Don't Leave Me Hanging:

Read transparency in texting and response time

A thesis presented by

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ABSTRACT

The purpose of this study was to examine whether read transparency, the ability to see when a text message has been read by the recipient, in texting affects response time. First, the study hypothesized that the use of the read transparency feature would decrease response time because it heightens one's sense of accountability for being responsive. Second, the study looked at how other key variables, including competence with mobile technology and five personality factors-extraversion, neuroticism, conscientiousness, agreeableness, and openness- influenced response time. Third, the study looked at how the perceived norm of reciprocity, attachment to texting, and certain uses of the technology moderated the relationship between read transparency and response time. A self-report survey was administered to undergraduates at the University of Michigan. The survey included both quantitative and qualitative questions. Findings from the survey reveal that read transparency decreases response time in text messaging. Additionally, neurotic individuals tend to take more time to respond to a text message while conscientious individuals tend to take less time to respond. Finally, participants who frequently use texting for micro-coordination respond faster to a text message when the read transparency feature is taken into account. Results of the study indicate that read transparency may lead to faster texting overall and thus changing the normative implications for text messaging.

TABLE OF CONTENTS

INTRODUCTION

The evolving features of mobile telephony create new opportunities for interactions between conversation partners. For many users, voice calling is no longer the main affordance (Lenhart, Ling, Campbell, & Purcell, 2010). This is most prevalent among teenagers and young adults who use the technology mostly for text messaging[1] (Lenhart, Ling, Campbell, & Purcell, 2010). Texting exhibits distinctive norms and social dynamics. As a result, some have theorized it presents important social consequences (Ling, 2004; Ling, 2008; Licoppe, 2003). This study examines how a particular affordance of text messaging-read transparency-shapes response time to a text message. I draw from previous research to also take into account the interactive effects of social and psychological factors that, theoretically, may moderate this trend.

For many, texting has become the preferable way for phone users to communicate with their friends, family, and various contacts (Ling, 2004). According to a Pew Internet report, 75% of all teenagers text and half of teens send 60 or more text messages a day (Lenhart, 2012). Traditionally, SMS[2] has held the monopoly when it comes to text messaging but recently, advanced text messaging services, such as BBM[3] and iMessage[4], have come to challenge SMS in popularity. These devices provide technological affordances that create a new framework for text messaging where "2-3 years down the road, these proprietary services will be in no way unique" (Kumparak, 2011, para. 15). While the popular press argues that SMS will not vanish completely, new affordances will set the precedent and become the "new protocol" in phones (Kumparak, 2011, para. 17).

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[1] Referred to also as "texting"
[2] Short Message Service
[3] Blackberry Messenger
[4] Instant Messenger service developed for the iPhone

An important technology affordance that non-traditional text messaging services have introduced is what some refer to as "read transparency." This feature has become increasingly popular among a variety of phone services (Kumparak, 2011). Read transparency allows users to see when a text message they have sent has been read, perhaps compelling users to be more responsive to text messages and thus respond faster. In other words, this feature may lead to a greater sense of accountability to respond quickly, and therefore it likely leads to a decreased response time in text messaging. This is the central theoretical argument that will be tested in this thesis.

There are a host of variables that can strengthen or weaken this relationship between read transparency and response time. This study identifies the following as key moderating variables from both social and psychological domains of related theory and research: the perceived norm of reciprocity, attachment to texting, and usage patterns. As read transparency becomes more common in messaging services, one might expect the norms associated with proper text etiquette to change. This study examines this technological affordance of read transparency and the ways it interacts with social and psychological factors and technology preferences to predict responsiveness via text messaging. Read transparency is important because it may signal an emergent normative shift as this affordance becomes more widespread, if not standard, among text messaging services.

Read transparency is socially consequential in a number of ways. The time it takes a recipient to respond to a text message after it is read gives the sender a signal about how the receiver prioritizes the sender among other activities. Indeed, if a text is not answered in a timely manner, the relationship could be damaged. Kasesniemi and Rautiainen (2002), as expanded upon later, state that if one leaves an SMS message unanswered, it "is almost without exception

interpreted as rudeness" (p. 186). Delaying a response can also disrupt the normative flow of

dialogue and affiliation that network ties have established. A variation in response time rather

than a constant back and forth conversation can interrupt the mediated rhythms of everyday

social life. Considering the other side of the coin, one can see how faster responsiveness to

texting can tighten those bonds between the sender and the receiver and establish new rhythms of

network interaction. Even small adjustments in timing can have meaningful consequences for

how involved people are with their social ties as they virtually carry friends and family members

around throughout their daily affairs.

       Texting has become an integrated part of everyday life. Considering how texting has

become a prominent means for communication and relationship maintenance, this topic merits

additional research to better understand the central factors that influence the timing of mobile

text-based exchanges. The purpose of this study is to explore the main technological predictors

of text-based response time as well as the social and psychological factors that are expected to

moderate the relationship between read transparency and response time. In this study, I will

determine whether read transparency speeds up response time compared to non-transparent text

messaging. I also develop predictions about which groups of people will exhibit the largest

increase in response time based on the use of transparent text messaging technology.

LITERATURE REVIEW

Studies have explored mobile communication and its impact on social relationships (Ling, 2004; Ling, 2008, Kim, Kim, Park & Rice, 2007; Baron, 2008). In addition to voice calling, text messaging has been a main way in which people use their cell phones to communicate. The asynchronous method lets users respond to a text message at their own discretion. Past researchers have looked at the influence of response time to a text message on social relationships (Laursen, 2005; Ling, 2004, Horstmanshof & Power, 2005). While response time can depend on the person's contacts, schedules, and the nature of the message, the impact of technological features such as read transparency- where a user can see when a message is read- is still unclear (Rettie, 2009). As explained below, there are theoretical grounds to anticipate that read transparency may shape how quickly one responds to a text message. Thus, this research will look at how read transparency affects response time, while controlling for previously established social and psychological factors found to lead people to use phones differently. These factors include competence with mobile technology and personality traits. The study will also explore the impact of several moderating factors, perceived norm of reciprocity, attachment to texting, and usage patterns, on the strength of the relationship between transparency and response time.

Text messaging is different than face-to-face conversation because the timing of the response gives the recipient additional information about how the sender feels, beyond the explicit content of the message. Text messaging ultimately shows how the text receiver prioritizes the sender in his/her mind. Delaying a response when "conveniently possible" could affect personal relationships more than the actual content of the conversation (Horstmanshof & Power, 2005, p. 41). Text-based communication can occur throughout the day when other forms

of contact are not possible or appropriate. Since variation in response time affects the quality of relationships, it is important to research why people respond in the time that they do.

Response time also has implications for a "mediated ritual interaction" (Ling, 2008). Ling (2008) defines a ritual as the sharing of a mood and the mutual recognition of being engaged in a common situation (p. 83). It is a co-present activity that Ling (2008) has extended into the realm of mediated interaction. A mediated ritual interaction is an interaction where the individuals are not necessarily in the same space but the interaction still establishes many of the same kinds of symbolic, relationship, and informational flows as possible in a face-to-face interaction (Ling, 2008). Ling (2008) argues that it is a form of contact in which social bonds are nurtured and that this is necessary for the growth and stability of social cohesion in mediated relationships. Mediated ritual interaction through text messaging often entails steady flows of exchanges throughout the day. They help establish a rhythm that contributes to the social cohesion within a social network or relationship. Text messaging can enhance the co-present relationship by allowing people to exchange thoughts, endearments, and comments when they are not in the same location. Ling (2004) describes the message as a component of the ongoing relationship between the sender and receiver. Text messaging contributes to the "maintenance of the relationship in the form of small ritual interaction" (Ling, 2004, p. 153). If the receiver fails to respond at an appropriate time with a worthy message, the social cohesion could be threatened. Response time and quality signals to the receiver how he/she prioritizes the sender in his/her life. Delinquent or inadequate responses can leave the sender feeling neglected.

In addition to affecting relationships, text messaging can help establish "richness" or a sense of clarity and connection during human interaction. Media richness theory (Daft & Lengel, 1983) posits that communication modalities can be rich or lean, depending on the amount of

information exchanged. If the technology itself facilitates new understanding, it is considered rich. If the medium cannot enhance understanding beyond the content of a specific message, it is considered poor (Daft & Lengel, 1983). Rich media are appropriate for complex organizational topics whereas media low in richness is suitable for simple or routine discussions (Daft & Lengel, 1983). Daft & Lengel (1983) consider face-to-face conversation the richest form of media because it provides immediate feedback. Each medium is evaluated on four different criteria: feedback capability, nonverbal cues, personalized focus, and natural language (Daft & Lengel, 1983). Feedback capability is the ability of the medium to provide synchronous feedback and instant communication during engagements; nonverbal cues include observing body language, facial expressions, and tone of voice; personalized focus is the extent to which intent is focused on the recipient; and natural language is language variety (Daft & Lengel, 1983). The telephone medium is less rich than face-to-face medium (Daft & Lengel, 1983). With text messaging, feedback capability is asynchronous, visual cues are not available, and individuals have to rely on language content to reach an understanding. Therefore, even though texting is asynchronous, the act of texting more immediately will elicit a constant flow to the conversation. It will mimic a medium with a faster feedback capability and thus embody a richer means of communication. Having immediate feedback can be key to having a rich personal connection in digital communication.

Affordances of Read transparency

The affordance approach looks at how the "physical characteristics of an object interplay with the way in which we perceive and interpret the use of the object" (Ling, 2004, p. 24). It is "the properties of objects [that] determine possibilities for action" (Sellen & Harper, 2002, p. 17). These physical characteristics give users the ability to use the product in different ways.

RIM[5] has created a type of text messaging for Blackberry smartphones called Blackberry

Messenger, also known as BBM. This application allows for the continuous flow of

communication with an unlimited amount of characters, as opposed to SMS that only allows 160

characters, so users do not have to shorten their texts. The main technological affordance of

BBM is read transparency. BBM allows the sender to see when the message has been read, as

indicated by the "R" receipt next to the message.

The time stamp is another important affordance of text messaging. Seeing the actual time

in which the respondent responds can change the way a person feels. People perceived "the same

message content differently in dimensions describing intimacy/liking and

dominance/submissiveness depending on the time stamp" (Döring & Pöschl, 2009). The time

stamp can also indicate delayed response time. In connection with the idea of read transparency,

both the time stamp and read transparency are contingent on response time. Knowing senders

can see the amount of time that has lapsed from the time stamp on the "R" receipt before

responding may make recipients reply more quickly. The basic prediction then, is that read

transparency will have a negative relationship with response time or in other words facilitate

responding. Thus, I anticipate that:

> **H1:** All else equal, read transparency, as embodied in BBM, will lead to a faster response
>
> time compared to SMS technology, which does not carry this feature.

Competence with mobile technology

As mobile telephony continues to evolve and more mobile technological affordances are

introduced, it is important to study how competence with mobile technology shapes the way

individuals use these devices. Competence is the ability to do something efficiently; it is a skill

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[5] RIM stands for Research In Motion. RIM is the manufacturer of Blackberry.

needed to complete tasks (Bakke, 2010). Bakke (2010) found that comfort with technology is a positive predictor of communication efficacy. Individuals who score high on this factor are comfortable using the features on their mobile device. They are adept at learning new mobile features and "believe they can quickly adapt to the technological change" (Bakke, 2010, p. 353). This level of comfort with technology is an indication of competence. More experienced cell phone users, for example, might better understand different phone features. On the other hand, those with lower levels of competence with mobile technology may be reluctant to use the new phone features. For instance, those who are inept at using the phone's features, such as text messaging, may need help from others in responding or may forget to check their messages entirely, thus delaying a response. Understanding how to use the features on the phone such as text messaging is likely to increase users' ability to respond to a text message because they understand the steps it takes to send a text message, such as opening the message, writing the message, and sending it. Thus, individuals who are highly competent with mobile technology are better able to navigate through the text messaging application, which can lead to a faster text response than someone who is less competent. I expect that the more competent and comfortable an individual feels with regard to cell phones, the faster the individual will respond to a text message. I hypothesize that:

H2: Competence with mobile technology will be negatively associated with response time.

Personality

Personality factors might also influence texting response time. The personality traits to be measured are extraversion, neuroticism, conscientiousness, agreeableness, and openness.

Extraversion: Extraverts are "warm, friendly persons who enjoy talking to people" (Weiner & Greene, 2008, p. 328). They enjoy socializing with others and being part of the

action. Extraverts are sociable, gregarious, ambitious, and care about their image and social

consequences of behavior (Lane & Manner, 2011). They seek out new opportunities and

excitement (McElroy, Hendrickson, Townsend & DeMarie, 2007). Further, those who are high

in extraversion place a bigger value on close and warm interpersonal relationships (Watson &

Clark, 1997). Since extraverts are outgoing and want to know what is going on, they may

respond to a text message faster than non-extraverts because it is a quick way to easily

communicate with others. Extraverts, as opposed to non-extraverts, may also respond sooner

because it reaffirms the fact in their minds that they are popular and thus fulfills their desires of

increasing social status (Lane & Manner, 2011). Thus, I hypothesize that:

H3: Extraversion will be negatively associated with response time.

Neuroticism: Neurotic individuals tend to be more paranoid, anxious, and self-conscious

(Devaraj, Easley, & Crant, 2008). They often feel inferior around other people and worry that

things might go wrong (Weiner & Greene, 2008). A study by Ehrenberg, Juckes, White, and

Walsh (2008) found that neurotic people spend more time text messaging and have stronger

mobile phone addictive tendencies. While neurotic individuals spend more time text messaging,

it is conceivable that it actually takes these individuals longer to respond to a text message. Text

messaging allows individuals to take their time to construct and edit messages until it is to the

sender's liking (Butt & Phillips, 2008). Socially anxious individuals are likely to focus longer on

what the text message should say and when they should respond to a text rather than sending a

text immediately without thought. This can lead to a delay in their response time compared to

those who are not neurotic. Therefore, I propose that:

H4: Neuroticism will be positively associated with response time.

Conscientiousness: Conscientious individuals are extremely organized and need order to carry out a task (Lane & Manner, 2011). They are often self-controlled and think things through before making a decision or taking action (Weiner & Greene, 2008). It is likely, then, that conscientious individuals may take more time in responding to a text message because they want to think about their answers as a way to maintain the amount of information transmitted about them (Butt & Phillips, 2008). Conceivably, they are careful in crafting their messages and therefore the extra level of strategy and planning involved in their responses affects their response time. I hypothesize that:

H5: Conscientiousness will be positively associated with response time.

Agreeableness: Agreeable individuals are sympathetic, forgiving, cooperative, trusting and altruistic (McElroy, Hendrickson, Townsend & DeMarie, 2007; Anastasi & Urbina, 1997). Past studies have found that individuals who scored higher in disagreeableness use texting more than agreeable individuals and individuals who scored higher in agreeableness prefer talking on the phone to texting (Lane & Manner, 2011; Ehrenberg, Juckes, White, & Walsh, 2008). Agreeable individuals have higher levels of interpersonal skills (Scaely, Phillips, & Stevenson, 2002). Thus, they may prefer to talk on the phone rather than text because it may be a more engaging interaction with others. On the other hand, the preference of texting over calling among disagreeable types could be due to their "lower levels of social skills" (Ehrenberg, Juckes, White, & Walsh, 2008, p. 740; Lane & Manner, 2011). Because disagreeable individuals tend to have lower social skills, they may take more time writing a text message and thinking about what they want to say. Therefore, I hypothesize that:

H6: Agreeableness will be negatively associated with response time.

Openness: Those who score high in openness are tolerant of new experiences and ideas. They are less threatened by change involved in new technology (Devaraj, Easley, & Crant, 2008). These individuals have an active imagination and fantasy life (Weiner & Greene, 2008). Previous work has not found openness to be a strong predictor of cell phone use, either in terms of frequency or style (Lane & Manner, 2011; Butt & Phillips, 2008). Lane and Manner (2011) tested openness in their research about the effects of personality on smartphone usage but found no associations among the trait and smartphone adoption and usage. Further, Butt and Phillips (2008) could not construct a theoretical argument for how openness would be associated with mobile phone use so they omitted the trait from their study of personality factors and cell phone use. Based on these past findings, I speculate that openness is not associated with response time.

H7: Openness will have no relationship with response time.

Perceived Norm of Reciprocity

A perceived norm is a pervasive, yet tacit understanding that guides behavior. Much research has been devoted to texting and the perceived norm of reciprocity. There is a dominating norm in society that states that a text message requires a response (Laursen, 2005). According to the teenage participants in Laursen's study, the only SMS messages that did not require a response were chain messages, night messages, or a follow-up message to a telephone conversation. The response cultivated and strengthened the relationship between the sender and the receiver, and thus when there was no response it was likely to hinder the interaction and social relationship (Laursen, 2005).

Supporting the notion of the perceived norm of reciprocity, Horstmanshof and Power (2005) conducted a focus group pertaining to SMS users and how their social behavior, norms, and patterns of communication affect text messaging. They reported that students used text

messaging for corresponding with close friends and liked being in control of the pace of the

interpersonal exchange. One can respond to SMS messages with any amount of time delay, since

the sender does not know when the receiver has seen the message. However, because people

often carry their phone with them at all times, it is more instant and immediate than e-mail in

relation to computer use (Horstmanshof & Power, 2005). Norms of email where a response is not

required immediately after the email was sent do not apply to texting (Horstmanshof & Power,

2005). Respondents noted that response time depended on the sender, physical location of the

receiver, and in some instances, the time of day (Horstmanshof & Power, 2005). Participants felt

they had considerable flexibility in responding to late-night messages, often stating that such

texts did not require a response. Participants also felt responses should be composed when

convenient. Since it is difficult for a sender to know whether an immediate response is

convenient, however, he/she will be forced to check his/her phone often to see if they have been

re-contacted. This behavior may subsequently enhance attachment to texting, a concept that will

be discussed below in more detail. This means that not only is there the expectation to meet this

rule and respond but also that users will constantly be checking their phone to find out who is

contacting them.

Failing to respond to text messages is a particularly egregious norm violation in intimate

relationships (Horstmanshof & Power, 2005). This position is supported by Kasesniemi &

Rautiainen's (2002) study of adolescents and mobile phone use. Participants expressed that

phone owners keep their phone with them at all times and thus if a response is not received

within an acceptable time frame (15-20 minutes, according to the participants) then the text

message sender expects an explanation (Kasesniemi & Rautiainen, 2002). These first-hand

responses of the first generation to truly adopt the mobile phone, especially text messaging, show

how these patterns of reciprocation are extremely important. It is simply unacceptable to break the social norms and rules of texting.

Ito and Okabe (2005) introduce the term *ambient accessibility* to refer to a state where an individual is constantly available to friends and family. If users are unable to return a message immediately, there is a sense that "a social expectation has been violated" (Ito & Okabe, 2005, p. 265). By responding immediately, users not only continue the conversation but also reaffirm the norms of a timely response. Continuing this ritual will contribute to the strength and growth of the relationship. Yet, if this normative rule is broken, a threat could arise to the interaction and nature of the social relationship.

Given that lack of response in a timely manner can have negative consequences for the relationship between the sender and receiver, the perceived norm of reciprocity will strengthen the relationship between read transparency and response time. If the receiver knows the sender can see when the receiver reads the message, the receiver may feel more inclined to respond to the text message faster. I therefore hypothesize that:

> **H8:** Individuals who are highly sensitive to the perceived norm of reciprocity will show the
> largest decrease in response time to a text message when their phone employs the read
> transparency function.

Attachment to texting

Mobile phones represent a convergent technology and an invaluable part of one's life. Mobile phones not only serve as a device to place calls but also serve as a clock, calendar, reminder aid, Internet, game portal, and emergency tool, among hundreds of other applications that can be downloaded. Phones become unique to the owner and reflect the user's life through pictures, phone contacts, emails, past downloads, Internet history and text messages. In

particular, text messages can entail information regarding meeting times, short anecdotes, personal greetings, and pictures that are meaningful to the owner. Therefore, it is the relationship with others that serves as a catalyst for people's attachment to their mobile phone (Vincent, 2006).

In addition to this relationship, security is another main reason for attachment to mobile phones. Attachment is characterized by an excessive performance of an activity despite the potential negative outcomes (Walsh, White, & Young, 2008). In research conducted for the Pew Research Center, a survey indicated that cell phone owners value their phones mainly for quick information retrieval, for entertainment, and for emergencies (Smith, 2011). Studies have found that attachment to mobile phones has stemmed from one's need to constantly be reachable and one's need for security (Katz, 2006; Walsh, White & Young, 2008). A study by Katz (2006) required the participants to refrain from using their cell phone for 48 hours. Although they agreed to the terms of the study, 85% of the participants were unable to give up their phone for the two-day time frame (Katz, 2006). Many of the excuses used included that the experiment was too difficult, urgent issues arose, and certain responsibilities required them to use their phones before the experiment was over (Katz, 2006). Without a phone, the owner feels a loss of control and the inability to attend to others' needs. This can be extended to text messaging in that text messaging provides the users with the same sense of security and connection to others. It is a quick way to seek help or to be in contact with others throughout the day.

A previous study found that individuals who were highly involved with their phone used their phone more frequently than those who were not as highly involved (Walsh, White, & Young, 2010). In the study, involvement was measured with Brown's (1993, 1997) behavioral addiction components, including salience, conflict, relief/euphoria, loss of control, withdrawal,

and relapse and reinstatement. In relation to the present study, the main measures that were reflected in the survey were salience - the activity dominates the person's thinking and life, withdrawal - unpleasant emotions are experienced when the person is unable to perform the activity, and relief/euphoria - positive emotions result from engaging in the activity (Walsh, White, & Young, 2010, p.197). The findings in that study suggest that mobile phone involvement is quite similar to attachment. Participants tend to check their phones for something to do such as play games, read email, or surf the Internet. Texting is no exception. If participants who are highly involved with their phone use their phone more frequently, then it is highly likely that those individuals will become more attached to their phones than individuals who are not highly involved with their phones.

It is for the reasons aforementioned, that those who are attached to their phone may be more tuned into the features of read transparency. The user may be constantly checking to see if their message has been received and then respond right away. Thus, the effect of read transparency on response time will be larger for those individuals who are high in attachment to texting.

H9: The negative relationship between read transparency and response time will be largest for those high in attachment to texting.

Differential Usage Patterns

Previous studies have shown that usage patterns play a significant role in shaping effects in mobile phones (Campbell & Kwak, 2011; Campbell & Russo, 2003; Campbell & Kwak, 2012). Specifically, coordinating social activities and maintaining relationships among people are the main reasons for text messaging (Ling & Pedersen, 2005). These different types of text

messaging fall into two categories: micro-coordination and hyper-coordination (Campbell &

Russo, 2003; Ling & Ytrri, 2002; Rettie, 2007).

Micro-coordination: Micro-coordination refers to using the phone for logistical

purposes such as coordinating a time and place for a meeting (Campbell & Russo, 2003). The

mobile phone allows users to change plans en route and rearrange schedules during the day. It is

the ability for "nuanced, instrumental coordination" where plans can be adjusted if a conflict

should arise (Ling & Ytrri, 2002, p. 3). An example could be that two parties agree to meet

somewhere at a specific time yet an unplanned logical problem arises. A text message about the

changed meeting time would be sent to let the other person know about the change in plans. The

relationship between read transparency and response time could be strengthened when the text

message involves logistical planning because in this case reading a text message with read

transparency acknowledges the sender that the receiver has read the change in plans. This can

prompt an immediate response back to confirm the change in plans. I hypothesize that:

> **H10:** The negative relationship between read transparency and response time will be
>
> strongest for those who report high levels of micro-coordination.

Hyper-coordination: In addition to the phone being a tool to coordinate plans, the phone

can also be considered part of a social interaction between the user and his/her contacts as a way

to not only keep up to date on meetings but also as a way to maintain relationships and close ties.

Campbell and Russo (2003) define hyper-coordination as "a means of self-presentation and

personal expression, such as romance, chatting, and sharing jokes with friends" (p. 320). It is not

only instrumental in terms of managing accessibility but also expressive as in social and

emotional communication (Ling & Ytrri, 2002; Rettie, 2007). In addition, as previously

mentioned, Ito and Okabe (2005) coined the term *ambient accessibility* to surmise that text

messages are not only to transmit information but also to follow up on the status of the

relationship with the other person-much like a virtual tap on the shoulder. The expressive

messages can also serve as a confirmation of a relationship (Ling & Yttri, 2002). The sender and

receiver share the common experience of the text message and thus solidify the relationship

through a technological social interaction. A simple text message in this case confirms the notion

that the receiver is in the sender's thoughts. If the receiver does not respond to the text message,

it may hurt the relationship since the purpose of the message was an intimate gesture. If read

transparency is employed in the text messaging service, hyper-coordination usage will only

heighten the relationship between read transparency and response time because not responding to

a text message in this case may be insulting to the sender because of the personal nature of the

text message. Thus, hyper-coordination is likely to strengthen the relationship between read

transparency and response time because the recipient may not want to offend the sender by not

responding to the text message immediately, especially since the purpose of the text message

was a way to keep in contact. From these speculations, I hypothesize that:

H11: The negative relationship between read transparency and response time will be strongest

for those who report high levels of hyper-coordination.

METHOD

Sample

A convenience sample was used because participants were required to be 18 years or older and have a Blackberry mobile device, as they have the option to engage in BBM or SMS texting. There were a total of 119 students, 43 males and 71 females, who completed the survey in its entirety. Five participants did not finish the survey to fill out their gender. The mean age was 20 years old. The majority, 103 participants, was recruited by flyers posted around campus in buildings such as the libraries, Chemistry Building, North Quad, MLB, and East Hall. As an incentive to complete the survey, a $10 VISA gift card was mailed to the participants at the conclusion of the survey. The rest of the participants signed up on the Subject Pool website from the Communications 102 Participant Pool. Each participant received a half hour of credit to be used toward the total number of research participation hours required to pass the introductory class.

Design

A self-report survey was used to test the hypotheses in this study. The survey contained mostly closed-ended questions, where responses were in the form of agreement on a Likert scale and open-ended questions, so participants could freely express their views about mobile technology. For illustrative purposes, two examples of the statements are provided for each measure. Refer to the Appendix for the complete survey. The survey took about 15 minutes to complete. Before the start of the survey, a terms list was provided that explained the different meanings of texting, SMS, and BBM. This was to ensure all participants had the same understanding of these technologies when answering the questions.

Measures

Criterion variable: Response Time

The response time variable consisted of 6 items and was measured on a 7-point Likert scale; the first two questions ranged from *Almost never* to *Almost always* and the four remaining questions ranged from *About an hour or more* to *Immediately* (Cronbach α = .79). An example of the statements include, "Thinking about your typical use of BBM, on average, how often do you respond to a BBM immediately after reading it" and "When you do not respond immediately to a SMS (not a BBM), how long does it typically take you to respond." The responses formed an index that ranged from 0 to 1; 0 indicated the fastest response time and 1 indicated the slowest response time (*M* = .46, *SD* = .17).

Read transparency

Respondents were asked to answer yes or no to two questions about read transparency. The two statements of read transparency included, "I am aware that BBM allows users to see when a message has been sent, delivered, and read," and "I take this into account when responding to a BBM message" (Cronbach α = .58). The responses formed an index that ranged from 0 to 1, 0 being not at all aware of read transparency and 1 being completely aware of read transparency (*M* = .84, *SD* = .30).

Control Variables

The control variables measured were age, gender, competence with mobile technology, extraversion, openness, neuroticism, conscientiousness, and agreeableness.

Competence with mobile technology

Competence with mobile technology was measured with an index of five statements with a 7-point Likert scale ranging from *Strongly disagree* to *Strongly agree* (*M* = .79, *SD* = .15,

Cronbach α = .74). The index ranged from 0 to 1 with 0 indicating the lowest competence and 1

indicating the highest competence. Several of the statements used have been previously validated

(Campbell & Russo, 2003; Bakke, 2010). Two examples included, "I am comfortable with the

technical features of the mobile phone that I use" and "I find it hard to navigate through the

different features on my phone."

Personality Measures

To measure personality, respondents had to state how much they agreed or disagreed

with 24 statements on a 7-point Likert scale ranging from *Strongly Agree* to *Strongly Disagree.*

The statements corresponded to the five personality traits.

Extraversion. Extraversion was measured with an index of five statements. Two

examples included "I feel comfortable around people" and "I do not mind being the center of

attention" (Cronbach α = .75). The index ranged from 0 to 1 with 0 indicating the lowest level of

extraversion and 1 indicating the highest level of extraversion ($M = .76$, $SD = .14$).

Agreeableness. Agreeableness was measured with an index of four statements. Two

examples included "I often think of others first" and "I am a hard person to get to know"

(Cronbach α = .49). The index ranged from 0 to 1 with 0 indicating the lowest level of

agreeableness and 1 indicating the highest level of agreeableness ($M = .75$, $SD = .13$).

Conscientiousness. Conscientiousness was measured with an index of five statements.

Two examples were "I like order" and "I often pay attention to details" (Cronbach α= .65). The

index ranged from 0 to 1 with 0 indicating the lowest level of conscientiousness and 1 indicating

the highest level of conscientiousness ($M = .72$, $SD = .14$).

Neuroticism. Neuroticism was measured with an index of five statements that included "I

tend to panic easily" and "I am easily bothered by things" (Cronbach α = .72). The index ranged

from 0 to 1 with 0 indicating the lowest level of neuroticism and 1 indicating the highest level of neuroticism ($M = .52, SD = .16$).

Openness. Openness was measured with an index of five statements that included "I like hearing new ideas" and "I do not mind trying new things" (Cronbach $\alpha = .67$). The index ranged from 0 to 1 with 0 indicating the lowest level of openness and 1 indicating the highest level of openness ($M = .79, SD = .13$).

Moderating Variables

Perceived Norm of Reciprocity

Respondents were asked to state how much they agreed with the four statements on a 7-point Likert scale ranging from *Strongly Disagree* to *Strongly Agree* (Cronbach $\alpha = .69$). The responses formed an index that ranged from 0 to 1; 0 indicated no understanding of the perceived norm of reciprocity and 1 indicated complete understanding of the perceived norm of reciprocity ($M = .68, SD = .16$). Two example statements were "It is normal for people my age to respond to a text message immediately" and "My friends expect me to be highly responsive to their texts."

Attachment to texting

To measure attachment to texting, respondents had to state how much they agreed with seven statements on a 7-point Likert scale that ranged from *Strongly Disagree* to *Strongly Agree* (Cronbach $\alpha = .79$). Two examples included "I often think about texting when I am not doing it" and "Sometimes I can't stop myself from texting, even if I know it is inappropriate." The responses formed an index from 0 to 1, where 0 indicated the lowest level of attachment to texting and 1 indicated the highest level of attachment to texting ($M = .65, SD = .19$).

Micro-coordination

For micro-coordination, a 7-point Likert scale was used that ranged from *Strongly*

Disagree to *Strongly Agree*. Two examples of the seven micro-coordination statements were "I

am always using texting to make plans with others" and "I use texting before calling when there

is a change in plans" (Cronbach α = .87). The statements were combined to create an index that

ranged from 0 to 1, 0 indicating the lowest usage for using texting to coordinate plans and 1

indicating the highest usage for using texting in this way (*M* = .74, *SD* = .17).

Hyper-coordination

For hyper-coordination, a 7-point Likert scale was used that ranged from *Strongly*

Disagree to *Strongly Agree*. Two examples of the five hyper-coordination statements included "I

frequently text friends and family throughout the day just to say 'Hello'" and "I primarily use

texting to keep in touch with family and friends" (Cronbach α = .76). The statements formed an

index that ranged from 0 to 1, 0 indicating the lowest usage for using texting to maintain

relationships with others and 1 indicating the highest usage for using texting in this way (*M* =

.71, *SD* = .17).

Qualitative Data

In order to further expand upon the survey questions, three open-ended questions were

used. These questions looked at preferences for texting, preferences for one method of texting

over the other in different situations, and the strengths and weaknesses of each method. These

sets of data were analyzed using steps from Hammersley and Atkinson's (1995) procedure for

analyzing qualitative data as a framework. While trying to make sense of the data, it was

imperative not to make prejudgments or omit the responses that refuted the hypothesis. The first

step involved becoming extremely familiar with the data (Hammersley & Atkinson, 1955). In

doing so, it was then possible to find interesting patterns and examine puzzling comments or

inconsistencies. The next step was compiling central themes from the data and thus refining the

categories in regards to the central importance of the study. The three open-ended questions

were: "Which method of texting do you prefer more, BBM or SMS? Please explain why," "In

what situations do you prefer to send an SMS text over BBM or vice versa?" and "What would

you say are the strengths and weaknesses of BBM and SMS as different texting platforms?"

RESULTS

Main Effect

A paired t-test was conducted to compare how fast the participant responded to BBM and SMS text messages. This comparison was used because BBM has the read transparency feature while SMS does not. The results revealed that in each pair of questions, participants responded more quickly to BBM than SMS but the results were only significant for the second pair. Pair two reported that participants responded significantly faster to BBM ($M = 3.34$, $SD = 1.28$) than to SMS ($M = 3.04$, $SD = 1.24$), $t(117) = 2.49$, $p = .014$. As shown in Table 1 below, each mean for the question regarding BBM was higher than the mean for the question regarding SMS. The higher mean indicated a higher score on the response time scale, thus a faster response time. These results suggest that read transparency does decrease the time it takes one to respond to a text message.

Table 1

Paired Samples Test

		M	Mean Difference	SD	t	df	p
Pair 1	a. For this item, we are interested in how quickly you normally respond to BBMs after you open and read them. Thinking about your typical use of BBM, on average, how often do you respond to a BBM immediately after reading it?	3.92	.14	1.35	1.09	117	.28
	b. On average, how often do you immediately respond to a SMS after reading it?	3.79					
Pair 2	c. When you do not respond immediately to a BBM, how long does it typically take you to respond?	3.34	.30	1.30	2.49	117	.01
	d. When you do not respond immediately to a SMS, how long does it typically take you to respond?	3.04					
Pair 3	e. If you have no pressing obligations when you receive and read a SMS message, typically how long does it take for you to respond to that text message after reading it?	4.09	.07	1.15	.65	114	.52
	f. If you have no pressing obligations when you receive and read a BBM message, typically how long would it take for you to respond to that text message after reading it?	4.16					

Table 2

Regression Analysis

Measure	B	β	SE	t
Perceived norm of reciprocity	-.01#	-.17	.00	-1.80
Attachment to texting	-.00	-.09	.00	-1.00
Hyper-coordination	-.00	-.09	.00	-.81
Micro-coordination	-.00	-.07	.00	-.63
Extraversion	-.00	.00	.00	-.00
Agreeableness	.00	.11	.00	1.21
Conscientiousness	-.01**	-.40	.00	-4.53
Neuroticism	.01*	.18	.00	2.06
Openness	.00	.02	.00	.23
Competence with mobile technology	-.00	-.05	.00	-.57
Read transparency	-.06*	-.20	.02	-2.42
What age are you?	.02*	.17	.01	2.05
Please select your gender.	.05	.13	.03	1.48

a. Dependent Variable: Response Time

$#p < .10$
$*p < .05$
$**p < .01$

Table 2 supports the following hypotheses.

Hypothesis 1

Hypothesis one posited that read transparency would lead to a faster response time to a text message. A regression analysis was used to test this hypothesis. The results were statistically significant ($B = -.06$, $β = -.20$, $p = .02$). The technological affordance of read transparency has a negative relationship with response time, indicating that individuals who are aware of read

transparency respond faster to a text message than those who are not aware of read transparency. Read transparency affected response time even when controlling for other variables in the model that may explain response time. Participants' answers in the open-ended questions supported the findings. For example, one participant wrote, "I prefer BBM because it is a more active fast pace form of communication. I like to know when my friends see what I sent them. It makes them respond faster." Additionally, another participant wrote, "I like BBM better for 'conversation' with a lot of back and forth because you know whether or not the other person is checking their phone and responding."

Controls

While age and gender were simply controls and no relationship was hypothesized, it is important to note the significant results. In terms of age, older individuals take a longer time to respond to a text message than younger individuals ($B = .02$, $\beta = .17$, $p = .04$). Further, while the relationship between gender and response time was not statistically significant, it was in the direction where females would respond slower to a text message than males, yet this result was not statistically significant ($B = .05$, $\beta = .13$, $p = .14$). The remaining controls, as evaluated below, are competence with mobile technology and the five personality traits.

Hypothesis 2

A regression analysis was used to test the hypothesis that competence with mobile technology would be negatively associated with response time. In other words, it was hypothesized that competent individuals would be more likely to respond faster to a text message. This test was not statistically significant and thus the hypothesis was not supported ($B = -.00$, $\beta = -.05$, $p = .57$).

Hypothesis 3

Hypothesis three posited that extraversion would be negatively associated with response time. This means that extraverts would respond faster to a text message than non-extraverts. This hypothesis was not supported ($B = -.00$, $\beta = .00$, $p = .99$).

Hypothesis 4

This hypothesis stated that neuroticism would be positively associated with response time. The results were statistically significant and thus the hypothesis was supported ($B = .01$, $\beta = .18$, $p = .04$). Neurotic individuals take a longer time to respond to a text message.

Hypothesis 5

Hypothesis five stated that conscientiousness would be positively associated with response time. The results were statistically significant although in the opposite direction hypothesized ($B = -.01$, $\beta = -.40$, $p = .00$). Individuals who are conscientious respond to a text message faster than those individuals who are not conscientious. Therefore, the hypothesis was not supported.

Hypothesis 6

Hypothesis six posited that agreeableness would be positively associated with response time. While the results were in the hypothesized direction, the results were not statistically significant ($B = .01$, $\beta = .11$, $p = .23$). Individuals who are agreeable do not respond to a text slower than individuals who are not agreeable.

Hypothesis 7

This hypothesis stated that openness would have no relationship with response time. The hypothesis was supported ($B = .00$, $\beta = .02$, $p = .82$). Openness has no effect on response time.

Interaction Effects

To carry out analyses corresponding to the hypotheses about moderating effects, this study created interaction terms between read transparency and each of the moderating variables: the perceived norm of reciprocity, attachment to texting, micro-coordination, and hyper-coordination. A regression analysis was conducted to evaluate the interaction effects. For the results of the hypotheses, refer below to Table 3.

Table 3

Regression Analysis Results for Interaction Effects

Measure	B	β	SE	t
Attachment to texting x Read transparency	-.01	-.08	.02	-.55
Perceived norm of reciprocity x Read transparency	.04	.33	.03	1.47
Hyper-coordination x Read transparency	.06*	.53	.03	2.44
Micro-coordination x Read transparency	-.07*	-.59	.03	-2.57

a. Dependent Variable: Response Time
*$p < .05$

Hypothesis 8

Hypothesis eight stated that individuals highly sensitive to the perceived norm of reciprocity would have a decrease in response time when they also attended to the affordance of read transparency. This result was not statistically significant ($B = .04$, $\beta = .33$, $p = .15$). In fact, the hypothesized direction was not supported either. The interaction with the perceived norm of reciprocity and read transparency shows a positive relationship. However, the regression analysis revealed that there was a marginally significant relationship between the direct effect of the perceived norm of reciprocity on response time ($B = -.01$, $\beta = -.17$, $p = .08$). Here, the results reveal that those who understand the perceived norm of reciprocity respond to a text message faster than those who do not understand the perceived norm of reciprocity.

Hypothesis 9

This hypothesis stated that those high in attachment to texting would report slower response time when attending to read transparency than those low in attachment to texting. The regression analysis showed that the results were not statistically significant ($B = -.01$, $\beta = -.08$, $p = .58$). There is not enough evidence to conclude that individuals high in attachment to texting respond to a text message faster when observing the read transparency affordance.

Hypothesis 10

Hypothesis ten posited that those individuals who use texting frequently for micro-coordination (i.e., logistical purposes) would show a decrease in response time when attending to read transparency. The finding for this hypothesis was statistically significant ($B = -.07$, $\beta = -.59$, $p = .01$). Those individuals who use text messaging for logistical purposes such as coordinating plans will respond to a text message faster when read transparency is present than those individuals who do not use texting heavily for logistical purposes. The significant interactive relationship is plotted in Figure 1. As shown in this figure, for those who highly use text messaging for micro-coordination purposes, the response time decreases when read transparency is present. Further, for those who do not use text messaging for micro-coordination purposes, the response time increases when read transparency is present. In other words, participants tend to respond faster to text messages when they pay attention to read transparency and use their phone for social coordinating, while there is a slight opposite trend for those who pay attention to read transparency but do not use their phone in this way.
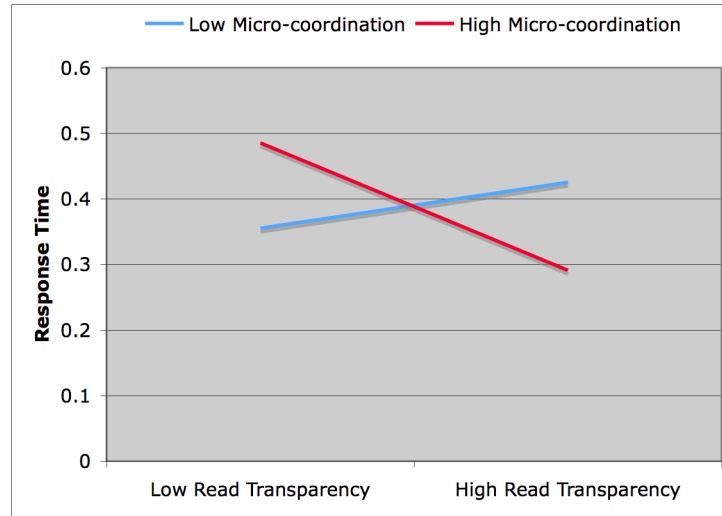
Figure 1. Predicting response time with read transparency x micro-coordination

Participants' answers to the open-ended question, "In what situations do you prefer to send an SMS text over BBM or vice versa" supported this hypothesis. Responses included, "I use BBM more frequently when I am coordinating/making plans."

Hypothesis 11

The final hypothesis stated that those individuals who use texting frequently for hyper-coordination (i.e. relational purposes) would show a decrease in response time when attending to read transparency. The finding for this hypothesis was statistically significant ($B = .06, \beta = .53, p = .02$). While the results were statistically significant, the relationship was in the direction opposite of what was expected. Individuals low in hyper-coordination and more sensitive to read transparency tend to respond faster to text messages. This trend is depicted in Figure 2 below, where low hyper-coordination, when combined with high read transparency, results in decreased response time. High hyper-coordination, when combined with read transparency, increases response time slightly.
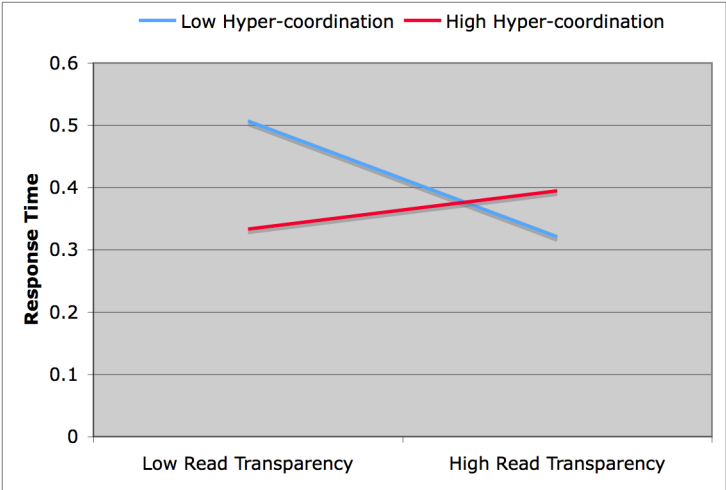
Figure 2. Predicting response time with read transparency x hyper-coordination

DISCUSSION

Summary of the Study

The primary interest of this study was the relationship between read transparency and response time to a text message. It was postulated that read transparency would decrease text response time. The study also took into account other expected influences on response time, those being competence with mobile technology and personality traits (i.e. extraversion, neuroticism, conscientiousness, agreeableness and openness). Finally, the study examined how other expected variables, perceived norm of reciprocity, attachment to texting, micro-coordination, and hyper-coordination, would strengthen the relationship between transparency and response time.

Findings revealed that the main hypothesis (H1) was supported; read transparency decreases response time to a text message. Results also reveal that among the paired questions regarding both SMS and BBM, the mean was greater in all questions for BBM. This indicates that the participants respond faster to a BBM in all three cases than an SMS. Among the key measures that were expected to have a direct effect on response time, only three variables had statistically significant results. The hypothesized relationship between neuroticism and response time (H4) was supported. Highly neurotic individuals take a longer time to respond to a text message than individuals who are not highly neurotic. Further, the hypothesis about conscientiousness (H5) was supported but in the opposite direction hypothesized, indicating that highly conscientious individuals actually respond to a text message faster than those who are not highly conscientious. Finally, the hypothesis about openness (H7) was supported; openness does not affect response time. The hypotheses for the other control variables, competence with mobile technology (H2), extraversion (H3) and agreeableness (H6), were not supported.

There were four moderator variables tested (i.e. perceived norm of reciprocity, attachment to texting, micro-coordination and hyper-coordination) and two were shown to be significant: micro-coordination (instrumental use) and hyper-coordination (relational use). Increased use of the technology for micro-coordination strengthened the negative relationship between transparency and response time (H10). The hypothesis about hyper-coordination (H11) was supported but in the opposite direction. Low hyper-coordination, when combined with high read transparency, resulted in decreased response time whereas high hyper-coordination, when combined with read transparency, increased response time. The hypotheses about the perceived norm of reciprocity (H8) and attachment to texting (H9) were both not supported. That is, norms and attachment did not affect the relationship between read transparency and response time.

Interpretation of the Findings

The results of this study suggest that read transparency influences response time, even while accounting for the effects of all other variables tested. That is, participants in the study who used the read transparency feature tended to respond faster to text messages than those who were unaware of read transparency. This is supported by participants' responses to the qualitative questions. Responses included "BBM is a more active form of communication. It lets you see when the other person has read your message. It makes [people] respond faster," "I prefer BBM when I want a more immediate response," and "BBM is more instantaneous and conversational." Further, when read transparency is taken into account, a delayed response may feel as a more personal attack on the sender if the receiver chooses to not respond immediately after reading the message. The affordance of read transparency changes the way response time in texting is perceived. Read transparency heightens one's sense of accountability in a text message. There is more expectation on the text recipient to respond sooner. If the use of read transparency becomes

the norm, then people who use read transparency are likely to become more sensitive to the amount of time it takes to respond to one's text message. The appropriate amount of time to respond to a text decreases with read transparency and thus if this feature becomes more prevalent in texting services, then texting response time overall will decrease.

With regard to the finding about neuroticism, neurotics may take longer to respond because it might take them longer to write a text message. This is connected to the idea of arranging "face" (Ling & Yttri, 2002). In constructing "face," it allows one to "consider the effect that is desired in the message" (Ling & Yttri, 2002, p. 19). That is, users have time to filter through what they are going to write in the message before they send it. This type of communication applies to neurotics because neurotics can take the time to write the text message to their liking (Butt & Phillips, 2008). Since neurotics take their time in writing the message, it may help ease their anxiety and increase their confidence in their response. Additionally, the findings revealed that those high in conscientiousness respond faster to a text message than those low in conscientiousness. Conscientious individuals like to keep everything in place and try to perform all the tasks assigned to them thoroughly and diligently (Weiner & Greene, 2008). They are effective, efficient, and productive in their work (Weiner & Greene, 2008). Perhaps because conscientious individuals are organized and need order, they are very much set in their ways. They value consistency and like finishing tasks on time. This relates to text messaging because conscientious individuals may respond to a text soon after it is received to fulfill their need to be diligent and productive. They do not necessarily want to distract themselves with a lingering text (Lane & Manner, 2011).

A surprising finding was that the hypothesis that competence with mobile technology would decrease response time was not supported. Perhaps this is because those individuals who

are extremely competent with mobile technology know ways around having the other person see

when they read the text message. There is a feature of BBM that allows users to view the full

BBM message without actually opening the BBM and therefore not letting the sender know that

the reader has in fact read the message. It is not automatic or an obvious feature. The user has to

have advanced knowledge of this feature. The message still shows as unread so the user will not

forget to respond to the message but it gives the user more time rather than responding right after

reading the message. One participant stated, "If I get a BBM that I don't want to respond to, I

have to leave it unopened in my inbox so it still shows the other person that it wasn't read."

Knowing this strategy can avoid the pressure of responding any faster to a BBM than an SMS,

which does not have read transparency.

Finally, in terms of usage patterns, both micro-coordination and hyper-coordination

moderate the relationship between read transparency and response time but in opposite

directions; high micro-coordination decreases response time when read transparency is attended

to and low hyper-coordination, when combined with read transparency, decreases response time.

Individuals who use texting frequently for micro-coordination (i.e., logistical purposes) reported

average faster response time when attending to read transparency. This could be because when

planning and coordinating activities is involved, it is important to be responsive in case there are

any changes in the plans. For example, if a group of friends who use BBM plan a meeting time

and the time changes during the day, it is important for everyone to know the change and

confirm the newly chosen meeting time. Therefore, read transparency speeds up the

communication process because the sender knows the receiver has read the message and thus can

confirm that the receiver has read the change in plans. The findings also support several

statements from the open-ended questions in the survey. There were numerous respondents who

preferred BBM when "they want a quick conversation" and "if [it is just] a simple message that does not require a long conversation."

Hyper-coordination was found significant but in the opposite direction hypothesized. Individuals who use phones highly for hyper-coordination may simply prefer to call someone to "catch up" rather than texting the individual, as texting may seem less personal. Conversations discussing life occurrences may be more demanding of the person as opposed to simply coordinating activities because the individuals must be actively listening and involved in the topics being discussed. A phone conversation fulfills feedback capability, because it allows for synchronous, instant communication, and fulfills nonverbal cues, because it observes tone and expression of voice (Daft & Lengel, 1983). Texting is not as appealing as voice calling for intimate or personal interaction because it lacks the criterion aforementioned. Individuals may be less enthusiastic to respond quickly to a text message because text messaging does not offer the level of "richness" of voice calling.

Theoretical Implications

This study contributes to the body of research on mobile communication, specifically on text messaging and consequences for relationships. The main implication for this study is that read transparency may act as an "added pressure" to respond to a text message and thus may increase the expectation for immediacy. One of the fundamental staples for this paper is the underlining meaning of what response time means for the relationship of the sender and receiver. As aforementioned, leaving a message unanswered or not responding in a timely manner can hurt the relationship between the sender and the receiver (Kasesniemi & Rautiainen, 2002; Horstmanshof & Power, 2005; Ling, 2004). There were numerous participants who negatively expressed their thoughts about read transparency because of the pressure to respond sooner so

they would not offend the sender. Some actually preferred an SMS text message to a BBM

because of the added pressure to be accountable with the read transparency feature. Participants'

answers included, "BBM lets you know when you've read someone's message, but you may not

want to respond to them right away. Therefore, it's rude and you feel obligated to respond after

the 'R' has appeared;" "It is annoying to know that someone has read your message and not

responded, it makes me feel anxious;" "[With BBM], once a message has been read, it is more

pressing to open [the message]; and "BBM is too invasive and doesn't respect the recipient's

time and privacy to answer." The read transparency feature develops an expectation where a text

message requires an immediate response and thus adds unnecessary pressure to respond to a text

message.

At the same time, however, many respondents liked the idea of read transparency because

"BBM allows [the sender] to see when a message has been read. This way, [the sender] knows

that even if [the receiver] can't respond right away, [the sender] knows that [the receiver] is still

receiving the message and seeing what [the sender] had to say." Another respondent stated, "I

prefer BBM when it is more important in order to make sure the message was read." The read

transparency feature gives the sender assurance that their text message has been read. It helps

eliminate the question if the text has even been read in the first place.

The results provide evidence that the read transparency affordance is influencing people

to text faster than they normally would if the read transparency affordance was not present. This

feature supports Ling's (2008) theory on mediated ritual interactions. As discussed in the

literature review, a ritual is the sharing of a mood and the mutual recognition of being engaged in

a common situation (Ling, 2008, p. 83). Ling (2008) has extended a ritual into the realm of

mediated interaction, which is an interaction where the individuals are not physically together

but the interaction still allows for the same kinds of symbolic, relationship, and informational flows as possible in face-to-face interaction. In terms of text messaging, a mediated ritual interaction would be a steady flow of exchanges throughout the day. Since read transparency influences people to respond faster, the conversation would be more continuous and thus further establishes the mediated interaction. Moreover, many respondents' answers to the qualitative questions revealed enthusiasm for BBM because of the fast paced nature of the conversation that the read transparency feature allows. The responses varied around the theme that "BBM feels faster and instantaneous." Many participants even went as far to say "BBM feels like instant messaging" because it "facilitates the flow of the conversation more so than an SMS." If phone companies are moving towards having the read transparency affordance in their text messaging services, then text messaging is going to be more widespread and faster overall. In BBM, an "R" is displayed by the sender's text when the receiver reads the message. The "R" confirmation of read transparency dictates when it is the receiver's turn in the conversation to respond and thus if read transparency decreases response time, the immediate response will make the mediated ritual interactions more routine.

Limitations of the Study

A main limitation of this study is the sample. A small portion of students at the University of Michigan completed this study. These students were recruited through flyering and through participating in a study pool required for a specific entry-level class. Thus, those individuals taking the class might have been in the same circle of friends or networks with similar interests and similar texting habits. Further, the VISA gift card was an incentive for people to participate. While several participants were omitted from the study because results revealed they did not meet the requirements of owning a Blackberry, other individuals could

have pretended to have a Blackberry just for the monetary exchange. For these reasons, this

study had limited external validity. Although statistics show that the main age demographic that

utilizes text messaging is teenagers and young adults, this sample is not representative of the

entire population of those who use devices with the read transparency feature (Lenhart, Ling,

Campbell, & Purcell, 2010).

Another limitation of this study is that the survey was offered online and was readily

available to take at the participants' convenience. This may have enticed the participant to

answer the questions without thoroughly reading them as a way to quickly finish the study.

A third limitation is that the study did not look at the different amount or type of BBM

contacts. For example, an individual aware of the read transparency feature might not take it into

consideration when the BBM contact is a parent as opposed to a close friend or vice versa. The

type of relationship phone owners have with their BBM contacts might have affected response

time.

Suggestions for Future Research

Further research should explore the relationship between the types of contacts on BBM

and response time. Perhaps a deciding factor as to when to respond to a text is simply the

contact. It would be interesting to see if the same text from a parent, close friend, or acquaintance

would hold the same weight in response time. One participant in the study stated that he/she

"uses BBM with close friends and SMS with less close friends." Perhaps he/she uses BBM with

close friends because read transparency allows the close friends to have a more direct and instant

conversation and SMS with less close friends because there is less pressure to respond right

away since read transparency is not present. Moreover, future research should include looking at

the times the texts were sent. For example, if an individual is going to sleep and receives a BBM

and reads it, perhaps they would respond to the message since the sender can see the receiver read it as opposed to if it was simply an SMS. If it were an SMS text, perhaps the recipient would wait and respond in the morning.

In addition to the types of contacts and the times the texts were sent, future research should also look at whether different locations have an effect on read transparency's influence to decrease response time. The results of this study raise new questions as to what this affordance means for texting in places where the norm for texting is inappropriate. For example, responding to a text message while seeing a movie, dining out, riding public transportation (in some countries), or driving is not appropriate or safe. Does the affordance increase pressure to respond faster in all places? Does this affordance make texting impervious to these norms? Future research should look at if the expectation for responsiveness makes it more difficult for people to text in situations in which they should not be texting in the first place.

Further, expanding the study to other age groups and demographics would be beneficial to the external validity of the study. A randomly selected sample that is representative of the larger population of users would make the study more generalized.

Finally, since this study used cross-sectional data, it lacks empirical grounds to support causal claims. However, there are theoretical grounds for inferring causality. Future research should use experimental and/or longitudinal approaches to bolster this theoretical support with empirical evidence.

CONCLUDING REMARKS

Read transparency is extremely valuable to study because while it was traditionally only present in Blackberry's BBM feature, over the course of when this thesis was written, this particular affordance has now expanded to other platforms such as the iPhone's iMessage. There are also applications that mobile phone users can download that include the read transparency affordance, such as Viber, Kik, and PingMe. The affordance is becoming more prevalent in texting platforms and thus likely more normal for individuals who send texts. The finding that read transparency influences response time indicates that the speed in which we, as society, are texting each other is on the cusp of significantly changing.

A Pew survey reports that teenagers' use of texting has surpassed every other common form of interaction with their friends, including talking face-to-face (Lenhart, Ling, Campbell, & Purcell, 2010). If this is the number one way people interact and this affordance is making its way into text messaging services, it is likely that people will be texting faster, changing the normative way for communication. This change could make it more difficult for people not to text during certain times when they need to be focused on another task such as being at work, sitting at the dinner table with their family, listening in class, and more gravely, driving a car. The expectation to respond immediately to a text message could make it challenging for people to avoid texting while driving. One in four American adults have admitted to texting while driving and one in three teens have admitted to texting while driving (Madden, & Rainie, 2010; Lenhart, Ling, Campbell, & Purcell, 2010). Yet, people of all ages still continue to text and drive. Sometimes safety takes a backseat when it comes to being in constant communication (Madden & Lenhart, 2009). It is likely that people are feeling the pressure to be constantly available and respond immediately to a text message. Thus, does the expectation to respond to a

text message increase that pressure even more? And, consequently divert one's attention from the main task at hand?

The affordance of read transparency makes it possible for people to see when the receiver has read a text message. At the same time, some phone platforms, such as iPhones, give users the option to turn off read transparency the affordance. While more people will have the affordance, which may increase pressure to respond to a text message, users still have the power to turn the feature off. Therefore, it only makes it possible for us to see this level of read transparency if we choose.

This study shows that read transparency decreases texting response time and thus raises new questions as to what the social and normative implications are for this particular affordance. Since read transparency is becoming more prevalent in text messaging services, it is only a matter of time before it becomes more widespread, with important consequences for the normative landscape of text messaging.

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APPENDIX

Appendix 1: Survey

By clicking below, you are agreeing that you have a BLACKBERRY and are agreeing to be in the study. Be sure that questions you have about the study have been answered and that you understand what you are being asked to do. You may contact the researcher if you think of a question later.

○ I agree to participate in the study

Directions: These statements look at one's competence with using mobile phones.
Please check the box that best indicates how much you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree Nor Agree	Somewhat Agree	Agree	Strongly Agree
I am comfortable with the technical features of the mobile phone that I use	○	○	○	○	○	○	○
I find it hard to navigate through the different features on my phone	○	○	○	○	○	○	○
I am quick when it comes to learning new features on my phone	○	○	○	○	○	○	○
I am not familiar with all the features on my phone	○	○	○	○	○	○	○
I think my phone is easy to operate	○	○	○	○	○	○	○

Directions: The questions below look at how you handle and prefer different situations. Please check the box that best indicates how much you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree
I feel comfortable around people	○	○	○	○	○	○	○
I often think of others first	○	○	○	○	○	○	○
I like order	○	○	○	○	○	○	○
I am a hard person to get to know	○	○	○	○	○	○	○
I feel comfortable with myself	○	○	○	○	○	○	○
I do not mind being the center of attention	○	○	○	○	○	○	○
I find it difficult in getting my work done	○	○	○	○	○	○	○
I often start conversations with others	○	○	○	○	○	○	○
I am not interested in other people's problems	○	○	○	○	○	○	○
I often pay attention to details	○	○	○	○	○	○	○
I always take charge of situations	○	○	○	○	○	○	○
I am not easily frustrated	○	○	○	○	○	○	○

I am skilled in handling social situations	○	○	○	○	○	○	○
I believe others have good intentions	○	○	○	○	○	○	○
I am relaxed most of the time	○	○	○	○	○	○	○
I like hearing new ideas	○	○	○	○	○	○	○
I always follow a strict schedule	○	○	○	○	○	○	○
I do not mind trying new things	○	○	○	○	○	○	○
I tend to panic easily	○	○	○	○	○	○	○
I have a vivid imagination	○	○	○	○	○	○	○
I rarely do things according to plan	○	○	○	○	○	○	○
I have difficulty understanding abstract ideas	○	○	○	○	○	○	○
I am easily bothered by things	○	○	○	○	○	○	○
I am quick to understand	○	○	○	○	○	○	○

Directions: The questions below pertain particularly to texting. Please check the box that best indicates how much you agree or disagree with the following statements.

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree
It is normal for people my age to respond to a text message immediately	○	○	○	○	○	○	○
My friends expect me to be highly responsive to their texts	○	○	○	○	○	○	○
When I send a text message, I expect a response immediately	○	○	○	○	○	○	○
It is common to not respond to a text message immediately	○	○	○	○	○	○	○

For this item, we are interested in how quickly you normally respond to BBMs after you open and read them. Thinking about your typical use of BBM, on average, how often do you respond to a BBM immediately after reading it? Note: This only refers to BBM, not SMS messages you receive.

Almost Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Almost Always (5)
◯	◯	◯	◯	◯

This item is the same as the one above, but only refers to SMS messages and not BBMs. On average, how often do you immediately respond to a SMS after reading it?

Almost Never (1)	Rarely (2)	Sometimes (3)	Often (4)	Almost Always (5)
◯	◯	◯	◯	◯

When you do not respond immediately to a BBM, how long do you typically wait? Provide your best estimate for what is typical.
    Note: This item only refers to a BBM.

About an hour or more (1)	About half an hour (2)	About 15 minutes (3)	Less than 15 minutes, but not immediately (4)	Immediately (5)
◯	◯	◯	◯	◯

When you do not respond immediately to a SMS (not a BBM), how long do you typically wait? Provide your best estimate for what is typical.

About an hour or more (1)	About half an hour (2)	About 15 minutes (3)	Less than 15 minutes, but not immediately (4)	Immediately (5)
◯	◯	◯	◯	◯

If you have no pressing obligations when you receive and read a SMS message (not a BBM), typically how long does it take for you to respond to that text message after reading it? Provide your best estimate for what is typical.

About an hour or more (1)	About half an hour (2)	About 15 minutes (3)	Less than 15 minutes, but not immediately (4)	Immediately (5)
◯	◯	◯	◯	◯

If you have no pressing obligations when you receive and read a BBM message, typically how long would it take for you to respond to that text message after reading it? Provide your best estimate for what is typical.

| | | | Less than 15 minutes, but not | |
About an hour or more (1)	About a half hour (2)	About 15 minutes (3)	immediately (4)	Immediately (5)
○	○	○	○	○

How often do you receive BBM messages?

| | | | 2-3 Times a | | 2-3 Times a | | 2-3 Times | About every Ten Minutes |
Never (1)	Monthly (2)	Weekly (3)	Week (4)	Daily (5)	Day (6)	Hourly (7)	an Hour (8)	(9)
○	○	○	○	○	○	○	○	○

How often do you receive SMS messages?

| | | | 2-3 Times a | | 2-3 Tmes a | | 2-3 Times | About every Ten Minutes |
Never (1)	Monthly (2)	Weekly (3)	Week (4)	Daily (5)	Day (6)	Hourly (7)	an Hour (8)	(9)
○	○	○	○	○	○	○	○	○

Thinking about your use of texting overall (including both BBM and SMS), on average, how long does it typically take you to respond to a text message after you read it?

| | | | Less than 15 minutes, but not | |
About an hour or more (1)	About a half hour (2)	About 15 minutes (3)	immediately (4)	Immediately (5)
○	○	○	○	○

Please check the box that best indicates how much you agree or disagree with the following statements. Note that the following items refer to texting in general (i.e., both BBM and SMS)

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree
I often think about texting when I am not doing it	○	○	○	○	○	○	○
Sometimes I can't stop myself from texting, even if I know it is inappropriate	○	○	○	○	○	○	○
I rarely interrupt whatever I am doing when I receive a text message	○	○	○	○	○	○	○
I feel connected to others when I engage in texting	○	○	○	○	○	○	○
Texting is something I do without thinking	○	○	○	○	○	○	○
The thought of not being able to text makes me feel distressed	○	○	○	○	○	○	○
I would feel at a loss if forced to give up texting	○	○	○	○	○	○	○

Please check the box that best indicates how much you agree or disagree with the following statements. Note that the following items refer to texting in general (i.e., both BBM and SMS)

	Strongly Disagree	Disagree	Somewhat Disagree	Neither Disagree nor Agree	Somewhat Agree	Agree	Strongly Agree
I frequently text friends and family throughout the day just to say "Hello"	○	○	○	○	○	○	○
I am always using texting to make plans with others	○	○	○	○	○	○	○
I use texting before calling when there is a change in plans	○	○	○	○	○	○	○
I mainly use texting to be available for my friends and family to contact me at any time	○	○	○	○	○	○	○
I heavily use texting to find out when and where I can meet with others	○	○	○	○	○	○	○
I often rely on texting to let someone know I am running late	○	○	○	○	○	○	○
I prefer texting over voice calling to coordinate plans	○	○	○	○	○	○	○
I mainly use texting when I want to stay in touch with others	○	○	○	○	○	○	○
I primarily use texting to keep in touch with family and friends	○	○	○	○	○	○	○
I frequently use texting to coordinate the location to meet with others	○	○	○	○	○	○	○
I prefer texting over voice calling to coordinate plans	○	○	○	○	○	○	○
I normally use texting to contact someone who I have not spoken to in a while	○	○	○	○	○	○	○

Which method of texting do you prefer more, BBM or SMS? Please explain why.

In what situations do you prefer to send an SMS text over BBM or vice versa?

What would you say are the strengths and weaknesses of BBM and SMS as different texting platforms?

Are you aware that BBM allows users to see when a message has been sent, delivered, and read?

◯ Yes

◯ No

Do you take the BBM feature mentioned in the previous question into account when responding to a BBM message?

◯ Yes

◯ No

What age are you?

◯ 18

◯ 19

◯ 20

◯ 21

◯ 22

◯ 23 or older

Please select your gender.

◯ Male

◯ Female

Thank you for completing my survey. You will now be directed to a new survey to collect information regarding compensation. The answers you gave in the survey you just completed will not be linked in any way to the next survey.

Appendix II

Codebook:

Read Transparency
1. I am aware that BBM allows users to see when a message has been sent, delivered, and read
2. I take this into account when responding to a BBM message

Response Time
1. For this item, we are interested in how quickly you normally respond to BBMs after you open and read them. Thinking about your typical use of BBM, on average, how often do you respond to a BBM <u>immediately after reading it?</u> Note: This only refers to BBM, not SMS messages you receive.
2. This item is the same as the one above, but only refers to SMS messages and not BBMs. On average, how often do you <u>immediately respond to a SMS after reading it?</u>
3. When you do not respond immediately to a BBM, how long does it typically take you to respond? Provide your best estimate for what is typical.
4. When you do not respond immediately to a SMS (not a BBM), how long does it typically take you to respond? Provide your best estimate for what is typical.
5. If you have no pressing obligations when you receive and read a SMS message (not a BBM), typically how long does it take for you to respond to that text message after reading it? Provide your best estimate for what is typical.
6. If you have no pressing obligations when you receive and read a BBM message, typically how long would it take for you to respond to that text message after reading it?

Perceived Norm of Reciprocity
1. It is normal for people my age to respond to a text message immediately
2. My friends expect me to be highly responsive to their texts
3. When I send a text message, I expect a response immediately
4. It is common to not respond to a text message immediately

Attachment to Texting
1. I often think about texting when I am not doing it
2. Sometimes I can't stop myself from texting, even if I know it is inappropriate
3. I rarely interrupt whatever I am doing when I receive a text message
4. I feel connected to others when I engage in texting
5. Texting is something I do without thinking
6. The thought of not being able to text makes me feel distressed
7. I would feel at a loss if forced to give up texting

Extraversion
1. I feel comfortable around people
2. I do not mind being the center of attention
3. I often start conversations with others
4. I always take charge of situations

5. I am skilled in handling social situations

Agreeableness
1. I often think of others first
2. I am a hard person to get to know
3. I am not interested in other people's problems
4. I believe others have good intentions

Conscientiousness
1. I like order
2. I find it difficult getting my work done
3. I often pay attention to details
4. I always follow a strict schedule
5. I rarely do things according to a plan

Neuroticism
1. I feel comfortable with myself
2. I am not easily frustrated
3. I am relaxed most of the time
4. I tend to panic easily
5. I am easily bothered by things

Openness
1. I like hearing new ideas
2. I do not mind trying new things
3. I have a vivid imagination
4. I have difficulty understanding abstract ideas
5. I am quick to understand

Micro-coordination
1. I am always using texting to make plans with others
2. I use texting before calling when there is a change in plans
3. I heavily use texting to find out when and where I can meet with others
4. I often rely on texting to let someone know I am running late
5. I prefer texting over voice calling to coordinate plans
6. I frequently use texting to coordinate the location to meet with others
7. I prefer texting over voice calling to coordinate plans

Hyper-coordination
1. I frequently text friends and family throughout the day just to say "Hello"
2. I mainly use texting to be available for my friends and family to contact me any time
3. I mainly use texting when I want to stay in touch with others
4. I primarily use texting to keep in touch with family and friends
5. I normally use texting to contact someone who I have not spoken to in a while

Competence
1. I am comfortable with the technical features of the mobile phone that I use
2. I find it hard to navigate through the different features on my phone
3. I am quick when it comes to learning new features on my phone
4. I am not familiar with all the features on my phone
5. I think my phone is easy to operate