

Abstract

During late adolescence, teenagers develop deeper digital footprints as they navigate new communication technologies to connect with friends and family. During these years, family rules around technology—especially what technologies can be used and when teens can use them—are a major source of tension between parents and their children. In this paper, we use Communication Privacy Management (CPM) theory to explore factors leading to familial turbulence around technology use. Using paired surveys of parents and teen children (N=96), we build novel measure the likelihood of privacy turbulence emerging in a family. We then identify factors associated with a higher likelihood of privacy turbulence, with a significant interaction effect indicating older teens who perceive their parents to be overly restrictive have the highest likelihood of familial turbulence. We discuss findings in light of CPM and offer suggestions for families to change their communication structure to encourage openness and reduce turbulence.

Keywords: Adolescence, privacy, family communication, Communication Privacy Management Theory, turbulence, social media

How Communication Technologies Introduce Privacy Turbulence in Families During Late Adolescence

The impact social and mobile communication technologies have on young people cannot be understated. Teenagers are the heaviest users of these technologies and spend a significant portion of each day online, using devices to learn, be entertained, and communicate (Common Sense Media, 2015; Lenhart, 2015). Researchers have extensively documented both the risks and benefits of this increasing shift toward using technology to mediate learning and relational processes and news outlets highlight cases where information posted online has cost someone a job, college acceptance, or scholarship (boyd, 2014; Livingstone et al., 2011; Wisniewski et al., 2016). Perhaps most importantly, economic trends now suggest that having basic proficiency in computing, including digital literacy and programming, are essential for future career success (Chau, 2015).

But the teen years are also an important transitional time for adolescents and for parent-child interactions. Technology has provided new ways for parents and children to connect—and for parents to monitor their kids’ online and offline behaviors. While this increased connection may help ease parental concerns, it also provides a new source of turbulence within families (Child & Westerman, 2013). Parents’ rules about technology use—including when teens can use technology, what content they can access, and what controls they must turn over to parents—may create tension in parent-child relationships, especially as teens approach adulthood and seek greater autonomy. Teens, who often have greater knowledge and skills in applying technology workarounds (Yardi & Bruckman, 2011)—may rebel against their parents rules and engage in riskier behaviors to avoid technology constraints.

In this paper, we consider how the rise of families' technology-mediated hyperconnection creates turbulence in parent-child relationships during late adolescence. Using Sandra Petronio's (2002) Communication Privacy Management theory as a framework for analysis, we examine discrepancies in parents' and their teen children's technology use and technology "rules", and we identify the factors that are likely to create increased turbulence in these relationships. As previously demonstrated, CPM provides a useful framework to evaluate tensions within family structure; in this paper, we extend prior work to consider the role technology plays in creating turbulent communication environments.

In the following sections, we summarize research on late adolescence and parent-teen interactions, as well as provide an overview of the CPM framework. We then present results from paired surveys of high school students and their parents, collected during winter 2017. Findings highlight where and when tensions are likely to emerge between parents and children over technology use and the factors most associated with parent/child turbulence. We conclude the paper by discussing how this study extends our understanding of CPM and boundary control issues, and offers practical suggestions for families seeking to reduce familial turbulence over communication technologies.

Characteristics of Late Adolescence

Teens are avid consumers of technology. In a 2015 national survey by Pew Internet (Lenhart, 2015), 92% of teens reported going online every day, with nearly one-quarter saying they were online "almost constantly." As the vast majority (88%) have access to or own a mobile phone, teens are heavy users of apps to connect with friends. Social media use is high (71% of teens use more than one platform), with Instagram and Snapchat much more popular with this age group than with older users (Lenhart, 2015). CommonSense Media (2015, 2017) reports that

teens spend more than seven hours a day using screens—to the point where they no longer distinguish between “online” and “offline”—and the largest proportion of time is spent on smartphones. Even when teens are concerned about their privacy, they still report feeling pressured to make online disclosures (Agosto & Abbas, 2017).

Technology provides new sources for tension between parents and their children. Parents express numerous concerns about their children’s use of technology, including fears about “stranger danger,” accessing adult content, and cyberbullying (Madden et al., 2012). Parents are becoming more active in monitoring their children’s online behaviors and use new monitoring technologies; for example, recent Pew data shows that more than half of parents check the websites their child visits, visit their child’s social media profile, and friend or follow their child on social media (Anderson, 2016). In turn, teens have become increasingly savvy at finding ways around parental restrictions ranging from using ephemeral apps like Snapchat to using social steganography (encapsulating a message so only intended audience understands true meaning) (boyd, 2010, 2014; Wisniewski et al., 2016).

Adolescence is a time of great change, both mentally and physically. As Dahl (2004) notes, “by adolescence, individuals have matured beyond the frailties of childhood, but have not yet begun any of the declines of adult aging” (p. 3). The high school and college years can be seen as transitional—what Arnett (2012) has termed “emerging adulthood”—when attitudes and beliefs are maturing and teens become less dependent on their parents and peers.

Of interest to this project, the teen years are characterized by increasing independence and autonomy (Baumrind, 2005) and, consequently, increased risk taking as teens seek to distance themselves from their parents (Kloep, Güney, Çok, & Simsek, 2009). In transitioning away from reliance on their parents, teens become much more reliant on and influenced by their

peers during this time; at least one researcher suggests that peer influence peaks during high school before declining during the transition to adulthood (Steinberg & Monahan, 2007). Many teens experiment with “risky” behaviors like drinking and smoking during these years because of peer pressure (Allen, Porter, McFarland, 2006; Maxwell, 2002; Simons-Morton, Haynie, Crump, Eitel, & Saylor, 2001). Such behaviors often create tension in families, as parents are forced to balance their concerns for their child’s safety and preparing them for adulthood (Collins, Laursen, Mortensen, Luebker, & Ferreira, 1997; Finkenauer, Engels, & Meeus, 2002).

Framework: Communication Privacy Management Theory

Communication Privacy Management (CPM) theory (Petronio, 2002, 2013; Petronio & Dunham, 2015) is especially relevant for evaluating questions of how families negotiate technology use and privacy during late adolescence, as it offers a framework to evaluate the dialectical tensions in private disclosures—that is, the push and pull between revealing and concealing private information. This study evaluates how parents and their teenage children negotiate rules around technology use, and considers how specific factors influence teens’ strategies for managing their online identities.

Core ideas of CPM include (1) ownership, (2) information control through privacy rules, and (3) turbulence. First, Petronio notes that individuals maintain “ownership” of their own private information, even after it is shared with others (Petronio, 2002, 2013). She uses the metaphor of thick versus thin boundaries to unpack this ownership; for example, secrets have very thick boundaries, while boundaries are thinner for information shared with others. With information ownership comes the belief that individuals control how their private information is shared with others, which is achieved through negotiation of “privacy rules” with co-owners of a piece of information. The goal of these rules is to help people understand when, where, and with

whom it is acceptable to share a piece of private information. Privacy rules vary based on the relationship; for example, Caughlin (2002) found that voluntary relationships are characterized by more informal guidelines than involuntary relationships like family. Furthermore, an individual's privacy rules will vary based on cultural and contextual factors and risk-benefit calculations (Petronio, 2002). That said, privacy rules are generally flexible and adapt to changes in one's circumstance; for example, during a separation or divorce, parties are likely to change the types of information they share with each other or reveal previously private (i.e., thick boundary) information to the court.

Finally, CPM assumes that privacy rules will break down, leading to turbulence between the owners of a piece of information. Petronio and Durham (2015) note that turbulence leads to a breakdown of trust between the original owner of the information and the person(s) who violated a privacy rule. When this happens, individuals need to recalibrate their privacy rules to avoid turbulence in the future—or dissolve the relationship if the violation was severe enough and dissolution is possible. Research examining cases of mediated turbulence have found it to be a relatively common experience, with one study of young adults finding that more than one-third had experienced turbulence due to breakdowns in privacy rules online (Litt & Hargittai, 2014).

Recognizing that content is visible to an unwanted audience or finding that someone has shared an unwanted picture on social network sites such as Facebook can cause boundary turbulence (Tufekci, 2012). Many users observe others fighting with partners or parents or experience such negative consequences themselves (Tufekci, 2012).

Various factors contribute to experiences of turbulence. For example, a lack of understanding of the audience of a particular online disclosure can lead to tension when one person discloses something about another person in an unexpected or undesired way (Litt, et al,

2014). People who engage in more self-monitoring practices may also experience more boundary turbulence (Litt, et al, 2014).

To minimize the chance of experiencing boundary turbulence, people may change their rules for privacy management (Child, Petronio, Agyeman-Budu, & Westermann, 2011) or use other coping mechanisms that involve effort or detract from the value of social network sites. These include using a pseudonym, maintaining different profiles, self-censoring disclosure, or ignoring the content people share (Wisniewski, Lipford, & Wilson, 2012).

People with higher internet skills recognize that content shared online (e.g. an embarrassing photo) can raise concerns, even if no one directly responds to the photo (e.g., leaves a like or comment on Facebook). This means that they be more likely to experience boundary turbulence online because they notice it (Litt et al, 2014). However, those who have the skills to change privacy settings or to otherwise adjust aspects of their online presence may experience less boundary turbulence (Litt et al, 2014; Litt & Hargittai, 2014).

Several researchers have responded to Child & Petronio's (2011) call for more investigation into the role of boundary turbulence and online disclosure involving families, particularly as parents enter the social media spaces their children inhabit. As of 2013, 37% of English-speaking monthly-active U.S. users of Facebook showed a connection to a parent or child on the site (Burke, Adamic & Marciniak, 2013). Some research on parent-child Facebook friendship suggests that this particular connection may not raise as many privacy concerns as expected (Kanter, Afifi, & Robbins, 2012). Young adults are generally receptive to Facebook Friend requests, and most accept them without adjusting their privacy settings on the site (Child & Westermann, 2013). One reason may be that Facebook users establish their privacy

management practices with the expectation that family members may at some point see what they disclose on those there.

Family history naturally affects such perceptions. Young adults' whose families emphasize openness and transparency are more likely to accept friend requests from parents (Child & Westermann, 2013). And such friendship can actually increase feelings of closeness among young adults who have conflicted relationships with parents (Kanter, Afifi, & Robbins, 2012). However, other youth express frustration at parents viewing discussing their Facebook content with them, perceiving this as a source of problems (Racz, Johnson, Bradshaw, & Cheng, 2017). As social media use is now widespread across adults, and as children begin using social media at young ages, teens may have less of a choice when it comes to connecting with their parents on these platforms. Some teens refrain from using Facebook for precisely this reason (Erikson, et al., 2015).

Differences in teenagers' and parents' understandings of teen technology use and conceptualizations of digital privacy can trigger turbulence. Parents may struggle to use digital technology themselves and to understand how their teenage children use it (Cranor et al, 2014; Erikson et al, 2015). Furthermore, teenagers tend to view digital spaces as "personal and private," while parents regard content shared online as "uncontrollable" and prefer to monitor or restrict it (Cranor et al., 2014). Parents recognize the need to trust and respect teenagers' emerging autonomy but at the same time seek to preserve teenagers' physical safety and emotional wellbeing (Czeskis et al., 2010).

The fact that online safety apps tend to emphasize parental control strategies (i.e. monitoring, restricting, or actively mediating teens' online activities) over teen self-regulation strategies (i.e., self-monitoring, impulse control, risk-coping) may also cause turbulence between

teenagers and parents who use such tools (Wisniewski et al, 2017). Such apps often share details about teenagers' smartphone use, including websites visited, calls made, texts sent, or location, with parents. Parental monitoring efforts may also yield information about teenagers' peers, suggesting that such activities implicate boundaries beyond just the parent-teenager dyad (Erikson, et al., 2015)

Unsurprisingly, a connection exists between relationship satisfaction and boundary turbulence, with teenagers who report having lower quality interactions with their parents also perceiving more boundary turbulence in general interactions with parents (Hawk, et al., 2008). In addition, teen perceptions of parental privacy invasions predict parental conflict, with teenagers who perceive more invasions reporting more conflicts (Hawk, et al., 2009). Given the prominent role that smartphones and social media play in family life, it is likely teenagers' technology use is a ripe source of boundary turbulence.

Current Study: CMC and Parent/Teen Turbulence

Based on the extant research, the current study evaluates the gap in understanding of how new communication technologies—and especially social media and smartphones—can facilitate turbulence in familial relationships between parents and their teenage children. Using CPM as a guiding framework, we focus our research questions around the ways parents use technology tools to interact with and monitor their teen children, the (mis)alignment between parents' perceptions of their teens' technology use and the teens' reported use, and the factors that are most likely to be associated with such a misalignment, which is likely to cause increased turbulence in households.

First, we examine how families use technology to keep in touch and—in parents' case—track what children do. Parents now have many tools available to monitor their child's internet

and mobile use openly (e.g., sending text messages and becoming social media “friends” allows parents to communicate with their children regardless of physical location) and covertly (e.g., using software tools or parental controls to restrict or monitor access). As we expect technology use, and especially technology surveillance, to be a primary cause of familial turbulence, we need to first unpack what these behaviors look like. Therefore, we ask:

RQ1: How do parents use communication technologies to keep connected with and/or monitor their teenage children?

CPM theory holds that people use privacy rules to understand how to manage information. A lack of alignment in these rules can cause turbulence. In the case of parents and teenagers, this means that both come to a shared understanding of what social media sites the teenage child can use or how much time the teenage can spend using a smartphone. Parents and teens who have different understandings of what the teenager can or cannot do online may experience tension in the relationship. Our second research question considers whether parents and their teenage children are on the same page regarding teenagers’ technology use.

RQ2: How well do parents’ and their teenage children’s accounting of their social media use align?

Finally, we seek to identify the set of factors most associated with behaviors that lead to turbulence in parent-teen relationships. For example, are younger teens, who may be restricted by tougher technology use rules, more likely to hide their social media use than those who are older? Conversely, does the increased desire for autonomy and independence lead older teens to engage in technology use without their parents’ knowledge?

RQ3: What factors are associated with increased privacy turbulence between parents and their teenage children?

Method

During summer 2016, the first author contacted two private high schools in the Mid-Atlantic region of the United States to collaborate on a one-year study to pilot test questionnaires, data collection, and experimental manipulations with families enrolled at the schools. After reaching agreements with the schools and obtaining IRB approval, the first author coordinated with school administrative staff to contact parents at the two schools (N=1400) through email and mail; parents received information packets, including a detailed description of the study and consent/assent forms to submit if they agreed to participate. After six weeks, 177 families had submitted these forms. In December 2016, each parent and child was (separately) emailed a customized survey link to SurveyGizmo with a personalized ID (e.g., 3104) to link parent and child data. Two reminders were sent via email. Data collection remained open for four weeks, resulting in 127 completed parent surveys and 119 completed child surveys (N=96 paired surveys). Teens who participated in the first survey were invited to complete a follow-up survey at the end of the school year; however, this paper only considers the parent-child paired data from Time 1.

Measures

Privacy turbulence likelihood. Validated measures of turbulence (as framed in CPM) do not exist; instead, researchers have used a variety of approaches to capture this variable. For example, Litt and Hargittai (2014) focused on negative outcomes resulting from content someone had posted online, or content someone else posted about that person. Hawk and colleagues (2008) devised a seven-item scale of privacy perceptions using items like, “My parents are always nosing into my business” and “My parents have to know everything about me.” Finally, Child et al. (2011) created two measures when studying the role of turbulence in

prompting bloggers to delete content: motivations to change privacy rules and proactive vs. reactive practices.

In this study, we operationalize turbulence in terms of the level of agreement between parents and their children on three factors: (1) privacy invasion, (2) alignment in parents' knowledge and teens' reports of social media use, and (3) alignment in knowledge between parents and teens regarding technology rules. We then calculated a "turbulence score" based on responses to items in each category.

For privacy invasion, we used two items. This operationalization underscores parents' reported "cyber-spying" behaviors that could lead to relational turbulence, rather than teen's subjective perceptions of parental monitoring. We asked parents if they were friends with their child on any social media accounts; if they said yes, we asked if it was a mutual agreement or if the parent required it. We also asked parents if they had ever installed any software, application, or other monitoring device to track their child's computer or phone use. If they responded yes, they were asked if the child knew they were being monitored. Parents who either required their teenager to connect with them on social media without mutual agreement or who monitored their teen without the teen's knowledge received five points.

For misalignment in reported social media use, we asked teens which social media platforms they used. Separately, we asked parents which social media platforms they thought their teen used. Specifically, we asked about six social media platforms: Facebook, Twitter, Instagram, Tumblr, Reddit, and Snapchat. We were especially interested in "false negative" cases, where a teen reported using a social media platform but the parent said the teen did not use it. We argue the occurrence of these false negatives could indicate that teens are intentionally hiding their social media use from their parents; at minimum, this misalignment suggests a lack

of communication between parents and children about technology use. Each false negative on this measure received 5 points.

Third, we considered how parents enforced technology oversight while not making their actual monitoring behaviors explicit to their children. We asked teens whether their parents had any rules about what technology they can use. We also asked parents whether they enforced a rule that regulates the types of websites their teens can access. We considered “false negative” reports from teens, where teens said that their parents did not have rules, but parents reported that they regulated the types of websites their children can access, as an aspect of relational turbulence. We argue this misalignment implies that parents enforce technology oversight while intentionally hiding it from teens, or at a minimum, that a lack of communication exists between parents and teens about technology rules. Each false negative on this measure received 5 points.

The highest possible score in this index is 50; however, no dyad met the criteria to receive points for every item included in the measure. In this sample, the privacy turbulence score for each dyad ranged from 0 (indicating a very low likelihood of privacy turbulence) to 25 (indicating a high likelihood of privacy turbulence), $M=12.69$, median = 10, $SD=3.45$.

Perceived parental restriction ($M=14.79$, $SD=4.33$, $\alpha=0.70$). When it comes to technology use, teens perceive their parents as enforcers of technology rules. We asked teens a series of 7-point semantic differential items using the prompt, “When thinking about your relationship with your parents when it comes to using technology, do you think they are...” For this study, four items are relevant: (1) Not at all restrictive — Very restrictive, (2) Too quick to punish you for breaking a rule — Have never punished you for breaking rules, (3) Unwilling to compromise on your technology use — Willing to compromise on your technology use, and (4) Less strict than your friends’ parents — Stricter than your friends’ parents. For each item, we

counted the numeric score associated with the teens' selection, with a lower score indicating a more open, relaxed set of rules, and averaged the four items to achieve a reliable scale.

Teens' internet privacy concerns ($M=2.67$, $SD=0.19$, $\alpha=0.95$). We asked teens to indicate their level of agreement with 12 items drawn from prior work on privacy concerns (Vitak, 2016). We prompted teens to, "Indicate your level of concern about the following things that might happen when you use communication technologies (social media, email, apps)." Teens responded on a five-point scale ranging from 1=Not at all concerned to 5=Very concerned. Sample items include "A teacher or employer viewing content (text or photos) that might negatively impact your life at school or work" and "Being tagged in an update that identifies your current physical location."

Parent's concerns regarding teens' technology use ($M=3.51$, $SD=1.06$, $\alpha=0.92$). We also asked parents to indicate their level of concerns regarding teens' technology use with the same 12 items used in the teen survey, and with the same response options and a similar prompt ("Indicate your level of concern about the following things that might happen *when your child* uses communication technologies").

Teen emotional autonomy ($M=3.07$, $SD=0.13$, $\alpha=0.82$). We included Steinberg and Silverberg's (1986) 20-item measure of adolescent emotional autonomy in the teen survey to gauge how independent/dependent teens' perceived they were from their parents. The scale includes four subscales (perceived parents as people, parental de-idealization, non-dependency on parents, and individuation), but for this analysis, we used the full 20 items as a single measure to capture the higher-level construct. Sample items in this scale include, "Even when my parents and I disagree, my parents are always right" (-) and "My parents would be surprised to know what I'm like when I'm not with them" (+).

Control variables. We include a number of control variables in our analyses. First, we controlled for teens' year in high school. To capture potential differences between older and younger adolescents, we created a dichotomous variable that divided students into underclassmen (freshmen and sophomores) vs. upperclassmen (juniors and seniors). Forty-three teens (37%) were underclassmen, 74 (63%) were upperclassmen. Other control variables included sex and total time spent using technology for purposes of social media sites, texting, calling, gaming, and video watching, which are discussed below.

Data Analysis

We exported the data into Excel spreadsheets and compiled a master list of all parent and teen IDs. We created blank cases to reflect instances when a parent completed the survey but their teen did not, and vice versa. Then, we merged the two datasets into a single file in SPSS v24 to allow for parent-teen comparisons. Next, we conducted Missing Data Analysis (MDA) to identify the number of missing cases for each variable of interest. Because there was a low percentage (<5%) in each case, we used Expectation-Maximization (EM) imputation where possible. Following this, we computed scale variables for analysis.

To analyze RQ1, we exported open-ended responses to an Excel spreadsheet to allow for coding. The first author went through each response to a series of questions asked of parents about their decision-making around monitoring their child and, using a grounded approach, identified a complete list of unique themes. The themes were then collapsed into a shorter list of high-level codes that reflected the overarching themes observed in dataset. The first author then went back through the responses with the list of codes and coded each response with the most appropriate code(s) each utterance.

Findings

Strategies Parents Employ to Keep Track of Their Teens' Social Media Use

To address RQ1, we first looked at open-ended responses parents provided to a series of questions about their use of monitoring tools and other non-technology methods to track their child's online behaviors, as well as their decision to connect with their child through social media platforms like Facebook, Instagram, and Snapchat.

Across all parents who completed the survey, more than one-quarter (27.2%) reported installing monitoring software or apps to track their child's internet and phone activities. Specific apps included Find My Phone apps to identify their teen's location as well as apps that enabled parental controls, including Norton Family, Screen Time, Mama Bear and Circle. Other parents mentioned tools provided through their mobile provider (e.g., Verizon's Family Share) that allowed them to monitor smartphone usage. Many parents did not list specific apps but instead described the specific types of content they monitored. Text messages and social media content were the most frequently listed, but some parents also mentioned checking their child's email accounts and/or having login credentials for these accounts. The vast majority of these parents (88%) said their child was aware they were being monitored.

Among those parents who said they did not currently use monitoring software but would consider it in the future (N=68; 77%), many did employ (non-technical) monitoring strategies to keep tabs on their child, including periodically checking devices or having login credentials for accounts. When asked why they considered using monitoring software, the most common responses were to ensure their child was acting appropriately and safely (34%), to respond to changes in behavior, such as if grades dropped (24%), to resolve uncertainty about what their child was doing online (10%), and to confirm their child was following household rules about technology use (10%). Among parents who said they would not consider monitoring (23%), the

vast majority said they trusted their child to do the right thing (60%), while a smaller portion said their child was very open with them and talked about their technology use (23%). Finally, about 18% of parents who said they would not consider monitoring their child described doing “random checks” of devices to make sure everything looked okay.

Finally, we asked parents whether they were “friends” with their child on social media and, if so, whether that decision had been mutually agreed upon or required by the parent. Nearly half of parents (N=58; 48%) said they were friends with their child on at least one site; of those, most (65%) said it was a mutual agreement. Parents’ predominant reason for connecting with their child was to see what their child—and more often, to see what their child’s friends—were posting online (48% of parents said this). The second most common reason was more benign, with 26% of parents saying they were connected so they could share images, links, and other content with their child. Approximately 14% of parents used generic descriptions of “monitoring” their child, without specifically referencing content or behaviors they wanted to track. In cases where a parent said they were not friends with their child, in more than half of the cases, it was because the parent was not on social media (47%) or the parent and child were not on the same platforms (29%). A few parents (8%) said referenced trusted their child or respecting their child’s privacy as their rationale for not connecting via social media.

While the open-ended responses provided rich descriptive data, we also looked for differences in parents’ monitoring strategies across parents of younger and older teens. We predicted that parents of older teens (upperclassmen) would have begun easing some restrictions on technology use when compared with parents of younger teens (underclassmen); however, we found no significant differences between groups when looking at if parents had ever installed monitoring software ($\chi^2(1, 91) = .253, p = .62$); if they were friends with their child on social

media ($X^2(1, 90) = .357, p = .55$); and if the decision to connect on social media was mutual ($X^2(1, 43) = .018, p = .89$). The only item where a difference emerged was when parents were asked if they would ever consider using monitoring software; where parents of underclassmen were much more likely to say yes (80%) compared to parents of upperclassmen (57%), ($X^2(1, 65) = 3.56, p = .059, \Phi = .23$). This relationship should be confirmed with a larger sample.

Evaluating Families (Mis)Alignment on Use of Social Media and Technology Rules

RQ2 addressed whether parents' knowledge of the social media platforms their child used aligned with teens' reported use of these sites. Unsurprisingly, teens in this study reported diverse social media use, consistent with prior national studies (e.g., Lenhart, 2015). Snapchat, Instagram, and text messaging apps were the most commonly reported social media teens used, and these were valued as the "most important" platforms for their social life. Table 1 provides a breakdown of social media use and valuation across the seven platforms we asked about.

--TABLE 1 ABOUT HERE--

(Mis)alignment in knowledge of social media use. Next, we specifically looked at the extent to which parents and their children were aligned in their reporting of social media use. In addition to the questions teens responded to regarding the social media platforms they used, we also asked their parents if their child had an account on any of the listed platforms. We calculated both the frequency of alignment—when parents reported correctly regarding their children's use or non-use of social media—as well as the frequency of misalignment (false negatives and false positives). False negative misalignment occurred, for instance, when the teen reported using Snapchat, but the parent incorrectly indicated that the child did not use it, while a false positive occurred when a teen reported not using a platform but their parent incorrectly thought they did.

We then examined these (mis)alignments regarding six social media platforms—Instagram, Snapchat, Facebook, Twitter, Tumblr, and Reddit. A chi-square test of independence ($X^2 (10,96)=18.64, p<.05, Cramer's V=0.14$) indicated a significant difference in the (mis)alignments across social media. Specifically, based on the contingency table with expected and observed frequencies of (mis)alignments, there was a stronger alignment between parent and their child when looking at use Instagram, Snapchat, Tumblr, and Reddit; in contrast, there were more misalignment on the use of Twitter (false negative) and Facebook (false positive).

Alignment between parents and their child regarding technology rules. In the survey of teens, we asked if their parents had any rules about when and *what* technology they could use or *when* they could use technology. Likewise, parents were asked whether they enforced rules around time restrictions on technology use and websites their child could visit. Using a chi-square test of independence, we identified significant differences in perception regarding rules about both when ($X^2 (2,96)=23.63, p<.01, \Phi=0.33$) and what ($X^2 (2,96)=26.75, p<.01, Cramer's V=0.34$) teens could use. Most interestingly, we observed 24 cases where parents said they had time-based rules but the child said there were not rules, and 30 cases where parents said they had rules about what websites their child could visit but the child said there were no rules.

Identifying Factors Associated With Increased Likelihood of Privacy Turbulence

Finally, to address RQ3, we constructed a measure to capture behaviors that are more likely to lead to privacy turbulence. As described in the Method section, this measure includes a series of items reflecting a misalignment in knowledge of what teens are doing online and what a family's technology-specific rules are, as well parent behaviors that might lead teens to feel like they lack agency in maintaining privacy or autonomy. As familial turbulence is already common

during late adolescence (e.g., Child & Westerman, 2013), we wanted to identify the factors that are most clearly associated with this increased likelihood of turbulence.

Therefore, we ran a hierarchical OLS regression, using the dyad's "turbulence likelihood score" as the dependent variable. We first tested the regression model for main effects; see Table 2 for the final, best-fit model. Perceived parental restriction ($\beta=0.21, p<0.05$) was positively related to privacy turbulence likelihood, suggested that when teens who perceive their parents as more restrictive are also more likely to experience privacy turbulence due to misalignment and parental monitoring practices. Likewise, we found a higher likelihood of privacy turbulence among older teens ($\beta=.32, p<.05$) compared to younger teens. This greater likelihood of turbulence may be a byproduct of older teens' desire for greater autonomy from their parents, which can create tension in the parent-child relationship.

--TABLE 2 ABOUT HERE--

Next, we tested for interaction effects among the independent variables. When looking at the interaction between our two main effect IVs (perceived parental restriction and teen age; see Model 2), we found a significant interaction between these variables ($\beta=1.15, p<.01$). Specifically, when there was little to no perceived parental restriction, there were no significant differences between younger and older teens' privacy turbulence score; however, older teens who perceived higher level of parental restriction had a significantly higher privacy turbulence scored ($M=4.58, SD=4.98$) compared to younger teens who perceived high levels of parental restriction ($M=2.74, SD=3.71$). This interaction is illustrated in Figure 1.

--FIGURE 1 ABOUT HERE--

We also tested other potential interaction effects, including the interaction between perceived parental restriction and teen privacy concerns, perceived parental restriction and teen

emotional autonomy, and teen privacy concerns and age. However, we observed no significant interaction effect in any of these cases.

Discussion

Parent-child turbulence is not a new concept, nor is it the result of new communication technologies. However, smartphones, email, social media, GPS, and related technologies both enable families to stay in communication throughout the day and allow for more restrictive monitoring practices that can create familial tension, especially between parents and children during the final years of their adolescence.

In this paper, we present findings from a study of 96 parent-teen dyads to examine their communication openness around technology use and factors that might create or enhance familial turbulence. Acknowledging a lack of operationalization of the construct of turbulence—and particularly in relation to Petronio's (2002) framing of turbulence within Communication Privacy Management theory—we constructed an index to account for factors that are likely to generate turbulence. These items, which draw on Petronio's conceptualization of turbulence as arising from a breakdown in privacy rules, reflect examples of behaviors by both parents and their teenage children that could violate norms, be perceived as overly restrictive (as in the case of parents monitoring their child's online activities surreptitiously or requiring access to social media), or indicate a lack of openness in communicating about technology use.

This is not to suggest that parents do not have reasons to be restrictive in their child's online activities. Many parents used open-ended questions to frame their decisions to monitor their child in terms of protecting their child from perceived harms or ensuring their child does not make mistakes that could harm them later in life. Parents rationalized their monitoring as necessary for their child's "safety and security" or to help their "inexperienced" child navigate

technology, especially when they are “immature” or prone to “peer pressure.” The alternative to this “technoparenting” strategy—a term Yardi & Bruckman (2011) use to describe parenting practices designed to regulate children’s technology use—is parents who are not involved in their child’s online behaviors and may miss valuable opportunities to observe and interact around the benefits and drawbacks of mediated communication. Research has shown that parents struggle to find the balance between too much and no restrictions, especially with new communication tools emerging regularly and teens being more “in the know” about available technology tools (boyd, 2014; Collins et al., 1997; Finkenaer et al., 2002; Yardi & Bruckman, 2011).

Transparency in communication is one of the most important ways to minimize the likelihood of privacy turbulence arising between parents and their children. In cases where communication is less open, or there is more ambiguity regarding technology rules, there is a greater chance of misalignments between parents’ and children’s understanding and application of rules. We observed a number of ways in which this misalignment manifested in our dataset, and we considered several factors when designing our privacy turbulence measure. Specifically, we were interested in cases where (1) teens reported using social media platforms but their parents said they did not use that site, and (2) parents stated there were family rules for when and what technology their child could use but the teen said there were no rules. While the latter example reflects a classic example of turbulence in the CPM framework (Petronio, 2002, 2013), the former has been more recently identified as a source of familial tension (Blackwell, Gardiner, & Schoenebeck, 2016).

Finally, when building a model to predict factors contributing to the likelihood of familial privacy turbulence, we found that perceived parental restrictions were the largest main effect in

the regression model and, furthermore, that this relationship was especially true of older teens (established through moderation analysis). As previously noted, in the years leading up to adulthood, teens increasingly push rules and boundaries to obtain greater autonomy, independence, and privacy from their parents, and they may engage in riskier behaviors (Baumrind, 2005; Dahl, 2004; Kloep et al., 2009). These competing tensions, along with parents' struggles to "let go" of the control they had during their child's youth, naturally generate turbulence. It is likely that the affordances and features of social and mobile media (see Evans, Pearce, Vitak, & Treem, 2017 for a summary) further exacerbate these tensions and play a role in generating familial turbulence. Future research should further unpack how communicative affordances can help and harm parent-child interactions online.

Reducing Familial Turbulence: Open Communication is Key

In light of these findings, we echo prior ethnographic research by danah boyd (2010, 2014) and others that highlights the critical role that parent-child communication plays in minimizing turbulence and other tensions in families during late adolescence. Our operationalization of privacy turbulence for this paper focused on communication breakdowns, misunderstandings, and other factors that lead parents and their children to lack knowledge about technology rules and technology use. In our study, many of the parents who did not actively monitor their child's online behaviors or connect with them through social media said their child has behaved responsibly when using technology and has earned their trust. Furthermore, several parents stated their child comes to them to discuss their technology use and that the family regularly discusses technology and the reasons behind technology rules. For example, the mother of a 17-year-old boy said, "[Child] and I have always been very open and honest about what is acceptable behavior on the web and what is not," while the mother of a 17-year-old girl said,

“She tells us what she does. She is well-behaved, good grades and trustworthy.” Likewise, for several parents who said they were considering engaging in more formal strategies to monitor their child’s online behaviors, they said the motivating factor was uncertainty—about what the child was doing, who they were talking to, etc.

The data suggest that the best strategy to reduce turbulence related to technology use involves clear rules and boundaries, that are clearly communicated, and that can evolve over time. Furthermore, parents should create an environment that encourages and rewards their child for sharing their online activities, rather than punishing them for perceived rule violations. Regular conversations about technology broadly, as well as conversations that help children understand *why* specific rules exist, are likely to reduce uncertainty and increase the likelihood that children come to their parents with problems. We do not suggest these steps are easily implementable, but both the current study as well as prior research suggest that familial turbulence results largely situations where teenagers do not feel like they have agency, where rules are miscommunicated, and when rules seem overly restrictive.

Limitations

This study provides a robust dyadic dataset of parents’ and their teenage children’s attitudes and beliefs around technology use. However, the data presented in this paper represent a single point in time and thus can only establish correlations between variables. Future work could extend these findings by tracking parent-child dyads over time, to better ascertain how technology rules evolve over the time from middle to late adolescence, and how that is reflected in the amount of turbulence in those relationships. In addition, this study uses an original variable to measure the dependent variable (privacy turbulence likelihood); while this measure was derived from theoretical constructs of CPM, further studies should be conducted to test and

validate operationalizations of privacy turbulence that can be used in various communicative settings.

Conclusion

Privacy turbulence arises in relationships when rules of information ownership and technology use break down. In this paper, we extend Sandra Petronio's (2002) Communication Privacy Management (CPM) theory to consider the role technology can play in increasing turbulence between parents and their teenage children, as well as factors that can minimize that turbulence. We found that parents employ a range of strategies to monitor their children's online behaviors; however, even with monitoring, misalignments in technology use and technology rules emerge. We argue for parents to create a more open environment for communicating about technology use and to provide their children with more agency to make decisions about technology use, especially as they approach adulthood. By focusing on open communication, parents and their children are less likely to experience tension and turbulence related to what technologies they use, when they are using them, and with whom they are interacting through technology.

References

- Agosto, D. E., & Abbas, J. (2017). “Don’t be dumb—that’s the rule I try to live by”: A closer look at older teens’ online privacy and safety attitudes. *New Media & Society* 19, 347–365. <https://doi.org/10.1177/1461444815606121>
- Altman, I. (1975). *The environment and social behavior: Privacy, personal space, territory, and crowding*. Brooks/Cole Pub. Co.
- Anderson, M. (2016). Parents, teens and digital monitoring. Washington DC: Pew Research Center: Internet, Science & Tech. Retrieved from <http://www.pewinternet.org/2016/01/07/parents-teens-and-digital-monitoring/>
- Arnett, J. J. (2012). New horizons in research on emerging and young adulthood. In *Early Adulthood in a Family Context*. Springer, New York, NY, 231–244. https://doi.org/10.1007/978-1-4614-1436-0_15
- Baumrind, D. (2005). Patterns of parental authority and adolescent autonomy. *New Directions for Child and Adolescent Development*, 108, 61–69. <https://doi.org/10.1002/cd.128>
- Blackwell, L., Gardiner, E., & Schoenebeck, S. (2016). Managing expectations: Technology tensions among parents and teens. *Proceedings of the 19th ACM Conference on Computer-Supported Cooperative Work & Social Computing* (pp. 1390–1401). New York, NY, USA: ACM. <https://doi.org/10.1145/2818048.2819928>
- boyd, d. (2010). Social network sites as networked publics: Affordances, dynamics, and implications. In Z. Papacharissi (ed.), *A Networked Self: Identity, community, and culture on social network sites* (pp. 39–58). Routledge.
- boyd, d. (2014). *It’s complicated: The social lives of networked teens*. Yale University Press, New Haven, CT, USA.

- Burke, M., Adamic, L. A., & Marciniak, K. (2013). Families on Facebook. In *Proceedings of the Seventh International AAAI Conference on Weblogs and Social Media* (pp. 41–50). Boston, MA: AAAI.
- Caughlin, J. P. (2002). The demand/withdraw pattern of communication as a predictor of marital satisfaction over time. *Human Communication Research* 28, 49–85.
<https://doi.org/10.1111/j.1468-2958.2002.tb00798.x>
- Chau, L. (2015). Digital skills urgently needed to bridge digital literacy gap. *Huffington Post*. Retrieved from http://www.huffingtonpost.com/lisa-chau/digital-skills-urgently-n_b_7796312.html
- Child, J. T., & Petronio, S. (2011). Unpacking the paradoxes of privacy in CMC relationships: The challenges of blogging and relational communication on the internet. In K. B. Withg & L. M. Webb (Eds.), *Computer-mediated communication in personal relationships* (pp. 21–40). New York: Peter Lang Publishing.
- Child, J. T., Petronio, S., Agyeman-Budu, E. A., & Westermann, D. A. (2011). Blog scrubbing: Exploring triggers that change privacy rules. *Computers in Human Behavior*, 27(5), 2017–2027. <https://doi.org/10.1016/j.chb.2011.05.009>
- Child, J. T., & Westermann, D. A. (2013). Let's Be Facebook Friends: Exploring Parental Facebook Friend Requests from a Communication Privacy Management (CPM) Perspective. *Journal of Family Communication*, 13(1), 46–59.
<https://doi.org/10.1080/15267431.2012.742089>
- Collins, W. A., Laursen, B., Mortensen, N., Luebker, C., & Ferreira, M. (1997). Conflict processes and transitions in parent and peer relationships: Implications for autonomy and regulation. *Journal of Adolescent Research* 12, 178–198.

<https://doi.org/10.1177/0743554897122003>

Common Sense Media. (2015). The Common Sense Census: Media Use by Tweens and Teens.

San Francisco, CA. Retrieved from <https://www.commonsensemedia.org/research/the-common-sense-census-media-use-by-tweens-and-teens>

Common Sense Media. (2017). News and America's kids: How young people perceive and are impacted by the news. San Francisco, CA. Retrieved from

<https://www.commonsensemedia.org/research/news-and-americas-kids>

Cranor, L. F., Durity, A. L., Marsh, A., & Ur, B. (2014). Parents' and teens' perspectives on privacy in a technology-filled world. *Proceedings of the Tenth Symposium On Usable Privacy and Security* (pp. 19–35). Menlo Park, CA: USENIX Association.

Czeskis, A., Dermendjieva, I., Yapit, H., Borning, A., Friedman, B., Gill, B., & Kohno, T.

(2010). Parenting from the Pocket: Value Tensions and Technical Directions for Secure and Private Parent-teen Mobile Safety. In *Proceedings of the Sixth Symposium on Usable Privacy and Security* (pp. 1-15). New York: ACM.

<https://doi.org/10.1145/1837110.1837130>

Dahl, R. E. (2004). Adolescent brain development: A period of vulnerabilities and opportunities.

Annals of the New York Academy of Sciences 1021, 1–22.

<https://doi.org/10.1196/annals.1308.001>

Erickson, L. B., Wisniewski, P., Xu, H., Carroll, J. M., Rosson, M. B., & Perkins, D. F. (2016).

The boundaries between: Parental involvement in a teen's online world. *Journal of the Association for Information Science and Technology*, 67(6), 1384–1403.

<https://doi.org/10.1002/asi.23450>

Evans, S. K., Pearce, K. E., Vitak, J., & Treem, J. W. (2017). Explicating affordances: A

- conceptual framework for understanding affordances in communication research. *Journal of Computer-Mediated Communication*, 22, 35–52. <http://doi.org/10.1111/jcc4.12180>
- Finkenauer, C., Engels, R. C. M. E., & Meeus, W. (2002). Keeping secrets from parents: Advantages and disadvantages of secrecy in adolescence. *Journal of Youth and Adolescence* 31, 123–136. <https://doi.org/10.1023/A:1014069926507>
- Hawk, S. T., Hale, W. W., Raaijmakers, Q. A. W., & Meeus, W. (2008). Adolescents' Perceptions of Privacy Invasion in Reaction to Parental Solicitation and Control. *The Journal of Early Adolescence*, 28(4), 583–608. <https://doi.org/10.1177/0272431608317611>
- Hawk, S. T., Keijsers, L., Hale, W. W., & Meeus, W. (2009). Mind your own business! Longitudinal relations between perceived privacy invasion and adolescent-parent conflict. *Journal of Family Psychology*, 23(4), 511–520. <https://doi.org/10.1037/a0015426>
- Hargittai, E. (2010). Digital Na(t)ives? Variation in internet skills and uses among members of the “Net Generation”. *Sociological Inquiry* 80, 92–113. <https://doi.org/10.1111/j.1475->
- Kanter, M., Afifi, T., & Robbins, S. (2012). The impact of parents “friending” their young adult child on Facebook on perceptions of parental privacy invasions and parent-child relationship quality: The impact of parents on Facebook. *Journal of Communication*, 62, 900–917. <https://doi.org/10.1111/j.1460-2466.2012.01669.x>
- Kloep, M., Güney, N., Çok, F., & Simsek, Ö. F. (2009). Motives for risk-taking in adolescence: A cross-cultural study. *Journal of Adolescence* 32, 135–151. <https://doi.org/10.1016/j.adolescence.2007.10.010>
- Lenhart, A. (2015). Teens, Social Media & Technology Overview 2015. Pew Research Center:

- Internet, Science & Tech. Retrieved from <http://www.pewinternet.org/2015/04/09/teens-social-media-technology-2015/>
- Litt, E., & Hargittai, E. (2014). A bumpy ride on the information superhighway: Exploring turbulence online. *Computers in Human Behavior* 36, 520–529.
<https://doi.org/10.1016/j.chb.2014.04.027>
- Litt, E., Spottswood, E., Birnholtz, J., Hancock, J. T., Smith, M. E., & Reynolds, L. (2014). Awkward encounters of an “other” kind: Collective self-presentation and face threat on Facebook. *Proceedings of the 17th ACM Conference on Computer Supported Cooperative Work & Social Computing* (pp. 449–460). New York: ACM.
<https://doi.org/10.1145/2531602.2531646>
- Madden, M., Cortesi, S., Gasser, U., Lenhart, A., & Duggan, M. (2012). *Parents, teens, and online privacy*. Washington, DC: Pew Internet Project. Retrieved from <http://www.pewinternet.org/2012/11/20/main-report-10/>
- Maxwell, K. A. (2002). Friends: The role of peer influence across adolescent risk behaviors. *Journal of Youth and Adolescence* 31, 267–277.
<https://doi.org/10.1023/A:1015493316865>
- Palfrey, J. G., & Gasser, U. (2013). *Born digital: Understanding the first generation of digital natives*. Basic Books.
- Petronio, S. (2002). *Boundaries of privacy: Dialectics of disclosure*. SUNY Press.
- Petronio, S. (2013). Brief status report on communication privacy management theory. *Journal of Family Communication* 13, 6–14. <https://doi.org/10.1080/15267431.2013.743426>
- Petronio, S., & Durham, W. T. (2015). Communication privacy management theory: Significance for interpersonal communication. In L. A. Baxter & D. O. Braithwaite (Eds.).

- Engaging theories in interpersonal communication: Multiple perspectives* (pp. 335–347), Sage.
- Racz, S. J., Johnson, S. L., Bradshaw, C. P., & Cheng, T. L. (2017). Parenting in the digital age: urban black youth's perceptions about technology-based communication with parents. *Journal of Family Studies*, *23*(2), 198–214.
<https://doi.org/10.1080/13229400.2015.1108858>
- Simons-Morton, B., Haynie, D. L., Crump, A. D., Eitel, P., & Saylor, K. E. (2001). Peer and parent influences on smoking and drinking among early adolescents. *Health Education & Behavior* *28*, 95–107. <https://doi.org/10.1177/109019810102800109>
- Steinberg, L., & Monahan, K. C. (2007). Age differences in resistance to peer influence. *Developmental Psychology* *43*, 1531–1543. <https://doi.org/10.1037/0012-1649.43.6.1531>
- Tufekci, Z. (2012). Facebook, Youth and Privacy in Networked Publics. In *Proceedings of the Sixth International AAAI Conference on Weblogs and Social Media* (pp. 338–345). Dublin, Ireland: AAAI.
- Wisniewski, P., Ghosh, A. K., Xu, H., Rosson, M. B., & Carroll, J. M. (2017). Parental control vs. teen self-regulation: Is there a middle ground for mobile online safety? *Proceedings of the 2017 ACM Conference on Computer Supported Cooperative Work and Social Computing* (pp. 51–69). New York, NY, USA: ACM.
<https://doi.org/10.1145/2998181.2998352>
- Wisniewski, P., Lipford, H., & Wilson, D. (2012). Fighting for my space: Coping mechanisms for SNS boundary regulation. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 609–618). New York: ACM.
<https://doi.org/10.1145/2207676.2207761>

Wisniewski, P., Xu, H., Rosson, M. B., Perkins, D. F., & Carroll, J. M. (2016). Dear diary: Teens reflect on their weekly online risk experiences. *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems* (pp. 3919–3930). New York: ACM.

<https://doi.org/10.1145/2858036.2858317>

Yardi, S., & Bruckman, A. (2011). Social and Technical Challenges in Parenting Teens' Social Media Use. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems* (pp. 3237–3246). New York: ACM. <https://doi.org/10.1145/1978942.1979422>

Table 1. Teens' Reported Frequency of Use and Perceived Importance of Social Media

	Frequency of Use ¹		Importance to Social Life ²		N	%
	Mean	SD	Mean	SD		
Snapchat	4.85	1.36	3.18	1.26	97	82%
Instagram	4.50	1.23	2.62	1.13	94	79%
Messaging apps	4.00	1.59	1.29	28	28	24%
Twitter	3.04	1.65	1.67	0.94	46	39%
Reddit	3.00	1.73	1.67	1	9	8%
Tumblr	2.93	1.44	1.36	0.93	14	12%
Facebook	2.44	1.66	1.41	0.78	34	29%

¹ Frequency of Use: Measured on a six-point scale ranging from 1= Less often than once a week; to 6= Multiple times per hour. ² Importance to Social Life: Measured on a five-point scale from 1=Not at all important to 5=Very Important.

Table 2. Multiple Regression Measuring Variance in Privacy Turbulence Likelihood

Variable	Model 1			Model 2		
	<i>B</i>	<i>SE</i>	β	<i>B</i>	<i>SE</i>	β
Perceived Parental Restriction	0.22	0.13	0.21*	0.05	0.14	0.04
Teen's Privacy Concerns	0.21	0.56	0.04	0.49	0.55	0.10
Teen's Perceived Emotional Autonomy	1.63	1.22	0.17	2.28	0.33	0.24*
Parent's Privacy Concerns for Child	-0.25	0.52	-0.06	-0.45	0.51	-0.1
Teen's Age (Upperclassman)	3.27	1.32	0.32*	8.49	4.80	0.83*
Interaction Term: Perceived Parental Restriction * Teen Age				0.81	0.32	1.15**
	<i>R</i> ²					0.21***
	<i>F</i> for change in <i>R</i> ²					8.68**

p*<0.05; *p*<0.01; ****p*<0.001

Figure 1. Interaction Effect of Child’s Age and Perceived Parental Restriction on Familial Privacy Turbulence Likelihood

