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Media Use Among Kindergartners from  
Low-Income Households During the COVID-19 Shutdown

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Abstract

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*Objective:* This study examines media use of children from low-income homes during school closings during the COVID-19 pandemic. *Method:* Caregivers of 151 kindergartners from low-income homes completed questionnaires as part of a larger study. Caregivers reported how much time children spent watching TV/videos and using apps on the most recent weekday and weekend day. Caregivers also reported how their child's current use of media for several different purposes compared to how much the child usually uses media for that purpose. *Results:* Weekly average media use was 46.3 hours or 6.6 hours per day. Counter to prior research, weekday media use was higher than weekend use, suggesting media was likely used as a replacement for time usually spent in school. Caregivers reported increased child media use for positive purposes, like education and maintaining relationships with family and friends outside of the home, as well as potentially useful but less socially-valued purposes, like occupying the child's time while caregivers were completing other tasks. Having more children in the household was related to higher media use and girls used media for maintaining remote relationships more than boys. *Conclusions:* These findings provide reason for both concern and optimism for the impacts of pandemic closures on low-income children. High levels of media use appear to be prevalent in this population. However, the diverse purposes for media use suggest that caregivers relied on media to supplement children's academic and social growth at a time when school and socializing were not safe in their typical forms.

**Keywords:** screen time, poverty, pandemic, school closings

## KINDERGARTNERS' MEDIA USE DURING COVID-19

66 COVID-19 led to school closings beginning in March 2020 across the U.S., with at least  
67 55.1 million students affected<sup>1</sup>. In Ohio, where this study was conducted, the governor ordered  
68 the closure of schools on March 12 and childcare centers were soon put under new restrictions  
69 resulting in most temporarily closing<sup>2</sup>. Eleven days later, stay-at-home orders went into effect  
70 with residents instructed to only leave their homes for essential services. Although the order was  
71 lifted on May 29, many schools and businesses remained closed into the summer months<sup>3</sup>.

72 With children at home, caregivers had to manage increased childcare obligations as well  
73 as regular responsibilities. Reports emerged of increased screen time among children<sup>4</sup> and  
74 increased viewership of child-targeted channels<sup>5</sup>. Popular media reflected parents' concerns  
75 about this shift<sup>6</sup>, with many who had previously aimed to follow the American Academy of  
76 Pediatrics daily limits of 1 hour per day for preschoolers<sup>7</sup> finding themselves exceeding that limit  
77 quickly during quarantine. Indeed, 63% of parents of K-12 students reported being more  
78 concerned about their children's screen time than before the pandemic<sup>8</sup>.

79 Increased screen time may be particularly concerning for children from low-income  
80 households who had higher levels even before the pandemic: over three and a half hours per day  
81 compared to less than two hours for children from high-income homes<sup>9</sup>. Further, COVID-19 has  
82 had more negative impacts for low-income adults, including greater job loss and increased credit  
83 card debt<sup>10</sup>. Furthermore, these caregivers are less likely to be able to work from home or have  
84 flexible jobs<sup>11</sup> that allowed them to adjust schedules to care for children during shutdowns. Thus,  
85 this population may be coping with pandemic stressors differently than higher-income families,  
86 potentially affecting children's media use.

87 Some types of media use may contribute to negative cognitive and health outcomes<sup>12-14</sup>,  
88 whereas other uses may have positive effects<sup>15, 16</sup>. In the context of COVID-19, media may have

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89 relieved stress in overburdened families or allowed more social connection. Thus, it is important  
90 to understand media use during stay-at-home orders for children in low-income homes.  
91 Emerging evidence on pandemic media use has not focused on young children and this age range  
92 may be less likely than older children to have extremely high levels of use. By investigating  
93 media use of children from low-income homes during the COVID-19 shutdowns, we can shed  
94 light on the potential for both positive and negative impacts and the need for intervention during  
95 future surges or other school closings.

96 We also examine how child and family factors may be related to children's media  
97 experiences during this time. Recent data suggests that boys' media use may have been higher  
98 than girls' prior to the pandemic<sup>9</sup> and understanding the role of gender in pandemic media  
99 experiences could have important implications for understanding how boys and girls may be  
100 differentially impacted by shutdowns. Further, family structure may influence the role that media  
101 played in these households. Prior research has shown that children in single-parent households  
102 and with siblings consume more media than children in two-parent households and only  
103 children<sup>17</sup> and these trends may be exacerbated for families experiencing pandemic-related  
104 challenges.

105 We used an existing sample of low-income families with young children to rapidly  
106 collect detailed data on media use during the shutdown. Families were part of a larger  
107 kindergarten transition study during the 2019-2020 school year. We address three research  
108 questions: (1) How much media use were kindergartners from low-income backgrounds  
109 experiencing during COVID-19 shutdowns? (2) How did the purposes for which kindergartners  
110 from low-income backgrounds use media change during COVID-19 shutdowns? And (3) How  
111 were family and child factors related to children's media experiences?

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**Methods**

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Caregivers of kindergartners ( $N = 151$ ;  $M_{\text{age}} = 73$  months,  $SD = 3.8$ , range = 67 – 84; 51% Black, 11% Asian or Asian American, 10% Hispanic) completed online questionnaires as part of a larger study between May 1<sup>st</sup> and June 30<sup>th</sup>, 2020. Caregivers resided in low-income homes based on annual income data reported in the prekindergarten year: 19.9% reported an annual income of less than \$20,000 and 34.4% reported an annual income between \$20,001 and \$40,000 (19.3% missing). PreK data showed that 27.2% of caregivers had a high school diploma or less, 37.7% had some college, vocational training, or an associate's degree, and 19.9% had a four-year college degree or higher (15.2% missing). Additionally, 45.7% of households had two adults in the household, whereas 30% had one adult in the home and 7.9% had three or more (15.9% missing). Thirty-five percent of households had two children, whereas 13.2% had one child, and 35.8% had three or more (15.9% missing).

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Caregivers responded to 12 questions assessing children's media use. Specifically, they were asked to report how much time children spent (1) watching any kind of video including TV, movies, or short clips on any type of device, and (2) using apps or games on any type of electronic device, during three time periods (waking through lunch, after lunch through dinner, dinner until bedtime) on the most recent weekday and weekend day (See Appendix). Response options ranged from none to 3+ hours. We summed video and app time across weekdays and weekends and created a weighted weekly total. Outliers more than 2 standard deviations above the mean were excluded.

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Caregivers also reported how their child's media use for different purposes compared to pre-pandemic use. Purposes included learning, entertainment, occupying the child's time while caregivers complete other tasks, family bonding, and maintaining relationships with family and

135 friends outside of the home. Five response options ranged from “Much less” to “Much more”.  
136 Caregivers were then asked how helpful media and technology has been for each purpose. Five  
137 response options ranged from “Very unhelpful” to “Very helpful”.

138 Finally, caregivers reported whether or not their child was having any direct contact with  
139 their teacher, and if so, how often. This item provided context for children’s media use.

## 140 Results

141 Children’s weekly average media use reported by caregivers was 46.3 hours ( $SD = 22.4$ ),  
142 or 6.6 hours per day (see Figure 1). Counter to prior research<sup>18</sup>, weekday ( $M = 6.8$  hours) was  
143 higher than weekend media use ( $M = 5.8$ ),  $t(132) = 4.27$ ,  $p < .0001$ ,  $d = .30$ . This difference was  
144 driven by morning ( $p < .0001$ ,  $d = .67$ ) and afternoon use ( $p = .024$ ,  $d = .58$ ), rather than evening  
145 use, which did not differ ( $p = .11$ ). Notably, 84.1% of children had direct contact with their  
146 teachers once a week or less, with 53.6% reporting no direct contact, suggesting that remote  
147 schooling is unlikely to account for a significant portion of children’s reported media use.

148 For purposes, sixty-one percent of caregivers reported their child was using media for  
149 learning more than usual. Forty-seven percent reported increased entertainment use. Forty-five  
150 percent reported increased use for occupying the child’s time, 42% reported increased use for  
151 maintaining relationships with remote family and friends, and 34% reported increased use for  
152 family bonding. See Figure 2.

153 Seventy-eight percent of caregivers reported media had been helpful for their child’s  
154 learning. Seventy percent reported media had been helpful for entertainment, with 67% reporting  
155 media was helpful for occupying the child’s time, 67% for maintaining relationships with remote  
156 family and friends outside, and 51% for family bonding. See Figure 3.

157 We found no differences between boys and girls on overall media use, weekday use,  
158 weekend use, video use, or app use. Furthermore, there were no sex differences on increased  
159 media use for learning, entertainment, occupying time, or family bonding, or how much media  
160 had been helpful for these purposes. However, girls were more likely than boys to have increased  
161 media use for maintaining relationships with family and friends outside of the home,  $t(149) = -$   
162  $2.28, p = .02, d = .37$ , and caregivers of girls were more likely to report that media had been  
163 helpful for this purpose,  $t(146) = -3.24, p = .001, d = .53$ .

164 Number of children in the household was related to more overall media ( $B = 4.46, p =$   
165  $.02$ ), more video use ( $B = 1.85, p = .04$ ), more app use ( $B = 2.57, p = .01$ ), and more weekday  
166 use ( $B = 0.64, p = .01$ ), but not more weekend use ( $p = .27$ ). Number of adults in the household  
167 was not related to media use ( $ps > .10$ ). Neither number of adults nor number of children was  
168 related to purposes for media use ( $ps > .11$ ).

### 169 Discussion

170 During COVID-19 school closings, media and technology use among kindergarteners in  
171 a low-income sample made up over a quarter of the day and almost half of presumed waking  
172 hours. Although there are no pre-pandemic comparison data for this sample, these numbers are  
173 almost double those reported for children under 8 from low-income homes pre-pandemic<sup>9</sup>.  
174 Although prior reports have shown increased media use during the pandemic<sup>4, 5</sup>, little has  
175 focused specifically on children from low-income backgrounds who already experienced higher  
176 levels pre-COVID<sup>9</sup> and who may be more at risk for increases given poverty-related constraints  
177 on caregivers<sup>11</sup>.

178 Children used more media on weekdays than weekends, counter to pre-pandemic  
179 findings<sup>18</sup>, suggesting that media is likely replacing time usually spent in school or childcare.



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180 Although some weekday use may be related to remote learning, children's direct contact with  
181 teachers in this sample during the early days of the pandemic was limited. Thus, most is likely  
182 due to increased non-school use, including time when caregivers are working or attending to  
183 other tasks and cannot entertain children.

184 Caregivers reported that children used media for diverse purposes, including positive  
185 purposes like learning, maintaining relationships with remote family and friends, and family  
186 bonding. Caregivers reported that media was helpful for these purposes, suggesting these  
187 technologies have been a valuable source of parental support during shutdowns. Although  
188 research often focuses on negative aspects of children's media use, this aligns with data showing  
189 that 72% of parents report that media use helps their child's learning<sup>9</sup> suggesting that parents  
190 recognize potential benefits. Indeed, the current data show increased media use for digital play<sup>19</sup>  
191 educational uses of technology<sup>16</sup>, and technology use for social connection<sup>20</sup>. Such use may be  
192 particularly important in this population given that caregivers may have limited resources for  
193 investing in new toys and may not consider outdoor play safe in their neighborhoods. However,  
194 caregivers also reported increases in using media to occupy children's time while caregivers  
195 were busy, highlighting struggles to manage childcare along with other responsibilities during  
196 closings. The increase in media use for entertainment may reflect limited opportunities for other  
197 recreational activities like organized sports, playdates, and visiting zoos and museums.  
198 Caregivers also found media helpful for these purposes, potentially reducing stress, an important  
199 predictor of positive parenting practices<sup>21</sup>. To the extent that some types of media use may be  
200 harmful<sup>12-14</sup>, these findings suggest that pediatricians and family-focused organizations should  
201 support caregivers in finding alternative independent play activities and/or encourage more  
202 educational and creative uses of media<sup>22</sup>.

203           Although pre-pandemic data shows higher media use among boys<sup>9</sup>, these data suggest  
204 that both boys and girls experienced high levels of media use during shutdowns. The only sex  
205 difference was that girls were more likely to have increased media use for maintaining  
206 relationships with family and friends outside of the home, and their caregivers found media more  
207 helpful for this purpose. This aligns with findings that girls are more likely than boys to maintain  
208 friendships over time<sup>23</sup>, to care more about dyadic friendships, and engage in extended dyadic  
209 interactions<sup>24</sup>. However, caregivers may also be partial drivers of this effect, as adults use  
210 dominant societal stereotypes to influence children's environments as early as the first year of  
211 life; for example, by buying girls more dolls than boys<sup>25</sup>. Regardless, this finding suggests that  
212 girls may be better maintaining friendships during pandemic shutdowns than boys. This may  
213 have long-term implications for boys' social development and suggests that caregivers should be  
214 encouraged to provide extra support to boys in maintaining relationships via technology when in-  
215 person interactions are unsafe. Some children may need more structured play activities to  
216 maintain attention during virtual playdates<sup>26</sup>.

217           That number of household children was related to media use aligns with pre-pandemic  
218 findings<sup>17</sup> and suggests that family processes influenced media use during the shutdowns. During  
219 the pandemic, caregivers who have more children may be less likely to enforce screen time limits  
220 or have time to engage children in alternate activities, given their many responsibilities. Number  
221 of children was related to weekday but not weekend use, suggesting that sibling presence may be  
222 more influential when caregivers are likely otherwise occupied. Interestingly, number of children  
223 was not related to purposes for media use, suggesting that increased use may not be intentional  
224 or directed towards a specific goal.

225           One limitation is that this data relies on caregiver report of children's media use, which  
226 may not always be accurate. However, we focus on changes in use over time and purposes for  
227 use and expect that parents' responses are more accurate for these types of items than when  
228 asking them to report specific amounts of time, which can be difficult to estimate. However,  
229 future research should seek to use more objective measures of assessing media use during  
230 periods of school closings and other shutdowns.

231           Importantly, it is unclear whether high levels of media and diversity of purposes are  
232 specific to low-income families or whether similar patterns would emerge among higher-income  
233 populations. Given other reports<sup>5</sup>, it is likely that children from all backgrounds have had  
234 increased media use during this time. However, use may be exacerbated for families in poverty  
235 because caregivers are less likely to have flexibility to be able to manage children's activities  
236 during work hours<sup>11</sup>, and are less likely to have resources to pay for in-home childcare options  
237 and purchase other toys and activities to occupy children's time.

238           In sum, these findings provide reason for both concern and optimism for the impacts of  
239 pandemic closures on low-income children. Extremely high levels of technology and media use  
240 appear to be prevalent in this population, which may be related to negative cognitive and health  
241 outcomes<sup>4,6</sup>. At the same time, the diverse purposes reported for children's media use suggest  
242 that caregivers relied on media to supplement children's academic and social growth at a time  
243 when school and socializing were not safe in their typical forms.

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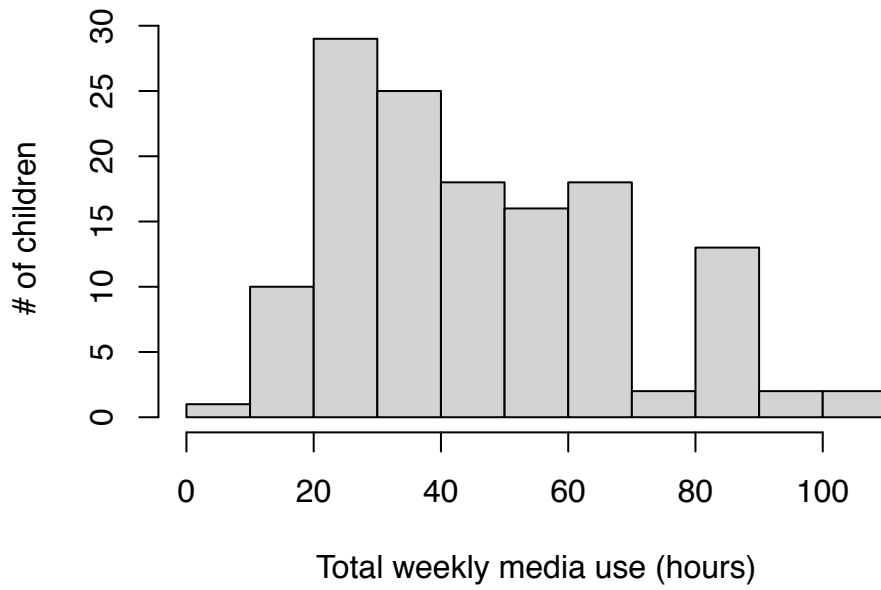
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316 **Figure 1.** Children's Total Weekly Media Use

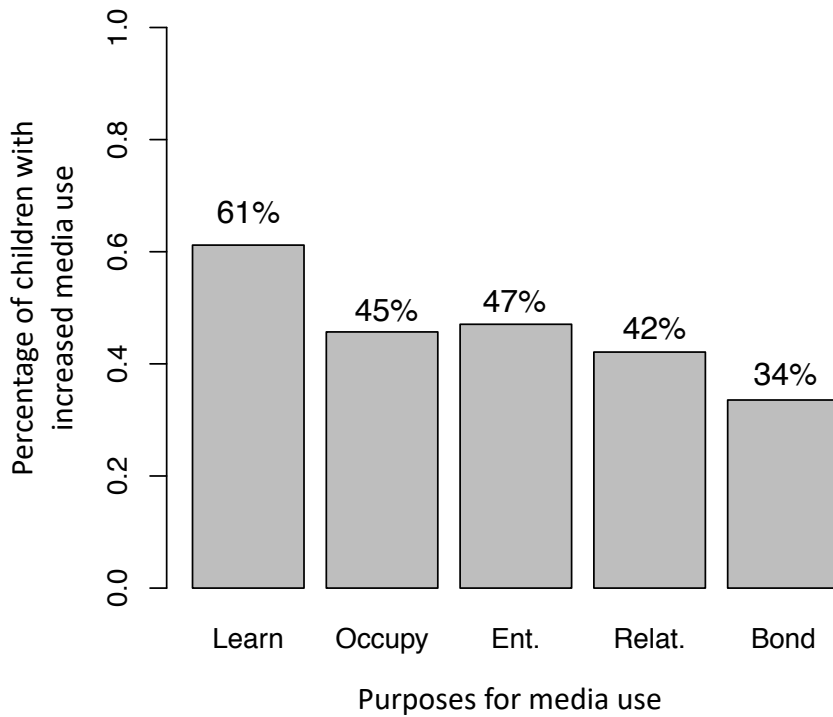


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## KINDERGARTNERS' MEDIA USE DURING COVID-19

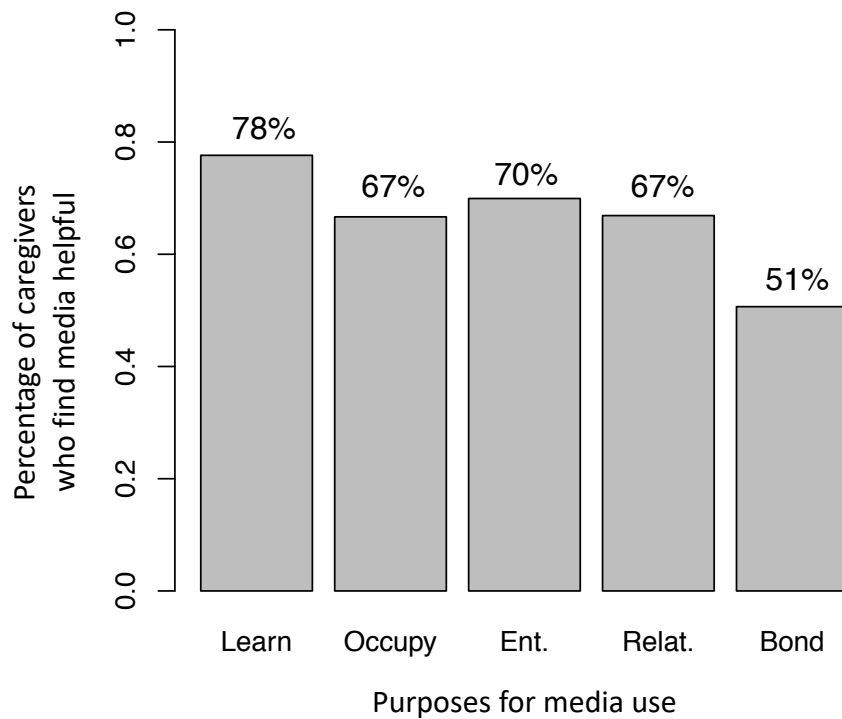
319 **Figure 2.** Caregivers Reporting Increases in Children's Media Use for Different Purposes. *Note:*  
320 Learn = Learning, Occupy = Occupying the child's time while parents/caregivers complete other  
321 tasks, Ent. = Entertainment, Relat. = maintaining relationships with family and friends outside  
322 of the home, Bond = family bonding



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325 **Figure 3.** Caregivers Reporting that Media and Technology Have Been Helpful for Different  
326 Purposes. *Note:* Learn = Learning, Occupy = Occupying the child's time while  
327 parents/caregivers complete other tasks, Ent. = Entertainment , Relat. = maintaining relationships  
328 with family and friends outside of the home, Bond = family bonding  
329



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