3 Photos, 2 Strangers, 1 Day: Perspective and Empathy Through Paired Anonymous Photo Sharing

Michelle Quin
Wellesley College
Wellesley, MA 02481, USA
mquin@wellesley.edu

Orit Shaer
Wellesley College
Wellesley, MA 02481, USA
oshaer@wellesley.edu

ABSTRACT

In an age where photography is commonplace thanks to the prevalence of camera phones and photo-based social media, photo sharing becomes an important social issue. Who sees the photos that we share? How do we curate our social media presence through photography? How do we perceive others through shared photos? While much research has been done on the pervasive nature of digital photographs and behavioral patterns of photo sharing as a whole, very little has been done on purposeful manipulation of anonymous, paired photo exchange. We especially focused on the potential of such an exchange to increase empathy through its intimate, purely visual nature. In this study, pairs of strangers were told to send photos of their day to each other. The participants were not allowed to use text-based chat functionalities or share identifying information. Here we report findings from analyzing the content and experiences of these exchanges.

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KEYWORDS

Photo; anonymity; mobile; visual communication; social computing

Figure 1: WhatsApp screenshot of two Phase 1 study participants anonymously exchanging five photos.

1 INTRODUCTION

Photo sharing has the powerful potential to increase empathy and create meaningful personal connections. With the rise of smartphones and photo-based social media giants such as Instagram and Snapchat in the past decade, communication methods have become increasingly visual. As the global social and cultural norms around privacy and emotional engagement have shifted, the mainstream uses of photography have expanded to include the propagation of a curated self-identity as well as of the vicarious experience of multiple everyday realities, i.e. minute-by-minute "digital storytelling".

Interaction design has often focused on barrier removal rather than emotional engagement [1]. In a world where users are flooded with both wanted and unwanted visual digital stimuli from friends and strangers alike, it is crucial for the CHI community to understand the emotional implications of photo sharing to circumvent societal apathy and desensitization. Photos are more effective for universal connectedness than text or audio because they transcend language and skill barriers. They produce a literal different perspective for viewers, allowing users to see and contextualize others' lives.

Instead of exploring privacy or behavior in photo exchange from a purely non-emotional standpoint, emotion is key to this study, which aims to provoke empathy, self-reflection, and broader perspectives through a mobile experiment, an online-based experiment, and a mobile app prototype specifically centered around anonymous paired photo exchange.

2 RELATED WORK

It is established that digital photography supports informal storytelling, with digital photo sharing replacing traditional photo albums, retaining their key functionalities of storage for self-recollection, displaying for others, and aesthetic arrangement [2]. Users fluctuate between "photo-driven" (photos of people, objects, or places) and "story-driven" (photos that recall specific narratives) strategies when uploading digital media [3]. Photo sharing behavior has often been acknowledged or studied in face-to-face sharing, but has not been systematically dissected across various social or technological settings [4].

Using Biemans, Dijk, Dadlani, and Halteren's definition of social connectedness as "positive emotional appraisal characterized by a feeling of staying in touch within ongoing social relationships," it is worthy to note that enhancing the social connectedness of users enhances overall well-being, satisfaction, and self-esteem [5]. Photo sharing has the capacity to be at the forefront of improving emotional and social awareness of the self and of others; in society today, people who use media sharing platforms are much more likely to form social connections than those who don't [6].

Voida and Mynatt have found six themes of appropriation in the photo as a form of communication: as amplification, narrative, awareness, local expression, invitation, and instrument [7]. We were motivated to explore these themes and their accompanying behavior and emotional responses in the specific context of "in-the-moment" photo sharing between two strangers with no prior face-to-face contact. To address disparities in behavior across differing technical platforms, we decided to investigate this same exchange across an existing mobile messenger app and an online upload site, and to conclude by developing our own mobile app based off of gathered feedback.

Table 1: Study Overview

	Phase 1	*Phase 2*	*Phase 3*
Platform	WhatsApp	Google Form	Mobile App
Photos Exchanged Per Day	5	3	3
Days Run	3	1	1
Participants	10	12	10
Total Photos	150	36	30
Mutual Exchange?	Yes - Days 1, 2 No - Day 3	Yes	No

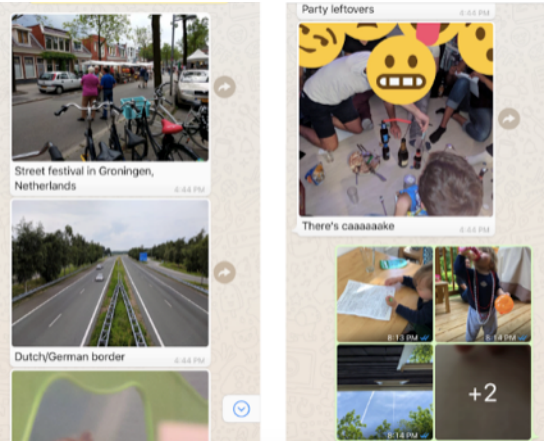

Figure 2: WhatsApp screenshots of photos shared between Phase 1 participants. One participant sent photos with text captions (left), another participant obscured faces in photos using emoji edits (right).

3 METHOD

Our study consists of three separate stages, designed to investigate anonymous paired photo exchange across three platforms – WhatsApp (Phase 1), Google Form (Phase 2), and our mobile app prototype Portrade (Phase 3). We studied mobile vs. desktop and mutual vs. non-mutual exchanges while maintaining the same user prompt for photo taking and sharing in each phase Table 1.

3.1 Phase 1: WhatsApp Direct Exchange of Five Photos

Mobile instant messaging applications have large user bases, with WhatsApp delivering more than 50 billion messages per day. WhatsApp was chosen as the user communication platform for the Phase 1 study due to its international media-sharing capabilities [8].

Phase 1 ran once a day for three days with 10 participants from the United States, United Kingdom, and Germany. Participants were randomly paired and told to take 5 photos throughout their day. They were then tasked to send the 5 photos to their paired participant via WhatsApp at the end of the day, and to not exchange text or self-identifying information. Fig. 1 displays one such participant exchange. No guidelines were given as to the content or editing of the photos themselves.

Day 1 and Day 2 were run with mutual pairings, while Day 3 was run without the aspect of mutuality – the participants received 5 photos from a different participant than the one they sent photos to. 150 photos were shared in total during the Phase 1 study.

3.2 Phase 2: Google Form Indirect Exchange of Three Photos

The Phase 2 study consisted of a similar task to the Phase 1 study, with the main difference being the use of a desktop platform versus a mobile one. Phase 2 was conducted over Google Forms, with participants asked to take 3 photos (reduced from 5 due to Phase 1 user feedback) throughout their day and upload them.

The Google Form was open to the public for 24 hours and gathered 12 participants and 36 photos. We randomly paired the participants and sent their corresponding photos to each other. Rather than having the two participants communicate directly via a mobile app, this stage involved indirect communication through a centralized online form.

3.3 Phase 3: Mobile App Non-Mutual Sharing of Three Photos

For Phase 3, we developed the anonymous photo-sharing mobile app Portrade, as seen in Fig. 8. Portrade retained the 3 photo, centralized aspects of Phase 2 and the mobile, non-mutual aspects of Phase 1. The app was built with JQuery and PHP and includes a side-by-side photo comparison archive for a richer shared experience [9].

Users upload three photos and immediately receive three photos from another user in return. Their photos are then stored in the server to be sent to a future user. Portrade was live demoed for one day with 10 participants sharing a total of 30 photos in addition to the pre-stocked initial images.

Table 2: Phase 1 Photo Type Distribution

Category	*Photos*	*Percentage*
Animal	11 of 150	7.33%
Food	19 of 150	12.67%
Landscape	41 of 150	27.33%
Object	16 of 150	10.67%
Social	63 of 150	42.00%

Table 3: Phase 2 Photo Type Distribution

Category	*Photos*	*Percentage*
Animal	0 of 36	0.00%
Food	4 of 36	11.11%
Landscape	19 of 36	52.78%
Object	5 of 36	13.89%
Social	8 of 36	22.22%

Table 4: Phase 3 Photo Type Distribution

Category	*Photos*	*Percentage*
Animal	2 of 30	6.67%
Food	4 of 30	13.33%
Landscape	11 of 30	36.67%
Object	3 of 30	10.00%
Social	10 of 30	33.33%

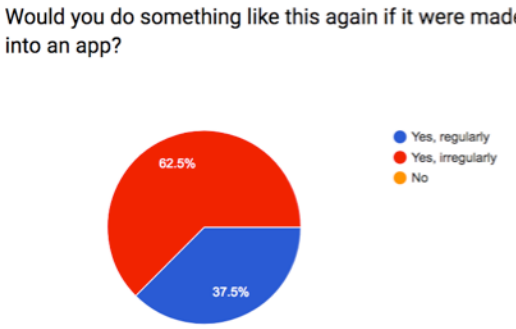

Figure 5: 100% of participants said "yes" to using an anonymous paired photo sharing mobile app, with 62.5% saying they would use it irregularly and 37.5% saying they would use it regularly.

4 FINDINGS

We categorized the photos from Phases 1, 2, and 3 under five dominant themes: animal, food, landscape, object, and social. We define social photos as having one or more people in them, or else being of a social activity such as a party. Landscapes are defined as photos of nature and places, with no clear focus on a singular object. Object photos are defined as pictures with a focus on one or more non-food objects. Every photo was placed into a single category, with no double categorizations.

4.1 Phase 1: Social Photos and Contextualization

Participants in the Phase 1 WhatsApp study tended to share social photos above all other categories, with 63 of the 150 photos (42%) showing people or social gatherings, followed by 27.33% landscape, 12.67% food, 10.67% object, and 7.33% animal photos Table 2.

Some participants chose to censor the faces of their image subjects, such as in Fig. 2, while others did not, such as in Fig. 1. Although participants were explicitly instructed to only send five photos and not send text-based messages to their matched photo-sharer, some participants worked around this instruction by editing text onto their photos or else ignored the instruction altogether and sent contextual captions (see Fig. 2).

Other participants mentioned that the photo exchange "increased overall social media anxiety about portraying a fun, cool life" and that "it forced me to take photos." One participant noted that the highly social, people-filled photos that she received (see Fig. 6) made her feel more isolated, but also made her more active than she otherwise would have been; the study got her to leave the house and "do something actually exciting" in order to take more interesting photos.

Many participants attempted to predict their matched stranger's occupation or lifestyle. For instance, a healthcare analyst intern in Texas commented that she believed her photo-sharer's identity to be that of an "unemployed hunter, living in the woods" based off of his "blurry deer photos." In actuality, his identity was that of a lawyer and lab director in Massachusetts.

4.2 Phase 2: Landscape Photos and Motivation

In Phase 2, no participants censored faces or edited text onto their photos. Accompanying text captions were entirely prevented due to the Google Form formatting, making Phase 2's submissions purely photo media. Over half of the 36 shared photos (52.78%) were landscape images, followed by 22.22% social, 13.89% object, 11.11% food, and 0% animal photos Table 3. Phase 2's desktop-based online platform resulted in significantly more landscape images than social images, the opposite of what occurred with Phase 1's mobile-based messaging platform.

When asked how they took and chose photos to submit, participants stated: "chose the most aesthetic ones," "took pictures of things I either thought would be interesting or described my lifestyle," and "wanted to send along the more mysterious ones." It is interesting to note that the majority of the landscape and object photos are abstract, "artistic" angles like that in Fig. 7.

In terms of overall reaction on a scale from 1 to 5 (1 being no interest and 5 being very interesting), 50% of participants reported having a strong reaction of 5. Multiple participants

Figure 6: A Phase 1 participant's shared WhatsApp photo, categorized under "Social" in Table 2.

Figure 7: A Phase 2 participant's shared Google Form photo, categorized under "Object" in Table 3.

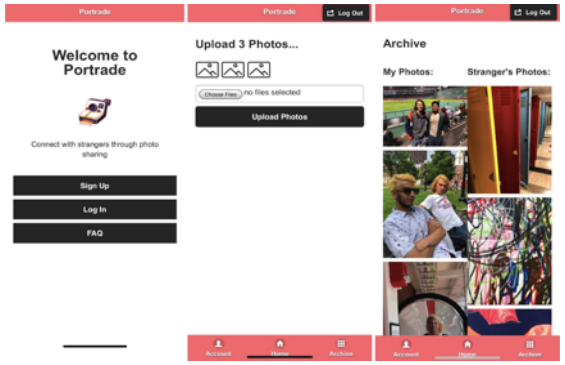

Figure 8: Phase 3 mobile app home screen (left), photo upload screen (center), and archive (right).

mentioned that they "love this," while others found it "a hassle." One user concluded feeling "momentary empathy," and another compared the exchange to Snapchat. The majority of participants used the words "interesting", "curious", and "story" to describe their experience.

4.3 Phase 3:

Feedback from Phase 1 and Phase 2 included requests for a mobile app catered towards paired anonymous photo sharing, as Phase 2 participants noted "the web form is harder to use" and "mobile friendly website could be good too." Phase 1 users did not mention inconvenience as a factor of the WhatsApp, mobile-based study. When asked if they would do anonymous paired photo sharing again if made into a mobile app, 100% of participants responded "yes" to the Fig. 5 poll, regardless of whether they reported a positive or negative experience from the studies.

The Phase 3 photo category distribution was similar to the Phase 1 pattern of distribution, but unlike Phase 1, had a nearly even amount of social and landscape photos. 36.67% of the 30 photos were landscapes, followed by 33.33% social, 13.33% food, 10% object, and 6.67% animal Table 4.

Participants reacted positively to the immediate feedback of receiving three photos as soon as they sent three photos, but wished that the aspect of mutuality had been retained. Users did not find themselves emotionally engaged by the app due to its lack of mutual pairing, as it felt "unfulfilling".

5 DISCUSSION & CONCLUSIONS

Photography has become a "flexible medium," often used alongside text in mixed mode communication via messaging apps [7]. In this study, digital photography is made the sole mode of communication between two participants who have no face-to-face contact. Nevertheless, the intertwined and flexible nature of photography is apparent through the participants' use of text captions or text overlay despite being instructed to only send images. This reveals that, when given the means of multimedia functionalities, users tend to prefer multimedia use to single media communication, using it spontaneously and to contextualize images regardless of prior instruction [8].

The playful and ephemeral nature of shared images beyond their intended meaning or original context is apparent through participants' tendencies to project an identity onto their anonymous photo-sharer [10]. By attempting to construct a narrative out of received photos as if it were a puzzle or game, participants reinforce the idea that humans are highly contextual and seek connection.

Finally, these findings confirm that mobile photo sharing is more spontaneous and social, following the "story-driven" strategy, while online photo sharing is more deliberate and artistic, following the "photo-driven" strategy [3]. This suggests that mobile platforms would be more effective for increasing empathy and connectedness.

The next step would be to further develop the mobile app prototype Portrade. Participants desire both mutuality and immediate feedback, which is not possible with the current premise of taking three photos throughout the day and uploading at the end of the day. Time difference and the size of the existing user pool are factors that result in a delay between photo sharing. Existing user feedback favors mutual matching over immediacy, as participants believe sending photos to the same person sending photos back to them is more meaningful.

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It is crucial to note that, throughout this study, all participants were genuinely interested in deciphering the content and implications of the photos they received in the context of the person who took the photos. However, none of the participants wished to have their anonymous photo-sharer's true identity revealed, instead finding satisfaction in the mystery and resulting curiosity that such an exchange provoked. The attraction was that they were able to see through a stranger's perspective while simultaneously wondering what the stranger thought of them.

The intense connectedness created throughout the three phases of this study has uses far beyond the specificity of anonymous photo sharing, and can be applied towards encouraging more empathic and less curated social media behavior as a whole.

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