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## Parenting to Reduce Child Screen Time: A Feasibility Pilot Study

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### Abstract

**Objective**—Excessive screen time has been associated with a multitude of child health problems. This pilot study examined the feasibility and preliminary outcome of a novel one-session intervention designed to help parents reduce their child’s screen time.

**Method**—Thirty-nine parents of 5- to 12-year old children were randomized to the intervention (a combined didactics and hands-on approach focused on technology-specific parenting) or wait list control group.

**Result**—The findings suggested that a sample could be recruited in a reasonable time (6 weeks) at a reasonable cost, randomized, and retained at six weeks post-intervention. Preliminary evidence suggested the intervention, which was implemented with fidelity, was associated with change in technology-specific parenting and one of two measures of child screen time. Parents reported satisfaction with the intervention and confidence in managing their child’s screen time.

**Conclusions**—The results of this pilot study suggest that this one-session intervention is a promising approach to managing child screen time.

### Keywords

Screen time; Parenting; Feasibility Pilot

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In only a few years, the use of mobile technology (e.g., smartphones, tablets, e-readers) in the United States has changed dramatically. Recent reports from the Pew Research Center found that 68% of Americans own a smartphone.<sup>1</sup> Tablet use especially is increasing, as the number of households with a tablet device rose from 4% to 45% between 2010 and 2015.<sup>1</sup> Parents in particular appear to be adopting these new forms of technology at a rapid pace; among parents with a minor living in the home, tablet ownership increased from 26% in 2012 to 50% in 2013.<sup>2</sup> Despite the increasing adoption rates of mobile technology, parents also acknowledge some uncertainty regarding how best to navigate the incorporation of multiple mobile devices into their children’s daily lives. For example, Ortiz, Green, and Lim<sup>3</sup> found that parents viewed current technology as important to their child’s academic

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and future job success, whereas Wartella, Rideout, Lauricella, and Connell<sup>4</sup> reported that parents sometimes used screen time as a reward, but also believed digital technology would have a negative impact on their child's behavior, social skills, sleep, and physical activity. Although the nature of parental beliefs about technology vary across demographic differences, particularly age of the child,<sup>5, 6</sup> these findings serve to highlight the confusion and concern parents face as they grapple with modern technology use in the home.

In spite of the potential benefits of technology, past research suggests that too much screen time may be associated with a host of negative outcomes for children. Research focusing on excessive screen time in childhood (e.g., television, computers, video game consoles etc.) has revealed links with physical and behavioral health problems, including increased body mass index (BMI) and academic difficulties.<sup>7, 8</sup> Child screen time is also associated with a host of mental health problems. For example, although little research to date has examined the link between internalizing symptoms and screen time in childhood, a few studies suggest that increased screen time is associated with increased depressive symptoms and overall psychological difficulties.<sup>9, 10</sup> In contrast, a broad literature has revealed consistent links between children's exposure to violent media and increases in aggressive behavior.<sup>11, 12</sup>

Research suggests that parents play an important role in their child's access to screen time. As primary caregivers, parents have the opportunity to establish behavioral control in the home, often in the form of monitoring and rule setting.<sup>13</sup> Indeed, interventions aimed at improving general parenting strategies in the home have been successful in increasing the desired behavior of a child.<sup>14, 15</sup> Consistent with this perspective, some research suggests parental use of rules specifically around technology (e.g., television, smartphones, tablets, and computers) use are associated with reduced screen time for children (i.e., television, video games, & computer/internet use).<sup>16</sup>

When examining the role of general and technology-specific parenting strategies in their child's screen time, recent research suggests that general parenting strategies assist parents in managing their pre-adolescent age children's screen time indirectly by improving technology-specific parenting strategies.<sup>17</sup> In the proposed study we focus on technology-specific parenting strategies, but within the context of general parenting (e.g., positive parenting, setting limits), in order to provide an effective screen time intervention.

One potential solution to parenting difficulties around child screen time may lie in the use of parental controls, which are often found in the form of additional settings and password protections for various technological devices (e.g., television, computers, smartphones, etc.). Although little research to date has examined the role of parental control use as a predictor of child screen time, one recent study suggests that use of these technology-specific parenting practices is associated with less child screen time for early and middle childhood samples.<sup>18</sup> Unfortunately, the use of parental controls in the home may be limited by the dissemination to parents of inconsistent or confusing information about these options.<sup>19</sup>

A recent meta-analysis<sup>20</sup> examining 29 intervention studies concluded that on average interventions had a small, but significant, reduction in children's screen time (ES = .148). Only 8 of the 29 interventions occurred in the home as approximately one-half occurred in

schools and were child-focused. Importantly, few screen time interventions to date have accommodated mobile devices such as smartphones or tablets in their measurement of screen time or their approach to its management. However, the majority of media devices, including stationary and mobile, include internal parental control and/or password features of their own. We propose that the use of parenting strategies, primarily technology-specific within the context of general parenting, and knowledge about utilizing parenting features on these devices will allow parents to successfully reduce their child's screen time without the need for additional hardware or financial burden. In the intervention examined in the current study we provide parents with information about how to manage their child's use of media devices in order to reduce overall child screen time.

Our novel intervention had several unique features that should enable it to be not only effective but efficient. First, and of importance, the intervention was based on evidence-based principles of parenting demonstrated over the past 50 years to effectively change child behavior.<sup>21</sup> Second, it included a hands-on component, which allowed individual problems of parents to be addressed. Third, in order to maximize dissemination, the intervention was one session, which should meet the needs of busy parents who might not have sufficient availability to attend multiple sessions for multiple weeks. Fourth, the intervention was designed so that it could be updated in order to adapt to new media devices.

An additional advantage in the present study and, in contrast to the existing literature, is our inclusion of two outcome measures of screen time: (1) parent appraisal of amount of child screen time daily, the most frequently employed measure among screen time interventions<sup>22</sup>; and (2) parent daily diaries of child screen time. Consistent findings across the two outcomes will increase confidence in the findings whereas inconsistent findings will provide important information for future research.

## Goals and Expectations of Current Study

The goals of this study were to examine the feasibility of recruiting, retaining, and implementing with fidelity and therapist competence of a one-session intervention for parents to reduce screen time; examine the feasibility of parents collecting daily diary screen time for a week and compare this method to parent appraisal of daily screen time, the standard in the field; examine preliminary data on changes in technology-specific parenting and child screen time; and examine parent satisfaction with the workshop and their sense of confidence in utilizing skills learned in the workshop to reduce child screen time. We expected that we could recruit a pilot sample ( $n = 40$ ) in six weeks, randomize, and retain at least 80% of our sample at our six-week post-assessment. In addition, we expected the following: (a) The intervention could be implemented with fidelity and implemented competently by the group leader; (b) parents in the intervention group would demonstrate larger pre- to post-treatment mean changes on technology-specific parenting and both measures of youth screen time than the wait list group; (c) parents would be satisfied with what they learned in the workshop; and (d) parents would report that, as a result of the workshop, they have the skills to reduce child screen time and would implement the skills at home.

It is important to note that the current investigation was a pilot study; therefore, the goals are modest (e.g., Can a sample be recruited? Is it feasible to collect daily screen time data? Can the intervention be implemented with fidelity?), and the expected outcomes are examined through the sample data analytic procedures (e.g., effect sizes). The objective was to provide pilot data to ascertain whether a full-scale evaluation of the intervention was warranted.

## Method

### Participants

A total of 39 families with children between the ages of 5 and 12 years old participated in the study. Eligibility criteria were that the parent had at least 50% legal custody of a child in the 5–12 age range and the child lived with her/him at least 5 days per week. The number of families recruited and retained, as well as their demographic characteristics, are presented in the Results.

### Measures

**Demographic information**—Parents responded to demographic questions about themselves, their families, and the target child.

**Fidelity and Leader Competence**—The delivery of each of 33 components of the one-hour instructional period by the group leader was rated live by two volunteer observers as follows: 0 = not covered; 1 = covered but minimally adequate; or 2 = covered well. A score of 1 or 2 was required for fidelity and a score of 2 was required for therapist competence in implementing the intervention. A score of one reflected an objective measure that the material was discussed (i.e., not overlooked or missing in the intervention), whereas a score of 2 reflected a subjective measure by observers that the material that was clear, understandable, and engaging for the participants. Observers were graduate level clinicians and advanced undergraduate research assistants trained in both general parenting interventions and the intervention tested. These observers also provided assistance in the hands-on workshop. The lead author served as therapist for this pilot intervention.

**Technology-related Parenting Strategies (TPS)**.<sup>18</sup>—Parents responded to eight questions that described rules (e.g., “limits on the amount of time,” and “limits on the type of content allowed”) and enforcement strategies (e.g., “Consequences if the child accesses when not allowed,” and “Passwords on these devices”) they potentially use to exert behavioral control over their child’s screen time in the home. For each item, parents rated how true it was for them in the last month on a Likert scale ranging from 0 (*not true*) to 2 (*very true*). Higher scores reflect more behavioral control of child technology use. The TPS has demonstrated excellent internal consistency ( $\alpha = .87$ ) and to relate inversely to pre-teens’ screen time in initial validation studies<sup>18</sup> and reliability in the current sample was in the borderline acceptable range ( $\alpha = .68$ ).

**Parental appraisal of daily screen time**—Parents were asked two questions regarding their child’s screen time. First, they were asked “Now thinking about [target child]’s typical activities, on a typical *weekday* how much time does [target child] spend doing each of the

following at home?” Then, parents were asked the same question about their child’s weekend. Parents responded with the number of daily hours and/or minutes their child engaged in each of the following activities: (1) Watching TV or DVDs, (2) using the computer, (3) playing video games on a console game player (e.g., Xbox, Playstation, Wii), (4) playing on a handheld game console (e.g., Gameboy, PSP, or DS), (5) using a tablet computer (e.g., iPad), and (6) using a smart phone for things like playing games and surfing the Internet (excluding time spent talking on the phone). A daily use (averaged across the weekend and weekday) was calculated by device and then summed across all devices. This sum was used as our interest was in *total* screen time rather than time in front of any specific device. This method is similar to those used in industry reports.<sup>8</sup>

**Diary Reports**—Diaries were completed each evening for seven days after a parent completed other pre-assessment measures and for seven additional days after completing other post-assessment measures. Utilizing a time-based, fixed-interval diary report,<sup>23</sup> parents were asked to report the total number of hours and/or minutes their child engaged in each of the same six activities (e.g., watching TV or DVDs) in the prior paragraph at the end of each day. Parents were asked to provide a cellular phone number or email address in order to receive text message prompts for diary reports. Parents without a cellular phone (n = 2) received daily telephone calls at home each evening for the duration of the diary periods. The daily text message/telephone call directed parents to an online survey where they completed self-report items of their child’s screen time behavior. Two parents without internet access were provided paper copies of the diary reports. In addition, during the baseline screening period, parents were provided with detailed instructions for these diary reports and were contacted by the researcher prior to the seven day period in order to ensure the participant understood and was fully trained on the diary report method.

**Parent Satisfaction and Confidence in Skill Implementation**—Six questions addressed parent satisfaction with the workshop. The topics assessed were: (1) Teaching effectiveness; (2) quality of the workshop; (3) learning by participant; (4) knowledge of instructor; (5) helpfulness of workshop; and (6) usefulness of each workshop component. Each item was completed on a 1 to 5-point scale with a score of 5 indicating more satisfaction. Parent confidence in implementing skills learned in the workshop was assessed by two questions: (1) Parent has skills to implement controls for child screen time (rated on a 1 to 5 scale); and (2) how likely is parent to implement controls as a result of workshop (less, some, more).

## Procedure

All procedures were approved by the university IRB.

**Advertisement**—Participants were recruited through various news sources, including local newspapers, flyers, and digital platforms (e.g., “Front-Porch Forum,” Facebook) (see Results).

**Screening**—Advertising directed parents to contact project staff via phone or through a website, at which point participants were screened by telephone for eligibility.

**Assessment and randomization**—Eligible participants were provided with a unique identification code used to access an online consent form and baseline measures. Participants were contacted after completing the baseline survey and informed about the randomization process, as well as the dates of the workshop for both intervention and waitlist groups. One week prior to the intervention, parents were randomly assigned to the wait list or intervention condition.

**Post-assessments**—Participants in the intervention condition completed the intervention and, after six weeks, the post-intervention measures. Participants in the waitlist (WL) condition completed questionnaires after a “wait period” at the six-week mark, concurrent with the intervention condition’s post-questionnaires and just prior to participating in the intervention.

## Intervention

The intervention consisted of a one-hour instructional period followed by a one-hour hands-on workshop. Three separate workshop dates (Monday, Wednesday, and Friday) were offered in order to accommodate parent schedules (number of families per group = 7, 8, & 8). All interventions were provided and directed by the lead author, with two trained graduate or undergraduate assistants also in attendance to provide assistance during the hands-on workshop. More than one parent per family could attend the workshop; however, data were collected from only one parent from each family.

The instructional period first introduced psychoeducation about the positive and negative effects of children’s media use, highlighting the importance of media management in the home. Next, parenting skills were discussed as they pertained to technology-specific parenting strategies. These strategies included setting consistent boundaries around media use, providing effective instructions, and positive reinforcement. Additional considerations were provided to parents based on the unique concerns around media use, such as media use with multiple children in the home, when children visit with other family members/friends, and remaining consistent in parenting practices when balancing educational and entertainment use of media. Finally, parents were provided with specific information about setting parental controls and passwords for multiple categories of devices, including video game consoles, smartphones/tablets, and computers. Parents also were given tips for various challenges in parenting that may occur for each of these devices (e.g., sharing device use among children) utilizing parenting skills rooted in the parent training.<sup>21</sup> This instructional period was designed to provide non-judgmental, positive feedback for parents in order to help them feel more empowered to place limits on devices at home.

The hands-on workshop occurred directly after the instructional period and allowed parents an opportunity to ask questions specific to their household challenges and to work one-on-one with instructional assistants to address any additional concerns. Parents were also advised to bring in devices they would like to place limits on, such as tablets or smartphones, so that assistants in the workshop could teach them the process of enabling passwords and parental controls. Finally, parents were provided with a resource guide that included instructions on how to set parental controls and passwords for all media devices on

the market today. Parents were encouraged to contact the lead author with additional questions following the intervention.

Participants in the WL condition waited six weeks to participate in the intervention. All other aspects of the intervention offered to this group were consistent with the intervention condition.

### **Data Analytic Approach**

We utilized similar procedures to those employed in previous feasibility pilot randomized control trials.<sup>24</sup> After reporting on how the program was designed and the preliminary testing that was conducted, we first examined the recruitment and retention rates and the baseline characteristics of the sample. Second, we examine the feasibility of collecting daily diary data by examining the number of days parents reported data pre-treatment and post-treatment. We also compared the daily hours of screen time collected through daily diaries to the more typical measure of parent appraisal of average daily screen time. Although the data for the two measures were collected at different time points at both the pre- and post-assessment, we examined the correlation between the two measures at both pre and post. Third, we present data on the fidelity of the implementation of the intervention and therapist competence in implementing the intervention. Fourth, we examined changes from pre- to post-assessment on technology-specific parenting, parent daily diaries of youth screen time, and parent appraisal of average youth screen time. Because of the pilot nature of the study, analyses were conducted by examining within group effect sizes (ES) (e.g., treatment group pre- to post-treatment change divided by the pooled standard deviation at pre and post) and between group ESs as recommended by Morris<sup>25</sup> (i.e., mean change of treatment group pre- to post-treatment minus mean change of WL group pre- to post-treatment divided by the pooled standard deviation at pre). Effect Sizes (.20 – .49 small, .50 – .79 medium, & .80 large) provide information about the relative magnitude of the intervention effect, and are an appropriate statistic for pilot studies as they allow comparisons within and across investigations,<sup>24</sup> for more information). Fifth, we examined parent satisfaction with the workshop and their confidence in implementing skills learned in the workshop to reduce child screen time.

## **Results**

### **Program design**

Program design consisted first of a literature review incorporating the current research on parent training skills, parental media mediation, and parenting efficacy. This review also included an exhaustive review of current consumer technology and guidelines provided by researchers and hardware engineers for managing and using these devices. This information was used in designing the instructional period.

### **Preliminary testing**

The intervention was piloted three times with the following groups: (1) Parent participation recruited through local schools; (2) Psychology Department faculty; and (3) Psychology Department graduate students. Initial pilot testing with families was conducted to gather

qualitative data on difficulties with technology and parenting around these difficulties. Feedback from faculty and graduate students was used to improve the language of the instructional material and to ensure that parenting skills reflected the current literature and clinical practice accurately.

### Recruitment and Retention

Figure 1 presents the flow chart for recruitment and retention. Of the 52 participants screened, 39 (75%) completed the pre-assessment and were randomized. Of the 20 randomized to the Intervention, 17 (85%) attended the session and completed the post-assessment. Of the 19 randomized to the WL, 15 (77%) completed the post-assessment. Across the two groups, 82% of participants completed the 6-week post-assessment. Thirty-nine participants were recruited over a six-week period from community newspapers (41%), online (e.g., Facebook) (46%), flyers (8%), and word of mouth (5%). \$2,848.11 was spent on advertising the project. As shown in Table 1, parents consisted largely of mothers and were predominately Caucasian, relatively well educated, and married. Children were predominately male and averaged approximately 9 years of age. Family income ranged from less than \$30,000 to over \$90,000. Treatment conditions did not significantly differ on any of the demographic variables.

### Daily Diary of Youth Screen Time

In order to examine if parents would complete a daily diary of their child's screen time, we examined the number of days completed at the pre- and post-assessments. Across the two groups, at the pre-assessment 7.5%, 7.5%, 18%, and 67% completed 0, 1–2, 3–5, and 6–7 daily reports, respectively. At the post-assessment 3%, 6%, 25%, and 66% completed 0, 1–2, 3–5, and 6–7 daily reports, respectively. The percentages were similar across the Intervention and WL groups. In addition, the daily diary total screen time scores correlated with the estimated screen time scores at the baseline ( $r(31) = .57, p < .001$ ) and post ( $r(28) = .68, p < .001$ ) assessments. Of note, however, mean diary estimates were higher than parental appraisal of screen times at both pre- and post-assessment for the Intervention group and at pre-assessment for the WL group.

### Fidelity and Therapist Competence

The fidelity of and therapist competence in implementing the intervention in each of the three workshops was rated by two observers. The fidelity ratings indicated 100% of the components were covered with 98.8% of them “covered well” (i.e., competently). Agreement between observers was 97% or higher in all cases.

### Parenting and Youth Screen Time

Table 2 presents the pre- and post-assessment means and within group effect sizes (Cohen's *d*) for the Intervention and WL groups, as well as the between group effect sizes. The within group ES was greater for the Intervention group than the WL group for technology-specific parenting (.76 vs .52) and parent appraisal of average daily screen time (.51 vs .26). The within group ES was in the medium range for both groups for parenting whereas for screen time the ES was in the medium and small range for the Intervention and WL groups,



respectively. In contrast to these two measures, parent reported daily diary screen time did not change from pre- to post-treatment for either group. When between group ESs were examined, the intervention group had a larger effect than the WL group for technology-specific parenting and parent appraisal of youth screen time (both ESs in the medium range), but not for daily diary screen time. It should be noted that the two measures of screen time yielded substantially different means, particularly in the intervention group (daily screen time = 2.37 hours; appraised screen time = 4.36 hours).

### **Consumer Satisfaction with Workshop and Parent Sense of Competence**

Parent satisfaction with the workshop is reported in Table 3 in items 1–6. In order to increase the sample size, we report the mean for 37 participants: 15 in the Intervention group and 22 who attended the workshop after the wait period or called about the study after the deadline but attended the workshop with WL participants. The results indicate that the teaching effectiveness, overall quality, amount of learning, instructor's knowledge, helpfulness of topics covered, and usefulness of both workshop components were all rated highly (i.e., between 4.0 and 5.0). Furthermore, in terms of competence, parents believed they had the tools to implement controls for child screen time (item 7), and 95% of them had done so or were likely to do so (item 8).

## **Discussion**

Upon conclusion of the recent symposium, *Growing Up Digital: Media Research Symposium*, the Academy of American Pediatrics issued an update to their agenda and goals for setting recommendations and shaping research on children's media use.<sup>26</sup> The design and implementation of this pilot intervention is a response to their call for more focused support to equip parents to better manage their children's screen time. The purpose of this study was to examine the feasibility and preliminary outcome data for a novel one-session intervention to help parents monitor and control their child's screen time, a procedure which has the potential to limit the access children have to harmful media exposure.<sup>17</sup>

The results indicate that 52 parents responded to the recruitment ad and 39 (75%) participated. Our goal was 40 parents. Our sample suggests that child screen time use is a perceived problem and that parents can be recruited in a reasonable time for a reasonable cost. Randomization and retention of parents also occurred successfully. In addition, preliminary outcome data based on effect sizes suggest that technology-specific parenting and one measure of youth screen time demonstrate change with the intervention relative to a control condition. Furthermore, a measure of both fidelity and therapist competence in program implementation demonstrated that the intervention was delivered as designed, received positive evaluations from participating parents, and resulted in them having confidence in implementing and changing their child's screen time.

Use of screen time has become an increasingly recognized and studied problem.<sup>24</sup> High levels of screen time are associated with a variety of health concerns, particularly through risk factors associated with excessive sedentary behavior (e.g., weight gain, unhealthy snacking)<sup>25</sup> and exposure to violent or otherwise inappropriate content.<sup>13</sup> Although recent increases in interventions designed to reduce youth screen time is encouraging,<sup>21, 29</sup> to date

the majority of these interventions have not addressed the rapidly-changing technological landscape and may be difficult to sustain. Indeed, a recent review of considerations for ehealth pediatric interventions highlighted a need for programs in this area to place more emphasis on the “shelf life” of their implementation,<sup>30</sup> and in a recent review of current screen time interventions Buchanan and colleagues<sup>29</sup> highlighted a dearth of programs that incorporate mobile media devices such as tablets and smartphones. The intervention examined in the current study was not only brief and developed from evidence-based principles, but allowed for flexibility to incorporate use of all media devices, both stationary and mobile, in order to remain relevant to the needs of families and the shifting patterns of media use by children. Thus, the brief nature of this intervention allows for continual updating and incorporation of new devices as the technology children use continues to advance.

Beyond being implemented in one two-hour session, the intervention had two components (a presentation and a hands-on assistance), both of which were rated highly by participants. These findings suggest the importance of providing parents not only with didactic material about parenting around technology *but* also individual assistance with problems encountered with technology. Indeed, recent evidence suggests that parents’ difficulties with media use, and the beliefs associated with these difficulties, may directly impact their ability to manage their children’s media usage.<sup>19, 31</sup>

Of importance, the findings suggest that the intervention appears to be effective. Specifically, both technology-specific parenting and the most commonly used measure of child screen time (parent appraisal of screen use over one week) had larger effect sizes in the intervention than wait list group. Of relevance, the effect size for parent appraised screen time was *substantially* higher than the average effect size (.148) reported in the Maniccia et al.<sup>21</sup> meta-analysis. Furthermore, parents reported high levels of satisfaction with the intervention and confidence in reducing their child’s screen time. The promising results of this feasibility pilot study call for a full-scale outcome investigation.

Finally, our findings suggest that how screen time is assessed may be important in determining the amount of child screen time and intervention outcome. In particular, parent appraisal, but not parent daily diaries, resulted in a major effect size difference for the intervention versus wait list groups. A daily diary may be less susceptible to parent bias; however, these data require substantial programming (e.g., reminders) and even then, in the current study a substantial minority failed to provide data across 30% of the days of data collection. However, it is important to note that the parent appraisal of screen time and the daily diary were collected during different weeks, which may account for the discrepant findings. Furthermore, although collected at different times at both pre- and post-assessments, the two measures were significantly correlated ( $r = .57$  &  $.68$  at pre & post, respectively), suggesting that the rank ordering of appraisals and daily diaries by parents were at least somewhat similar. This suggests some congruence between the parent reports on measures. Future research needs to carefully consider how screen time is assessed and, when multiple methods are utilized, collect data in the same time interval.

The current study had both strengths and weaknesses. In terms of strengths, it employed a small randomized control design to evaluate the pilot intervention. Inclusion of a wait list control group was particularly important as this group changed without intervention from pre to post assessment on both technology-specific parenting and parental appraisal of child screen time. This suggests that repeated assessments themselves may have led to parents beginning to implement controls around screen time. Alternately, the passage of time may have accounted for the wait list group changes; however, as this was only six weeks, this explanation seems less likely. The take-away message is that with the current measures for screen time and parenting around screen time, inclusion of a control group is imperative. Second, the intervention required minimum time on the part of parents and the intervention leader. Third, the study conducted the post-assessment after a 6-week period, allowing parents to implement the skills they had learned. In terms of weaknesses, it is important to point out that this was a feasibility pilot study. There was not a sufficient sample size to conduct rigorous statistical analyses or to examine moderators (e.g., age of child). In addition, it is important to note that the developer of the program was the individual who implemented it. Future research should determine if other individuals who are less invested and skilled in implementing the program can achieve the same levels of fidelity, competence, and outcomes. Third, as has been noted, the two assessments of screen time were conducted at different time points, limiting the conclusions about the differential impact of the intervention on these two outcomes. Fourth, although technology-specific parenting strategies were assessed, media use problems were not assessed. Consequently, it was not possible to determine why a low score on technology parenting may have occurred (e.g., parent failure to use the parenting strategies or a child not having access to a particular device.) Future research will benefit from examining the impact of this intervention at the device level (e.g., whether parents that desire changes in their child's smartphone use but not television use were successful as a result of the intervention). Fifth, the one session intervention is likely most effective with parents who are experiencing mild to moderate screen time issues with their child. Future work needs to examine different populations (e.g., families with severe screen time issues or child problem behaviors beyond screen time) to determine the generality of the intervention's effects.

In terms of clinical implications, the results of this study are promising in that parents are sufficiently concerned about child screen time to participate in a brief intervention, can learn technology-specific skills, report reductions on one indicator of child screen time, and are both satisfied with and empowered by the program. Given the substantial links between excessive media use and physical<sup>28</sup> and mental<sup>11</sup> health challenges, implementation of brief and cost-effective screen time interventions may serve to reduce these risks while providing large-scale dissemination not feasible with system-focused or multi-session intervention efforts. It is important to find a balance between dissemination and efficacy, however, and although research with clinical disorders has demonstrated that a one-session intervention can be effective,<sup>32</sup> consideration should be given to either enhancing the number of intervention sessions or providing a booster. In addition, as technology continues to advance, updates to this intervention will be needed. Nevertheless, currently the primary research implication is the need for a full-scale evaluation of the intervention with careful consideration of outcome measures and inclusion of long-term follow-up data. The present

findings suggest a promising new intervention for the reduction of child screen time that will benefit from further study.

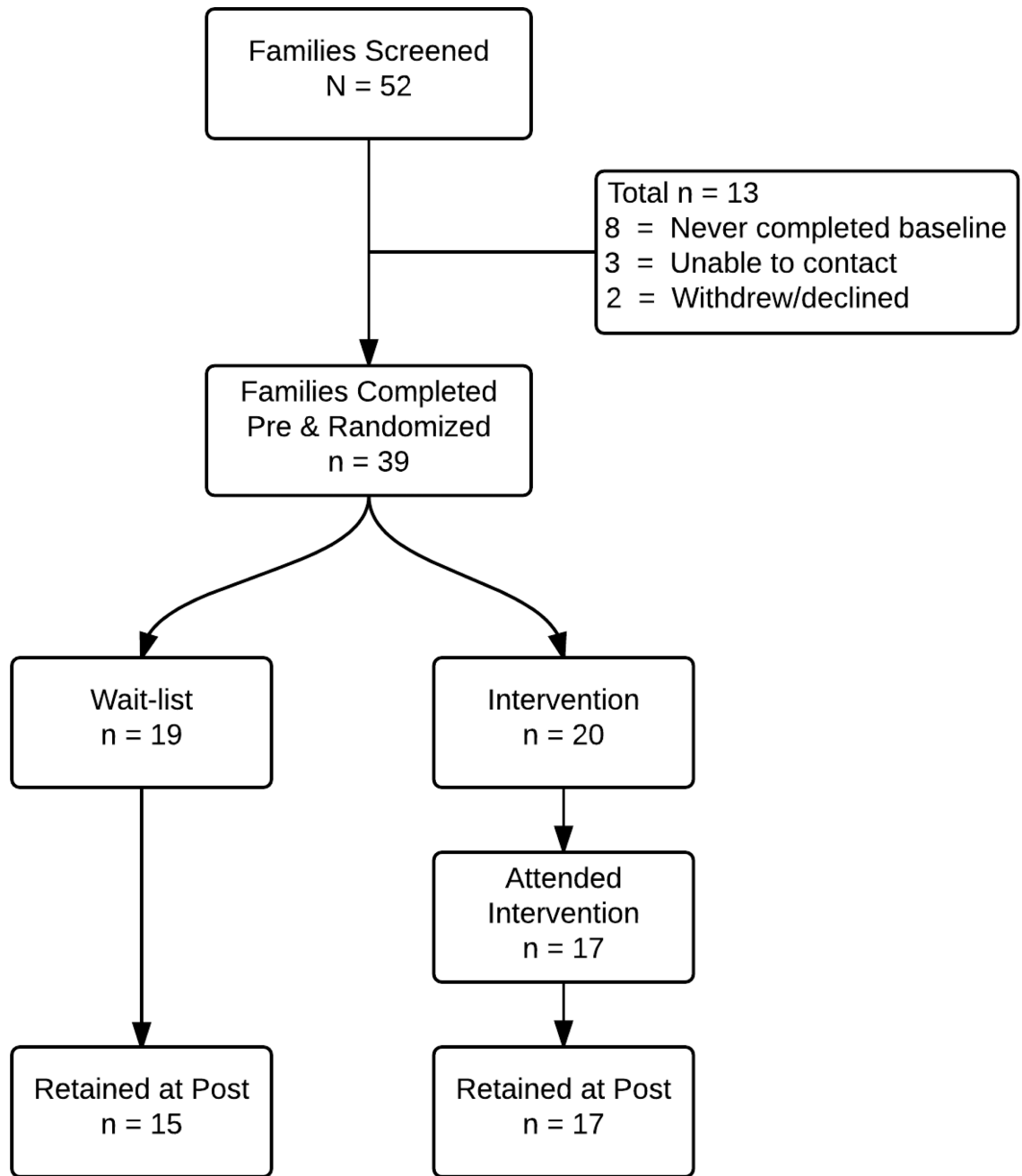
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**Figure 1.**  
CONSORT Flow Diagram

**Table 1**

## Demographic characteristics of the sample

	<b>Total Sample % or n</b>	<b>Intervention Group % or n</b>	<b>Wait-List Group % or n</b>
Parent gender			
Mother	87.2%	80.0%	94.7%
Father	12.8%	20.0%	5.3%
Parent Race			
White	92.3%	95.0%	89.5%
Latino/a	2.5%	0.0%	5.3%
Not specified	5.1%	5.0%	5.3%
Parent Education			
High School	5.1%	10.0%	0%
Some College	15.4%	5.0%	26.3%
College Degree	41.0%	35.0%	47.4%
Some Graduate	7.7%	5.0%	10.5%
Graduate Degree	28.2%	45.0%	10.5%
Not specified	2.6%	0.0%	5.3%
Parent Marital Status			
Married	66.7%	70.0%	63.2%
Cohabiting	11.2%	10.0%	10.5%
Single	15.4%	10.0%	21.1%
Not specified	7.7%	10.0%	5.3%
Child Gender			
Female	38.5%	35.0%	42.1%
Male	61.5%	65.0%	57.9%
Child Age			
	8.72	9.21	8.25
Family Income			
< \$30,000	18.1%	25.0%	10.5%
\$30,000 – \$59,999	28.2%	15.0%	42.1%
\$60,000 – \$89,999	18.0%	15.0%	21.0%
> \$90,000	30.7%	40.0%	21.1%
Not specified	5.0%	5.0%	5.3%

**Table 2**  
Technology-Specific Parenting and Child Screen Time for Intervention and Wait List Groups

	Intervention Group (I)				Wait List Group (WL)				I vs WL	
	Pre M (SD)	Post M (SD)	N	Within Group ES <sup>1</sup>	Pre M (SD)	Post M (SD)	N	Within Group ES <sup>1</sup>	Between Group ES <sup>2</sup>	
Technology Specific Parenting <sup>3</sup>	8.18 (3.2)	10.41 (2.7)	17	.76	10.40 (2.2)	11.60 (2.4)	15	.52	.48	
Diary Screen Time <sup>4</sup>	2.37 (1.8)	2.23 (1.3)	17	.08	3.05 (1.9)	3.02 (1.3)	14	.02	.06	
Appraised Screen Time <sup>4</sup>	4.36 (2.7)	3.01 (2.6)	14	.51	3.11 (1.6)	2.68 (1.7)	14	.26	.58	

**Note:**

<sup>1</sup> Within group effect size: Change from Pre to Post divided by pooled standard deviation.

<sup>2</sup> Between group effect: Change from Pre to Post for Tx group – W1 group divided by pooled pre SD (see Morris, 2008, for formula).

<sup>3</sup> Possible range of scores: 0 to 16.

<sup>4</sup> Daily hours of screen time.



**Table 3**

Consumer Satisfaction Ratings with Workshop (Items 1–6) and Parent Confidence in Implementing Skills (Items 7–8).

Consumer Rating Item	Average Score or %
1 Overall teaching effectiveness:	4.72 <sup>1</sup>
2 Overall quality of this workshop:	4.67 <sup>1</sup>
3 How much did you learn?	4.19 <sup>2</sup>
4 Was instructor knowledgeable about the topic?	4.83 <sup>3</sup>
5 Were the topics discussed today helpful?	4.75 <sup>3</sup>
6 Usefulness of each of two workshop components:	
a. Instructor's presentation:	4.64 <sup>2</sup>
b. Hands-on Workshop/Individual Assistance:	4.56 <sup>2</sup>
7 As a result of workshop, I have the tools to successfully implement parental controls for child screen time.	4.69 <sup>4</sup>
8 As a result of the workshop, how likely are you to implement parental controls (including passwords, applications, and limitations to access) in the home?	
a. Less likely to implement:	0%
b. I do not intend to implement any changes in the home:	5%
c. More likely to implement parental controls:	95%

**Note:**

<sup>1</sup> 1 = exceptionally low; 5 = exceptionally high

<sup>2</sup> 1 = very little; 5 = a lot

<sup>3</sup> 1 = not at all; 5 very much

<sup>4</sup> 1 = definitely not capable; 5 = feel confident I can.