long-term, but it also demonstrated an impact on reward responsiveness, inhibitory control, and hippocampus functioning (Assari, 2020; Assari et al., 2020a; Assari et al., 2020b). Given the results of earlier research, it was hypothesized that media usage (particularly social media usage) would be negatively related to happiness and positively related to aggressive tendencies, however higher parental education would positively contribute to these relationships. Hypotheses were formed from previous studies stating that higher levels of parental education were shown to positively impact psychological well-being, emotional regulation, and life satisfaction, among other major factors (Assari, 2020; Assari et al., 2020b; Sutin et al., 2018).

Method

Participants

All participants were 12th grade students from the United States and data were collected from researchers at the University of Michigan in 2018 (n = 14,502; 47.8% male, 52.5% female; 43.6% under 18 years old, 56.4% 18 years or older; $M\ age$ = 1.56, $SD\ age$ = .49). Majority of participants were White (61.4%), following Black (11.6%), and Hispanic (27.0%) participants. All students were randomly assigned to complete one of six surveys. For the current study, two surveys were analyzed – the first had 2,125 participants (47.0% male, 53.0% female; 42.6%

under 18 years old, 57.4% 18 years or older; 10.5% Black, 62.6% White, 26.9% Hispanic), and the second Dataset had 2,388 participants (47.4% male, 52.6% female; 44.9% under 18 years old, 55.1% 18 years or older; 12.3% Black, 61.1% White, 26.6% Hispanic) (view Table 1). Participants were recruited from public, private/non-Catholic, and private/Catholic high schools.

Materials

The data for this research were obtained from Monitoring the Future: A Continuing Study of American Youth (12th-Grade Survey; Miech et al., 2018). The purpose of this survey was to analyze the values, behaviors, and lifestyle choices of American youth. All students completed demographic questions and then were randomly assigned to complete one of six surveys that examined social and mental health variables, such as drug use, parental education, general media usage, social media usage, happiness, and aggression. For the current study, data from two surveys containing questions about parental education levels, adolescent media usage, and adolescent happiness, and aggression were used to create two separate datasets. It is important to note that both datasets did not contain the same variables. These two datasets will later be referred to as Dataset 1 and Dataset 2.

In both datasets, the demographic variables of gender and race/ethnicity were included. For gender, participants were given one of two options (*1 = "Male," 2 = "Female"*). For race/ethnicity, participants were only given the following three options: *1 = "Black or African American," 2 = "White (Caucasian)," 3 = "Hispanic".* Fathers' and mothers' level of education were also included in both datasets and were measured on a scale of 1 to 7 (1 = *"Completed grade school or less," 2 = "Some high school," 3 = "Completed high school," 4 = "Some college," 5 = "Completed college," 6 = "Graduate or professional school after college," 7 =*

"Don't know, or does not apply"). For purposes of the current study, the last category was coded as missing data.

Dataset 1 included frequency of television viewing as the predictor variable, parental education levels (mother and father) as two additional predictor variables, and self-reported happiness and aggression as the two outcome variables. Although not a form of social media, frequency of television viewing was used as a predictor variable because it was the only media variable included in Dataset 1. Television viewing was assessed with the question, "How often do you do watch TV?" and was measured on the following 6-point scale: 1= "Never," 2= "Seldom," 3= "Sometimes," 4= "Most Days," 5= "Nearly Every Day," 6= "Every Day." The following question was asked to measure the outcome variable of happiness: "Taking things together, how would you say things are these days—would you say you're very happy, pretty happy, or not too happy these days?" This variable was measured on a Likert scale of 1 to 3 (*1 = "Not too happy," 2 = "Pretty happy," 3 = "Very happy"*). The mean of 2.00 demonstrated that participants generally reported being "pretty happy." The outcome variable of aggression was measured by asking the following question: "In the past 12 months, how often have you hurt someone badly enough to need bandages or a doctor?" This variable was measured on a scale of 1 to 5 (1 = *"Not at all," 2 = "Once," 3 = "Twice," 4 = "3 or 4 Times," 5 = "5 or more times"*). The mean frequency of participants reporting physical aggression was 1.13, indicating that most participants indicated "*not at all*." Of 2,125 participants who responded to this question, 93.5% of participants reported "*not at all,"* 4.1% reported *"once,"* 1.1% reported *"twice,"* 0.7% reported *"3 or 4 times,"* and 0.6% reported *"5 or more times"* (view Table 2).

Dataset 2 included the following five media, predictor variables: hours per day spent on SNS, hours texting, hours video-chatting, hours spent watching videos on the weekdays, and

hours spent watching videos on the weekends. Mothers' and fathers' education were also included as predictor variables, and self-reported happiness was the outcome variable. Hours per day spent on each activity relating to media usage were measured on a scale of 1 to 7 (*1 = "None," 2 = "Less than 1 hour," 3 = "1 – 2 hours," 4 = "3 – 4 hours," 5 = "5 – 6 hours," 6 = "7 – 8 hours," 7 = "9 hours or more"*). In addition to using each media variable separately in analyses, several indices were created: hours spent using SNS and texting were combined into a social media usage index (α = .76), hours watching videos on weekdays and weekends was combined into another index called the video index (α = .84), and all five media variables were combined into one general media usage index (α = .72). The outcome variable of happiness was measured using the same question and three-point scale as in Dataset 1: "Taking things together, how would you say things are these days—would you say you're very happy, pretty happy, or not to happy these days?"

Procedure

Data were obtained from a national survey by Miech et al. (2018). Participants were randomly assigned to complete one of six surveys. Outliers were removed following z-scores guidelines of cases exceeding 3 or -3. From Datasets 1 and 2, the total number of participants after removing outliers was 4,513.

Data Analyses

The first predictor variable examined in Dataset 1 (*n* of valid cases = 2,125) was frequency of television watching. The additional predictor variables were mothers' and fathers' education. The two outcome variables were happiness and aggression. A series of Spearman rank-order correlations were conducted to determine if there were any significant relationships

between frequency of tv watching, parental education, and the outcome variables of happiness and aggression.

The following predictor variables were examined in Dataset 2 (*n* of valid cases = 2,388): hours on social networking sites, hours per day spent video-chatting, hours watching videos on weekends and weekdays, and hours texting. There were three indices created: social media index, general media index, and video index. The additional predictor variables were fathers' and mothers' education, and the outcome variable was happiness. A series of Spearman rank-order correlations were also conducted in Dataset 2 with all variables.

Spearman-rho correlations were used rather than Pearson r correlations because the outcome variables were measured on a rank-order basis (aggression on a 5-point scale in Dataset 1 and happiness on a 3-point scale in Datasets 1 and 2). For both datasets, if the relationship between a media variable and an outcome variable was significant, an ordinal logistic regression was then conducted using the media variable and parental education level as predictor variables of the outcome variable. Parental education levels were used as predictors as well to ascertain whether level of education contributed to the relationship between media usage and outcome variables. All analyses were conducted with an alpha level of $p < .05$ using SPSS statistical software (SPSS Inc., Chicago, Illinois).

Results

Using Dataset 1, a series of Spearman Rho correlations were conducted to see if there were any significant relationships between frequency of television viewing, parental education levels, and happiness and aggression. None of the variables were significantly correlated with aggression. Even after removing the participants who reported "not at all" for the aggression variable, none of the relationships between predictor variables and aggression were significant.

Therefore, no ordinal logistic regressions with the outcome variable of aggression were conducted.

Still using Dataset 1, the outcome variable of happiness was analyzed to look at its association with frequency of television viewing, as well as fathers' and mothers' level of education. A significant, positive relationship between happiness and frequency of television viewing emerged, indicating that adolescents were happier the more they watched television, r_s (2123) = .07, $p < .001$. There was also a significant positive relationship between happiness and fathers' education, signifying that the higher fathers' education, the higher one's level of happiness was, r_s (1950) = .08, $p < .001$. Similarly, there was a significant positive relationship between happiness and mothers' education, r_s (2064) = .10, $p < .001$. See Table 3 for all correlations from Dataset 1.

Given that television viewing was significantly associated with happiness, as were parental levels of education, an ordinal logistic regression was run with happiness and all three predictor variables. Results indicated that the total model was a good fit, $\chi^2(3) = 36.35$, $p < .001$. The most significant predictor of happiness was that of frequency of television viewing: the higher the frequency of television viewing, the happier adolescents reported to be, Wald $\chi^2(1) = 16.93$, $p < .001$. Mothers' education level also independently predicted happiness, such that the higher the level of education, the happier one reported being, Wald $\chi^2(1) = 5.91$, $p = .015$, although to a lesser degree than television viewing. Fathers' education did not predict adolescent happiness in this equation.

Dataset 2 had a different set of media predictors in addition to parental education: hours per day spent on social networking sites, hours texting, hours video-chatting, hours spent watching videos on the weekdays, and hours spent watching videos on the weekends, as well as

the indices created from those variables. The only outcome variable contained in this dataset was that of happiness. Spearman rank-order correlations were conducted with all predictor variables and the outcome variable of happiness. The only media variable that was associated with happiness was hours of watching videos on the weekends, r_s (1872) = - .06, $p < .001$, indicating that happiness decreased as hours of weekend video watching increased. There was a significant, positive relationship between happiness and fathers' education, r_s (2003) = .10, $p < .001$, and a significant, positive relationship between happiness and mothers' education, r_s (2122) = .08, $p < .001$. See Tables 4 and 5 for all correlations from Dataset 2.

Because the relationship between the media variable of video viewing on weekends negatively predicted happiness, an ordinal logistic regression was conducted using video viewing as well as parental education levels to predict happiness. The model was shown to be a good fit, $\chi^2(8) = 25.74$, $p < .001$. In this model, fathers' education was the biggest predictor of happiness, such that the higher the level of education, the happier adolescents reported to be, Wald $\chi^2(1) = 7.14$, $p < .01$. Hours watching videos on the weekend continued to predict happiness, in a negative direction, Wald $\chi^2(1) = 4.87$, $p = .03$; however, the relationship between hours of videos viewed and happiness was decreased by entering level of father's education as evidenced by the reduced *p*-value. Level of mother's education did not significantly predict happiness in this equation.

The only significant media index associated with happiness was the video index (combining hours of weekday and weekend video watching), r_s (1890) = -.06, $p = .02$. This relationship was negative, suggesting that the more individuals watched videos the less happy they were. However, this relationship was lower than the relationship between hours of weekend video viewing and thus was considered to be driven by combining hours of weekend video

viewing with hours of weekday video viewing, which had a non-significant relationship to happiness. Therefore, no further analyses were conducted using this index.

It is interesting to note that there was a significant, negative relationship between mothers' education and the general media index, r_s (1831) = -.06, p < .001, as well as a significant, negative relationship between mothers' education and the social media index, r_s (1825) = -.06, p < .001. The same pattern was found with father's education level, as a significant, negative association between fathers' education and the general media index, r_s (1743) = -.06, p < .001, and the social media index, r_s (1737) = -.10, p < .001 emerged. These findings demonstrated that the more education one's parents attained, the less time adolescents reported using general media and social media.

Exploratory Results

To analyze the data further, cases were split by gender and race/ethnicity and an additional series of Spearman-rho correlations and ordinal logistic regressions were conducted for each dataset. When analyzing relationships by gender (Dataset 1), a significant, positive association between frequency of television watching and happiness was present only for male adolescents, r_s (961) = .09, p =.005. Even though both mother's educational level (r_s (961) = .08, p =.013) and father's educational level (r_s (961) = .07, p =.041) were significantly correlated with happiness, the ordinal logistic regression demonstrated that frequency of television viewing was the only predictor of happiness among males, such that males who watched tv more frequently were happier, Wald $\chi^2(1) = 12.45$, p < .001, with parental education failing to predict happiness. When splitting the file by race/ethnicity, there was also a significant, positive correlation between frequency of television watching and happiness only among White individuals, r_s (1101) = .09, p =.002; an ordinal logistic regression found that frequency of

television viewing was also predictive of happiness, Wald $\chi^2(1) = 11.73$, $p < .001$. Frequency of television viewing did not predict happiness for either Black or Hispanic adolescents.

In Dataset 2—when splitting the file by gender—a significant, negative correlation was found between happiness and hours of videos watched on the weekend only for females, r_s (957) = -.07, $p = .03$. The ordinal logistic regression results suggested that mothers' education level was positively predictive of females' happiness, Wald $\chi^2(1) = 3.71$, $p = .052$. However, interestingly, hours of watching videos on the weekend continued to predict female happiness in a negative direction, Wald $\chi^2(1) = 5.47$, $p = .02$

A significant, negative correlation was found between White adolescents' happiness and watching videos on the weekend, r_s (982) = -.07, $p = .02$, but not for Black or Hispanic individuals. However, when running an ordinal logistic regression to further analyze those findings, interestingly, daily hours watching videos on the weekend was negatively predictive of only Black individuals' happiness, Wald $\chi^2(1) = 4.08$, $p = .04$.

Exploratory results for Dataset 2 also indicated there was a negative, significant relationship between mothers' education and the general media index among White individuals, r_s (973) = -.07, $p = .02$. There was also a negative, significant relationship between mothers' education and the social media usage index (r_s (970) = -.10, $p < .01$), as well as fathers' education and the social media usage index was also negative (r_s (954) = -.12, $p < .001$). There were no significant relationships between parental education and the media indices for Black or Hispanic individuals. When splitting cases by gender, there was a significant, negative association between mothers' education and the general media index for females, r_s (946) = -.09, $p < .01$. There was also a significant, negative association between mothers' education and the social media index for females, r_s (945) = -.10, $p < .01$. There was a significant, negative

relationship between fathers' education and the general media index (r_s (885) = -.11, p < .001), as well as fathers' education and the social media usage index (r_s (884) = -.15, p < .001) among females. There were no significant relationships found for males regarding parental education and media usage.

Discussion

The aim of the present study was to investigate adolescent media usage by analyzing its association with two main outcome measures (happiness and aggression) and examining whether those outcomes were influenced by parental education level. From the present findings, the only media variables that predicted happiness were frequency of television viewing in a positive direction (Dataset 1), and hours watching videos on the weekend (Dataset 2) in a negative direction. In addition, mothers' and fathers' education levels were positively predictive of happiness levels. Nothing was found to be correlated with the measure of aggression.

Exploratory results from Dataset 1 demonstrated that frequency of television viewing was the only positive predictor of happiness among White, adolescent males, such that those who watched television more frequently were happier. Exploratory results from Dataset 2 suggested there was a negative correlation between White, adolescent happiness and video usage on the weekends. Females particularly reported feeling significantly less happy the more time spent watching videos on the weekend. Although there were no significant relationships between Black and Hispanic participants' media usage and parental education, daily hours watching videos on the weekend was negatively predictive of Black adolescent happiness. This finding suggests that as more videos were watched on the weekend, the less happy Black adolescents were.

There was a significant, negative relationship between parental education and social media usage, such that mothers and fathers who had lower levels of education had adolescents who reported using more social media. There was no way to demonstrate a causal relationship between variables, so the reason for this relationship remains undetermined. One potential explanation could be that parents who have less education also have a higher workload, leading those adolescents to spend more time using media. Or, perhaps parents with higher levels of education were more cognizant of the potential negative effects of too much media consumption.

Weinstein (2018) found that males reported strong, negative feelings when using social networking sites and females reported feelings of indifference. Other research primarily involving Black and Hispanic individuals stated that social media usage–particularly Facebook–was associated with heightened negativity and conflict in males and females (Stevens et al., 2017). Antheunis et al. (2016), suggested that media usage provided a positive experience for adolescents who sought to connect and cope with the daily stress of living in a disadvantaged neighborhood. Previous research from Assari et al. (2020a & 2020b) stated that parents who received less education were more frequently impulsive and aggressive. However, current results demonstrated that only White participants reported a significant relationship between happiness and video watching on weekends (negatively), as well as happiness and frequency of television viewing (positively). Black individuals' video usage on the weekends was negatively predictive of happiness, aligning more so with findings from Stevens et al. (2017). Both the social media usage index and general media index did not predict happiness. There was no evidence to suggest that parental education or social media usage was associated with or predictive of aggression. A possible reason for the outcome of the results was the way outcome variables were measured. Happiness was measured on a three-point scale; perhaps this limited

the results by only allowing participants to select one of three options for how happy they felt at the time. Aggression was assessed on a five-point scale, however the extreme way it was assessed was not a realistic portrayal of participants' aggression levels. Majority of participants reported they were not aggressive toward another individual to the point of needing medical attention. The lack of frequencies of participants reporting above 1 (not at all) was a potential reason for null results. The nature of the measure by default was extreme, and it eliminated other ways participants could show aggression, such as bullying or gossiping about others either in person or online.

If the aggression measure incorporated passive and/or verbal aggression that could have potentially changed the results. For example, Khurana et al. (2019) measured adolescent aggression in three ways: physical aggression, face-to-face bullying, and cyberbullying (*M* age = 15.6 years). Participants were asked to indicate whether they had been involved in a physical fight in the past 6 months and if so, how often they had had been involved. Face-to-face bullying was assessed in a yes or no manner by asking if individuals teased, verbally threatened, or spread rumors about another individual in the past 6 months. Cyberbullying was also measured in a yes or no manner by asking if participants were involved in mocking, threatening, or spreading rumors about another individual on a virtual platform (i.e., texting, social media messaging, etc.) in the last 6 months.

Past research showed mixed results regarding social media and how it impacted adolescents. Some studies suggested there were positive effects when it came to building connections (Antheunis et al., 2016; Weinstein, 2018) and others demonstrated negative outcomes (Hawk et al., 2019; Stevens et al., 2017; Thomaes et al., 2008; Van den Ejinden et al., 2016), suggesting that although it provided immediate relief short-term, it inhibited adolescents'

ability to process emotions long-term. However, the current study showed no relationship between media usage and happiness – again pointing to the very limited way this variable was measured.

There was a very large number of participants in the study, which was indicative of small effect sizes and may have hindered the correlation results by presenting as weak. Despite the large sample size, there were no significant relationships between general media or social media indices and the outcome variables (happiness and aggression), signifying even further that the outcome variables appeared to have been poorly measured.

Previous research demonstrated that childhood socioeconomic environment impacted several factors (e.g., life satisfaction, anxiety, hopelessness)-(Sutin et al., 2018). Sutin et al. (2018) also found that those whose parents had higher levels of education also had lower levels of depression. Santiago et al. (2011) also stated that poverty-related stress led to higher levels of anxiety, depressive symptoms and poor overall health and wellness outcomes. The current study found that parental education—which functioned as a measure of socioeconomic status—was associated and positively predictive of adolescent happiness. Mothers' education was positively predictive of female, adolescent happiness and fathers' education was positively predictive of male, adolescent happiness. The results of the current study, as well as previous research by Sutin et al. (2018) and Santiago et al. (2011), stand to reason that parental education and socioeconomic status do play a predictive role in adolescent emotions. Although exploratory results demonstrated significant relationships between White participants, findings also suggested that video usage on the weekends was predictive of Black individuals' happiness. It is unclear as to why results shifted from correlations to the ordinal logistic regressions.

There were no previous studies found tying parental education to media usage among adolescents. However, the current study demonstrated that parental education was positively associated with and predictive of adolescent happiness**.** Parental education was negatively associated with the video index, general media index, and social media index. These outcomes suggest that the more education parents attainted, the less time adolescents spent using media. Parallel to the current study, Assari et al. (2020b) looked at parental education as a form of SES. Sutin and colleagues (2018) stated parental education and living in a lower SES area impacted not only child well-being, but also brought about emotional regulation challenges.

Limitations

Firstly, the general collection of demographic data was not inclusive toward other genders and races/ethnicities, and it did not allow adolescents who may have been in custody of a guardian other than their biological parents to express that on the survey. The measures used in this national dataset also posed limitations to the study. Happiness was measured on a three-point scale, and participants were only given the following options when asked to choose a level of happiness: not too happy, pretty happy, or very happy. This may have prevented participants' from accurately reporting how happy they were feeling. Further, only physical aggression was measured which overlooked the idea that aggression could also be verbal or passive. It is worth noting there was a discrepancy in findings regarding mothers' and fathers' education as they related to happiness among adolescents. Mothers' education was predictive of adolescent happiness only in the first dataset, and fathers' education was predictive of adolescent happiness only in the second dataset.

Future research would benefit in gathering data from a wider age-range of adolescents (10 – 19 years old). Aiming for inclusivity toward those who were left out of this study (e.g.,

Asians, Alaskan Natives, non-binary individuals, those with non-traditional guardians, etc.) would also greatly improve accuracy of general demographics. Further, if the happiness measure was adjusted from a three-point scale to a five- or seven-point scale that would expand the range of options, allowing participants to more accurately self-report happiness levels. As mentioned, aggression should also be measured physically and verbally because the current study's aggression measure was extremely limiting. It would be interesting to see if the findings would align with Assari (2020) regarding impulsive behaviors and how that could translate to aggression.

Lastly, it is important to note that the present data analyzed was gathered in 2018 prior to the Covid-19 pandemic. It is unclear how the data shifted since then regarding adolescent media usage, and happiness and aggression levels relating to parental education. However**,** Binagwaho and Senga (2021) noted that the global pandemic brought an array of mental and physical challenges, such as feelings of isolation and distress. Participants in another study reported using their phones/technology more which aided in feeling relief (Cauberghe et al., 2021). Other research demonstrated that although social media can help with immediate support, it allowed individuals to rely on instant, positive reinforcement. Another study noted that short-term aid prevented individuals living in lower SES areas from gaining long-term coping strategies to manage stressors (Sutin et al., 2018).

Additional studies have demonstrated that life throughout the pandemic has taken a big toll on children and adolescents' mental health (Binagwaho & Senga, 2021; Cauberghe et al., 2021). The World Health Organization (WHO) stated that approximately 10 to 20% of children and adolescents reported needing some form of mental health support but reported inadequate provision of support (Binagwaho & Senga, 2021). One in four parents reported their child

experiencing some mental health challenge, and one in seven reported increased distress and worsened behavioral health due to food insecurity, loss of childcare services and inadequate healthcare services.

Society has been experiencing the negative impact from the pandemic, and studies have demonstrated results relaying the message (Binagwaho & Senga, 2021; Cauberghe et al., 2021). Although media usage may not provide long-term relief, one can speculate that—throughout the pandemic—individuals were able to find some solace and connection with others through time spent watching videos or scrolling on social networking sites. Generally, the number of studies inclusive of adolescent happiness and aggression, media usage, and parental education was scarce. However, if changes were made within this national dataset moving forward, there could be a clearer image of how to provide more support for adolescents and their families as well as how to approach media usage in a way that can become beneficial long-term.

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Table 1. Demographics of both Dataset 1 and Dataset 2 as percentages

Dataset 1 (*n* = 2,125)	Dataset 2 (*n* =2,388)
Gender Male: 47.0% Female: 53.0%	Gender Male: 47.4% Female: 52.6%
Race/ethnicity White: 62.6% Black or African American: 10.5% Hispanic or Latino: 26.9%	Race/ethnicity White: 61.1% Black or African American: 12.3% Hispanic or Latino: 26.6%
Age Under 18: 42.6% 18 years or older: 57.4%	Age Under 18: 44.9% 18 years or older: 55.1%

Table 2. Percentage breakdown of aggression in participants of Dataset 1 (n = 2,125)

Not at all	93.5% (n = 1,987)
1 time	4.1% (n = 87)
2 times	1.1% (n = 24)
3 or 4 times	0.7% (n = 15)
5 or more times	0.6% (n = 12)

Table 3. Relationship between frequency of television watching, parental education, and outcome variables (happiness and aggression) (Dataset 1)

Correlations among variables and descriptive statistics

Variables	Happiness	Aggression	Fathers' Education	Mothers' Education	Frequency of television viewing	*M*	*SD*
Happiness	-	-	-	-	-	2.01	0.61
Aggression	-.02	-	-	-	-	1.13	0.54
Fathers' Education	.08**	-.00	-	-	-	3.75	1.48
Mothers' Education	.10**	-.02	.56**	-	-	4.04	1.45
Frequency of television viewing	0.07**	-0.03	0.04	0.07**	-	4.44	1.31

Table 4. Relationship between media variables (hours video-chatting, hours watching videos on the weekdays and weekends, hours on SNS, and hours texting), parental education, and happiness (Dataset 2)

Correlations among variables and descriptive statistics

Variables	Happiness	Mothers' education	Fathers' education	Hours video-chatting	Hours watching video (weekday)	Hours watching video (weekend)	Hours texting	Hours on SNS	*M*	*SD*
Happiness	-	-	-	-	-	-	-	-	1.99	0.62
Mothers' education	.08**	-	-	-	-	-	-	-	4.03	1.45
Fathers' education	.10**	55**	-	-	-	-	-	-	3.78	1.46
Hours video-chatting	.04	-.05*	-.05*	-	-	-	-	-	1.93	1.41
Hours watching videos (weekday)	-.03	-.05*	-.04	.16**	-	-	-	-	3.22	1.37
Hours watching videos (weekend)	-.06**	-.00	.00	.11	.70**	-	-	-	3.81	1.57
Hours texting	.02	-.09**	-.15**	.32**	.25**	.19**	-	-	3.56	1.68
Hours on SNS	-.02	-.03	-.06*	.24**	.28**	.25**	.56**	-	3.50	1.64

Table 5. Relationship between media indices, parental education, and the outcome variable happiness (Dataset 2)

Correlations among variables and descriptive statistics

Variables	Happiness	Mothers' Education	Fathers' Education	General Media Index	Social Media Index	Video Index	*M*	*SD*
Happiness	-	-	-	-	-	-	1.99	0.62
Mothers' Education	.08**	-	-	-	-	-	4.03	1.45
Fathers' Education	.10**	55**	-	-	-	-	3.78	1.46
General Media Index	-.04	-.06**	-.06*	-	-	-	2.95	1.53
Social Media Index	-.01	-.06*	-.10	.78**	-	-	3.35	1.81
Video Index	-.06*	-.03	-.01	.70**	.30**	-	3.41	1.60