Rapport: A system designed to limit digital distraction within romantic relationships

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Rapport: A system designed to limit digital distraction within romantic relationships

by

Alexandria Collins

A thesis submitted to the graduate faculty
in partial fulfillment of the requirements for the degree of

MASTER OF FINE ARTS

Major: Graphic Design

Program of Study Committee:
Alex Braidwood, Major Professor
Ryan Clifford
April Katz

The student author, whose presentation of the scholarship herein was approved by the program of study committee, is solely responsible for the content of this thesis. The Graduate College will ensure this thesis is globally accessible and will not permit alterations after a degree is conferred.

Iowa State University

Ames, Iowa

2018

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DEDICATION

I dedicate this thesis to my family and friends, whose love and unwavering support throughout my academic adventures have laid the foundation for the discipline and application necessary to complete this work; without them, none of my success would have been possible.
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIST OF FIGURES</td>
<td>v</td>
</tr>
<tr>
<td>ACKNOWLEDGMENTS</td>
<td>vi</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>ix</td>
</tr>
<tr>
<td>CHAPTER 1: INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1 A Relevant Issue</td>
<td>1</td>
</tr>
<tr>
<td>1.2 The Initial Question</td>
<td>2</td>
</tr>
<tr>
<td>CHAPTER 2: LITERATURE REVIEW</td>
<td>3</td>
</tr>
<tr>
<td>2.1 Our Relationships with Technology</td>
<td>3</td>
</tr>
<tr>
<td>2.2 Temptation, Fear, and Addiction</td>
<td>4</td>
</tr>
<tr>
<td>2.3 A Second World</td>
<td>5</td>
</tr>
<tr>
<td>2.4 Creating Our Own Distances</td>
<td>6</td>
</tr>
<tr>
<td>2.5 Finding a Balance</td>
<td>7</td>
</tr>
<tr>
<td>CHAPTER 3: PRECEDENT MARKET</td>
<td>10</td>
</tr>
<tr>
<td>3.1 DistractaGone</td>
<td>10</td>
</tr>
<tr>
<td>3.2 Freedom</td>
<td>11</td>
</tr>
<tr>
<td>3.3 RescueTime</td>
<td>12</td>
</tr>
<tr>
<td>3.4 Rapport’s Difference</td>
<td>12</td>
</tr>
<tr>
<td>CHAPTER 4: RESEARCH</td>
<td>15</td>
</tr>
<tr>
<td>4.1 Study: Survey</td>
<td>15</td>
</tr>
<tr>
<td>4.2 Study: Daily Routine Evaluations</td>
<td>26</td>
</tr>
<tr>
<td>4.3 Study: Smartphone Usage Tracking</td>
<td>29</td>
</tr>
</tbody>
</table>
CHAPTER 5: CREATIVE PROCESS AND DESIGN SOLUTION 

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1 Understanding the Audience and Need</td>
<td>32</td>
</tr>
<tr>
<td>5.2 Original Avenues and Ideation</td>
<td>33</td>
</tr>
<tr>
<td>5.3 A Technology Solution for a Technology Problem</td>
<td>36</td>
</tr>
<tr>
<td>5.4 Building Rapport</td>
<td>38</td>
</tr>
<tr>
<td>Concept Ideation</td>
<td>38</td>
</tr>
<tr>
<td>Finding a Name</td>
<td>39</td>
</tr>
<tr>
<td>Rapport Workbook and Instruction Booklet</td>
<td>41</td>
</tr>
<tr>
<td>Rapport Device</td>
<td>52</td>
</tr>
<tr>
<td>Rapport System Screens</td>
<td>61</td>
</tr>
<tr>
<td>Rapport Concept Video</td>
<td>67</td>
</tr>
</tbody>
</table>

CHAPTER 6: FUTURE DIRECTIONS 

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1 Alternative Audiences</td>
<td>70</td>
</tr>
<tr>
<td>6.2 Further Development</td>
<td>71</td>
</tr>
<tr>
<td>6.3 User Testing</td>
<td>72</td>
</tr>
</tbody>
</table>

CHAPTER 7: SUMMARY AND CONCLUSIONS 

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1 Conclusion</td>
<td>74</td>
</tr>
<tr>
<td>7.2 A Personal Reflection</td>
<td>77</td>
</tr>
</tbody>
</table>

REFERENCES 

APPENDIX. IRB APPROVAL MEMOS 

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRB Approval Memo (Study 4.1)</td>
<td>86</td>
</tr>
<tr>
<td>IRB Approval Memo (Study 4.2)</td>
<td>87</td>
</tr>
<tr>
<td>IRB Approval Memo (Study 4.3)</td>
<td>88</td>
</tr>
</tbody>
</table>
# LIST OF FIGURES

<table>
<thead>
<tr>
<th>Figure</th>
<th>Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Figure 1</td>
<td>DistractaGone Device</td>
<td>10</td>
</tr>
<tr>
<td>Figure 2</td>
<td>Freedom User Interface</td>
<td>11</td>
</tr>
<tr>
<td>Figure 3</td>
<td>RescueTime Weekly Output Data</td>
<td>12</td>
</tr>
<tr>
<td>Figure 4</td>
<td>Survey, Results from “How long was your last relationship? How long have you been in your current relationship?”</td>
<td>16</td>
</tr>
<tr>
<td>Figure 5</td>
<td>Survey, Results from “How would you rate your experiences with these applications?”</td>
<td>17</td>
</tr>
<tr>
<td>Figure 6</td>
<td>Survey, Explanations of “How would you rate your experiences with these applications?”</td>
<td>17</td>
</tr>
<tr>
<td>Figure 7</td>
<td>Survey, Results from “Are there things you would change about how you communicate digitally with your partner?”</td>
<td>18</td>
</tr>
<tr>
<td>Figure 8</td>
<td>Survey, Explanations of “Are there things you would change about how you communicate digitally with your partner?”</td>
<td>18</td>
</tr>
<tr>
<td>Figure 9</td>
<td>Survey, Results of “How would you rate how these applications affect your emotions?”</td>
<td>19</td>
</tr>
<tr>
<td>Figure 10</td>
<td>Survey, Explanations of “How would you rate how these applications affect your emotions?”</td>
<td>20</td>
</tr>
<tr>
<td>Figure 11</td>
<td>Survey, Results of “How often do you think you are affected emotionally by these applications?”</td>
<td>21</td>
</tr>
<tr>
<td>Figure 12</td>
<td>Survey, Results of “Are smartphones and other digital devices ever the cause of a disagreement within your relationship?”</td>
<td>22</td>
</tr>
<tr>
<td>Figure 13</td>
<td>Survey, Results of “Do you think smartphones and other digital devices can sometimes distract you from your relationship?”</td>
<td>23</td>
</tr>
<tr>
<td>Figure 14</td>
<td>Survey, Explanations of “Are smartphones and other digital devices ever the cause of a disagreement within your relationship?” and “Do you think smartphones and other digital devices can sometimes distract you from your relationship?”</td>
<td>24</td>
</tr>
<tr>
<td>Figure 15</td>
<td>Survey, Results of “If possible, would you like a creative way for you and your partner to temporarily disconnect from the world when you’re on a date or in another intimate setting?”</td>
<td>25</td>
</tr>
</tbody>
</table>
Figure 16  Daily Routine Evaluations, Participant’s Routine Recordings  ________ 27
Figure 17  Daily Routine Evaluations, Participant’s Routine Recordings ________ 27
Figure 18  Smartphone Usage Tracking, Photo of Tally Counters _________ 30
Figure 19  Smartphone Usage Tracking, Photo of Tally Counters _________ 30
Figure 20  Smartphone Usage Tracking, Participant’s Tally Data _________ 31
Figure 21  Smartphone Usage Tracking, Participant’s Tally Data _________ 31
Figure 22  Smartphone Usage Tracking, Participant’s Tally Data _________ 31
Figure 23  Initial Ideation ____________________________________________ 38
Figure 24  Finding a Name ____________________________________________ 40
Figure 25  Defining Rapport __________________________________________ 41
Figure 26  Initial Workbook Sketches____________________________________ 44
Figure 27  Workbook Concept 1 Sketches________________________________ 46
Figure 28  Workbook Concept 1 Mock-ups __________________________________ 47
Figure 29  Workbook Concept 1 Mock-ups __________________________________ 47
Figure 30  Workbook Concept 1 Mock-ups __________________________________ 47
Figure 31  Workbook Concept 1 Mock-ups __________________________________ 47
Figure 32  Workbook Concept 2 Sketches__________________________________ 48
Figure 33  Workbook Concept 2 Mock-ups __________________________________ 49
Figure 34  Workbook Concept 2 Mock-ups __________________________________ 49
Figure 35  Final Workbook _____________________________________________ 51
Figure 36  Final Workbook _____________________________________________ 51
Figure 37  Final Workbook _____________________________________________ 51
Figure 38  Initial Device Ideation ________________________________________ 53
Figure 39  Round 1 Device Sculpting .................................................. 54
Figure 40  Round 2 Device Sculpting .................................................. 55
Figure 41  Final Concept Device Sculpting ........................................... 56
Figure 42  Examples Holding Device .................................................... 57
Figure 43  Examples Holding Device .................................................... 57
Figure 44  Examples Holding Device .................................................... 57
Figure 45  Final Device Concept Sketch ............................................... 58
Figure 46  Final Device ........................................................................ 60
Figure 47  Final Device ........................................................................ 60
Figure 48  Final Device ........................................................................ 60
Figure 49  Initial Information Architecture ........................................... 62
Figure 50  Initial Screen Sketches ......................................................... 63
Figure 51  Concept 1 Device Screens .................................................... 64
Figure 52  Concept 2 Device Screens .................................................... 65
Figure 53  Final Device Screens ........................................................... 66
Figure 54  Final Device Screens ........................................................... 66
Figure 55  Final Device Screens ........................................................... 66
Figure 56  Video Concept Ideation ......................................................... 68
Figure 57  Final Video Frames ............................................................... 69
Figure 58  Final Video Frames ............................................................... 69
Figure 59  Final Video Frames ............................................................... 69
Figure 60  Final Video Frames ............................................................... 69
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ABSTRACT

Technology continues to take a more prominent role within our relationships. Although the Internet allows for more connectivity, it also disconnects people from family and friends in face-to-face situations. As mobile digital technologies continue to advance, they create more and more opportunities for distraction and overuse. With an ever-growing market of smart devices with enhanced abilities, it’s important that partners are aware of the implications of their use.

To develop a deeper understanding of how digital technology impacts romantic relationships, a digital survey and two data collection studies were administered. Vital information was collected to further develop an understanding of the problems that exist between digital technology and romantic relationships. The data collected helped to outline how relevant digital distraction is within relationships. The data also clearly showed that every relationship is unique and that not every usage problem is the same. The information and data collected were used to create a design solution to help target the issue.

Rapport is designed to help couples with their device usage challenges. It aims to help users identify their individual usage problems and understand how their usage might be affecting their romantic relationships. It also helps users establish realistic goals while developing long-term solutions. Rapport aims to promote positive communication, teach compromise and trust, and develop better device usage habits. The system contains three simple parts: the self- and partner-assessment pages, the Rapport usage tracking device, and the monthly analytic reports. Rapport is also aware of the users’ vicinity to their partners. When users are on their devices excessively in the presence of their partners, it helps remind them to disconnect. Rapport’s goal is to help minimize digital distraction and promote the importance of face-to-face interaction within romantic relationships.
CHAPTER 1

INTRODUCTION

1.1 A Relevant Issue

Although mobile phones and other smart devices have many advantages, problems often arise with the inability to regulate usage. Humans have an innate need to connect with others. Ironically, devices that were designed to aid in these social exchanges have become instruments that now interfere with them (Billieux, 2012).

Technology continues to take a more prominent role within our relationships. Almost all Americans can access the Internet, with about 65% having access at home. Almost 91% have cell phones, and 61% have laptops (McDaniel & Coyne, 2014). With the constant increase in demand, these technologies continue to progress and become more and more advanced in functionality. With the added ability to access the Internet from anywhere, there have been mixed reviews on whether its impacts have been more positive or more negative. Although the Internet allows for more connectivity, it also disconnects people from family and friends in face-to-face situations. As mobile digital technologies continue to advance, they create more and more opportunities for distraction and overuse.

Technology impacts our daily interactions with others, but it may have an even more detrimental impact on our romantic relationships. When asked how frequently partners use their phone or other smart devices, many people have trouble estimating their individual usage. Most also aren’t aware of the impact it has on their relationships (Coyne, Stockdale, Busby, Iverson, & Grant, 2011).

With an ever-growing market of smart devices with enhanced abilities, it’s important that partners are aware of the implications of their use. The goal of this project is to help couples
understand their individual usage, understand its overarching impact within their relationships, and organize a customized pattern of usage that suits the preferences of their unique relationship.

1.2 The Initial Question

Before choosing my research topic, I took a few weeks to analyze my social surroundings in search of an impactful issue. I became interested in relationships and smartphone usage after seeing personal stories that were shared on social media and also after witnessing smartphone usage within my friends’ and family members’ romantic relationships. I realized that digital devices played a strong role within relationships, so I was interested to learn more.

My research began by asking the broad question: How do smartphones affect romantic relationships? Broadening my question even more, I looked at other digital devices, not just smartphones, and wondered what role they also played within romantic relationships. It was important for me to understand their current role within relationships in order to develop a possible solution. As my research developed further, I narrowed down the problems I discovered, and my broad question changed to a more specific three-part question: How can I make couples more aware of their technology usage, help them understand its impact, and help them develop more positive usage habits? I then worked to develop a design solution to aid in the dilemma posed between romantic relationships and digital devices.
CHAPTER 2

LITERATURE REVIEW

2.1 Our Relationships with Technology

As human beings, we have an innate need to connect. We have a biological need to form meaningful attachments. Research shows that human connection is the key to happiness (Hart & Frejd, 2013). These connections are at the core of our existence, and their importance cannot be overlooked. So is digital connection enough to suffice our need? Technology allows us to communicate and interact in a very controlled and edited manner. Real-world relationships can be more complicated and even more time consuming, but they are worth it.

“It seems insufficient to think of design without a consideration of the relationships between people and technology” (Sharpe, 2012). When designing for humans, it’s important to consider our relationships with technology and how these relationships shape the device itself. Different users, interacting with the same piece of technology, can respond in many different ways. Every user adapts to the device in relevant ways according to his or her needs. Thus, the overall impact of the design can vary dramatically. For instance, cell phones were designed to keep people connected from a distance. They provided a method of communication that was not limited by space or time. However, as the technology evolved and more people started to use it, the cell phone was replaced with the smartphone, which has now become a tool that impacts almost every aspect of life, not just communication.

The smartphone and other emerging smart devices target many different aspects of our lives beyond communication. It’s almost impossible to complete a daily task without some sort of smart software. As interactive technology becomes more and more advanced, we must consider the relationships that are forming between devices and their users. But how does this
relationship with technology impact our physical relationships? What impact does this virtual world have on reality? With digital technology always within our reach, it’s often difficult to separate the two relationships. We must assess our digital usage and how it affects our romantic relationships and find a sufficient way to balance the two. “We have to love ourselves enough to confront technology’s true effects on us” (Turkle, 2011).

2.2 Temptation, Fear, and Addiction

All of these technologies address us as if they were people constantly trying to get our attention and communicate with us. We develop relationships with other humans from interacting with one another, and we do the same with devices. We become attached to these relationships with our devices and applications, just like we do with human attachments. The ping of a notification becomes an instant reminder that triggers a biological response. As Sherry Turkle puts it in her book Alone Together, “Connectivity becomes a craving; when we receive a text or e-mail, our nervous system responds by giving us a shot of dopamine” (Turkle, 2011). The connectivity itself becomes so stimulating that we find it hard to ignore.

After we develop an attachment to our technologies, there is a sense of safety and normality that forms. Our devices become a symbol of our connection to the world, and without them, there is a fear of disconnect. Nomophobia, the fear of being separated from a cell phone, is a digital disorder that is on the rise (Hart & Frejd, 2013). These devices have become so prominent in our lives, we often wouldn’t know how to handle certain situations without them. There is a sense of anxiety that forms when our devices die and we aren’t able to stay constantly connected to the rest of the world.

After prolonged use of these devices, a dependency starts to form, an addition. When the word addiction is mentioned, we usually think of substances like drugs or alcohol. But addiction
can also be applied to behaviors. An addiction occurs when users feel such intense pleasure from an activity that, over time, they will become psychologically and physically hooked. Their bodies will begin to crave it. Prolonged use can cause negative effects when a user starts to choose the activity or substance over other more important responsibilities. Sometimes users will continue to participate in the task even when they know there will be negative consequences. “Internet addiction is probably the most common and fastest-growing addiction of our modern time” (Hart & Frejd, 2013).

When users get to the point where the specific activity is always on their mind and they think about it constantly, the addiction turns into an obsession. Technology is addicting and can encourage obsessive behaviors because of three main characteristics: accessibility, affordability, and anonymity (Weiss & Schneider, 2014). Although they may not notice it, many people will show key signs of addiction or obsession and, in some cases, withdrawal. It’s common for many modern users to have a hard time putting down their devices for a long period of time. There is a sense of anxiety that forms when they are without access. Most of the time, it’s a problem we don’t even notice. We check our phones without realizing it. It has become an activity that feels natural and necessary.

### 2.3 A Second World

With the limitless connections available through our digital devices, it’s easy to get lost in our virtual worlds. On social media and digital devices, it’s easy to form a fantasy of who we want to be (Turkle, 2011). It’s easy to blur the lines between the two worlds. In a virtual world, there is a lack of commitment and a lack of reality. But is this always a good thing? When we’re in these virtual worlds, the real world disappears around us and it’s easy to get stuck in a false
reality, even if it’s only momentary. Virtual worlds can offer a great escape, but it’s important we don’t neglect the real world as a result.

Psychologist Mihaly Csikszentmihalyi calls this mental state, in which someone is completely immersed in their technology, “the flow state” (Oppland, 2016). In this state, like in real life, we have goals set of what we want to achieve, whether it be a small task or a longer series of accomplishments. During this time, we become fully present into our virtual environment. We are able to act without self-consciousness. We become so overstimulated that we become fully present with its demands. This is why it’s easy to check our phones, and before we know it, we’ve been on them for 20 minutes. This second world draws us in and keeps our attention. “Most of the time we are not aware of how intrusive this perpetual and easy access has become, or how much of our time it demands” (Hart & Frejd, 2013).

2.4 Creating Our Own Distances

Until recently, our human relationships were largely based on proximity. We used to have to be in the same room to interact with each other; now, in order to communicate, proximity isn’t a deterring factor. Being in the same place at the same time doesn’t mean what it used to. The world itself acts as a giant room in which we all can be present at the same time. And thus, this ability not to be physically present, yet still able to interact, has allowed us to create our own distances.

“These days, being connected depends not on our distance from each other, but from available communications technology” (Turkle, 2011). Distance can be created even when in a shared space. By refusing to disconnect ourselves from our digital devices, we are becoming even more dependent on them, creating an even bigger gap between our digital and physical worlds. In many public spaces, you’ll find people on their smart devices, whether smartphones,
tablets, or wearables. Instead of engaging in their physical surroundings and being physically present, they choose to be engaged in their digital worlds, creating a distance that doesn’t actually exist.

The Internet, like many other networked technologies, was a tool created as a method for sharing information, and it was quickly adapted as a technology for relationships. Humans will always find a way to adapt networked technologies to their needs. From chatrooms, to social media, to online role-playing games, it’s easy to connect to virtually anyone, anytime. It’s easy to become distracted by the ease of digital communication. As a result, we end up neglecting face-to-face communication without even realizing it. We often excuse ourselves from real time and the physical relationships that come with it.

Wanting to communicate from a distance is not a new idea. People have long wanted this ability and slowly made progress from telegrams to the telephone, and now the smartphone. Originally, these alternative methods of communication were seen as a “better than nothing” approach to communication when physical connection wasn’t possible. Now, for some, the value of this physical connection has been forgotten. “At the extreme, we are so enmeshed in our connections that we neglect each other” (Turkle, 2011).

2.5 Finding a Balance

Not everything about technology is negative. It offers us unlimited information instantly and from almost anywhere. Social media sites have opened up many social connection opportunities that were not available before. E-mail is much quicker and more efficient than handwritten letters. Online shopping gives us the ability to get whatever we need, when we need it. Texting allows us to stay in contact with our loved ones, regardless of time or distance. Digital textbooks and other forms of literature have had a very positive impact on our ability to learn.
Although there are many positives, technology is like a double-edged sword with many more overarching effects. Being constantly “plugged-in” has a price. It affects our health, our level of real-life social interactions, and even our relationships.

Generally, healthy romantic relationships require respect, support, quality time, validation, affection, vulnerability, and trust (Weiss & Schneider, 2014). Digital connectivity can give us at least minimal satisfaction in some of these areas, but what it lacks the most are quality time and affection. Spending quality time together usually requires some sort of shared physical space. If we are interacting solely through digital means, quality time is hard to achieve. Also, although we can show basic affection through our devices, nothing can replace genuine human touch. This is what we must consider. This is what makes digital connection different from physical connection.

Quitting our digital connections cold turkey isn’t going to work. We must find new ways to balance our relationships with technology and with each other. We have to find a way to live physically in the present and also with digital technology. “For better or for worse—he human evolution and technological evolution are inextricably linked, and there is no turning back” (Weiss & Schneider, 2014). It is not a simple process, and it’s a habit-forming concept, like any learned skill.

Although technology is the problem, it is also the solution. The technology itself isn’t the problem: It’s the users and the choices they make. Blaming the tool won’t help us solve the problem. The first step is admitting a problem exists. We must be honest with ourselves. It is our responsibility. Once we do that, we can analyze the problem and make the change. Our devices aren’t going to give us the answer; we must help ourselves. We must consider both how we connect, and how often we connect.
We are not stuck in this version of ourselves. There is always room for adaptation and change. We can work to make ourselves less vulnerable and more educated on the true impact of our choices. Those choices are ours to make, and it’s up to us to decide which ones are best. The situation may seem complex and deep rooted, but we must embrace the reality of the situation. We must consider what really matters in our lives. Technology may seem like it can satisfy everything we need, but can it truly love us as much as we love it? I believe we are at a point where we have the opportunity to step back and truly establish change. We deserve it. Our partners deserve it. We deserve better.
CHAPTER 3

PRECEDENT MARKET

3.1 DistractaGone

![DistractaGone Device](http://www.distractagone.com/)

**FIGURE 1. DistractaGone Device**

*Source: http://www.distractagone.com/**

DistractaGone is currently seeking funding on Kickstarter. The box was designed to lock phones inside for a designated time. Users place their regular-sized or plus-sized mobile phones inside and set the time, and the devices are locked inside until the time runs out. It holds up to four phones at once, and once it’s locked, it can’t be opened. It comes in a few finish options and runs on AA batteries. The device has not received full funding to become realized.
3.2 Freedom

Freedom is an app and website plug-in that aims to help improve focus and productivity. It blocks potential Internet distractions so users can stay on track with their activities. It was designed as a tool to promote high productivity within work, but it can be used in other situations to prevent distractions. It allows users to preset their schedule to block specific websites and applications for a specific period of time, and it syncs and blocks across all of their devices. It claims to help users gain an average of 2.5 hours of productive time each day. It offers a free trial and then charges a $2.50 monthly fee. There are also other similar applications like LeechBlock and Hey Focus.

FIGURE 2. Freedom User Interface

Source: https://freedom.to/
3.3 RescueTime

RescueTime is a time management app that runs in the background on a computer or phone. It tracks how much time is spent on websites and applications and gives users data reports based on their usage. It also sends users alerts when they have spent a certain amount of time on an application. It also blocks unwanted websites and allows users to pause or quit tracking at any time.

FIGURE 3. RescueTime Weekly Output Data

Source: https://www.rescuetime.com/

3.4 Rapport’s Difference

None of the previously listed devices target relationships. Although they address personal usage, they do not consider how the usage affects the users’ partners. There is also no platform that offers discussion and understanding and no opportunity to make usage compromises and goals for improvement.
Although DistractaGone’s design successfully allows users to lock their phones inside to prevent distraction, even the developers note that the struggle often begins with awareness. In order for the design to work, the users must realize every instance they are overusing their devices and choose to place it inside. The design is well functioning with its digital timing device, but there needs to be a method to help users become aware of their usage. The device doesn’t offer tracking or usage data to help users analyze their usage in order to improve long term. Also, the device doesn’t offer any long-term solutions or schedule-based usage compromises.

The Freedom app offers a great solution for blocking specific troublesome websites and applications. However, it does not extend beyond Internet-based websites and applications to other digital devices. Although it blocks content during specific periods of the day, it doesn’t consider total usage time outside of blocked time, so outside of working hours, users might still be using their devices excessively or at inappropriate times.

RescueTime is a great usage monitoring app. It successfully tracks usage and gives detailed reports to allow for self-assessment. It doesn’t however have overall usage blocking to limit users’ overall daily usage. It also doesn’t extend beyond Internet-based applications to other smart devices.

Unlike many online reporting software, Rapport isn’t an application that can be accessed anytime from anywhere and controlled by a single user. One of the most important goals of Rapport is to promote discussion and compromise between partners. All decisions and changes require the agreement of both partners. In order to make those changes, both partners must be physically present with both of their smartphones attached to the Rapport device. Rapport also isn’t solely a digital device that monitors and controls digital usage. The self-assessments and
partner assessments require hands-on interaction to help promote deeper understanding and retention. The assessments require the participants to think deeper about their usage and its overarching impacts on their partners, rather than focusing solely on personal impacts. The Rapport system also offers a method of monthly usage reporting to allow users to analyze their usage habits. They can use these reports as a method for promoting discussion with their partners.

Rapport hopes to put more focus on the effects that distraction and overuse of digital devices have within relationships. By promoting discussion of usage habits and helping develop usage compromises, Rapport aims to help users develop a customized solution for their distracted usage. Although the above products offer a short-term solution, none promote conversation and understanding to inspire long-term change.
CHAPTER 4

RESEARCH

4.1 Study: Survey

The purpose of this survey was to learn general thoughts and opinions about the impact of digital connectivity on romantic relationships. The data collected helped provide insight into a design solution to help advance the use of technology between couples.

Two hundred participants were invited to participate via e-mail. In the e-mail, they were given a description of the purpose of the study and offered a link to an online anonymous survey. The survey asked questions regarding personal experiences with technology within their relationships. It took about 5 minutes to complete the survey, and all questions were multiple choice or open answer. There were a total of 31 questions, and all questions were voluntary.

The survey results were collected from 76 males, 120 females, and 4 others that chose not to identify their gender. Fifty-four participants were between the ages of 18 and 25; 48 participants were between the ages of 26 and 35; 45 participants were between the ages of 36 and 45; and 53 participants were over the age of 46. Of the participants, 169 were currently in a relationship, and 31 were not. Of those that were currently in a relationship, 21 reported being in long-distance relationships. Participants were also asked how long their current or last relationship was.
When participants were asked to rate their experiences with common communication applications, most had an overall positive experience. About one-third however, had mixed experiences or negative experiences. When participants were asked to explain, 131 people chose to respond. Of the participants that reported positive experiences, most commented that they like being able to communicate while they are at work during the day. Of those that reported negative experiences, most commented that there are often arguments or misunderstandings. However, there were some reports of issues arising from digital communication becoming a replacement or a distraction for face-to-face communication.
FIGURE 5. Survey, Results from “How would you rate your experiences with these applications?”

“Can definitely have a negative affect at times. Discourages face to face communication.”

“Communication has been good, but the ease almost becomes a crutch to actual conversation.”

“Technology helps us stay in touch and update one another but it can be irritating when one is on a device and the other is not.”

FIGURE 6. Survey, Explanations of “How would you rate your experiences with these applications?”
Next, participants were asked about their usage while they were apart, and they were asked if there was anything they would change about how they communicate.

**FIGURE 7. Survey, Results from “Are there things you would change about how you communicate digitally with your partner?”**

![Survey Results](chart.png)

Just over half of the participants said they wouldn’t change anything about how they communicate. The other half said they would or might like changes. When asked to explain, those that wanted change said they would like more purpose in their communication and would like to use digital communication less. They would like to have more meaning within their conversations.
“…while he and I are spending time together. It seems like we always have our phones around, even when we try to intentionally put them away.”

“Maybe communicate more outside of digital.”

FIGURE 8. Survey, Explanations of “Are there things you would change about how you communicate digitally with your partner?”

Next, participants were asked about their emotional experiences while using digital communication technologies. About one-third of participants reported positive emotional experiences. The other two-thirds reported either indifferent emotional responses or negative emotional responses.
When asked to explain, those with positive emotional experiences noted that they liked being able to always stay in touch throughout the day. They found it comforting to know their partner was always connected to them digitally. Those with negative experiences said that misunderstandings and lack of meaning can cause arguments. Some also stated that the constant communication took away the meaning of face-to-face communication.
“I would like more face to face communication.”

“Technology seems as though it can take away the human aspect of things such as emotion.”

FIGURE 10. Survey, Explanations of “How would you rate how these applications affect your emotions?”

Next, participants were asked how often they were affected by these emotions. One-third of participants reported being affected daily; about half reported being affected between 1 and 6 times per week; and about one-fifth reported never being affected.
The last few questions of the survey asked about distractions and disagreements. When asked if their devices were ever the cause of a disagreement, about two-fifths of participants said yes, two-fifths said no, and one-fifth said maybe. When the participants were asked if they thought their devices were distracting, 75% of participants said yes. When asked to explain why their devices might have been the cause of a disagreement or distraction, almost all participants said it was because of overuse at home while they were with their partner. They realized that they would easily get lost on social media and not perceive their excessive use.
Are smartphones and other digital devices ever the cause of a disagreement within your relationship?

- Yes: 40.46%
- Maybe: 36.73%
- No: 20.81%

FIGURE 12. Survey, Results of “Are smartphones and other digital devices ever the cause of a disagreement within your relationship?”
**FIGURE 13.** Survey, Results of “Do you think smartphones and other digital devices can sometimes distract you from your relationship?”

- **74.57%** Yes
- **13.87%** Maybe
- **11.56%** No

**FIGURE 14.** Survey, Explanations of “Are smartphones and other digital devices ever the cause of a disagreement within your relationship?” and “Do you think smartphones and other digital devices can sometimes distract you from your relationship?”

- “More time spent on phone rather than speaking with my partner.”
- “On it during the day, then continue at home.”
- “Lots to watch, read, interact with. Sometimes get lost and don’t realize.”
For the last question of the survey, participants were asked if they would like a way to temporarily disconnect from their devices while spending time with their partners. Over 75% said yes.

FIGURE 15. Survey, Results of “If possible, would you like a creative way for you and your partner to temporarily disconnect from the world when you’re on a date or in another intimate setting?”

The survey provided me with vital information to further develop my understanding of how digital technology impacts romantic relationships. I learned that most participants have positive experiences with their digital communication, but when they do have negative experiences, it is due to miscommunication or lack of actual face-to-face communication. I
learned that most want or are willing to change how they communicate with their partners. I learned that almost all participants were affected emotionally by their devices in some way. And last, I learned that digital devices can sometimes be the cause of a disagreement and often become distractions, even when their users aren’t aware. More than three-fourths of participants admitted to wanting a temporary solution that would help them disconnect—this was very inspiring for my design solution.

4.2 Study: Daily Routine Evaluations

The purpose of this study was to develop personas to be used as precedent users for the intended design solution. In order to better understand relationships and daily activities, I felt it was important to understand daily routines. This study aimed to gather information about different persons’ daily routines and activities and use them to determine a potential design solution.

Five couples (10 total participants) were invited via e-mail to participate. They were asked to record their daily activities for one week. Participants were not given specific instructions of what to record or how to record it; they were simply asked to record their daily activities in whichever manner was easiest and most convenient. Instructions were kept intentionally vague because I didn’t want to instruct the participants so much that their natural daily activities were affected. They were instructed to record only what they felt comfortable sharing about their daily activities.
“Boyfriend sets alarms for 7:30 and 8:00. Gets up at 8:00 and gets ready for work. He says goodbye and leaves by 8:30. I get up, do yoga, and get ready for the day. I go to the bus stop by 9:30 and go to class. I have a break between classes where I eat and do homework in the grad studio. He and I talk about dinner plans over fb messenger and he suggests Thai Kitchen. I go to my next class which ends at five. He gets off work at 5 then he picks me up. We pick up Thai kitchen and take it home. We eat in the living room and watch a bit of Netflix. I leave to do homework and he watches car videos (Racing, tuning, repairing, reviews, literally anything relating to cars) for the purpose of continuing his education. We go to bed at a reasonable time together.”

FIGURE 16. Daily Routine Evaluations, Participant’s Routine Recordings

<table>
<thead>
<tr>
<th>TIME</th>
<th>PARTNER 1</th>
<th>PARTNER 2</th>
</tr>
</thead>
<tbody>
<tr>
<td>7:15</td>
<td>Son wakes up &amp; gets into bed with us</td>
<td></td>
</tr>
<tr>
<td>7:45</td>
<td>Get up &amp; make breakfast</td>
<td></td>
</tr>
<tr>
<td>8:00</td>
<td>Daughters get up</td>
<td></td>
</tr>
<tr>
<td>8:40</td>
<td>Woke up, got ready</td>
<td></td>
</tr>
<tr>
<td>9:00</td>
<td>Daughter heads to Sunday school</td>
<td>Took Daughter to Sunday school</td>
</tr>
<tr>
<td>9:00–10:30</td>
<td>Order clothes online for the girls to wear for family pictures</td>
<td></td>
</tr>
<tr>
<td>11:00</td>
<td>Start working on homework (Husband &amp; daughter arrive back home)</td>
<td></td>
</tr>
<tr>
<td>12:00 PM</td>
<td>Work on Halloween costumes</td>
<td>Cleaned house</td>
</tr>
<tr>
<td>1:00–4:00</td>
<td>Homework</td>
<td>Watched some football</td>
</tr>
<tr>
<td>4:00</td>
<td>Dinner prep</td>
<td>Grilled steaks for dinner</td>
</tr>
<tr>
<td>5:00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5:30</td>
<td>Eat dinner</td>
<td></td>
</tr>
<tr>
<td>6:15</td>
<td>Head into school</td>
<td></td>
</tr>
<tr>
<td>6:30</td>
<td></td>
<td>Gave girls a bath, got them ready for bed</td>
</tr>
<tr>
<td>6:30–9:15</td>
<td>Work on site model for studio</td>
<td></td>
</tr>
<tr>
<td>9:15</td>
<td></td>
<td>Showered and got ready for bed</td>
</tr>
<tr>
<td>9:30</td>
<td>Shower</td>
<td></td>
</tr>
<tr>
<td>10:00</td>
<td>Work on homework in bed</td>
<td>Went to bed</td>
</tr>
</tbody>
</table>

FIGURE 17. Daily Routine Evaluations, Participant’s Routine Recordings
I chose not to give any specific instruction to the participants because I wanted them to record their routines in the most comfortable method they preferred. Figure 16 shows one participant’s record of one day during their week of recording. This participant chose to write the events of their day in paragraph format. Figure 17 shows another participant’s recordings. This participant chose to record the events of their day in a table format.

In Figure 16, we see that both partners came together to discuss their daily activities, and then one partner recorded the events of both of their days together as they intertwined and related to each other. This couple was the only set of participants that chose to record their daily activities in this manner. Their recording noted two specific uses of technology throughout their day: Facebook Messenger and Netflix. They used Facebook Messenger as a method of communication while they were apart during the day, and Netflix was used as a personal activity for only one partner after they were home for the evening.

In Figure 17, we see two separate daily routines as recorded separately by both partners. Although there are a couple of instances where they reference each other, neither comment on any quality time spent together. Both partners seemed preoccupied by their own individual activities and didn’t seem to do many activities together this day. There are two possible uses of technology mentioned. Watching football might have been done on a television, and completing homework might require a computer.

This activity showed me that although relationships are an important part of our lives, four out of five couples chose to record their daily activities individually and rarely mentioned their partner throughout their recording. Also, they rarely recorded participating in activities together, even after work or after other daytime obligations.
The couple from Figure 16’s recording was the only one that chose to record their daily activities together and comment on their activities as they related to one another. This couple’s recordings were outliers to the study. However, I feel they highlight an important point about relationships. Although the majority of couples recorded their activities individually, this couple chose to communicate and record their activities together. It shows that in each relationship, couples approach an activity differently and interact with each other differently through their days. There is no one-size-fits-all approach.

Also, although my project focuses on technology, when participants were asked to participate, they were not asked to focus on their technology use. Yet, almost every participant mentioned the use of digital technology as least once per day. This showed me how prevalent digital technology is within our daily routines.

4.3 Study: Smartphone Usage Tracking

After discovering the prevalence of technology within daily routines in the previous study, I chose to conduct a final study. The purpose of this study was to better understand how often couples use their smartphones in the presence of their partners. For one week, participants were asked to record and document how often their partners use their smartphones. They were also asked to record how many hours they spent together each day. Data was then turned in anonymously and analyzed. The number of hours spent together was compared with the number of times the partner used a phone.

Four couples (acquaintances) were invited to participate. Each participant was also given a finger tally counter. They were not required to use it, but they were given the option to if it would aid in their collection process. Participants were given instructions on how to use the continuous counter: Press the large button to count and press the small button to reset it each day.
Almost all participants chose to use a counter. They were told to tally every time they saw their partners use their phones while they were together. If their partners were on their phones for a long period of time, participants were instructed to tally once for every 5 minutes of usage. Participants were also asked to record only when their partners used their phones for at least 1 minute. Quick glances or checking the time were not included in the count.

FIGURES 18 and 19. Smartphone Usage Tracking, Photos of Tally Counters

Two participants reported low usage while together, similar to Figure 20. These participants reported as little as no usage per day while together. However, they also recorded fewer total hours per day together than most other users.
Two participants reported moderate usage, similar to Figure 21. Some days had high reported usage while others reported lower usage, with an overall average of 16 uses per day. Note that lower usage days were reported when the couple spent fewer hours together.

Four participants reported high usage, similar to Figure 22. As shown in Figure 22, participants reported an average use of 39 times per day. When considering that participants were asked to tally when their partners used their phones for at least 1 minute but a maximum of 5 minutes, even on the lowest usage day one participant recorded the partner using a phone for between 25 minutes and 2 hours during the 3 hours they spent together.

<table>
<thead>
<tr>
<th>DAY</th>
<th>HOURS TOGETHER</th>
<th>TIMES ON PHONE</th>
<th>DAY</th>
<th>HOURS TOGETHER</th>
<th>TIMES ON PHONE</th>
<th>DAY</th>
<th>HOURS TOGETHER</th>
<th>TIMES ON PHONE</th>
</tr>
</thead>
<tbody>
<tr>
<td>DAY 1</td>
<td>2</td>
<td>1</td>
<td>DAY 1</td>
<td>4</td>
<td>10</td>
<td>DAY 1</td>
<td>5</td>
<td>48</td>
</tr>
<tr>
<td>DAY 2</td>
<td>2</td>
<td>0</td>
<td>DAY 2</td>
<td>2</td>
<td>3</td>
<td>DAY 2</td>
<td>6</td>
<td>52</td>
</tr>
<tr>
<td>DAY 3</td>
<td>1</td>
<td>1</td>
<td>DAY 3</td>
<td>8.5</td>
<td>25</td>
<td>DAY 3</td>
<td>3</td>
<td>25</td>
</tr>
<tr>
<td>DAY 4</td>
<td>4</td>
<td>4</td>
<td>DAY 4</td>
<td>5</td>
<td>37</td>
<td>DAY 4</td>
<td>3</td>
<td>32</td>
</tr>
<tr>
<td>DAY 5</td>
<td>2</td>
<td>0</td>
<td>DAY 5</td>
<td>3</td>
<td>2</td>
<td>DAY 5</td>
<td>4</td>
<td>42</td>
</tr>
<tr>
<td>DAY 6</td>
<td>1</td>
<td>0</td>
<td>DAY 6</td>
<td>5</td>
<td>15</td>
<td>DAY 6</td>
<td>4</td>
<td>35</td>
</tr>
<tr>
<td>DAY 7</td>
<td>2</td>
<td>0</td>
<td>DAY 7</td>
<td>5</td>
<td>23</td>
<td>DAY 7</td>
<td>4</td>
<td>45</td>
</tr>
</tbody>
</table>

FIGURES 20, 21, and 22. *Smartphone Usage Tracking, Participant’s Tally Data*

In conclusion, there was a direct correlation between hours spent together and usage levels. Less time spent together resulted in less usage. This seems logical considering the less time partners are together, the less participants would be able to see their partners use their phones. More important, however, over half of users reported high usage almost every day, or at least every other day. This study showed me how prevalent phone usage is within relationships while partners are in the presence of each other. It showed me that there was potential for a design solution related to overuse.
CHAPTER 5

CREATIVE PROCESS AND DESIGN SOLUTION

5.1 Understanding the Audience and Need

When searching for literature regarding my research topic, I found an abundance of resources that helped me better understand the market, the impact, and the audience of my topic. Previous studies and articles inspired me to approach the issue with a more personal viewpoint. I realized that the issue was not only relevant to my life and relationships, but as a common social issue, it was also relevant to almost everyone. Digital technology isn’t disappearing any time soon, so I felt the importance of the issue was more relevant than ever.

The literature I found helped clarify and define the hold that digital technology has on our daily lives. It’s a social and personal issue that continuously evolves every day. I found many studies that tested the social implications of our device usage but only a few that targeted the individual. Also, there were even fewer examples of studies that researched the impact of digital technology on relationships. This showed me there was a need for more research on the topic. I felt it was necessary to help further develop my own understanding of the issue.

I found my survey results to be very insightful. I was surprised by how many participants chose to respond within the first day but also by how many were willing to explain their answers in the optional explanation boxes. There were many participants that wrote in depth about their experiences. When I published the survey, I was unsure how the data would conclude. I wasn’t sure how honest participants would be or how willing they would be to share their personal experiences. I was delighted to discover that many people found the survey interesting and that many commented that they hoped for some sort of aid or solution. The survey helped me to understand my audience and how my design could help them. I was able to approach each set of
answers from the viewpoint of an individual, but I was also able to see the data as a whole and understand how the issue relates to the general population.

My data collection experiments were also very helpful to my final design solution. These studies sought more intimate and specific information about the relationships of my participants. The data helped me better understand how every relationship differs and how every circumstance is unique. Most importantly, they helped me understand that there is no one-size-fits-all solution. There was a need for a design solution that was unique, customizable, and personalized. This was a very important aspect of my final design solution.

Before developing my own design solution, I researched the market in order to understand what had already been created. I hoped to understand how these designs were successful but also how they could be improved. I found that none of them directly fit my target audience or problem, but some touched on similar issues. Most design solutions were digital technologies, mainly applications or software. Few had physical elements and most seemed identical to each other. For my design, I aimed to be different. There was a need for a design solution that focused on relationships and how they are affected by device usage. I made my design function in a unique way, compared to the already established designs. I wanted my solution to be more intimate and personal for each set of users. I also noticed that none of the precedent market designs helped users gain overall awareness about how their usage affected their partners. My design solution targets this issue.

5.2 Original Avenues and Ideation

When I first approached the issue of how digital technology affected relationships, I went down many avenues. One of the first was the idea of digital intimacy. I was interested in understanding how technology fostered and hindered intimacy within romantic relationships.
Most of the initial research I came across related to the area of online dating. Since my topic focused more on established romantic relationships rather than creating new romantic relationships, I chose to stay away from studies and research related to online dating.

However, there were still many avenues I could explore within the idea of intimacy. I felt it was important to understand how intimacy was affected by technology because intimacy is one of the most important aspects within a romantic relationship. Within my original research, I found there were both positive and negative arguments for how technology impacts intimacy. Since digital technology allows couples to stay in touch from a distance, some would argue that it fosters intimacy. Others would argue that because of the ease of digital communication, this ease often becomes a crutch, and intimate, face-to-face interactions are hindered.

As I approached intimacy as a potential topic to address, I thought it would be worthwhile to explore solutions of how to better foster intimacy through digital technology. However, when I looked at the issue as a larger picture, I felt by making technology more intimate I was actually contradicting my overall goal. By making technology more intimate, I would make couples even more distant from one another. If partners could hug, kiss, or exchange other intimate, physical interactions through a digital device, they wouldn’t even need to interact face to face at all. I felt I would be promoting distance, rather than promoting intimacy. If I developed a solution to further foster intimacy within digital technology, I would be driving an even bigger wedge between partners, which is the exactly opposite of what I had hoped to achieve.

Another area I explored was the concept of emotions and feelings within technology. Although texting and other forms of long-distance communication allow couples to communicate throughout the day and share sentimental feelings through expressions like “I love
you” and “I miss you,” there currently is no way to truly share emotions through digital technology. There are ways to mimic them virtually through video-chat technology like FaceTime, graphics like emojis, and applications like Snapchat, which all try to enhance long-distance communication. However, expressing true emotion is still very hard to do from a distance.

As a potential solution, I researched and explored the area of wearables. I thought it would be interesting to develop a wearable that would help partners exchange feelings and emotions from a distance via touch through a wearable device. I thought it would be interesting if partners were aware of each other’s moods, similar to the concept of a mood ring, when they weren’t physically in the presence of one another. Although the idea of a wearable seemed interesting, I soon eliminated the idea because I felt that by allowing partners to know each other’s emotions instantly via a wearable, it would minimize the importance of communication. Couples would no longer need to talk about their feelings and moods if the wearable automatically shared them. Again, this idea was contradictory.

So, I moved on from the areas of intimacy, emotions, and feelings. I then arrived at the idea of digital distraction. The more research I did and the more literature I read, the more interesting and relevant this issue became. What’s so interesting about distraction is that it’s something that can occur without the user even realizing it. It’s a problem that many users aren’t even aware they have. What’s even more important to consider is that if users aren’t aware of the problem, they probably aren’t aware of its effects on their relationships either. I felt this was a very important issue that needed to be addressed. Is there a way to help users become more aware of their distractions and their effects? Is there a way to help them limit their distractions in
the future? Is there a way to promote more positive usage habits? These were all questions I asked myself that lead to the development of my final design solution.

5.3 A Technology Solution for a Technology Problem

So the question is how to solve a technology problem in a technology-driven world. Eliminating technology altogether is not the solution. People simply aren’t willing to completely give up their devices. If they aren’t aware they are becoming distracted by their devices, how can they start to make a change? If they aren’t aware of their usage, they probably aren’t aware of its effects. Consequently, the first task is to help users become more aware of their usage. The next is to help them understand its effects within their relationships. And the last is to develop a personalized solution for each user.

Those ideals are what define Rapport. Rapport is designed to help couples with their device usage challenges. It aims to help users identify their individual usage problems and understand how it might be affecting their romantic relationships. It also helps users establish realistic goals while developing long-term solutions. Rapport also aims to promote positive communication, teach compromise and trust, and develop better device usage habits.

It works in three simple parts. The first is the individual and partner assessments pages. The assessment pages walk users through a self-assessment process and also allow partners to assess each other. The assessments provide an opportunity for couples to discuss their needs in a comfortable, open environment, without judgment. It allows partners to establish goals together and develop usage compromises. The second part is the Rapport device. The Rapport device functions as the usage monitor for those compromises. It operates according to the guidelines set up by the users. It makes sure users adhere to their restrictions and stay on track with their goals. Rapport is also aware of the users’ vicinity to their partners. When users are on their devices
excessively in the presence of their partners, it helps remind them to disconnect. And the last part: monthly usage analytics. After users have set up their usage allowances, the Rapport system offers an analysis of usage habits each month for each partner to evaluate. Each partner can print off his or her monthly analytics report and attach it to the Analytics booklet. They can then discuss their results and evaluate future goals together.

When users set up Rapport, all smart devices and applications are automatically loaded into the Rapport device. For each device or application, users can choose the amount of time they are allotted per day. Once they’ve used their allotted time, their phones will restrict access to those devices and applications. Rapport also offers some fun mode options for users and their partners. The use of these modes is completely voluntary, so it’s up to each couple if they would like to use them. If they choose to use them, all they have to do is go into the mode settings and turn each mode to the On position.

The Screen Sharing mode option promotes trust. Both users are allowed unlimited time on their applications while in this mode, but everything they do will be shared on each other’s screen. The Lock Out mode option promotes devotion and growth. For 10 minutes per day, each partner can choose to restrict all Internet access to all devices, whenever they choose to use this mode. While this mode is active, both partners’ access will be restricted. The Request Time mode option promotes compromise and understanding. If either user has run out of time on a specific application or device, he or she can ask the partner for 15 more minutes. In return, that user must answer a surprise question of the partner’s choosing. For example, “What’s my favorite color?” Each partner is allotted three of these mode uses per day.

Rapport is a technology meant to help with a technology problem. By allowing individual users to analyze their usage habits and understand its impact, they can develop new usage goals.
The device helps with usage monitoring and helps the users stick to their goals. Over time, Rapport aims to promote long-term change.

5.4 Building Rapport

Concept Ideation

As aforementioned, I went through a lot of research and ideation before finally narrowing down my main idea. As I went through related articles and studies, I wrote down what problems were occurring and why they were occurring. Figure 23 shows the list I had created. My final design aims to touch on all of these, but it focuses on the issues of distraction, struggles with disconnecting, the value of relationships, and lack of awareness.

![Initial Ideation](image)

FIGURE 23. Initial Ideation
I referred to this list (Figure 23) quite frequently throughout my process to make sure I was staying on track. I found that there are a lot of issues surrounding technology and relationships, so I wanted to make sure I didn’t stray from my main idea.

**Finding a Name**

I found that the best way to find a name for my project was to approach it in an organized way. I first listed words that were relevant to my project and what it was trying to achieve, for example: relationships, awareness, communication, etc. I then looked up the raw definitions of the words and looked for synonyms and antonyms.

As expected, there were many words to choose from. I tried to be selective, however. I didn’t want to choose a word that was too lengthy, hard to spell, or hard to pronounce. I didn’t want to choose a word that was too well known either, because it might have other unintended connotations.

I found the process to be difficult. Summing an entire project into one word was hard to do. Since my project is dynamic and has many aspects and parts, it took me a while to find a word that best represented every aspect. Figure 24 shows my narrowed down list as I searched for the right word. There were a few I liked, like *affinity*, and *divulge*, but in the end, I choose the word *rapport*. It almost exactly identifies my project’s purpose.
FIGURE 24. Finding a Name
Figure 25 shows the definition of *rapport* from the dictionary: “A close and harmonious relationship in which the people or groups concerned understand each other’s feelings or ideas and communicate well.” I was pleasantly surprised at how perfect it was, not only in its overall meaning but also with the other vocabulary it used within its definition. The definition itself used many words that I had already used throughout my process, like *communication*, and *relationship*. *Rapport* is a word that I had heard before, but only a handful of times. I felt it was unique and would represent the project well.

![Dictionary](image)

**FIGURE 25. Defining Rapport**

**Rapport Workbook and Instruction Booklet**

The first piece of the Rapport process is the Instruction booklet and the Workbook. The Instruction booklet outlines the details of the Rapport system. It explains how to set up the devices and walks users through all of the options. Similar to other device manuals, it’s only a
few pages long and can be used as a reference throughout the process. The Workbook includes a self-assessment, partner-assessment, discussion section, and an analytics section.

The Workbook is essential because it gives users the opportunity to assess themselves and their partners. It provides the opportunity for discussion and communication about device use and potential distraction issues. For those who may not know they have a problem, the assessments will help them break down their usage and become more aware. The contents of the workbook are designed to walk users through an assessment process and help promote discussion between partners. The first task users are asked to complete is a series of yes or no questions about their attachment to their smart devices. The questions are meant to be thought provoking; they aim to make users think critically about how much they depend on their devices. At the end of the series of questions, users are asked to consider how their answers might be affecting their partner. Next users are asked to write out their weekly activities and consider where they might be using their devices the most. They are then asked to rate on a scale from least to most, how important each device is to them. The final self-assessment activity users are guided to complete asks them to list all of the smart devices they use and estimate how many hours per day they use them. They are then asked to set new usage goals, keeping the previous activities and questions in mind. After completing the self-assessment, each partner is then asked to do the same assessment for their partner. After both partners have completed both the self and partner assessments, both users come together and use the discussion pages to facilitate a conversation about their assessments and new usage goals. The discussion pages provide an opportunity for both partners to address any problems that may exist about their usage and how it might be affecting their relationship.
The last part in the Workbook is the Analytics booklet. This section is a template to help users organize their monthly analytics data. Users can print out their monthly reports and paste them into the Analytics booklet. They can compare their results individually and together with their partners to discuss new potential goals. This section is a great way to keep the conversation going even after the original assessments have been completed.

In my process, I started with general layout sketches. These helped me consider which layout ideas and orientations would be best for organizing the content within the system. With my sketches, I focused on type and image relationships.
FIGURE 26. Initial Workbook Sketches
After completing the overall content organization sketches, I moved on to consider the format that the workbook would take. I wanted the format to be unique and interesting to the user. Traditional workbooks can appear boring and uninviting, so I wanted this workbook to be different than others.

My first idea involved numerous parts that all varied in size and shape. The parts were meant to stack together into one group. Each part could be taken apart and interacted with separately. Each would have its own assessment pages that fold out, similar to a newspaper. This way, the partners could fill out their own pages and then come back together to discuss.

The design is color coordinated. The partners have their own colors to help them easily follow along with their parts of the process. The noncolored sections are meant for both partners to complete together. It doesn’t matter which partner chooses which color; the colors are simply meant to help guide each couple through the process.

After completing the sketches of my first concept idea, I moved to the computer and designed the pages. I then printed them out, and I created physical mock-ups so I could see how the system would physically interact. Each piece interacted like it was meant to, but after working with the format physically in hand, I wasn’t convinced this was the best approach.

Although my first approach was completely outside the box and unique, I found it to be a bit too unorthodox and confusing. There were too many parts, and although the organization made sense to me as the designer, I felt it might be hard for actual users to follow and understand. I wanted the design to be unique, but I didn’t want it to be confusing.
FIGURE 27. Workbook Concept One Sketches
FIGURES 28, 29, 30, and 31. *Workbook Concept 1 Mock-ups*
Since I felt my first approach probably wasn’t the most effective, I moved on to a second concept—one that was a better compromise between original and traditional. In order for the system to be more easily understood, I felt I needed to step back and make the format a little more original. It needed to look and function more like a traditional workbook, with some added unique elements.

For my second concept, I created more sketches that would better combine original and traditional format ideas. I came up with a separate Information booklet and a Workbook in a tabbed format. The Workbook would still have sections that come apart and back together again, but the sizing and shape were more original and less overwhelming.

I then rearranged the content and printed new mock-ups. I felt this concept was much more successful. The format was interesting, but also easy to follow. Also, I was still able to maintain my coloring system.

FIGURE 32. Workbook Concept 2 Sketches
FIGURES 33 and 34. Workbook Concept Two Mock-ups
My final design is similar to my second concept idea. I refined the information and layout and developed a method for binding the pieces together. The Information booklet stands alone, but I felt this made sense, since its purpose is purely explanatory. The Workbook pages require interaction, so having them stand separately also made sense.

Each partner can still complete their assessments separately but then come back together for discussion. There is also still an Analytics section for each partner to keep track of his or her monthly analytics data. So, although some aspects were kept from the original ideation and design, this final solution is more streamlined and refined.
FIGURES 35, 36, and 37. Final Workbook
Rapport Device

This was one of my first experiences building a physical prototype. With my background in graphic design, my knowledge was mostly in digital and print media, not in industrial design. For this reason, throughout my process, I sought input from industrial designers. They helped me understand what was important to consider and how to approach the design. Although initially my knowledge was limited, I felt it was important to develop the device because it’s a great physical interpretation of part of what my project aims to do: bring couples together. The device physically connects both partners via their mobile phones. It serves as a metaphor for the connectivity we have with our partners but also the connectivity we have through our digital devices.

In the Instruction booklet, the device is explained. Through the self-assessments and partner assessments, each user will set specific usage goals. After these new goals are laid out, both partners must plug their mobile phones into the Rapport device and configure their usage limitations. The Rapport device will appear within each partner’s system settings; there is no app associated with the device. All actions completed through the Rapport device are shown through a shared screen. This way, while one partner is making changes or updating settings, the other partner’s screen will show the same actions. This is a crucial aspect to the Rapport system because all decisions should be made by both partners, not just one.

Neither partner can make changes to or access the system settings within the Rapport device without the other partner’s mobile phone also plugged into the device. The device is also locked via fingerprint, so even if one partner has both phones, it will not unlock without the other partner’s fingerprint.

The only part of the Rapport device that both partners can access without the physical device is the modes. If both partners agree that they want to use any of the offered modes, they
can choose to use them whenever they want through their system settings on their mobile devices. For example, if Partner A wants to Screen Share with Partner B, they can go to their system settings and turn on that mode. Partner B can then choose whether or not to accept. Both partners have access to the use of these modes and can use them whenever they wish.

Once I had clearly defined what I wanted the device to do, I started sketching. Figure 38 shows my initial ideation. I started with simple sketches to try and wrap my head around the idea of building a physical device.
After completing some sketching, I started to work with modeling clay. I tried to turn some of my two-dimensional ideas into three-dimensional mock-ups. My first round of sculpting yielded more general shapes, and they were half scale. I sculpted four shapes to begin with. I soon realized that these shapes may be too generic and that I should start considering different forms.

FIGURE 39. Round 1 Device Sculpting
My second round of sculpting yielded slightly more dynamic shapes. I started to consider how the device would be held and how I could get both users to interact. I liked the idea of a more vertical form, as it would be easier for both partners to hold.

FIGURE 40. Round 2 Device Sculpting
For my final form, I chose a vertical shape that both partners could hold simultaneously: A cylindrical form would allow both partners’ fingers to overlap in the back while they are both holding it, almost as if they were holding hands. I liked this idea of intimacy and how it relates to relationships. I also liked that in order for both partners to hold this form, they must be sitting side by side. It would require them to be close to one another.

FIGURE 41. Final Concept Device Sculpting
Figures 42, 43, and 44 show how each device mock-up might be held. The more vertical, cylindrical model felt more natural in the hand and was easier to hold. It required both partners’ fingers to overlap and interact on the back of the device while it is being held. I liked this interaction and how it related to the action of holding hands.

Although I liked the overall shape and feeling of the cylindrical shape, it was still too small. I felt it needed to be bigger in diameter and also in height. I also needed to consider where the cords would appear for users to connect their mobile devices. I liked the idea of the cords only being seen when needed and being hidden away when not.

FIGURES 42, 43, and 44. Examples Holding Device
To further refine my device’s shape and size, I made one last sketch. I measured my most recent mock-up and figured dimensions that I thought might be most efficient. It needed to be big enough to be substantial but small enough to be held. Since hand sizes differ, it also needed to be long enough to sustain the height of two hands.

FIGURE 45. Final Device Concept Sketch
My final device design is very similar to my final sketch. It is made out of acrylic, and I used vinyl to wrap it, to create the logo, and to create the location of the finger scanners. I also added the cords into the top like I had planned.

This final mock-up is still nonfunctioning, but it serves as a great replica of what I would want the actual device to look like. Although I mainly focused on the overall form of the device, I still tried to take the functionality into consideration while I was developing my design. I made sure as I was developing the form of the device that there would be ample room on the inside for hypothetical wiring and for concealing the connection cords. I designed it to sit up on its own, so it would be easy to interact with, and I also designed how the device screens would look and how the overall system would function. Figures 46, 47, and 48 show the final device.
FIGURES 46, 47, and 48. Final Device
Rapport System Screens

The Rapport device is controlled through the screens of the users’ mobile phones. The device is only accessible when both partners’ devices are plugged in and both partners are present to unlock it with their fingerprints. Rapport’s system is not meant to be accessible at any time or from anywhere; it is not an application. It only functions through the system settings of each user’s mobile phone. It functions as a series of settings, rather than a series of activities.

Before beginning to design the screens for the Rapport device, I began by creating an information architecture system so I could have a clear idea of how the Rapport system would function. When plugged into the Rapport device, users are able to access their settings and update their preferences. When users are not connected to the Rapport device, their capabilities are much more limited. The only action they are able to complete is to use any of the modes they have chosen to use (Screen Sharing, Lock Out, or Request Time).

The system is not meant to be overly complicated. Since part of the issue that Rapport is addressing is the overuse of digital technology, Rapport is designed to allow users to spend as little time as possible configuring their settings. Rapport is also purposely designed without any digital games or activities. This is because Rapport aims to avoid any further distraction through digital devices. Users are meant to simply input their settings based on the new goals they established with their partners, then disconnect from the device, and move forward with their regular activities.
My next step was to create sketches to consider content layout. Throughout this process I considered content hierarchy and how I wanted the information on each screen to be organized. These sketches (Figure 50) served as reference as I started to design each screen’s visual elements.
FIGURE 50. Initial Screen Sketches
After completing my sketches, I started work on my first concept for the screen designs. I continued the color scheme from my workbook designs. I also tried to make the design very linear and as simple as possible. After completing the first designs, however, I found that it resembled an application. Since Rapport is not an application, I wanted to make sure it didn’t look like one. I felt it should more closely resemble the actual system settings within a smartphone.

FIGURE 51. Concept 1 Device Screens
When I approached my second design, I used the styling for Apple’s System Settings. I studied how Apple’s system worked and then organized how Rapport might function within the Apple System Settings. The system still followed my original information architecture. Figure 52 shows a few of the screens.

FIGURE 52. Concept 2 Device Screens
My final screen designs are similar to my Concept 2 designs. The system functions 100% within the Apple System Settings. All notifications function through the Apple system as well. I felt designing the screens within the Apple System Settings made the design more organized and more streamlined.

FIGURES 53, 54, 55. Final Device Screens
Rapport Concept Video

After completing the design of the essential parts of the Rapport system, I started work on a promotional video that would help show how the Rapport system works. Although it’s easy to explain what Rapport does and how it works, a verbal or written description doesn’t quite describe the system as well as a demo video can. I hoped that the video would better explain some of the system’s unique features that were harder to explain. I also hoped that by creating a video, all the information about Rapport would be easier to digest and be less overwhelming. By incorporating actual users into the video, I also hoped the product would seem more relatable and user friendly.

Before starting work on creating the video, I laid out exactly what I wanted the video to do. I made a simple timeline for the content of the video. I first wanted to introduce the problem in a few different ways. I wanted to briefly introduce the Rapport system in relation to the problem, and then I wanted to break down the system into its parts and show it being used by a couple. I wanted to sum up the video with a closing statement about Rapport’s overall goals. Although there is a lot that can be said about the Rapport system, I wanted to make sure I kept the video short and to the point. I didn’t want it to be so daunting or long that viewers lose interest.
After completing my ideation, I took video clips of the content I wanted. I took far more clips than I needed, to ensure I had enough content and wouldn’t have to go back and record again. I then compiled all of the clips I wanted to use into one clip and edited them accordingly. After completion, the video served as a good summary of the Rapport system.
FIGURE 57, 58, 59, and 60. Final Video Frames
CHAPTER 6

FUTURE DIRECTIONS

6.1 Alternative Audiences

Although I designed Rapport for couples in romantic relationships, I feel the system could also benefit other types of relationships. Humanity’s issues with digital technology extend far beyond romantic relationships, so I feel the system could be relevant in other contexts.

The first would be within our families. Families are also tight-knit relationships with the need for communication and interaction. Digital technology can damper this relationship by making us forget how important face-to-face interaction is. Also, it is becoming increasingly common to find digital devices in the hands of children. It’s important that these children and young adults understand the effects of their usage before it becomes an even bigger problem. Starting at a young age might also help to minimize the issues of obsession and addiction later on. Equally significant is the issue of digital technology in the hands of parents. As mobile devices become more and more all-encompassing, it’s important that we remember to put our devices down and spend time with those who matter the most.

Also important relationships in our lives are friendships. Although they aren’t romantic in nature, they are still an important social relationship that have a significant impact on our lives. Since our mobile devices are often with us 24/7, it can be difficult to remember to put them down, even when with our friends. As discussions of social media arise, and various Internet phenomena become the topic of discussion, we are quick to pick up our devices and search for the content. As social media becomes more and more essential to our everyday social encounters, it’s easy to get lost in the copious amounts of information. We can often find ourselves sucked down the rabbit hole of social media news and information without even realizing it. Even when
out with friends, we find it a crutch to need to have our mobile devices always by our sides. Rapport would be a great way to help us restrain our digital device usage within our friendships. When we find ourselves getting distracted or overusing our devices, Rapport can remind us to put our devices down and spend time with those close to us.

6.2 Further Development

If I were to continue developing Rapport, I would seek the help of an industrial designer and an engineer or programmer. I would seek their insight into the design of the Rapport device and how to best make it fully functioning. Although I sought insight from industrial designers throughout my process of creating the device, I feel it would be beneficial to further discuss my design with them. Their insight into device shape and usability would be very useful. Also, as a graphic designer, I do not personally have the capability to make the Rapport system actually function. I would like to seek the help of an engineer or programmer to help me make the system function as it should.

Since my design is meant to function within the Apple system, I would also be interested in speaking to an Apple developer to hear their opinions of my design. Since my design doesn’t function like an application or like anything else built into the Apple system, I would be interested to hear the opinions of someone that currently designs or programs for Apple devices. Beyond Apple, I would be interested to hear how my design would function within other mobile operating systems.

Further advancing the functionality of the design, I would like to experiment more with the concept of smart technology and how vicinity could further be utilized within the design. The Rapport system already recognizes when users are within the vicinity of their partners, but it makes me wonder how else I could use this feature within my design. Maybe more notifications
could be developed that would let users know when their partners are home. Maybe there could be more mode options that further encourage face-to-face interaction, communication, and trust. I think there would be many opportunities for further development.

Although the Rapport system helps users learn to detach from their smart devices, there might also be potential for the Rapport system to help recommend more positive ways to use smart devices within relationships. Instead of always reminding users to put their devices away, maybe the system could also help recommend digital activities that partners could do together. Instead of one user being immersed in a game or movie by themselves, the Rapport system could recommend that the user invite their partner to play or watch along with them. Through the screen sharing function there are many activities that users could experience together. The Rapport system could use smart technology to recognize when it might be a good time to share screens. For instance, if one partner is looking up dinner recipes online, the Rapport system could allow them to share their screen with their partner and both partners could search for a recipe together. The Rapport system was designed to minimize distraction, but if both users are participating in an activity together, the distraction may no longer have a negative effect. Also, there might be an opportunity for the Rapport system to recommend other types of activities for couples to engage in, off of their devices. For instance, outdoor activities, local events, or date ideas. Since the Rapport system aims to promote more positive usage habits, there is potential that the system could do even more to help partners find more positive ways to use their technology within their relationship.

6.3 User Testing

Before I began creating Rapport, I conducted a survey and two studies in order to collect information about my potential users. I found the information from the survey to be very
enlightening. I also found the data from both of my data collection activities to be beneficial as I tried to understand my audience. Although I feel I did a lot of research in order to understand my audience, I think it would be beneficial to test Rapport with actual users.

Although I designed Rapport in order to meet the needs I found through my experiments, I was never able to actually test Rapport after the design was complete. I wasn’t able to test the system because I didn’t have the personal capabilities to program the Rapport device to be fully functional. Throughout my design process, I sought insight from follow classmates and colleagues, but they were never able to experience the system as a whole.

If I were able to test the Rapport system and get feedback from users, I would be more capable to further advance and improve my design. If I were able to make it fully functioning, user testing would be my next step. I think it would be crucial in order to make my design the most effective it can be. It would help me to understand what areas within my design are most successful and which areas I can work to improve further.
CHAPTER 7

SUMMARY AND CONCLUSIONS

7.1 Conclusion

Before arriving at the concept of Rapport, I had many failures. I had ideas that were too
generic and too boring. They weren’t captivating enough for the audience I was seeking, and
they weren’t unique enough to truly have an impact on the problem.

My first ideas involved informational material. Since I was trying to address the problem
of awareness, I had the idea of creating a poster series that would help viewers consider their
device usage. However, this idea was soon eliminated because merely informing my audience
wasn’t going to be enough. A poster series wouldn’t actually have an impact on the issue. Even
if the series did grab the attention of some of the viewers, my second issue still remained: Many
users aren’t aware they are overusing or being distracted by their devices. So if they aren’t aware
they have a problem, how is a poster series going to help them make a change?

My next ideas involved social experiments. I thought it would be interesting to
experiment with ways to interfere in the problem by helping users realize the impacts of their
device usage, and then helping them come up with their own solutions. Before I had fully
developed this idea, however, I realized that since I was addressing romantic relationships, which
are very personal in nature, it might not be the best approach to try to experiment with real
relationships. However, I did feel that interference was necessary in order to truly initiate
change.

Although I knew my previous ideas weren’t going to be effective, I knew I needed to find
a way to interfere in a unique way that was private and personal to each couple. I knew I needed
to help them throughout the entire process: help them become more aware of their usage, then
help them develop a method for change, and help them stick to their new goals. This is when I developed Rapport, an all-encompassing system that was unique and personal to each individual and couple.

Although my original ideas were not realized, they were essential to my process. They helped me understand how to approach the issue and which avenues would best address my audience. By considering other concepts and realizing their faults, I was able to develop a far better solution. I feel that the Rapport system has much more potential to be effective than my original ideas.

When I first began my process, I had three initial questions that I wanted to address. How can I help couples become more aware of their technology usage? How can I help couples understand the impact of their use? And, how can I help couples develop more positive usage habits? Throughout my process, I returned to these questions frequently to make sure I was meeting my goals.

The first question I addressed was how I could help couples become more aware of their technology usage. I targeted this question through my self-assessment and discussion pages of the Rapport workbook. The pages help couples self-assess their personal usage, and also their partner’s usage. The assessment pages guide users through a process of evaluation that help them think critically about their usage habits. Each user is given the opportunity to also assess their partner. Throughout my research, I learned that not every user is always aware of their usage, so a partner assessment allows each partner to help each other be fully aware of their usage habits.

After the assessments are completed, both partners are given the opportunity to discuss their assessments and start a dialogue about how their technology usage might be affecting their relationship. This process is meant to help users become more aware of any problems that may
exist or any habits that could be improved. Through the discussion pages, I addressed my second question, how can I help couples become more aware of the impact of their usage. The discussion pages help partners talk about their usage and understand which aspects of their usage are affecting their relationship. It also helps start dialogue about how each user could start to make a change in their usage habits. In all, the Rapport process not only helps bring any problems to light, but it also helps couples find a way to solve them.

The last question was the most difficult to address, how can I help couples develop more positive usage habits. Romantic relationships are often very private and personal. As I worked to create a system that would intervene and help romantic relationships, I was careful with how I did so. From my research and literature review about technology and relationships, I learned that not every situation is the same. I also learned, that not everyone has the same problems with their technology usage. So, I wanted to create a solution that could help users stay on track with their assessments and new goals. Regardless of what new goals they set, or what their assessments concluded, I wanted to help users personalize their solution in whatever way was best for them.

The Rapport system allows users to input their new goals. The system takes their new self-established limitations and monitors their usage to help them stay on track. The system also helps notify each user when it might be a good time to take a break from their devices. The monitoring system helps prevent users from spending too much time on a particular application or getting distracted by something they see online. It also helps them understand when it may or may not be appropriate to be on their devices. At the end of each month, the analytics report provides users with data about their usage habits and allows them to think about ways in which they can further improve. Through the Rapport system, partners will use their devices less and be more aware of how to use their devices more appropriately, promoting more positive usage habits.
Each part of the system addresses a specific question from my original set of goals. They work together as a system to address each goal individually, but they also build on one another throughout the process. The system helps users become more self-aware, understand the impact of their use, and it also helps them develop more positive usage habits.

7.2 A Personal Reflection

This thesis work was the first time throughout my years in academia that I had complete freedom to choose my project topic with no limitations or restrictions. I actually found it a little overwhelming at first. As a graduate student, I was told to pick a topic I’m passionate about, something I’m really interested in, but I found it extremely difficult to choose. As a student, I was used to having rules to follow and specific guidelines to meet, and most of the time, the topic was given to me. So how was I to choose only one topic to work with?

My initial list of interest areas was long, and every topic was very broad. My first step was to narrow down the list by relevancy. Which topics were most relevant in today’s society? Which topics affected the most people? This narrowed my list considerably, but I still had a lot of topics to choose from. I still needed to narrow it down more, so I chose to narrow the list down to something I could personally relate to. I wanted to choose a topic that I could personally invest in, something that might benefit myself and those close to me, as well as others.

I then had one topic left on my list: digital technology and relationships. The problem was, however, that this topic was still broad. There are many areas of technology and many different types of technology. Narrowing down this topic was probably the most difficult part. I read numerous articles and studies and found it all interesting. As I wondered how I could narrow the topic down, I decided to take some time and observe different types of relationships and how technology affected them. This is when I noticed that there was a big problem with
digital technology being a distraction within romantic relationships. I noticed it almost everywhere I went, in almost any setting, among many of the couples I publically observed.

I saw a lot couples that were ignoring each other in favor of their phones. Or they were having a conversation, but they weren’t looking at each other, and instead, they were scrolling through social media. I saw friends that were playing video games instead of spending time with their partners. I even saw some partners that were so immersed in a YouTube video that while their partners were trying to ask them a question, they were completely incoherent. Although I didn’t turn these observations into an actual study, I was moved by the reality of the situation.

By developing Rapport, I hoped to create a system that would help couples with their digital distractions. A system that would help them become more aware, better understand the impact of their device usage, develop individual goals, and create long-term solutions. My hope was that the system would help us create better usage habits, especially within our relationships. Unfortunately, it’s easy to undervalue our interpersonal relationships. It’s also easy to become distracted when instant connectivity is at our fingertips 24/7. I created Rapport because I wanted to help minimize digital distraction and promote the importance of face-to-face interaction within our romantic relationships.
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APPENDIX. IRB APPROVAL MEMOS

IRB APPROVAL MEMO (STUDY 4.1)

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Date: 10/31/2017

To: Alexandrine Collins
211 W 2nd St
Boone, IA 50036

From: Office for Responsible Research

Title: Digital Connectivity and Romantic Relationships

IRB ID: 17-465

Study Review Date: 10/31/2017

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

• (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
  ○ Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
  ○ Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:

• You do not need to submit an application for annual continuing review.

• You must carry out the research as described in the IRB application. Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. Only the IRB or designee may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

Please be aware that approval from other entities may also be needed. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. An IRB determination of exemption in no way implies or guarantees that permission from those other entities will be granted.
IRB APPROVAL MEMO (STUDY 4.2)

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Date: 11/2/2017

To: Alexandria Collins
211 W 2nd St
Boone, IA 50036

CC: Alex Braidwood
276 Design

From: Office for Responsible Research

Title: Relationships and Technology (Daily Routine Evaluations)

IRB ID: 17-545

Study Review Date: 11/2/2017

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
  - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
  - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:

- You do not need to submit an application for annual continuing review.

- You must carry out the research as described in the IRB application. Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

Detailed information about requirements for submission of modifications can be found on the Exempt Study Modification Form. A Personnel Change Form may be submitted when the only modification involves changes in study staff. If it is determined that exemption is no longer warranted, then an Application for Approval of Research Involving Humans Form will need to be submitted and approved before proceeding with data collection.

Please note that you must submit all research involving human participants for review. Only the IRB or designees may make the determination of exemption, even if you conduct a study in the future that is exactly like this study.

Please be aware that approval from other entities may also be needed. For example, access to data from private records (e.g., student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.

Please don't hesitate to contact us if you have questions or concerns at 515-294-4566 or IRB@iastate.edu.
IRB APPROVAL MEMO (STUDY 4.3)

IOWA STATE UNIVERSITY
OF SCIENCE AND TECHNOLOGY

Date: 1/16/2018
To: Alexandrite Collins
211 W 2nd St
Boone, IA 50036
From: Office for Responsible Research
Title: Relationships and Technology (Smartphone Use and Quality Time Recordings with Clickers)
IRB ID: 17-574

Study Review Date: 1/16/2018

The project referenced above has been declared exempt from the requirements of the human subject protections regulations as described in 45 CFR 46.101(b) because it meets the following federal requirements for exemption:

- (2) Research involving the use of educational tests (cognitive, diagnostic, aptitude, achievement), survey or interview procedures with adults or observation of public behavior where
  - Information obtained is recorded in such a manner that human subjects cannot be identified directly or through identifiers linked to the subjects; or
  - Any disclosure of the human subjects' responses outside the research could not reasonably place the subject at risk of criminal or civil liability or be damaging to their financial standing, employability, or reputation.

The determination of exemption means that:
- You do not need to submit an application for annual continuing review.
- You must carry out the research as described in the IRB application. Review by IRB staff is required prior to implementing modifications that may change the exempt status of the research. In general, review is required for any modifications to the research procedures (e.g., method of data collection, nature or scope of information to be collected, changes in confidentiality measures, etc.), modifications that result in the inclusion of participants from vulnerable populations, and/or any change that may increase the risk or discomfort to participants. Changes to key personnel must also be approved. The purpose of review is to determine if the project still meets the federal criteria for exemption.

Non-exempt research is subject to many regulatory requirements that must be addressed prior to implementation of the study. Conducting non-exempt research without IRB review and approval may constitute non-compliance with federal regulations and/or academic misconduct according to ISU policy.

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Please be aware that approval from other entities may also be needed. For example, access to data from private records (e.g. student, medical, or employment records, etc.) that are protected by FERPA, HIPAA, or other confidentiality policies requires permission from the holders of those records. Similarly, for research conducted in institutions other than ISU (e.g., schools, other colleges or universities, medical facilities, companies, etc.), investigators must obtain permission from the institution(s) as required by their policies. An IRB determination of exemption in no way implies or guarantees that permission from these other entities will be granted.

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