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The Changing Nature of Parent–Teacher Communication: Mode Selection in the Smartphone Era

Blair Christopher Thompson, Joseph P. Mazer & Elizabeth Flood Grady

Parent–teacher communication continues to evolve due to smartphones and other new communication technologies. In all, 1,349 parents completed the Parental Academic Support Scale to assess the frequency and importance of communication across modes. Confirmatory analysis revealed a good model fit. Media richness theory was applied to parents’ qualitative and quantitative responses to understand the communication modes parents now select to communicate with teachers at the P-12 level. The data revealed an increase in parents’ preference for frequent e-mail communication as well as for emerging modes of parent–teacher communication such as text messaging and social media. Implications for media richness theory and changes to parent–teacher communication are discussed.

Keywords: Parental Academic Support; Media Richness Theory; Technology; Smartphones; E-mail; P-12 Level

Since the turn of the 21st century, scholars have noted that computer-mediated communication (CMC), primarily e-mail, has changed the nature of parent–teacher communication at the P-12 level (Jacobson, 2003; Seitsinger, Felner, Brand, & Burns, 2008; Thompson, 2008). The proliferation of smartphones has changed the nature of communication, likely once again altering the modes parents select to communicate with teachers. Scholars suggest smartphones could be effective tools for parent–

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teacher communication (Ho, Hung, & Chen, 2013; Maisto, 2013; Sykes, 2014). Although scholars have begun to examine how students use smartphones in the classroom (“Living and learning with mobile devices”, 2014; Sykes, 2014), minimal research has investigated parents’ smartphone use to communicate with teachers. Scholars need to examine parents’ smartphone use to understand how the devices are utilized in parent–teacher communication and gain a theoretical understanding of why parents select specific modes in this new era. Therefore, this study explores potential changes in the modes parents select to communicate with teachers by applying media richness theory to parents’ mode selection.

Research reveals positive associations between parental academic support and student achievement (Chen, Yu, & Chang, 2007; McKay, Atkins, Hawkins, Brown, & Lynn, 2003; Rodriguez, 2002). As parents and teachers integrated CMC, it became vital for researchers to focus their attention on communication as a key element of parental support (Thompson, 2008, 2009; Thompson & Mazer, 2012). Thompson’s (2008) initial exploration of parent–teacher e-mail communication revealed 35 common topics. While Thompson identified e-mail as the primary mode of parent–teacher communication, parents and teachers also combined a variety of modes of communication to take advantage of specific elements of each mode.

Parental Academic Support via Smartphones

Since Thompson’s (2008) initial research, smartphones have saturated the marketplace. Reports indicate that smartphones are owned by two-thirds of consumers in the U.S. (“Two-thirds of US consumers own smartphones”, n.d.). Parents’ perceptions of students’ smartphone use in schools are mostly positive (“Living and learning with mobile devices,” 2014). Ho et al. (2013) suggested that mobile phones could be useful to increase parent–teacher communication. In their study of Taiwanese primary teachers, Ho et al. found teachers’ perceptions of ease and usefulness influenced their intention to use mobile technology. Parents have indicated preference for e-mail due to its convenience, but also suggest FTF provides additional nonverbal cues necessary to communicate effectively about complex topics (Thompson, 2008; Thompson & Mazer, 2012). Mechanisms such as Skype and FaceTime have the potential to enhance parent–teacher communication by combining the advantages of FTF and CMC, enabling parents and teachers to capitalize on cues that are more pronounced FTF. Thus, parents are likely open to using smartphones to communicate with teachers.

Smartphone use can increase access to communication via social media and expand the modes of parent–teacher communication. eMarketer estimated that by 2014, 46% of smartphone users will access social media through their smartphones (“Security and privacy in mobile social network”, 2013). The same trend may now exist in parent–teacher communication. Olmstead’s (2013) survey data showed that a third of parents indicated they used Facebook to communicate with teachers or to find out information about a class. It is important to note that Olmstead drew conclusions based upon 89 parents who reported if they in general used a mode of

communication with teachers. Scholars have also examined social media use in the educational context. For example, Mazer, Murphy, and Simonds (2007) found that greater teacher self-disclosure via Facebook positively influences students' motivation and learning, while Thompson and Mazer's (2009) research showed that Facebook plays a key role in student academic support.

Media Richness

Media richness theory (MRT) represents an ideal framework to gain a deeper understanding of the media parents now select to communicate with teachers. MRT focuses on how the richness of a medium facilitates effective communication, positing that individuals select media based on their assessment of the fit between richness and the complexity of the task (Daft & Lengel, 1986). In essence, MRT theorists propose that when communicators select a medium with the appropriate level of richness, they are more likely to avoid ambiguity, which may result in conflicting interpretations and, in turn, increase the likelihood for shared meaning. Richness of a medium is determined by four components: (1) capability for immediate feedback, (2) capacity for multiple cues, including auditory and visual cues and physical presence, (3) level of natural language to assist in explaining an idea, and (4) ability to personalize a message (Daft & Lengel, 1986). Media ranking high across these components are considered *rich* (e.g., FTF), while media ranking lower are deemed *lean* (e.g., e-mail). MRT suggests that e-mail, a leaner medium, would be less effective for communication about complex or sensitive matters due to delayed feedback, limited nonverbal cues, and decreased personal focus.

Instructional communication scholars have begun to apply MRT in the academic context. Timmerman and Kruepke (2006) applied MRT to computer-assisted instruction (CAI) and found that CAI provided students with the most natural language and cues produced the highest performance outcomes. While Timmerman and Kruepke focused on CAI to test the effects on student learning compared with traditional instructional strategies, their results provided important insights to help analyze parent-teacher messages. For example, they found that reprocessability, the ability to review a message (Robert & Dennis, 2005), represents an advantage of leaner media when students use CAI. Further, richer media can cause overload when communicating complex messages, as the combination of multiple cues and message complexity can inhibit the receiver's interpretation. This led Timmerman and Kruepke (2006) to suggest in some instances the richest media may not be most advantageous for complex messages. Reprocessability and overload may also be useful concepts in the parent-teacher context. For example, Thompson and Mazer (2012) applied MRT to parent-teacher communication prior to the smartphone era and found that parents selected e-mail most frequently regardless of message complexity. While parents' chose e-mail at a higher frequency for less complex topics (e.g., grades) as compared with more complex topics (e.g., behavior), parents still selected e-mail more frequently than richer modes (e.g., FTF, phone). Parents cited

convenience as their primary reason for selecting leaner modes for more complex topics, but reprocessability and overload may offer further explanation.

Parents' Smartphone Modes and Media Richness

Based on smartphones' convenient nature for facilitating electronic communication, parents' selection of lean media may increase in frequency and expand to other lean modes such as text messaging and social media in this new era. The selection of leaner modes due to convenience may cause concern due to the high propensity for negatively valenced topics (e.g., academic, behavioral problems, etc.; Thompson, 2009). While organizational communication scholars indicate that managers select leaner media for negatively valenced topics to reduce face threats and avoid damaging relationships with employees (Sheer & Chen, 2004), the parent–teacher power dynamic and purpose for communication (e.g., assisting students) differs, making the use of lean media for negatively valenced topics potentially more problematic. Thus, it is important to examine what modes parents select in the smartphone era:

RQ1: What modes, including new communication technologies (text messaging, Skype/FaceTime), do parents and teachers utilize to communicate academic support?

Parental Academic Support Communication Topics/Tasks and Complexity

Thompson and Mazer's (2012) Parental Academic Support Scale (PASS) measures the frequency of parent–teacher communication across modes (the researchers used the term mode instead of media to remain consistent with scales measuring support) along five factors: academic performance (e.g., inquiring about how the child can improve a grade), classroom behavior (e.g., communication about students' behavior), preparation (e.g., communication about a child's academic or social preparation), hostile peer interactions (e.g., communication about aggressive encounters between students), and health (e.g., communication about medical issues affecting a child's work). Interestingly, Thompson and Mazer's qualitative and quantitative data produced some contradictory results regarding the selection of modes based on message complexity. Parents selected e-mail, a leaner mode, most frequently for academic performance, the most objective factor focusing primarily on concrete questions about grades or assignments. Quantitative data revealed that parents also selected e-mail more frequently than richer modes (e.g., FTF and phone) across all five factors regardless of message complexity. The qualitative data suggested that parents placed importance on selecting richer media for complex topics. Although parents still noted in open-ended comments that they preferred to use e-mail twice as often as richer media, their responses indicated that parents valued the additional cues associated with richer media for more complex topics (e.g., classroom behavior and hostile peer interaction). This suggested that FTF or phone communication represented more appropriate modes for communicating about complex topics. Owing to the somewhat contradictory findings in Thompson and Mazer's study, it is critical to further assess parent–

teacher communication in the smartphone era to determine if parents have increased their reliance on e-mail. It is important to learn if parents have increased their selection of more convenient media for more complex topics, despite MRT's predictions that interactants select richer media for complex communication and leaner media for objective communication (Daft & Lengel, 1986; Sheer & Chen, 2004; Timmerman & Kruepke, 2006). Guided by MRT, we posed the following question:

RQ₂: Do parents select richer modes (FTF, phone, Skype/FaceTime) more frequently for complex topics and leaner modes (e-mail, text messaging, written communication) for instrumental topics?

It is also important to understand why parents select specific modes to determine why they might choose leaner modes for more complex topics. Open-ended responses can provide rich data to understand how and why parents' preference for specific modes may have changed, including inquiry into why parents select (or do not select) Skype/FaceTime, text messaging, and social media. Further, Thompson and Mazer's (2012) analysis revealed parents use a combination of modes to communicate with teachers, taking advantage of the key elements of rich and lean media. Thompson and Mazer (2012) identified four mode combinations: e-mail and FTF; e-mail and phone; e-mail, phone, and FTF; and a combination of all modes. Due to increases in smartphone use, it is important to analyze why parents combine certain modes to communicate with teachers in the smartphone era. Therefore, we asked:

RQ₃: Why do parents choose certain modes for specific topics?

RQ₄: What combination of modes do parents use to communicate with teachers?

Method

Participants

The participants were 1,349 parents of students from a school district in the Midwestern United States. The total population of the district was 37,164 students distributed over 56 schools (38 elementary schools, 11 junior high schools, 6 high schools, 1 alternative school). The sample consisted of 247 fathers and 1,083 mothers with an average age of 41.1 ($SD = 13.2$). Nineteen participants failed to report their sex. The racial/ethnic distribution was primarily Caucasian (90.7%). The majority of parents continued their education at the college/university level: 10.3% earned an associate's degree, 37.3% earned a bachelor's degree, 25.7% earned a master's degree, and 7.3% earned a doctoral degree. Additionally, 14.6% completed some college, and 3.8% possessed high school diplomas, while 1% did not provide this information. Their children ranged in age from 5 to 18 ($M = 10.8$; $SD = 3.6$) and were enrolled in first through 12th grades.

Procedures

All procedures were IRB approved and the school board granted permission to survey parents from the 22,930 households in the district. Participants received an e-mail requesting their participation, which provided a link to an online informed consent form and then directed them to an online survey.

Measures

Parental academic support

Thompson and Mazer's (2012) PASS assessed the frequency of parent–teacher communication across modes. PASS is a 16-item multidimensional measure on which respondents rate the frequency of communication across the five factors discussed previously. The scale features a three-pronged response format. First, participants indicated how *frequently* each type of support occurred over the last month, responding on a 5-point Likert-type scale (not at all, once or twice, about once a week, several times a week, about every day). Cronbach's alpha estimates indicated that the frequency ratings of parental academic support were reliable: academic performance $\alpha = .85$; classroom behavior $\alpha = .78$; preparation $\alpha = .77$; hostile peer interactions $\alpha = .84$, and health $\alpha = .70$.

The overall structure of the PASS was tested via confirmatory factor analysis. All CFA procedures were conducted using LISREL 8.80, and five popular indices assessed model fit: (1) model chi-square, (2) the root mean square error of approximation (RMSEA), (3) the non-normed fit index (NNFI), (4) the comparative fit index (CFI), and (5) the standardized root mean square residual (SRMR). Model fit is generally considered acceptable if CFI and NNFI values are above .90 (and preferably above .95), the RMSEA statistic does not exceed .08 (and preferably .05) (Kline, 2005; MacCallum, Browne, & Sugawara, 1996), and SRMR is less than .08 (Hu & Bentler, 1999). Guided by prior research (Thompson & Mazer, 2012), the frequency items were submitted to CFA with each manifest indicator of parental academic support loading onto its respective latent construct (i.e., academic performance, classroom behavior, preparation, hostile peer interactions, health). Analysis revealed that all items loaded onto their respective latent construct. Considering the standards for model fit reported previously, the final model demonstrated good model fit, $\chi^2(45) = 98.70$, $p < .01$, RMSEA = .064_[90% CI = .053:.084], NNFI = .95, CFI = .97, SRMR = .05.

Second, participants reported how *important* each supportive behavior was for their child's academic success (not important, moderately important, very important). Cronbach's alpha estimates indicated that the importance ratings of parental academic support were reliable: academic performance $\alpha = .92$; classroom behavior $\alpha = .93$; preparation $\alpha = .77$; hostile peer interactions $\alpha = .84$, and health $\alpha = .87$. Third, to measure the use of new communication technologies used in parent–teacher communication via smartphones, we updated PASS by adding Skype/FaceTime and texting as *mode categories*, expanding the instrument to measure six modes of communication (FTF, e-mail, phone, written communication, Skype/FaceTime, text

messaging) for each item, asking parents to indicate which mode(s) they utilized to communicate the specific supportive behavior, checking all modes that applied.

Open-ended questions

Finally, participants responded to the following open-ended questions to explore why parents selected specific modes and mode combinations: (1) “Why do you choose certain modes over others for communicating about certain issues with your child’s teacher(s)? Are certain modes better for certain tasks? Please explain and provide examples to illustrate your thoughts.” (2) “What, if any, combination of modes have you found work most effectively for communicating with your child’s teacher(s)?” and (3) “What other modes of communication, if any, do you use to communicate with your child’s teachers?”

Data Analysis

Frequencies and percentages were calculated to analyze parents’ PASS responses. The constant comparative method was used to analyze the open-ended questions (Strauss & Corbin, 1998). Responses produced 395 pages of single-spaced data. First, we read the data transcripts in their entirety, leading to line-by-line analysis. We then generated a master code list. Next, open coding involved the preliminary categorization of the data. Finally, axial coding included reading through the transcripts to compare, reduce, and reconceptualize the categories, and interpret the emerging themes. In the findings, we weaved in exemplars to provide evidence for the emergent themes, employing MRT as a theoretical framework to analyze the themes.

Results

Quantitative Data

RQ1 asked what modes parents commonly utilized to communicate academic support. We obtained a summed score for the six modes (FTF, e-mail, phone, written communication, text messaging, and Skype/FaceTime) across five PASS dimensions. Table 1 offers a percentage summary. The results indicated that parents most frequently communicate academic support via e-mail (12.6%), compared with face-to-face (5.3%), phone (2.7%), written communication (1.2%), text messaging (.2%), and Skype/FaceTime (0%). Parents selected e-mail most frequently across each dimension of parental academic support. RQ2 queried whether parents would select richer modes more frequently for complex topics and leaner modes for instrumental topics. While parents selected a leaner mode (e-mail) more frequently for instrumental topics, they did not select richer modes more frequently for complex topics. Analysis of mean importance ratings revealed an overall importance mean of 2.47 ($SD = .74$) indicating moderate importance. Parents viewed academic performance support ($M = 2.56$) as most important, followed closely by support pertaining to hostile peer interactions ($M = 2.49$), classroom behavior ($M = 2.48$), preparation ($M = 2.45$), and health ($M = 2.38$). See Table 2 for individual item importance scores.

Table 1 Percentages for Modes Used to Communicate Parental Academic Support

This past month, I communicated with my child's teacher about...	Face-to-face (%)	E-mail (%)	Phone (%)	Written Communication (%)	Skype/FaceTime (%)	Texting (%)	Average (%)
1. ...my child's grades in the class.	10.2	23.3	2.8	1.9	0	.1	6.4
2. ...why my child has a missing assignment.	4.9	18.7	1.9	1.0	0	0	4.4
3. ...how my child can improve his/her grade.	9.8	24.7	2.7	1.4	0	.2	6.5
4. ...why my child received the grade he/she did.	7.1	18.6	2.0	.7	0	0	4.7
5. ...why my child was not completing assignments.	5.1	15.0	1.8	1.5	0	0	3.9
6. ...learning more about homework assignments.	7.9	34.0	2.5	4.0	0	.5	8.2
7. ...a question I had about an assignment.	10.0	38.6	3.2	4.3	0	.3	9.4
8. ...solutions to address my child's behavior in class.	7.5	13.5	3.1	1.5	0	.2	4.3
9. ...my child talking back to the teacher.	2.7	5.8	1.2	.7	0	0	1.7
10. ...my child goofing off in class.	5.5	10.4	1.9	1.2	0	0	3.2
11. ...my child's ability to make/maintain friendships with peers.	5.9	7.0	1.1	.5	0	.1	2.4
12. ...how my child was not bringing materials to class.	2.6	8.3	1.1	.7	0	0	2.1
13. ...my child being picked on by his/her classmates.	4.2	7.9	3.3	.5	0	.3	2.7
14. ...a major classroom behavioral incident (fight, racial slur).	4.0	6.8	2.7	.7	0	.2	2.4
15. ...a temporary health issue that my child is experiencing.	5.8	17.0	6.0	2.3	0	.1	5.2
16. ...a major physical health issue that my child is experiencing.	4.1	9.8	3.8	1.0	0	0	3.1
Academic performance mean	7.9	24.7	2.4	2.1	0	.2	6.2
Classroom behavior mean	5.2	9.9	2.1	1.1	0	.1	3.1
Preparation mean	4.3	7.7	1.1	.6	0	.1	2.3
Hostile peer interactions mean	4.1	7.4	3.0	.6	0	.3	2.6
Health mean	5.0	13.4	4.9	1.7	0	.1	4.2
Overall mean	5.3	12.6	2.7	1.2	0	.2	3.7

Table 2 Importance Ratings on the Parental Academic Support Scale

This past month, I communicated with my child's teacher...	<i>M</i>	<i>SD</i>
1. ...my child's grades in the class.	2.56	.63
2. ...why my child has a missing assignment.	2.44	.70
3. ...how my child can improve his/her grade.	2.54	.63
4. ...why my child received the grade he/she did.	2.38	.67
5. ...why my child was not completing assignments.	2.49	.70
6. ...learning more about homework assignments.	2.38	.66
7. ...a question I had about an assignment.	2.36	.66
8. ...solutions to address my child's behavior in class.	2.52	.72
9. ...my child talking back to the teacher.	2.53	.77
10. ...my child goofing off in class.	2.41	.73
11. ...my child's ability to make/maintain friendships with peers.	2.34	.72
12. ...how my child was not bringing materials to class.	2.32	.75
13. ...my child being picked on by his/her classmates.	2.50	.75
14. ...a major classroom behavioral incident (fight, racial slur).	2.53	.75
15. ...a temporary health issue that my child is experiencing.	2.33	.70
16. ...a major physical health issue that my child is experiencing.	2.44	.79
Academic performance mean	2.56	.63
Classroom behavior mean	2.48	.78
Preparation mean	2.45	.73
Hostile peer interactions mean	2.49	.78
Health mean	2.38	.78
Overall mean	2.47	.74

The frequency and importance scores for each PASS factor were correlated with each other: academic performance, $r = .14$, $p < .01$; classroom behavior, $r = .14$, $p < .01$; preparation, $r = .10$, $p < .05$; hostile peer interactions, $r = .10$, $p < .05$; health, $r = .16$, $p < .01$.

Qualitative Data

Mode preference

The dominant theme, *mode preference*, directly addressed RQ3. The theme contained two subthemes, occurring across each mode: reasons why parents preferred a specific mode and when they used that mode.

Preference for e-mail and text messaging

Parents' open-ended responses demonstrated an even stronger preference for e-mail than in the statistical data. Five hundred fifteen parents stated they preferred to e-mail teachers, over five times as much as any other mode. One parent commented, "E-mail is used for 95% of my communication with the teacher." Five parents preferred text messaging to communicate with teachers.

Three reasons emerged explaining why parents showed a strong preference for e-mail (see Table 3). First, convenience represented parents' primary reason for selecting email, with 121 parents noting it as the reason they preferred to communicate with teachers. Relatedly, 131 parents enjoyed the asynchronous nature

Table 3 Open-ended Responses for Reasons for Mode Selection

Mode	Number of responses
E-mail	848 total
Asynchronous nature	131
Ease	129
Quick	123
Convenience	121
Access to a computer at work	55
Time factor	52
Written documentation	50
Fit work schedule	42
Less intrusive	33
Timely response	29
Access via smartphone	29
Time to better articulate thoughts	28
Access to teachers	20
Forward/share e-mails	16
Clearer wording	7
Explain/express message better	4
Better responses	3
Interpret language (barrier)	3
Face-to-face	96 total
Understand situation better (nonverbal)	38
Build relationship/establish rapport	18
Talk during pick up/drop off	11
Detailed verbal communication	9
Generate solutions/better resolve issues	8
Demonstrate importance of communication	8
While volunteering in classroom	7
Phone	25 total
Resolve issue	25
Text messaging	69 total
Accessibility, convenience	66
Check at work	3

of e-mail, which enabled them to read and reply to the message on their own time. Convenience also stemmed from how quick (123 parents) and easy (129 parents) it was to communicate via e-mail. One parent commented: “I don’t want to take a lot of the teacher’s time for less important issues, or issues easily communicated through e-mail.” Fifty-two parents noted that time was an important factor in their decision to communicate via e-mail. Parents’ identification of convenience as a primary reason for selecting leaner modes revealed that parents’ reasons for selecting lean media extended beyond the four tenets of MRT.

MRT specifies that communicators often select rich media based on their capability to offer more immediate feedback (tenet one) due to the ability for both parties to see, hear, and simultaneously react to one another (Timmerman & Kruepke, 2006). Parents indicated they received the most “immediate” response from teachers via e-mail; however, they referred to timeliness of the response rather than the ability to

see or hear feedback instantaneously. Although FTF and phone certainly provide more immediate feedback when parents and teachers can manage to communicate via these modes, these chances were rare. Parents believed they were more likely to get a timely response via e-mail than through synchronous modes (FTF and phone), which were more difficult to arrange since both parties must be present simultaneously. Based on e-mail's convenience which resulted in receiving messages more immediately, parents disregarded richness of the media as their primary reason for mode selection with teachers and chose e-mail more frequently due to its convenience and quick response time.

A second reason parents' preferred e-mail stemmed from the proliferation of smartphones, providing ready access to teacher e-mails. Twenty-nine parents specifically referenced using their smartphone to access e-mail. One parent commented, "being able to converse with [teachers] while I'm in the car (smartphone) waiting for lessons, in the evening after work etc. is very important" and another stated: "Easy, on my phone I can see it right away." Due to the easy access smartphones provided, 25 parents noted a preference for e-mail or texts. Parents typically had their smartphones on them while interacting with their children, enabling them to check their messages and immediately connect with the teacher. Parents' use of smartphones further strengthened their preference for e-mail as they could view e-mails on these devices, making e-mail even more convenient.

In addition to their convenience, smartphones further paved the way for the use of new modes of communication in parent-teacher communication. Text messaging emerged as a new mode of parent-teacher communication, as 66 parents appreciated texting as a viable and convenient option. Though minimally represented in the statistical data, the qualitative data added important insight into parents' views on incorporating text messaging: "I prefer to text message ... I read my text messages almost immediately" and "E-mail or texting is quick and available on my phone." Texting had the potential to be effective for brief messages, fitting with MRT's tenet that lean media work most effectively for less complex messages. Three parents noted teachers had begun sending important reminders via text messages to parents regarding tests or assignments. Other parents indicated they had never received a text from a teacher, but would like if teachers texted, while 11 parents were less comfortable with texting teachers.

Parents' open-ended responses revealed that they have begun to use social media and Skype to communicate with teachers, addressing modes not represented in the quantitative data. Facebook represented the primary form of social media parents used to communicate with teachers. One parent found the instant messaging function on Facebook appealing due to the quick feedback. Another parent mentioned their child's teacher used Instagram, which the parent appreciated, as incorporating pictures added some of the visual cues present in richer modes. Nine parents mentioned they would like to use Skype with teachers: "FTF or Skype would be the best method of communication, as it shows face and body language as well as verbal communication." Thus, Skype offered the potential to take advantage of both immediate feedback and visual/auditory cues present in richer media consistent with

MRT without losing the convenience of asynchronous communication. However, nine parents indicated they would not use Skype to communicate with teachers because they were simply not yet comfortable, perhaps explaining the lack of parents selecting Skype in the quantitative data.

Third, parents preferred e-mail because certain features allowed them to compose a message more effectively. Four parents felt they could more fully explain or express things better in writing, decreasing the likelihood for confrontation regarding sensitive topics. Further, 28 parents thought the asynchronous qualities of e-mail produced better messages, allowing parents time to return, reread messages, and think through the composition of a message so they could better articulate their thoughts, and in turn, craft more effective messages due to the time they could take to compose their response. Thus, reprocessability enabled parents to better craft a message (Timmerman & Kruepke, 2006), though the message may be less personal than in richer media. Parents who preferred e-mail placed such value on the advantages associated with its asynchronous qualities they only switched to richer modes if e-mail did not produce the desired results. Parents who preferred e-mail did not necessarily believe richer media facilitated better crafted messages, contradicting MRT. Further, in some cases, the less natural language of e-mail defused confrontation when parents and teachers e-mailed about sensitive topics.

In other respects, parents' responses were in line with MRT. Parents used e-mail most frequently for less complex topics (see Table 4). For instance, 132 parents selected e-mail for minor issues such as general information, quick updates, and nonemergencies. Specifically, 66 parents used e-mail for objective topics with clear answers such as assignments, homework, grades, and scheduling. A parent commented: "I use e-mail if the situation is assignments or grades (something objective)." MRT suggests that leaner media work more effectively for simpler topics explaining, in part, why parents typically selected e-mail and text messages for more instrumental topics. Thus, the strong preference for e-mail echoes the quantitative data where parents selected e-mail most frequently for objective topics. The second MRT tenet explains that lean media work effectively for communication where visual and auditory cues are not necessary to interpret the message (Timmerman & Kruepke, 2006). Consistent with this tenet, parents' responses indicated they selected e-mail for more objective topics, making a conscious choice to avoid e-mail for topics where meaning could be misconstrued.

Preference for FTF and phone

Some parents preferred synchronous communication with teachers primarily due to additional cues. Eighty-nine parents designated FTF as their preferred mode; eight preferred phone. Three reasons emerged explaining parents' preferences for FTF (distinct patterns did not emerge phone preference). First, 38 parents preferred FTF because they believed it led to a better understanding of the situation due to visual and auditory cues: "FTF communication is always best because then there is no misinterpretation of the words used. Body language is extremely important in understanding the message being relayed."

Table 4 Open-ended Responses for Modes of Parent–teacher Communication

Mode	Number of responses
E-mail	231 total
Minor issues	132
Assignments/homework/grades	54
Brief questions/easily resolved issues	25
Schedule meetings	12
Follow-up	8
Face-to-face	326 total
Serious problems	187
Behavior	45
Recurring issue/unresolved	37
Potential for misinterpretation	31
Social issues, bullying	20
Escalation	7
Follow-up	5
Paint better overall picture	4
Phone	70 total
Urgent, time sensitive issues	52
Health	10
Behavior	4
Social issues, bullying	4
Text messaging	10 total
Simple, brief messages	4
School crisis	3
Homework/assignment update	3

The second tenet of MRT suggests that richer media offer more visual and auditory cues and improve one's ability to interpret a message and adapt to the situation (Timmerman & Kruepke, 2006). Some parents explained they preferred richer modes for more serious topics due in large part to the additional cues which helped interpret the message. One parent preferred FTF "when a larger amount of information is to be exchanged. A five minute conversation is more convenient than 20 minutes to write an e-mail." Further, eight parents believed they could brainstorm potential solutions with the teacher, better resolve issues, and generate solutions more effectively FTF. Some parents viewed FTF as "the best way to advocate for my child and let the teacher know that while we encourage our child to try and solve the issue themselves first, that we are always there behind them." Although a majority of parents preferred e-mail, some parents believed more complex messages such as advocacy required richer modes.

Second, 18 parents believed FTF communication worked more effectively to build a relationship with teachers. Parents could get to know teachers better due to the more personal nature of the communication: "FTF is usually the best. It sends a message to the child that this is important and I am important. It also allows parents and teachers to establish better rapport and allows for a better partnership for everyone." Eight parents suggested FTF communication means more now, since it happens less frequently; the fact that both parents and teachers choose to

communicate FTF illustrates the importance of the issue. MRT's fourth tenet suggests richer media make communication more personal (Timmerman & Kruepke, 2006), connecting parents' association between FTF and relationship building due to the more personal nature.

Third, some parents preferred FTF because they frequently visited their child's school making FTF possible on a regular basis. Eighteen parents talked with their child's teacher during pick up and drop off time from school or when volunteering: "I am at school often so it is natural to have FTF conversations with my children's teachers." Convenience also represented a factor in selecting richer modes; however, parents noted that sometimes these conversations were pressed for time, nullifying the advantages of rich media for complex topics: "Talking after school is good for maintaining dialogue, but since we're often pressed for time and there are a lot of other kids and parents there, it is not always the best place to discuss sensitive matters." Perhaps, this explains why parents selected FTF for academic performance most frequently in the statistical data, as these short encounters during pick up/drop off only allowed parents to discuss simple topics like grades and assignments. Importantly, 32 parents noted that while FTF had its benefits, in many cases, it was not realistic due to difficulty in arranging times to meet.

Parents identified four types of issues when they chose FTF, selecting phone for similar issues. First, 187 parents selected FTF when the topic was very important, including major issues or serious problems that were urgent, highly sensitive, or complicated; 52 parents indicated they selected phone for emergencies and urgent, time-sensitive matters such as an injury to their child. In essence, parents voiced preference for FTF or phone, richer modes, for more complex topics. Put simply, "FTF is good for major issues so you can read the body language." Seven parents selected FTF when an issue escalated or if parents became concerned with how a teacher handled an issue: "I use FTF when there is a problem or I'm upset with the way something was handled ... we can go back and forth and fix the problem." Corresponding to the quantitative data, parents indicated a greater preference for richer modes for complex topics as compared with objective issues, though far fewer parents preferred FTF or phone communication over e-mail.

Second, parents voiced preference for FTF or phone when communicating about behavioral (49 parents) or social (24 parents) issues. These topics left more room for interpretation due to their subjective and emotional nature, making it more likely that language might be misinterpreted via a leaner mode. The qualitative data suggested parents select richer media to communicate behavioral and social issues as these issues represented complex scenarios. In the quantitative data, parents selected phone more frequently for hostile peer interactions than academic performance. Thus, phone communication better aligned with the third tenet of MRT which focuses on the ability of media to facilitate natural conversation to assist in interpreting more complex messages (Timmerman & Kruepke, 2006).

Third, 31 parents selected FTF when they believed a message could be misinterpreted. One parent who preferred FTF explained, "E-mails are hard because there are times when you read into the e-mail a tone that wasn't meant to be there." Parents

believed FTF was less likely to be misinterpreted, and in cases that were more subjective or emotional, FTF reduced the potential for misinterpretation. Further, parents believed the phone worked well for subjective conversations related to emotional issues that could lead to confusion, benefitting from the cues available via richer media. FTF was important if further explanation was needed to resolve issues where a misinterpretation may occur: “I think FTF is in order if your child had behavioral issues and you may have other extenuating circumstances that may require further explanation on your part to provide the teacher with your knowledge about their student.” The immediate feedback via FTF increased parents’ ability to adapt their message and offer further explanation when necessary. FTF allowed for immediate feedback (tenet one), enabling the parent and teacher to quickly adapt their communication when necessary during the discussion of complex issues. Parents also indicated phone communication represented a key mode of communication for urgent issues (e.g., child injured, a fight) when a teacher needed to contact them immediately.

Fourth, 42 parents selected FTF when their child continued to struggle because the issue was not resolved via e-mail. Parents selected FTF to follow-up when it became apparent additional contact was necessary via a richer channel as FTF meetings generated better problem-solving due to additional cues available.

Mode combinations

To answer RQ4, the second theme focused on the six *mode combinations* (see Table 5) parents used to communicate effectively with teachers, illustrating that although parents selected e-mail most frequently across factors, they used a variety of modes across topic areas. Each of these combinations reflected the four tenets of MRT as parents combined modes to take advantage of certain features. First, parents combined synchronous and asynchronous communication to take advantage of both rich and lean media. Most commonly, 332 parents used a combination of e-mail and FTF suggesting parents selected richer media when the situation required more immediate feedback and additional cues and leaner media when additional cues were unnecessary. Second, “text combination” consisted of three variations: text and e-mail (19); text, e-mail, and phone (10); text, e-mail, and FTF (10). One parent explained, “Texting worked well ... for quick homework updates or small behavioral issues. Phone calls were more serious issues. E-mails worked fine too,” exemplifying how parents switched from lean to richer modes when the issue was more serious. Third, elementary school parents sometimes used note combinations. Fourth, 14 parents took an “all or nothing approach” to parent–teacher communication, indicating they either took advantage of every mode available or voiced frustration that no modes worked well for communication with their child’s teacher(s). Fifth, eight parents employed an “asynchronous combination” (e-mail and teacher’s website), while four parents used a “synchronous combination” (phone and FTF) to converse with teachers. The latter valued richer media—regardless of topic—due to the additional cues.

Table 5 Open-ended Responses for Mode Combinations

Mode	Number of responses
Synchronous and asynchronous communication	555 total
E-mail and FTF	332
E-mail and phone	143
E-mail, phone, and FTF	80
Text combination	39 total
Text and e-mail	19
Text, e-mail, and phone	10
Text, e-mail, and FTF	10
Note combination	44 total
Written note and e-mail	23
Written note, e-mail, and FTF	15
Written note, e-mail, and phone	6
All or nothing approach	14 total
E-mail, phone, FTF, text, Skype, note	8
No modes effective	6
Asynchronous combination	13 total
E-mail and teacher's website	8
Facebook and e-mail	4
Text and Facebook	1
Synchronous combination	4 total
Phone and FTF	4

Discussion

This research reveals that smartphones have affected how parents and teachers communicate, suggesting that parents view academic support and new communication technologies as important to their child's education. Applying MRT to the data helped to explain parents' media selection, but also revealed potential gaps in the theory.

While MRT assisted in explaining parents' mode selection, from a theoretical standpoint, the most significant finding may be the increased role that the convenience of smartphones plays in mode selection. In many cases, convenience supersedes media richness for communicators' selection of a given mode for specific types of communication (e.g., instrumental vs. complex topics). Media richness theorists have suggested rich media provide a stronger capability to offer immediate feedback because the interactants are both physically present, allowing them to react immediately and better adapt their messages (Timmerman & Kruepke, 2006). However, the qualitative responses revealed parents' perception that e-mail, a lean mode, provided more immediate feedback through timely responses due to its convenience rather than the ability to immediately react and adapt one's communication. This distinction is critical in understanding parents' increased preference for e-mail communication. Compared with Thompson and Mazer's (2012) investigation, these findings revealed that parents' e-mail preference elevated from 2:1 to 5:1 in a three-year span. Further, parents' PASS responses indicated e-mail use increased

by 3%. We argue that the rise of smartphones has facilitated an increase in parent–teacher e-mail due to the access provided by the devices. This assertion is consistent with Ho et al.'s (2013) research indicating that the ease of mobile technology makes it a viable and welcomed tool for parent–teacher communication. Similar to Thompson and Mazer's (2012) findings, parents once again selected e-mail most frequently across all five dimensions of parental academic support. As Thompson and Mazer suggested, convenience represents an overriding factor in the modes parents select, and even more so now with the availability of new communication technologies.

Extending Media Richness Theory

The results of this study suggest that MRT may require further development and extension as the smartphone era has influenced how individuals go about selecting media. During the initial explication of MRT (Daft & Lengel, 1984), theorists may not have imagined the advancement of communication technology, which now enables communicators to interact across multiple applications (e.g., text messaging, social media, Skype/FaceTime) on portable devices. In the present era, media choice is driven as much by convenience as it is by richness. We propose an extension of MRT to account for the role convenience plays in media selection because the richness of media now plays a lesser role in the modes communicators select. This represents a significant theoretical contribution, as studying real-world data in the instructional context illustrates that some elements necessary to explain and predict individuals' media choices are presently not accounted for in MRT. As Sprague (1993) posited, it is imperative scholars identify distinctions in the instructional context when applying theories from other contexts to bolster the theory.

Including convenience as an explanatory element sheds further light on the quantitative findings. While parents selected lean media most frequently for instrumental topics (e.g., academic performance), in the case of e-mail, a leaner mode is most common for complex topics (e.g., classroom behavior, hostile peer interactions), although a smaller statistical gap existed between selection of e-mail and synchronous modes for more complex topics. This finding is inconsistent with MRT research which has found communicators select richer media for more complicated communication (Daft & Lengel, 1986; Sheer & Chen, 2004). As Timmerman and Kruepke (2006) found, certain elements of communication in the instructional context may be more complex than MRT can account for in its existing tenets. Taking this claim into account, other MRT concepts may also add additional explanation to parents' mode selection. First, parents indicated that the ability to reread a message helped in crafting a more effective response. Thus, reprocessability also plays a role in parents' preference for CMC (Robert & Dennis, 2005). Second, overload assists in explaining parents' perception that, in some instances, e-mail can actually defuse confrontation when communicating about difficult topics. The most complex issues may indeed produce overload when communicating via richer media (Timmerman & Kruepke, 2006), making leaner modes effective for more challenging topics.

Convenience also helps to explain why parents select new modes. First, the data indicate that text messaging is beginning to emerge in parent–teacher communication. Texting did not emerge as a mode of parent–teacher communication in Thompson and Mazer’s (2012) data. Although the quantitative data in the present study revealed only a small percentage of parents exchanged text messages with teachers, parents’ open-ended responses suggested this behavior might occur more frequently as a few parents already identified texting as their preferred mode to communicate with teachers. Similar to Olmstead’s (2013) study, most parents did not have access to teachers’ cell phone numbers, but many wished they did. Part of the emergence of text messages stems from the proliferation of smartphones, supporting Ho et al.’s (2013) assertion that smartphones can facilitate parent–teacher communication. The incorporation of texting into parent–teacher communication may help account for the decrease in written communication, which parents used twice as often three years ago (Thompson & Mazer, 2012).

The open-ended data revealed that parents have also begun to utilize social media to communicate with teachers. Similar to Olmstead (2013), parents indicated openness to communicating via Facebook. Although only a small number of parents used the instant messaging feature in Facebook or checked class Facebook pages, it appears that the convenience of accessing social media on smartphones has the potential to make Facebook and other social media platforms such as Twitter and Instagram more common in the future. A few parents mentioned how much they enjoyed receiving pictures from teachers via social media. Parents have become accustomed to school districts having social media accounts; it appears they would like to see more social media activity from teachers. Although parents’ use of Skype was virtually absent from the quantitative data, a few parents suggested in the open-ended data that it had the potential to combine the convenience of asynchronous communication with the visual and audio cues of synchronous communication. As Olmstead (2013) suggested, actual use of new technology is often lower than perceived preference for use. We speculate that parents may not have adopted Skype to communicate with teachers because smartphones provide many other convenient modes, so parents may not have viewed it as necessary for effective communication.

The selection of other modes appears consistent with MRT’s predictions. For example, parents selected text messaging for brief, simple messages. Comparatively, parents selected phone more frequently for complex topics than for instrumental topics. Interestingly, FTF communication also increased overall in comparison with Thompson and Mazer’s (2012) study. Due to the now dominant preference for CMC in the parent–teacher context due to convenience, it appears some parents communicated FTF with teachers due to the importance it communicated to their children; selecting a less convenient mode in the smartphone era communicated the seriousness of the issue to the student and how much their parent supported their educational success. This idea suggests that the level of effort put forth for FTF communication to occur may be a mode selection factor that MRT cannot address. Parents’ rationale for selecting FTF echoed MRT’s tenets as parents who preferred FTF appreciated cues associated with rich media and because they could take

advantage of the natural language and ability to more personally craft their messages (Timmerman & Kruepke, 2006). It is also possible that communicators' ability to adapt their communication in CMC may play a crucial role in parents' ability to use leaner modes for more complex topics. Thus, MRT is useful to explain elements of media selection, but convenience and the communicator's ability to adapt represent possible elements that require further attention in the extension of MRT.

Finally, MRT was especially valuable in addressing the combination of modes parents selected. While e-mail and FTF, e-mail and phone, and e-mail, phone, and FTF labeled collectively here as "synchronous and asynchronous combination" remained the most common groupings, one of the most significant findings centers on the identification of four new combinations (text, note, synchronous, and asynchronous) which have developed in large part due to new modes of communication. For example, the "text combination" represents the largest new iteration as parents begin to combine text messaging with existing modes. While texting typically only works well for brief, objective messages, when used in combination with e-mail and synchronous modes it can provide an important addition to parent-teacher communication due to its more instantaneous nature. Interestingly, other new combinations include only synchronous or asynchronous modes. One possible explanation is that parents who rely on smartphones have discovered that communicating with teachers on modes available on these devices has worked effectively, decreasing the likelihood for selecting richer media.

Limitations and Future Research

Our findings offer key insights into the modes parents select to communicate with teachers, but several limitations must be noted. First, while the PASS provides a mechanism to assess parents' mode selection, it does not include teachers who could provide additional insight into the challenges associated with new modes. Second, although the large number of responses offered a wealth of rich data, the written responses did not provide the opportunity to ask follow-up questions to assess how effective new modes are in the parent-teacher context. Scholars might consider conducting interviews with parents to further explore this issue. Third, while parents identified social media as a mechanism they use to communicate with parents, future research might explore how the addition of social media to the PASS might provide a clearer picture of the parental academic support process. Fourth, scholars might formally test associations among the frequency of parent-teacher communication, student learning outcomes and success in school, and how communication between parents and teachers might affect relational satisfaction between parents and their children. Such investigations would compile important validity evidence. Finally, we did not formally test the perceived complexity of each PASS factor alongside parents' media choice. Future research might explore this issue to understand how certain topics guide parents' selection of specific media to communicate with teachers.

This study offers key data for parent-teacher communication in the smartphone era, indicating preliminary growth of modes in the parent-teacher context due to

smartphones and suggesting future increases. Researchers should continue to chart this growth and analyze new trends to assess the implications for teachers, parents, and students. Although smartphones have made parent–teacher communication increasingly convenient, these findings continue to suggest parent–teacher communication occurs on a weekly basis for a few parents and teachers. Guided by prior research (Thompson, 2008; Thompson & Mazer, 2012) and our data, we advocate that educators work to increase parental involvement at the P-12 level and consider various modes as vehicles for effective parent–teacher communication.

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