

# The Relationship Between Parental Stress and Young Children's Screen Time During a COVID-19 Driven National Lockdown

**Yael Navon, Liora Bowers, Carmel Blank, Dana Vaknin, and Yossi Shavit**

This research was generously supported by the Beracha Foundation, the Bernard van Leer Foundation, and Yad Hanadiv

## Taub Center for Social Policy Studies in Israel

The Taub Center was established in 1982 under the leadership and vision of Herbert M. Singer, Henry Taub, and the American Jewish Joint Distribution Committee. The Center is funded by a permanent endowment created by the Henry and Marilyn Taub Foundation, the Herbert M. and Nell Singer Foundation, Jane and John Colman, the Kolker-Saxon-Hallock Family Foundation, the Milton A. and Roslyn Z. Wolf Family Foundation, and the American Jewish Joint Distribution Committee.

This paper, like all Center publications, represents the views of its authors only, and they alone are responsible for its contents. Nothing stated in this paper creates an obligation on the part of the Center, its Board of Directors, its employees, other affiliated persons, or those who support its activities.

## Initiative on Early Childhood Development and Inequality

The Taub Center's "Initiative on Early Childhood Development and Inequality" is tasked with examining the effects of the young child's environment on future achievements and disseminating the latest research on this subject. The Initiative's goal is to assist in the advancement of effective policy to improve the environmental conditions of children in Israel during their early years of life, in order to improve their outcomes and reduce disparities due to socioeconomic background. The researchers involved in this initiative draft up-to-date research reports, literature surveys, position papers, and policy papers. As part of its effort to disseminate the latest available knowledge, the Initiative holds an academic seminar to provide a multidisciplinary basis — both theoretical and empirical — for the investigation of early childhood. The activity of the Initiative is guided by an International Advisory Council consisting of leading academics, policy makers and members of civil society organizations who are committed to the advancement and implementation of effective policy in the area of early childhood in Israel. The activities of the Initiative are supported by the Bernard van Leer Foundation, the Beracha Foundation, and Yad Hanadiv. The Initiative is headed by Prof. Yossi Shavit, Principal Researcher, Taub Center for Social Policy Studies in Israel; Professor Emeritus, Tel Aviv University.

**Research staff:** Dr. Carmel Blank, Liora Bowers, Dr. Yael Navon, Dana Vaknin, Noam Zontag.

**Research assistant:** Hai Vaknin.

**Advisory Council:** Prof. Esti Adi-Japha, Daniella Ben-Attar, Efrat Degani-Toperoff, Prof. Isaac Friedman, Prof. John Gal, Dr. Shoshi Goldberg, Prof. Reuven Gronau, Sima Hadad, Dr. Tzipi Horowitz-Kraus, Fatma Kassem, Orit Levin, Varda Malka, Michal Mankas, Dr. Tali Yariv Mishal, Dr. Naomi Moreno, Prof. Frank Oberklaid, Ehud (Udi) Prawer, Prof. Sigal Sadetsky, Prof. Avi Sagi-Schwartz, Prof. Manual Trajtenberg, Dr. Maya Yaari.

# The Relationship Between Parental Stress and Young Children's Screen Time During a COVID-19 Driven National Lockdown

**Yael Navon, Liora Bowers, Carmel Blank, Dana Vaknin, and Yossi Shavit**

## **Abstract**

This is a study of screen use by young children during the first COVID-19 lockdown in Israel. Screen use can hinder optimal development among young children. Three questions are asked: How is screen use by children related to parents' psychological stress? Was screen use by young children during the lockdown more common in the lower socioeconomic strata, and how did parents' psychological stress during this time relate to their socioeconomic characteristics? These questions are examined using data collected through an internet survey of parents to young children conducted in Israel during the first COVID lockdown. Results show that screen use by young children increases as their parents' stress levels increase, and that both children's screen use and parental stress were more common in the lower socioeconomic strata.

---

\* Dr. Yael Navon, Researcher, Taub Center; Liora Bowers, Chief Financial and Operating Officer, Taub Center; Dr. Carmel Blank, Researcher, Taub Center Initiative on Early Childhood Development and Inequality, Ruppin Academic Center; Dana Vaknin, Researcher, Taub Center and Doctoral student, Department of Sociology and Anthropology, Tel Aviv University; Prof. Yossi Shavit, Chair, Taub Center Initiative on Early Childhood Development and Inequality and Professor Emeritus of Sociology and Anthropology, Tel Aviv University. We are grateful to the Bernard Van Leer Foundation, the Beracha Foundation, and Yad Hanadiv for their generous support of this research. Thanks also to Maisalon Dallashi for translating and editing the questionnaire in Arabic.

## Introduction

There is pervasive agreement in the research and policy literature that screen use can hinder optimal development, particularly among the youngest children. During the COVID-19 lockdown in Israel, educational institutions and much of Israel's economic activity were suspended, with families confined to their homes for days (and weeks) on end. Under the pressure-cooker atmosphere that developed in homes, many parents were tempted to park the kids in front of TV sets or other types of screens. We studied the scope of screen use by children from different socioeconomic backgrounds during this time. Our main finding is that children whose parents expressed high levels of psychological stress spent more time, on average, using screen-based devices. In addition, and expectedly, we found that psychological stress is more prevalent in the lower socioeconomic strata and among the Arab minority in Israel.

Both practitioners and researchers are concerned about the harmful effect of screen time on young children's physical health, sleep, cognitive and emotional development, and behavior (Madigan et al., 2019, 2020; Tomopoulos et al., 2010; Wen et al., 2014; Zimmerman & Christakis, 2005). Thus, it is no surprise that health authorities across countries generally recommend avoiding screen usage until the age of 18–24 months and limiting it to one hour per day until the age of five (Hill et al., 2016; IMA, 2014; Ponti et al., 2017; WHO, 2019).

Several parental characteristics correlate with consumption of screen time among children. Among them, children from lower socioeconomic backgrounds tend to engage in greater amounts of screen time than children from higher socioeconomic groups (McArthur et al., 2020; Wijtzes et al., 2012; Yang-Huang et al., 2017). In addition, parents from lower socioeconomic strata tend to experience more stress due to economic concerns (Kalil & Ryan, 2020; Leinonen et al., 2003; Puff & Renk, 2014), which challenges their ability to engage with their children, which, in turn, is associated with lower parental restrictions (Conger et al., 1994; Kalil & Ryan, 2020; Mistry et al., 2002), including screen use restrictions.

Parents' psychological stress and children's screen time are extremely relevant within the context of the COVID-19 outbreak. The pandemic introduced many challenges to family life, in Israel and elsewhere. During much of the pandemic, schools were closed, children were deprived of social interactions with schoolmates and teachers, and, for infants, toddlers, and pre-school children, many parents became their sole caregivers. Some parents tried to juggle full-time child care with work while others lost jobs or

experienced pay cuts and faced debilitating economic concerns and stress just at the time when their young children needed them the most. Under these circumstances, screens provide parents with an easy solution to the conflict between the requirements of child care on the one hand, and the demands of work and stress on the other (AAP, 2020). This study explores the association between young children's screen use during the first COVID lockdown in Israel, the socio-demographic characteristics of their parents, and their parents' psychological stress.

## Screen use and child development

The impact of screen use on children has been researched extensively by scholars across disciplines, including pediatrics, psychology, and sociology. Studies indicate that screen use can be harmful to children, especially very young ones. Increased screen time is positively related to obesity (Suglia et al., 2013; Taveras et al., 2013; Wen et al., 2014), poor sleep patterns (Hill et al., 2016; Ponti et al., 2017), and behavioral and emotional problems (Christakis et al., 2018; McArthur et al., 2020; Pagani et al., 2016; Radesky et al., 2014). In addition, there is a negative relationship between early screen use and cognitive development (Hu et al., 2020; Madigan et al., 2019, 2020; McArthur et al., 2020; Richert et al., 2010; Tomopoulos et al., 2010). Higher screen-based media use by preschool children has been found to be correlated with lower microstructural integrity of brain white matter tracts that facilitate language and early literacy skills (Hutton et al., 2020).

These findings, as well as the fact that screen time patterns established at early ages often form habits for the years to follow (McArthur et al., 2020), led to the strict recommendations of health authorities, noted above (Hill et al., 2016; IMA, 2014; Ponti et al., 2017; WHO, 2019). Thus, studying environmental factors that relate to screen time among preschoolers is of high importance.

## Family background and screen use behavior

The sociological literature shows that there are major differences among families with different socio-economic characteristics in parenting styles, including the interaction between parents and children, parent's engagement with their children and how children spend their time. Well-off parents tend to engage in "concerted cultivation," an involved, hands-on approach that relies on engagement with, and monitoring and arranging activities for their children; lower-class parents tend towards "natural growth," an assumption

that their children's skills and talents will develop on their own (Lareau, 2011). Parents in higher socioeconomic households spend more time in general in childcare even though they also spend more time engaged in work outside of the home (Guryan et al., 2008; Kalil et al., 2012). Such gaps between higher and lower income families exist also with regard to such parenting activities as reading stories, teaching letters and numbers, and attending cultural activities (Kalil et al., 2016).

Children from disadvantaged backgrounds, whether from low-income families or those with mothers with lower levels of education, tend to spend more time watching or playing with screens than children from better-off backgrounds and these differences tend to persist throughout childhood (Hish et al., 2020; McArthur et al., 2020; Wijtzes et al., 2012; Yang-Huang et al., 2017). Some underlying factors for this trend may be that highly educated parents use screens for fewer hours in front of their children, report a lower threshold for the appropriate amount of daily screen time for their children, and place greater importance on limiting children's screen time compared to their less educated counterparts (Määttä et al., 2017). It has been suggested that higher socioeconomic background relates positively not only to lower screen time but also to other factors of screen use, such as the likelihood of watching more educational content and co-viewing with parents who can explain and mediate content (Ribner et al., 2017).

## **Parental economic concerns and parenting practices**

A number of studies have shown a positive correlation between economic strain and stress, depression and anxiety among parents, with the latter serving as mediators in the relationship between economic challenges and less involved parenting (Leinonen et al., 2003; Puff & Renk, 2014). The Family Stress Model argues that family economic hardship increases parent's psychological distress, which is likely to lead to changes in parenting practices that may negatively affect their children (Conger et al., 1994, 2010; Scaramella et al., 2008). Low income and economic concerns are also associated with lower parental self-efficacy in discipline (Mistry et al., 2002).

Parents who feel poorly equipped to cope or who feel that they lack the resources to meet the needs of their children adequately are said to experience parenting stress (Crnic et al., 2005). Puff and Reck found among middle-class parents, that economic stress is associated with parenting stress, which mediates the relationship between negative economic events and children's

behavioral problems. Parenting stress is also associated with parents' lower ability to set limits for their children (Puff & Renk, 2014).

Stress may also challenge parent's ability to engage with their children in an intellectually stimulating manner. While lower-income parents are both aware of the importance of nurturing activities such as reading to their children, and would like to engage in such activities, they are less likely to do so due to "toxic" stress, which increases depression and anxiety and challenges their ability to focus on longer-term rewards and engage with their children in purposeful, involved parenting (Kalil & Ryan, 2020).

Several studies addressed the connection between parental emotional state and screen use among young children specifically. A 2003 study of 295 preschool children showed that children of mothers with clinically significant depression symptoms were more likely to watch more than 3 hours of television per day (Burdette et al., 2003). This relationship between maternal depression and children's screen time has also been demonstrated in other studies (Madigan et al., 2019). Furthermore, in a study of 146 children from low-income families attending Head Start preschool centers in the US, fewer pressures experienced by parents was associated with greater screen-time restrictions, and in turn, less TV watching by their children (Lampard et al., 2013).

## **The COVID-19 outbreak: economic decline, parental concerns, and children's screen use**

The COVID outbreak has challenged family life in a variety of ways. Following the outbreak of the pandemic, schools were closed for long periods, social interactions were restricted, and parents became sole caregivers for toddlers and preschool children. At the same time, when their young children needed them the most, some parents had lost their jobs or experienced pay cuts and faced debilitating economic concerns, while others attempted to juggle full-time child care with work. Under these circumstances, screens provide parents with an immediate solution to keep their young children occupied.

The crisis has affected many families' income as well as the level of their economic concerns. In Israel, unemployment rates (including temporary leave of absence) during the pandemic exceeded 30% (Zontag et al., 2020) and the

number of business that closed increased by 50% relative to 2019.<sup>1</sup> Economic hardships did not spare families with children: a recent survey of Israeli parents of children ages 18 or younger indicates that over 70% experienced some economic decline since the pandemic began, and about a third reported a severe or very severe decline (Man, 2020). Another survey of Israeli parents of young children points to a similar result – more than 70% of families reported some income loss during the pandemic (Ben-David, 2021).

Usually, children’s participation rates in early childhood education and care (ECEC) are very high in Israel (Vaknin, 2020), as is the involvement of extended families, in particular grandparents, in child care. Thus, the situation in which most young children spent 24/7 exclusively with their parents is extremely unusual in this country. In this respect too, the COVID lockdown was very disruptive to the lives of many Israeli families.

Screen use guidelines were discussed frequently during the pandemic, as lockdowns and social distancing curtail access to other forms of entertainment, socializing, and activities with children, such as museums, Gymborees, playdates, after-school sports, and activities. The American Academy of Pediatrics has specifically commented that limits on screen time should be more flexible during the pandemic and recommended that parents focus on ensuring content quality and adult co-viewing, while also assuring sufficient non-screen time activities that provide for physical activity, creativity, and communication (AAP, 2020). Vanderloo et al. proposed a “harm reduction” approach to screen time during the pandemic, including parental modeling of appropriate use of screens, co-viewing and educational content, as well as screen-free family time (Vanderloo et al., 2020).

In summary, the literature suggests that parents’ stress levels affect their parenting behavior, including their ability to set limits on their children’s behaviors — among these, screen use, which, in excess, is said to hinder cognitive and emotional development at young ages. Parental stress levels, in turn, are affected by economic concerns, which have likely been elevated due to the economic crisis that has accompanied the COVID pandemic, and the income loss experienced by many families. In addition, there are differences in children’s screen use that are related to children’s socioeconomic backgrounds.

---

1 See [Israel Economic Snapshot – Summary of 2020 and Forecast for 2021](#) on the Dun & Bradstreet website.



Due to the expected increase in children's screen time and the elevated stress levels of parents during lockdown, it is important to study the association between these variables under these extreme circumstances, and to identify socioeconomic differences.

Thus, this study addresses three main questions: Does parental psychological stress correlate with young children's screen use? Does socioeconomic background correlate with young children's screen use during the lockdown? Finally, how do parental stress levels differ by their families' socioeconomic background?

## Data

The first lockdown of 2020 was announced in Israel on March 14<sup>th</sup>, and it lasted until mid-May. We fielded an internet survey beginning on April 5<sup>th</sup> for about a week. The questionnaires were distributed through an intentionally diverse set of "seeds," including parents' WhatsApp groups in multiple communities and cities across the country, Facebook groups for parents, and through organizations active in the early childhood arena. The questionnaire was intended for parents who have children ages one to six. Respondents were asked to complete the questionnaire regarding their youngest child in that age range. The questionnaire covered several topics regarding the lives and daily routines of young children and their parents during the lockdown, including the scope of screen use, other time-use activities of parents and children, as well as parents' socio-demographic characteristics, their employment status, and psychological stress levels.

## Sample

Of 1,300 questionnaires that were returned by respondents, 1,098 included information on all the variables in the analysis. The sample is not representative of the Israeli population of parents of young children. Arabs comprise 38% of the sample, almost double their share in the Israeli population, and parents with college/university education comprise 77% of the sample as compared with about 50% of comparable age groups in the population (CBS, 2020). To attenuate the effects of these two sources of sampling bias, we employed weights that were computed as the ratio of sample moments (percent Arab and non-Arabs with or without college/university education) to the

comparable moments that we computed for mothers of young children in the Israeli Central Bureau of Statistics (CBS) Labor Force Survey data.<sup>2</sup> Specifically, the weight for respondent  $i$  was computed as follows:

$$W_i(s,a) = Pf(s,a) / Pd(s,a)$$

Where,  $Pd(s,a)$  is the proportion of mothers in our data who are Arab or Jews and with higher education or less, and  $Pf(s,a)$  is the parallel proportion of mothers in the Labor Force Survey. We present both weighted and unweighted results.

## Variables

The dependent variable in this study is screen use by children. Parents were asked to report, on a four-point scale (where 1 = not at all and 4 = a large part of the day), to what extent (1) watching television and (2) playing on a computer/tablet/smartphone made up part of their youngest child's daily routine during the first lockdown. The answers were summed and standardized to a mean of 0 and a standard deviation of 1 (hereinafter: "ZScreens"). Thus, those with a negative value use screens less than average, while positive values indicate above average use. In addition, we define two variables that measure the amount of TV watching. The first is a dummy variable indicating if the child watches any TV. This variable is coded 1 for children whose scores on questionnaire item 1 equal 2, 3, or 4. The other variable is a dummy variable coded 1 for children who watch TV a large part of the day (item 1=4).

The main independent variable is parent's psychological stress measured as the sum of four items in which respondents were asked to report, on a scale of 1 to 5, to what extent they felt lonely, depressed, and anxious, and the extent to which their sleep was restless during the lockdown (cronbach alpha=0.82).

Parents were also asked to rank their family's pre-COVID income on a 5-point scale relative to their perception of the average income, and we created a dummy variable that indicates that the respondent believed that their family's pre-COVID income was low relative to the general population. "Parents' education" is a dummy variable coded 1 if either of the child's parents has a college or university degree. "Ethnicity" is a dummy variable coded 1 for Arabs.

---

2 The comparison was done with data from the 2017 survey.

Respondents were identified as Arab if they chose to answer the questionnaire in Arabic (rather than in Hebrew), and they reported that they are not Jewish.

Three control variables are included in the multivariate analyses: "N of children" measures the respondent's number of children; "child's age" is the age of the child in question measured in years, and "income loss" is a dummy variable in which 1 indicates that the respondent reported losing some or all of their, or their spouse's, income during the lockdown.

## Results

Table 1 presents means and standard deviations of the variables in both weighted and unweighted form. As expected, there are substantial differences between the weighted and unweighted samples in the share of Arab and parents with higher education (because the weights were computed for four cells defined by ethnicity [Arab/Jewish] and parents' education) but there are only minor differences between the samples in the means and standard deviations of all other variables. A striking finding that appears in the table is the large share of respondents who reported income loss during the pandemic (about two-thirds of the sample).

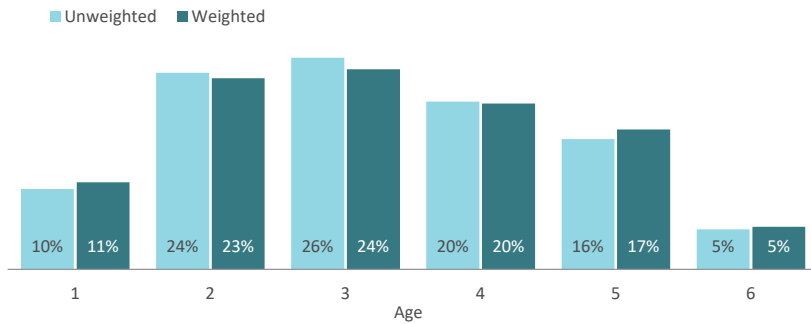
As noted, health practitioners' recommendation for limited screen use depend on the age of the child (Hill et al., 2016; IMA, 2014; Ponti et al., 2017; WHO, 2019). For children up to age two, avoiding any screen exposure is generally recommended, and for older children, screen time is to be limited. Figure 1 presents the age distribution of the children in the current sample. Both weighted and unweighted distributions are shown. As seen, about 10% of the children had not yet reached age two and an additional quarter of the children are under three years of age. Figure 2 shows average screenuse behaviour by age. The differences between the weighted and unweighted means of ZScreens are to be expected given that the weights are greater for uneducated parents, whose children tend to watch and play with screens more often according to previous findings and who were underrepresented in the sample. As seen, screen use rises with the child's age. Unfortunately, our measure of screen use is relative, enabling comparisons between age groups in screen use but does not measure actual screen time. Therefore, we cannot gauge the extent to which parents comply with the recommendations of health practitioners.

**Table 1. Means and standard deviations of variables, weighted and unweighted samples**

Variables	Values	Mean	Standard deviation	Mean	Standard deviation
		Unweighted sample (N = 1,098)		Weighted sample (N = 1,095)	
Zscreens	Range:-1.57 to 2.69	0.02	1.00	0.16	1.10
Watches any TV	1 = Yes	0.83	0.37	0.82	0.39
Watches TV a large part of the day	1 = Yes	0.07	0.25	0.10	0.30
Arab	1 = Yes	0.38	0.49	0.21	0.40
Child's age	In years. Range: 1 to 6	3.23	1.36	3.25	1.39
No. of children	Range: 1 to 10	2.62	1.41	2.61	1.43
Parents' education	1 = Higher education	0.77	0.42	0.59	0.49
Pre-COVID low income	Self assessment. 1 = Lower than average	0.14	0.35	0.16	0.37
Income loss	1 = Either respondent or their partner lost income	0.66	0.47	0.68	0.47
Parents' psychological stress	Range: 1 to 5	2.61	1.07	2.52	1.09

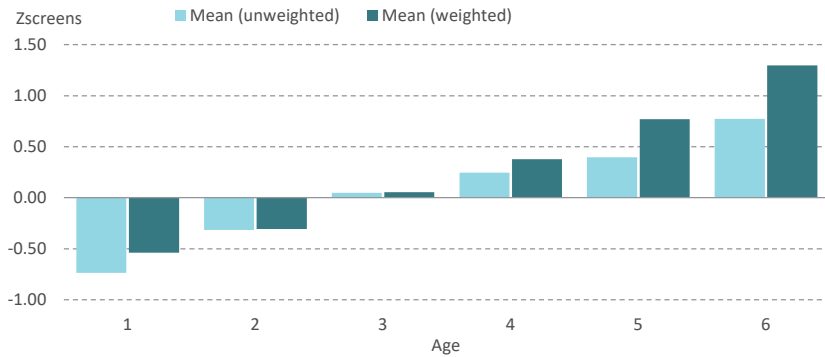
Source: Navon et al., Taub Center | Data: Parents' Survey During the First COVID-19 Lockdown, Taub Center

**Figure 1. Frequency distribution of child's age (weighted and unweighted samples)**



Source: Navon et al., Taub Center | Data: Parents' Survey During the First COVID-19 Lockdown, Taub Center

**Figure 2. Means of screen use by child's age (weighted and unweighted samples)**



Source: Navon et al., Taub Center | Data: Parents' Survey During the First COVID-19 Lockdown, Taub Center

## Screen use, socioeconomic background, and parents' psychological stress

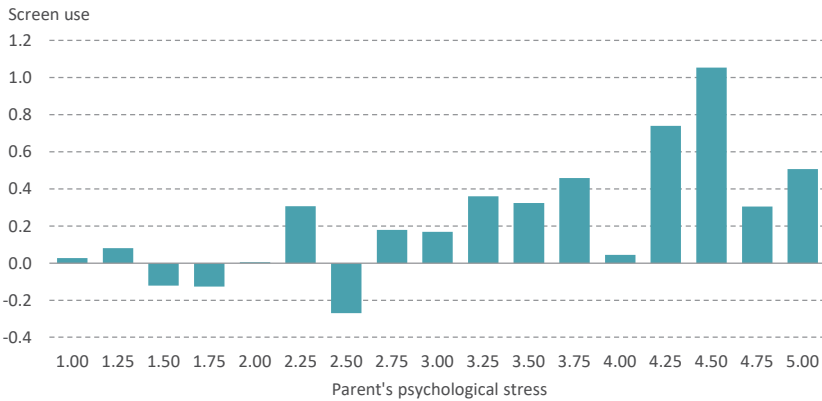
Figure 3 shows that screen use is correlated with parent's psychological stress. The correlation is positive and significant, although not very strong ( $r=0.179$ ;  $p<0.01$ ). This means that, on average, screen use was more prevalent in the schedule of children whose parents report higher levels of stress.

Multiple regressions for the weighted and unweighted samples of child's screen use are shown in Table 2. The most important result in the two columns for our purpose is the positive and significant coefficient estimates for psychological stress. One could interpret this result to reflect a negative effect of stress on parents' emotional availability to set limits on the child's behavior, as suggested by the literature (Puff & Renk, 2014). Another result, which is in line with former findings, is the negative correlation between parents' education and screen use. It is interesting to note that, conditional on the other variables in the model, Arab parents reported lower screen use by their child than their Jewish counterparts during the lockdown.<sup>3</sup>

3 This result may be due to a variety of factors including the larger Arab households which may help keep children busy in activities other than using screens, or the lower availability of screens in Arab households. In unreported analyses we estimated separate regressions for Arabs and Jews and found no substantial differences in the coefficients of parent's stress or education, though the latter is weaker among Arabs.

As seen in Figure 2, Table 2 also shows that even when other factors are taken into account screen use is positively related to age.<sup>4</sup>

**Figure 3. Means of child's screen use by parents' psychological stress (weighted sample)**



Source: Navon et al., Taub Center | Data: Parents' Survey During the First COVID-19 Lockdown, Taub Center

4 This result did not change when, in an unreported analysis, we defined the child's age as a set of dummy variables rather than as a continuous variable. In addition, we estimated the regressions separately for age groups 1–2, 3–4 and 5–6 (see Appendix Table 1) and found that each year of age correlates significantly with a higher screen use measure. The results show a negative coefficient for parents' education, and a positive one for parent's psychological stress, except for the 5–6 age-group.

**Table 2. OLS results for screen use**

Variables	Unweighted sample (1)	Weighted sample (2)
Child's age	0.271*** (0.021)	0.342*** (0.032)
Parents' psychological stress	0.132*** (0.026)	0.162*** (0.0430)
Income loss	-0.024 (0.059)	0.031 (0.082)
Parents' education	-0.249*** (0.074)	-0.355*** (0.114)
Arab	-0.166** (0.065)	-0.315*** (0.102)
Low income	-0.064 (0.082)	-0.073 (0.129)
No. of children	0.005 (0.021)	-0.044 (0.034)
Constant	-0.937*** (0.139)	-0.984*** (0.195)
No. of observations	1,098	1,095
R <sup>2</sup>	0.167	0.256

Significance levels: \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

Source: Navon et al., Taub Center | Data: Parents' Survey During the First COVID-19 Lockdown, Taub Center

## Passive screen time

The analysis in the previous section of the paper focused on ZScreens, which is a combination of two questionnaire items that differ by screen type. The research literature attributed the greatest harm for child development to passive screen use (Hu et al., 2020), which is closely represented by television watching (questionnaire item 1). We now ask if this form of screen use alone is correlated any differently with the independent variables. As noted above, we defined two forms of TV watching, depending on the child's age: "any TV watching" for children aged 1–2, and "TV watching a large part of the day" for those 3 years and older. These dependent variables are intended to represent the most harmful screen behaviors.

Table 3 presents logit regressions of the two TV watching behavior measures. The association between TV watching and parents' education and their stress

level are similar in direction to those reported in the previous table: higher education is associated with lower log odds ratios of watching any TV at age 1–2 and of spending a large part of the day in front of the TV for ages 3 to 6. Also consistent with results shown in Table 2, parent’s stress level is associated with higher log odds of TV watching. Noteworthy is an inexplicable difference between Arabs and Jews in TV watching: while Arab children aged 1–2 are more likely than their Jewish counterparts to watch TV, Arab children ages 3 to 6 are less likely to do so for large parts of the day.<sup>5</sup>

**Table 3. Logit results for television viewing**

	Any TV watching	TV watching for a large part of the day	Any TV watching	TV watching for a large part of the day
	Unweighted		Weighted	
	Ages 1–2	Ages 3–6	Ages 1–2	Ages 3–6
Child’s age	1.276*** (0.274)	0.199 (0.138)	1.082*** (0.388)	0.471** (0.206)
Parents’ psychological stress	0.377*** (0.134)	0.458*** (0.124)	0.269 (0.175)	0.595*** (0.175)
Income loss	-0.121 (0.263)	0.0937 (0.289)	-0.506 (0.340)	0.155 (0.403)
Parents’ education	-1.101*** (0.427)	-1.135*** (0.347)	-0.768 (0.468)	-0.933** (0.411)
Arab	1.165*** (0.339)	-1.987*** (0.402)	1.555*** (0.463)	-1.928*** (0.475)
Low income	-0.626 (0.382)	0.0655 (0.381)	-0.807 (0.551)	-0.0641 (0.541)
No. of children	-0.121 (0.108)	0.0642 (0.101)	-0.306** (0.136)	0.0492 (0.126)
Constant	-1.233* (0.711)	-3.229*** (0.862)	-0.117 (0.883)	-4.900*** (1.072)
No. of observations	368	730	368	727

Significance levels: \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

Source: Navon et al., Taub Center | Data: Parents’ Survey During the First COVID-19 Lockdown, Taub Center

5 The weighted and unweighted analyses yield generally similar results except for four coefficients (of 28) that are significant in one but not the other, although these are similar in direction.



## Parents' socioeconomic background and emotional distress

The findings presented in Tables 2 and 3 show that during the lockdown, potentially harmful screen use was more prevalent among families where the parents had lower education levels and increased with parent's stress level. In the following table (Table 4) we show further that Arab parents and parents whose income is lower than average are more likely to suffer from psychological stress than those from stronger socioeconomic groups.

**Table 4. OLS regressions of parents' psychological stress**

	Unweighted sample	Weighted sample
Income loss	0.077 (0.067)	-0.004 (0.104)
Parents' education	-0.103 (0.085)	-0.046 (0.130)
Arab	0.367*** (0.073)	0.512*** (0.111)
Low income	0.241** (0.094)	0.257* (0.151)
No. of children	-0.024 (0.024)	-0.054 (0.038)
Constant	2.521*** (0.120)	2.539*** (0.189)
No. of observations	1,098	1,095
R2	0.045	0.045

Significance levels: \* $p < 0.1$ ; \*\* $p < 0.05$ ; \*\*\* $p < 0.01$ .

Source: Navon et al., Taub Center | Data: Parents' Survey During the First COVID-19 Lockdown, Taub Center

## Summary and discussion

The main objective of this research was to study screen use by young children during the first COVID-19 lockdown in Israel. There is pervasive agreement in the research and policy literature that screen use can hinder optimal development among young children. During the lockdown, educational institutions and much economic activity were suspended, and, thus, children and many parents were confined to their homes for days on end. Under the pressure-cooker atmosphere that emerged in homes, many parents were tempted to park the kids in front of TV sets or other screens. We studied the scope of screen use by young children, aged 1 to 6, and its relationship with their parents' psychological stress, which may have risen during the lockdown. In addition, we explored socioeconomic differences in both screen use of children and parents' stress levels.

Our main finding was that children whose parents experienced higher stress levels spent, on average, more time using screen-based devices. This finding is in line with the few findings linking maternal depression with more intensive screen use by their children (Burdette et al., 2003; Madigan et al., 2019, 2020), and suggests that general distress, and not only clinically significant depression symptoms, is correlated with children's screen behavior. In addition, and expectedly, we found that psychological stress of parents is higher among Arabs and low-income families.

Another finding that is consistent with the evidence reported by previous studies on parents' socioeconomic background and their children's screen time is that children's screen use is more prevalent in the lower socioeconomic groups (Lareau, 2011; Määttä et al., 2017; Wijtzes et al., 2012). Notably, we found socioeconomic differences in the likelihood of television watching by young toddlers (ages 1-2). This finding is important because any screen-time at these ages is generally viewed as harmful (IMA, 2014; Ponti et al., 2017; WHO, 2019). We also find socioeconomic differences in intensive (most of the day) TV watching by children ages 3-6, which is also said to have detrimental consequences for child development (Foster & Watkins, 2010; McArthur et al., 2020).

Given that screen use is harmful to children's well-being and development, particularly in early childhood, the findings reported in this paper illustrate a mechanism through which the COVID pandemic, the ensuing economic crisis and the suspension of education and childcare facilities, may have hindered young children's development, as well as contributed to socioeconomic inequality.

The study is not without its limitations. One is that we do not have baseline (pre-COVID) measures of stress for these specific individuals. We therefore implicitly assume that COVID-era restrictions heightened the stress of individuals in our sample in the same way that they did in the population as a whole.

Another drawback of the study is that respondents were not identified through formal probability sampling, but rather through an internet sample fielded across a purposely diverse set of networks. As a result, they over-represent Arabs and respondents with higher education. We attempted to correct for these sampling biases by weighting the cases in our sample. Admittedly, this is a partial and incomplete solution, but given the constraints of the lockdown, this was the only way we could quickly collect such data.

Despite these limitations, the main finding that parents' emotional state is related to their children's screen use is consistent throughout all our analyses and suggests more generalizable conclusions. Clearly, emotional stress is experienced by parents under normal conditions, even though it is reasonable to assume that it increased during the COVID crisis. Thus, our finding may be valid more generally: stress hinders parent's emotional availability, and the lack of availability contributes to greater screen use among their children, which in turn may harm child development. Future research on child development, parenting, and educational stratification, in times of crisis or normalcy, should measure not only parents' socioeconomic characteristics, but also their emotional well-being.

## References

### English

- AAP (2020). [Finding Ways to Keep Children Occupied During These Challenging Times](#). American Academy of Pediatrics.
- Ben-David, N. (2021, January 3). [The COVID-19 Reality for Families with Young Children](#). The Joint.
- Burdette, H. L., Whitaker, R. C., Kahn, R. S., & Harvey-Berino, J. (2003). Association of maternal obesity and depressive symptoms with television-viewing time in low-income preschool children. *Archives of Pediatrics & Adolescent Medicine*, 157(9), 894–899.
- CBS (2020). [Labor Force Survey 2018](#). Central Bureau of Statistics.
- Christakis, D. A., Benedikt Rmirez, J. S., Ferguson, S. M., Ravinder, S., & Ramirez, J. M. (2018). [How early media exposure may affect cognitive function: A review of results from observations in humans and experiments in mice](#). *PNAS*, 115(40), 9851–9858.
- Conger, R. D., Conger, K. J., & Martin, M. J. (2010). Socioeconomic status, family processes, and individual development. *Journal of Marriage and Family*, 72(3), 685–704.
- Conger, R. D., Ge, X., Elder, G. H., Lorenz, F. O., & Simons, R. L. (1994). economic stress, coercive family process, and developmental problems of adolescents. *Child Development*, 65(2), 541–561.
- Crnik, K. A., Gaze, C., & Hoffman, C. (2005). Cumulative parenting stress across the preschool period: Relations to maternal parenting and child behaviour at age 5. *Infant and Child Development*, 14, 117–132.
- Foster, E. M., & Watkins, S. (2010). The value of reanalysis: TV viewing and attention problems. *Child Development*, 81, 368–375.
- Guryan, J., Hurst, E., & Kearney, M. (2008). [Parental education and parental time with children](#). *Journal of Economic Perspectives*, 22(3), 23–46.
- Hill, D., Ameenuddin, N., Chassiakos, Y. R., Cross, C., Radesky, J. S., Hutchinson, J. W., Boyd, R., Mendelson, R., Moreno, M., Smith, J., & Swanson, W. S. (2016). [Media and young minds](#). *Pediatrics*, 138(5).
- Hish, A. J., Wood, C. T., Howard, J. B., Flower, K. B., Yin, H. S., Rothman, R. L., Delamater, A. M., Sanders, L. M., Bian, A., Schildcrout, J. S., & Perrin, E. M. (2020). Infant television watching predicts toddler television watching in a low-income population. *Academic Pediatrics*.
- Hu, B. Y., Johnson, G. K., Teo, T., & Wu, Z. (2020). Relationship between screen time and Chinese children's cognitive and social development. *Journal of Research in Childhood Education*, 34(2), 183–207.

- Hutton, J. S., Dudley, J., Horowitz-Kraus, T., Dewitt, T., & Holland, S. K. (2020). Associations between screen-based media use and brain white matter integrity in preschool-aged children. *JAMA Pediatrics*, *174*(1), 1–10.
- Kalil, A., Ryan, R., & Corey, M. (2012). Diverging destinies: Maternal education and the developmental gradient in time with children. *Demography*, *49*(4), 1361–1383.
- Kalil, A., & Ryan, R. (2020). Parenting practices and socioeconomic gaps in childhood outcomes. *Future of Children*, *30*(1), 29–54.
- Kalil, A., Ziol-Guest, K. M., Ryan, R. M., & Markowitz, A. J. (2016). [Changes in income-based gaps in parent activities with young children from 1988 to 2012](#). *AERA Open*, *2*(3), 1–17.
- Lampard, A. M., Jurkowski, J. M., & Davison, K. K. (2013). Social-Cognitive predictors of low-income parents' restriction of screen time among preschool-aged children. *Health Education and Behavior*, *40*(5), 526–530.
- Lareau, A. (2011). *Unequal childhoods: Class, race, and family life*. University of California Press.
- Leinonen, J. A., Solantaus, T. S., & Punamäki, R. L. (2003). Parental mental health and children's adjustment: The quality of marital interaction and parenting as mediating factors. *Journal of Child Psychology and Psychiatry*, *44*(2), 227–241.
- Määttä, S., Kaukonen, R., Vepsäläinen, H., Lehto, E., Ylönen, A., Ray, C., Erkkola, M., & Roos, E. (2017). [The mediating role of the home environment in relation to parental educational level and preschool children's screen time: A cross-sectional study](#). *BMC Public Health*, *17*(1), 1–11.
- Madigan, S., Browne, D., Racine, N., Mori, C., & Tough, S. (2019). Association between screen time and children's performance on a developmental screening test. *JAMA Pediatrics*, *173*(3), 244–250.
- Madigan, S., McArthur, B. A., Anhorn, C., Eirich, R., & Christakis, D. A. (2020). Associations between screen use and child language skills: A systematic review and meta-analysis. *JAMA Pediatrics*, *174*(7), 665–675.
- McArthur, B. A., Browne, D., Tough, S., & Madigan, S. (2020). Trajectories of screen use during early childhood: Predictors and associated behavior and learning outcomes. *Computers in Human Behavior*, *113*, 106501.
- Mistry, R. S., Vandewater, E. A., Huston, A. C., & McLoyd, V. C. (2002). Economic well-being and children's social adjustment: The role of family process in an ethnically diverse low-income sample. *Child Development*, *73*(3), 935–951.
- Pagani, L. S., Lévesque-Seck, F., & Fitzpatrick, C. (2016). Prospective associations between televiewing at toddlerhood and later self-reported social impairment at middle school in a Canadian longitudinal cohort born in 1997/1998. *Psychological Medicine*, *46*(16), 3329.

- Ponti, M., Bélanger, S., Grimes, R., Heard, J., Johnson, M., Moreau, E., Norris, M., Shaw, A., Stanwick, R., Van Lankveld, J., & Williams, R. (2017). [Screen time and young children: Promoting health and development in a digital world](#). *Paediatrics & Child Health, 22*(8), 461–477.
- Puff, J., & Renk, K. (2014). Relationships among parents' economic stress, parenting, and young children's behavior problems. *Child Psychiatry and Human Development, 45*(6), 712–727.
- Radesky, J. S., Silverstein, M., Zuckerman, B., & Christakis, D. A. (2014). Infant self-regulation and early childhood media exposure. *Pediatrics, 133*(5), e1172–e1178.
- Ribner, A., Fitzpatrick, C., & Blair, C. (2017). [Family socioeconomic status moderates associations between television viewing and school readiness skills](#). *Journal of Developmental and Behavioral Pediatrics, 38*(3), 233–239.
- Richert, R. A., Robb, M. B., Fender, J. G., & Wartella, E. (2010). Word learning from baby videos. *Archives of Pediatrics & Adolescent Medicine, 164*(5), 432–437.
- Scaramella, L. V., Sohr-Preston, S. L., Callahan, K. L., & Mirabile, S. P. (2008). A test of the Family Stress Model on toddler-aged children's adjustment among Hurricane Katrina impacted and nonimpacted low-income families. *Journal of Clinical Child & Adolescent Psychology, 37*(3), 530–541.
- Suglia, S. F., Duarte, C. S., Chambers, E. C., & Boynton-Jarrett, R. (2013). Social and behavioral risk factors for obesity in early childhood. *Journal of Developmental & Behavioral Pediatrics, 34*(8), 549–556.
- Taveras, E. M., Gillman, M. W., Kleinman, K. P., Rich-Edwards, J. W., & Rifas-Shiman, S. L. (2013). Reducing racial/ethnic disparities in childhood obesity: The role of early life risk factors. *JAMA Pediatrics, 167*(8), 731–738.
- Tomopoulos, S., Dreyer, B. P., Berkule, S., Fierman, A. H., Brockmeyer, C., & Mendelsohn, A. L. (2010). Infant media exposure and toddler development. *Archives of Pediatrics & Adolescent Medicine, 164*(12), 1105–1111.
- Vanderloo, L. M., Carsley, S., Aglipay, M., Cost, K. T., Maguire, J., & Birken, C. S. (2020). Applying harm reduction principles to address screen time in young children amidst the COVID-19 pandemic. *Journal of Developmental & Behavioral Pediatrics, 41*(5), 335–336.
- Vaknin, D. (2020). [Early Childhood Education and Care in Israel Compared to the OECD: Enrollment Rates, Employment Rates of Mothers, Quality Indices, and Future Achievement](#). Taub Center for Social Policy Studies in Israel.
- Wen, L. M., Baur, L. A., Rissel, C., Xu, H., & Simpson, J. M. (2014). [Correlates of body mass index and overweight and obesity of children aged 2 years: Findings from the healthy beginnings trial](#). *Obesity, 22*(7), 1723–1730.

- Wijtzes, A. I., Jansen, W., Kamphuis, C. B., Jaddoe, V. W., Moll, H. A., Tiemeier, H., Verhulst, F. C., Hofman, A., Mackenbach, J. P., & Raat, H. (2012). Increased risk of exceeding entertainment-media guidelines in preschool children from low socioeconomic background: The Generation R Study. *Preventive Medicine, 55*(4), 325–329.
- WHO (2019). [\*Guidelines on physical activity, sedentary behaviour and sleep\*](#). World Health Organization.
- Yang-Huang, J., Van Grieken, A., Moll, H. A., Jaddoe, V. W. V., Wijtzes, A. I., & Raat, H. (2017). Socioeconomic differences in children's television viewing trajectory: A population-based prospective cohort study. *PLoS ONE, 12*(12), e0188363.
- Zimmerman, F. J., & Christakis, D. A. (2005). Children's television viewing and cognitive outcomes. *Archives of Pediatrics & Adolescent Medicine, 159*(7), 619–625.
- Zontag, N., Epstein, G., & Weiss A. (2020). [The Israeli labor market under the Coronavirus crisis: An overview](#). In A. Weiss, (ed.) *State of the Nation Report: Society, Economy and Policy in Israel 2020* (pp. 191–219). Taub Center for Social Policy Studies in Israel.

### Hebrew

- IMA (2014). [Media exposure prevention in infants under 2 years of age](#). Israeli Medical Association.
- Man, Y. (2020). *Working parents during COVID-19*. Berl Katznelson Center.

## Appendix

**Appendix Table 1. OLS regressions of screen use by child's age group**

	Unweighted			Weighted		
	Ages 1–2	Ages 3–4	Ages 5–6	Ages 1–2	Ages 3–4	Ages 5–6
Child's age <sup>#</sup>	0.418*** (0.100)	0.171** (0.084)	0.342** (0.149)	0.278** (0.139)	0.268** (0.128)	0.415** (0.204)
Parents' psychological stress	0.147*** (0.045)	0.176*** (0.039)	0.0221 (0.058)	0.151** (0.066)	0.234*** (0.070)	0.015 (0.097)
Income loss	0.033 (0.096)	-0.133 (0.088)	0.011 (0.135)	0.028 (0.119)	0.004 (0.126)	-0.154 (0.188)
Parents' education	-0.264** (0.128)	-0.200* (0.113)	-0.389** (0.151)	-0.319* (0.182)	-0.248 (0.186)	-0.610** (0.237)
Arab	0.133 (0.108)	-0.231** (0.097)	-0.503*** (0.143)	0.078 (0.159)	-0.267* (0.159)	-0.999*** (0.189)
Low income	-0.206 (0.136)	-0.114 (0.121)	0.257 (0.185)	-0.207 (0.214)	-0.124 (0.174)	0.231 (0.274)
No. of children	0.033 (0.038)	-0.036 (0.030)	0.042 (0.048)	-0.040 (0.047)	-0.075* (0.045)	0.084 (0.082)
Constant	-1.021*** (0.211)	0.048 (0.191)	0.691** (0.296)	-0.646*** (0.230)	-0.074 (0.308)	1.145** (0.542)
No. of observations	368	504	226	368	502	225
R <sup>2</sup>	0.115	0.062	0.101	0.087	0.109	0.230

Note: # This is a dummy variable indicating that the child is older within the age range. For example, in the 1–2 age category, the dummy variable is coded 1 for those who were 2 rather than 1.

Significance levels: \*p < 0.1; \*\*p < 0.05; \*\*\*p < 0.01.

Source: Navon et al., Taub Center | Data: Parents' Survey During the First COVID-19 Lockdown, Taub Center