# Examining Parents' Technical Mediation of Teens' Mobile Devices

**Arup Kumar Ghosh**
The University of Central Florida
Orlando, FL 32816, USA
arupkumar.ghosh@ucf.edu

**Karla A. Badillo-Urquiola**
The University of Central Florida
Orlando, FL 32816, USA
kbadillo@ist.ucf.edu

**Heng Xu**
The Pennsylvania State University
University Park, PA 16802, USA
hxu@ist.psu.edu

**Mary Beth Rosson**
The Pennsylvania State University
University Park, PA 16802, USA
mrosson@ist.psu.edu

**John M. Carroll**
The Pennsylvania State University
University Park, PA 16802, USA
jcarroll@ist.psu.edu

**Pamela Wisniewski**
The University of Central Florida
Orlando, FL 32816, USA
pamwis@ucf.edu


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## Abstract
Parental control software has been one approach for promoting adolescent online safety, but there is still some ambiguity in the adoption patterns and perceptions of technical mediation for teens' mobile devices. We have collected empirical data from a paired sample of 215 parents and teens. We found that overall usage of technical mediation for mobile devices is low and that parents' and teens' perceptions about the frequency of use are not significantly different. We discuss the implications of our findings and opportunities of future research.

## Author Keywords
Parental Control Software; Adolescent Online Safety; Mobile Platforms

## ACM Classification Keywords
K.4.1 [Public Policy Issues]: Ethics, Human safety, Privacy

## Introduction
The majority of U.S teens (91%) use smart phones to access the internet [3]. Yet, teens who have mobile smart phones are significantly more likely to encounter online risks, such as receiving sexual solicitations from strangers [5]. Some research has been conducted in the area of using technical mediation to help parents

***Side Bar 1***

**Ethnicities:** Teens were primarily Caucasian (68.4%), African-American (12.6%), Hispanic (13.5%), and Asian (1.9%).

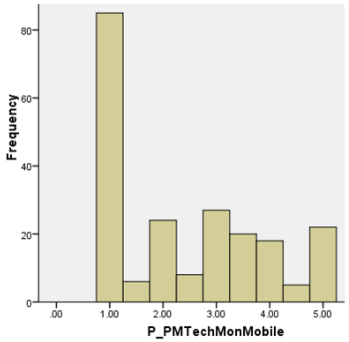


Figure 1: Histogram of Parental Reports of Technical Mediation

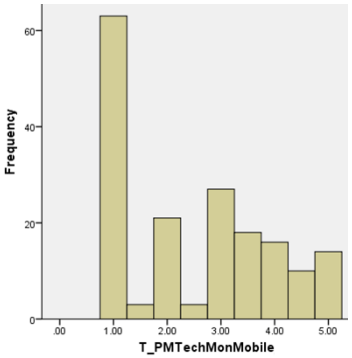


Figure 2: Histogram of Teen reports of Technical Mediation

keep their adolescents safe from online risks [4], but less effort has been given to exploring technical mediation in the context of mobile devices.

According to a 2011 Pew Research survey, 34% parents use parental controls to restrict their teens' cell phone usage, while only 19% of teens reported the same [1]. In a 2016 follow-up survey, Pew now reports that only 16% of parents use parental control apps on their teens' mobile devices [4]. These mixed findings suggest both ambiguity in the adoption patterns of parental technical mediation for teens' mobile devices, as well as a potential disconnect in the perceptions of use between parents and teens. Our recent CSCW 2017 work shows that this may be partially because existing parental control apps for adolescent online safety covertly monitor teens' phones may promote unhealthy family values that go counter to the parent-teen trust relationship and violate teens' privacy expectations [6].

In our future work, we plan to examine the salient factors that contribute to parental adoption of technical mediation for their teens' mobile devices. However, in this preliminary work, we focus on adoption patterns and perceptions around technical monitoring: 1) How frequently do parents use parental control technologies to monitor their teens' mobile devices? and 2) Do the perceptions of parents and teens significantly differ?

## Methods

We collected data via a U.S. based web survey administered through a Qualtrics panel to ensure a nationally representative sample of parents and teens. Participants were asked to complete an informed consent and were monetarily compensated for their participation. We asked parents and teens to complete the survey separately, and based on their survey reports, 89% of teens and 87% of parents complied with this request. Our final sample consisted of 215 parent-teen pairs; 71 (33%) parents and 94 (43.7%) teens were male. The median household income was $60K. In addition to other questions asked in the survey, we asked the following two questions to both parents and teens:

1. How often do [you/your parents] use parental control technologies to monitor [your teen's/your] text or photo messaging activities from his/her cell phone?
2. How often do [you/your parents] use parental control technologies to monitor what apps [your teen/you] installs or uses on his/her cell phone?

Responses were recorded on a 5-point Likert scale (1=Not at all, 5=All of the Time). Teens were given an additional option of answering "I don't know." We averaged the two items to create a composite measure for both parents (Cronbach's $\alpha = 0.94$) and teens ($\alpha = 0.93$). To answer our research questions, we report the descriptive statistics of our measures and conducted non-parametric dependent tests [7] to evaluate the differences in perceptions between parents and teens.

## Results

In Table 1, we present the descriptive statistics of our measures. Overall, the usage of parental mediation technologies for mobile devices was low with 39.5% of parents reporting not using technical mediation at all and the mean rating for both parents and teens falling between the anchors of "Rarely" to "Sometimes." In comparison to the Pew reports [1,4], the prevalence of adoption was generally higher, with 60.5% of our

***Side Bar 2***

**Teen Reports of Technical Mediation Compared to Parents**

- **18.6%** of teens said they did not know* if their parents used parental control technologies or not.
- **16.7%** of teens thought their parents used parental control technologies more often than their parents reported
- **20%** of teens thought their parents used parental control technologies less frequently than reported by their parents
- **44.7%** of teens agreed with their parents as to the frequency of use.

* **Note:** "I Don't Know" reports from teens were removed prior to statistically testing the between group differences of our parent-teen paired sample.

parent participants reporting at least minimal use of technical mediation for mobile devices.

Table 1: Descriptive Statistics for Technical Mediation of Mobile Devises by Parents and Teens

| Participant | Mean (SD) | Skewness | Kurtosis |
|---|---|---|---|
| Parents | 2.41 (1.41) | 0.489 | -1.132 |
| Teens | 2.51 (1.39) | 0.303 | -1.285 |

In terms of the differences in perceptions between parents and teens, see Side Bar 2. Since our data was not normally distributed, a Wilcoxon signed-rank test determined that there were no statistically significant differences between parent and teen reports ($z$ = -1.197, $p$ = 0.23). The mean for teens (2.51) was actually higher than for parents (2.41), which was in the opposite direction from Pew's results [1].

Based on the previous Pew findings [1], we had expected to find significant differences in perceptions where teens reported less technical monitoring than parents. To explore this discrepancy further, we dichotomized our variables to replicate the Pew measures. Recoding teens' "I don't know" responses as "No", a McNemar's test with a continuity correction found a statistically significant difference between parents' and teens' $(\chi^2(1) = 7.605, p = 0.006)$. The majority (82.3%) of parent and teen perceptions about technical monitoring agreed. When they disagreed, parents were more likely than teens to say that they employed technical monitoring. But, when we removed teens' "I don't know" responses, the McNemar's test again found no statistically significant differences between parent and teen reports $(p = 0.54)$.

## Discussion

Comparing our results to the two previous Pew studies [1,4], we denote some key differences and implications of these differences. First, our sample showed a relatively higher level of adoption for technical mediation by parents for mobile devices of teens (60.5%% in our study vs. 34% in the first Pew study [1] and 16% on the second [4]). Second, prior to dichotomizing our measures, we did not detect significant differences when comparing the perceptions of parents and teens using the dependent (paired) data. In contrast, the 2011 Pew study [1] did report statistically significant differences, but it was unclear as to whether their statistical tests used paired samples of parents and teens or independent samples. Depending on how the tests were conducted, this may be part of the discrepancies between our findings. Overall, we believe these differences may be, at least in part, due to the fact that we measured usage as a 5-point scale as opposed as a dichotomous "Yes" or "No" response. As shown in our post-hoc results, our statistical tests became significant after dichotomizing our measures and assuming teens' "I don't know" response as "No."

A key implication of these differences is that parental technical mediation of teens' mobile devices may not be as straightforward as a simple "Yes" or "No" response. It is possible that parents may install parental control apps but not actually use them for technical mediation on a regular basis. It is equally possible that parents use technical mediation for specific situations, such as after teens are caught doing something inappropriate on their phones, but that technical mediation is not a phenomenon that is ever-present once implemented the first time. Given the idea that use of technical mediation could very well be contextual, it would then

***Side Bar 3***

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be reasonable to expect that teens may be aware of mediation given those special circumstances.

## Conclusion and Future Research

While our current results pose a number of implications from both a practical and a methodological perspective, our current analysis does not definitively answer some of the questions that are raised by our findings. First, what are the salient factors that help explain the frequency in which parents leverage technical mediation for mobile devices? Our future research will use the parental measures examined in this preliminary work as a dependent variable and regress it on other parent and teen factors in order to examine this research question. Second, what are the characteristics and contexts of use, as well as the associated outcomes, when parents use technical mediation to monitor their teens' mobile devices? To answer this question, more nuanced approaches, such as diary methods or interviews may be more appropriate to unpack how technical mediation is used by parents.

As the majority of teens now use mobile devices, which obscure what they are doing online from the gaze of their parents [2], using technical mediation to give parents insight to their teens' mobile activities is one approach to mobile online safety [6]. However, more work needs to understand the status quo of this phenomenon so that we can design future technologies that best support parents and teens.

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