Self-Disclosure for Early Relationship Development through Situated Prompts in Opportunistic Collective Experiences

Cindy Hsinyu Hu
Northwestern University
Evanston, IL, USA
cindyhu2023@u.northwestern.edu

ABSTRACT

Though existing social technologies provide new opportunities for individuals to make new friends outside of their busy schedules, the lack of assistance to scaffold interactions creates anxiety and high mental efforts that make initiating and deepening the connection with strangers challenging. In this paper, we present Cerebro, a context-aware system that encourages self-disclosure between strangers by engaging users in Opportunistic Collective Experiences (OCEs) with situated prompts. OCEs provide a clear participation structure and ground the users' interactions on their shared physical affordances, and in addition to sharing their experiences, the situated prompts encourage users to share personal decisions that their partner can potentially relate to. Through a deployment study with 8 users, we found that (1) the ease in completing OCEs leads to active engagement and constant self-disclosure on Cerebro, and (2) shared collective experiences surface new common grounds to support follow-up interactions and self-disclosure after both completing the same experience.

CCS CONCEPTS

• **Human-centered computing → Collaborative interaction**.

KEYWORDS

opportunistic interactions; collective experiences; self-disclosure; situated prompts

ACM Reference Format:
Cindy Hsinyu Hu. 2022. Self-Disclosure for Early Relationship Development through Situated Prompts in Opportunistic Collective Experiences. In *CHI '22, April 30 - May 6, 2022, New Orleans, LA.* ACM, New York, NY, USA, 5 pages. https://doi.org/10.1145/3491101.3516810

1 INTRODUCTION

Dedicating time to meet new people and get to know them could be difficult for busy individuals who are looking to make new friends. Extreme situations like the global pandemic greatly reduce the opportunities to spontaneously meet new people within their tight daily schedules, and the coordination efforts needed for continuous engagements make developing friendships with new acquaintances even more challenging.

Though current technologies bring new possibilities to meet new people, there are two main problems that could hinder the self-disclosure needed to deepen the connections: 1) fear of rejection due to uncertainty and anxiety, and 2) difficulty in finding appropriate conversation topics in the early stages of a relationship. Social networking sites (SNSs) help users connect with strangers by giving friend recommendations based on their friend list or activity feeds, and relationship matching services such as Bumble BFF and Tinder provide a space for users who are actively seeking new relationships to connect. Users can utilize the direct messaging features to get to know each other, but the lack of assistance in scaffolding the conversations with a stranger on these platforms makes it hard to self-disclose. When two strangers are in an empty chat space, users may be reluctant to initiate interactions due to fear of rejection from the uncertainty around anticipating how the other person would react to or reciprocate their efforts [5]. Additionally, since there are no explicit cues in the chat space, users are left to their own devices to determine potential conversation starters, which can be challenging with the limited understanding of each other and mentally burdensome for the users to do so.

To help strangers converse and encourage self-disclosure, we present a different conceptual approach that promotes self-disclosure between strangers by engaging users in Opportunistic Collective Experiences (OCEs) with situated prompts. OCEs are contextually grounded experience-sharing activities based on the shared physical affordances between each pair of users [7]. OCEs have a clear participation structure by asking users to share photos and captions, which reduces users' fear of rejection and mental effort to initiate interactions. In addition, since the situated prompts are grounded on the users' shared situations, users are more likely to relate to their partner's sharing and give sympathetic reactions that can encourage more self-disclosure and increase social closeness [1, 10]. The shared photos and text constantly surface new common ground and provide rich details for the users to probe for more relevant information from their partners for the purpose of starting conversations easily.

We design Cerebro, a context-aware mobile application that encourages users to self-disclose through OCEs, as an approach to build deeper connections between strangers. Cerebro identifies common physical affordances in the user's daily life, such as location, time, and weather, and prompts users to participate in OCEs by sharing a picture and texts based on the given situated prompts (e.g. "Enjoying your walk? Take a picture of something around you that makes you happy!"). Once both users complete the same OCE, they would be able to view each other's contributions and share their reactions and thoughts through the chat space.

CHI '22, April 30 - May 6, 2022, New Orleans, LA

ACM ISBN 978-1-4503-9156-6/22/04.
https://doi.org/10.1145/3491101.3516810

To evaluate how contextually grounded experience-sharing activities guide self-disclosure between strangers, we conducted a user study with 8 participants for five days. The results showed that users liked this easy and low-effort way of interactions, which leads to active engagement on Cerebro and willingness to constantly self-disclose with OCEs. Regarding post-experience interactions, though there was evidence of participants leveraging the new common ground in their sharing to develop conversations, we did not see users giving reactions or comments very often through the chat space. Our next step would be improving the system usability that makes reacting and comments easier and encourages post-experience interactions and self-disclosure.

2 RELATED WORK

Social networking sites (SNSs) open up new possibilities for friends and families to interact remotely, as well as connect users to people outside of their social circles. Many SNSs provide spaces for users to share their life moments, thoughts, and opinions with images, texts, and other forms of media, but the previous study showed that passive engagement and post reactions on SNSs are not linked to improving social closeness [3]. On the other hand, though the direct messaging feature on SNSs allows users to interact with each other in a private space and has been shown to increase social closeness [2], initiating and maintaining the interactions are still challenging. People often feel "awkward" and "uncomfortable" when messaging another person, according to a survey taken by Tumblr users [6]. The anxiety and uncertainty around initiating conversations with strangers form fear of rejections since they are unable to predict the receiver's responses or how their input would be reciprocated [5]. Because of the limited understanding of the new acquaintance, the lack of common ground makes it difficult for users to engage in meaningful conversations, and the chat space on SNSs does not provide any additional assistance or cues that suggest potential conversation starters.

Previous studies have developed different social technologies that find potential conversation topics to facilitate strangers' conversations. To support face-to-face conversations, Nguyen et al.'s work collected publicly available information about the participants, such as jobs, locations, and personal interests, from their LinkedIn profiles and displayed the mutually interested topics on Google Glasses when having two participants talking to each other face to face [8]. To facilitate online conversations, BlahBlahBot scraped the users' social media accounts to find topics of interests and combined them with pre-defined sentence templates as chat starters [9]. Both studies use computer-mediated approaches to show that surfacing potential conversation topics based on commonalities is helpful for two strangers, but since both studies focus on the very first conversations and the topic source is based on one-time scraping of social media profiles, the effect of increasing self-disclosure over a longer progression of time is unclear.

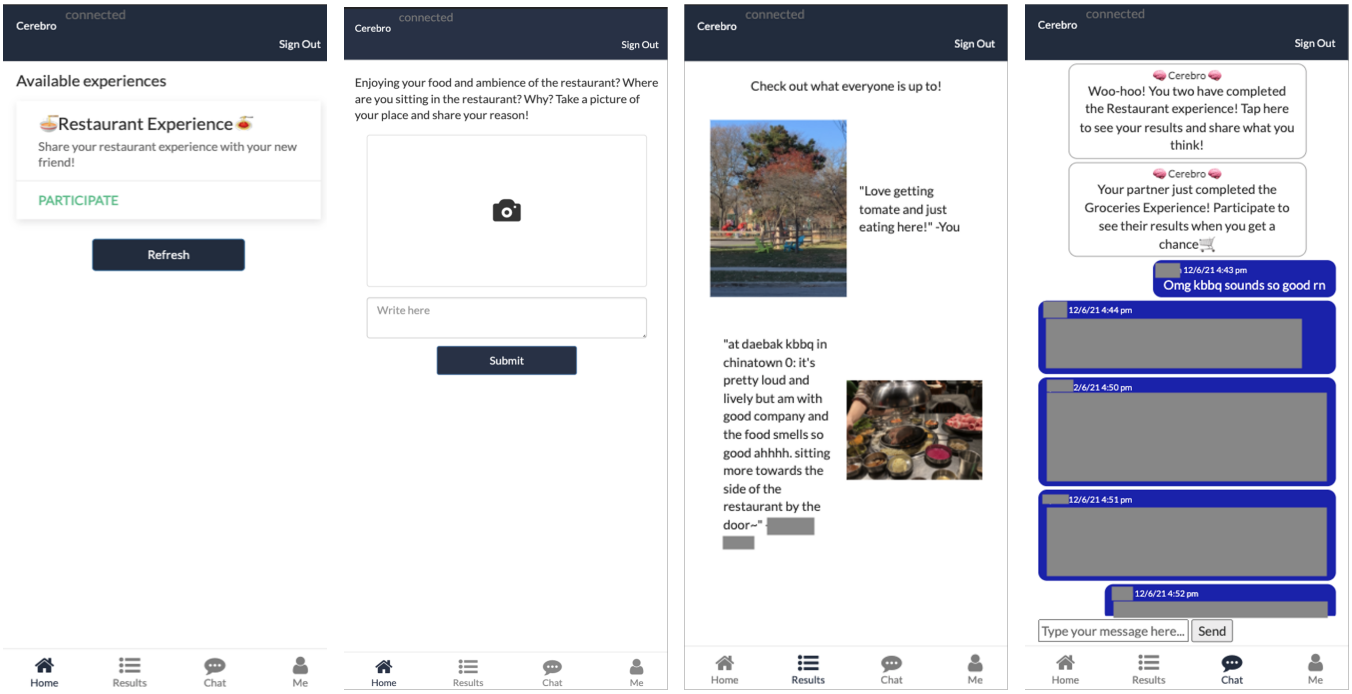
In addition, recent social computing works explored co-location and shared physical context and affordances in order to enhance social connectedness. To connect friends at distance, Opportunistic Collective Experiences (OCEs) engine, first proposed by Louie et al., identified common, shared physical situations among users' daily lives and engaged them in shared activities to create collective experiences (e.g. using half-half photos to create virtual "cheers" when two users are located at two different bars) [7]. The deployment study with college and research lab alumni showed that friends at distance felt more connected and involved in each other's life with the structured OCEs compared to posting and replying on SNSs. To increase the togetherness of a community, Collective Narratives seeked share-worthy moments across different times and situations for individuals to contribute their own experiences and feelings to a common theme (e.g. "Thriving or Surviving? Northwestern Seniors in Finals Season") and collectively form a narrative with the community members [4]. Building off the current studies of context-aware systems, this work focuses on promoting opportunistic social interactions between pairs of strangers in early friendship development. By integrating with situated prompts, OCEs help scaffolding the interactions and continuously encourage self-disclosures relevant to their shared situations in order to bring the pairs closer.

3 SYSTEM DESCRIPTION

OCEs with situated prompts were developed using the Collective Experiences API and implemented in the iPhone application Cerebro [7]. (See the cited work for base technical implementation of Collective Experiences API and Cerebro.) In order to promote opportunistic interactions, OCEs were designed for common daily situations, such as restaurants, coffee shops, and public transportation, and the current system was tailored toward the use case of undergraduate and graduate students around a college campus for the purpose of the deployment study.

Users will go through the following four interfaces as they participate in an OCE activity:

(1) **Prompted with available experiences**: After installing the application, users will have Cerebro running in the background with location tracking on. When Cerebro identifies an opportunity for an OCE in their day-to-day life, it sends out a notification prompting the user to participate. When the user clicks on the notification message on their device, it redirects them to the home page, where the user can view all available experiences and decide whether to participate based on their own availability at the moment.
(2) **Submitting an experience**: Once the user has decided to participate in an OCE, they will see three components on each submission view: a situated prompt, a photo upload area, and a text area for captioning the photo. The submission structure serves as an easy first step to initiate interactions with their partner, and the situated prompts ground their interactions on the shared physical affordances of their situations to increase the relevancy of their sharing. To generate situated prompts, we identify affordances in common daily context (e.g. location and weather) and map affordances of the context to a photo-sharing prompt structure. For example, in the library situation, since people study or do work in the library, we prompt "Take a picture and share something in your surroundings that keeps you motivated!"
(3) **Viewing the collective experience**: When both users have submitted their sharings of the same experience, Cerebro sends out a notification to let the users know the results are



(a) Browse available experiences **(b) Complete submission for a given prompt** **(c) View the OCE result** **(d) Share reactions and comments in chat**

Figure 1: Four steps of participating in an OCE on Cerebro.

ready to be viewed. The result view highlights the collective experiences between the pair and creates the sense of co-experiencing. In the early phases of getting to know each other, the concrete visual artifacts help establish trust and fondness. In addition, the images and captions constantly surface new common grounds between the pair as they participate in multiple OCEs and provide rich details of their partner's situation as potential conversation starters, which reduces the user's mental effort of finding appropriate conversation topics with a stranger and sustaining the conversations.

(4) **Sharing reactions and thoughts via chat**: Upon viewing each other's submissions, users can share their reactions and thoughts in the chat space and engage in further self-disclosure through follow-up conversations. System messages are also displayed here to show some visibility of their partners' activities and encourage the users to participate in the same OCEs in order to view the results.

3.1 Situated prompt design

The situated prompts were designed based on the shared physical affordances in the situations and encourage self-disclosure that their partners are more likely to relate to. In a previous pilot testing where we compared non-situated and situated prompts, we learned that with non-situated prompts (e.g. meal-time reflection) users tend to give more introspective disclosure and high-level summaries on self-reflection that a stranger would have a hard time understanding due to the abstractness. On the other hand, with situated prompts, users disclosed concrete details in their shared context such that a stranger can more easily relate to and reciprocate their sharing with reactions (e.g. both users shared the gloomy sky on a rainy day in Day Walk experience). In addition, since physical locations can often carry personal information of an individual such as their preferences, interests and experiences, the situated prompts probe for relevant personal information (e.g. favorite pastime on public transportation and seating preferences at a dining place) to encourage more meaningful self-disclosure that can highlight the uniqueness or similarity in their mundane daily moments and increase the chances of relatableness or curiosity driven conversations afterwards.

4 PRELIMINARY STUDY AND EVALUATION

To explore how strangers interact using Cerebro, we conducted a study to answer the following research questions:

- RQ: how do situated experience-sharing activities make it easier to self-disclose and engage users in interactions in the earliest stages of a relationship?

4.1 Setup

We recruited 8 participants (6 undergraduates, 2 graduate students) from two research groups. Each participant was paired with another participant that they had not met before. The study lasted for 5 days. All participants were asked to participate in a self-introduction activity with their partner before the study began to ensure that

Cerebro was installed correctly on their phone and that they were able to submit and view each other's contributions. After the self-introduction activity, users were free to decide when to participate in OCEs based on their own availability. The OCEs that the participants were prompted to participate in differed depending on the places they visited in the duration of the study. After the study ended, we conducted a 30-minute interview with each participant that focused on participants' overall experiences with Cerebro and their strategies of self-disclosure when participating in OCEs.

4.2 Result

The opportunistic aspect of collective experiences and the low effort needed to share small moments in daily lives led to active engagement on Cerebro and continuous self-disclosure. Over the 5 days of study with 8 participants, there were 30 individual submissions in total (excluding the self-introduction activity), and 18 out of the 30 total submissions contributed to 9 combined collective experiences across 4 pairs (i.e., 18 submissions were able to be seen by their partners). All participants liked that OCEs took little effort to complete, and they were able to participate at their own pace. One participant shared that "I like how casual it is. I don't have to think too much about it as if it was an Instagram post." Another participant shared that "it's mundane but in a good way" because to him, it felt like keeping a diary of his daily life, but he was able to share himself and learn about his partner at the same time. The casual setting and the low participation effort reduced users' mental effort to initiate interactions, and users were able to continue the interactions easily by self-disclosing with OCEs.

Though given a situated prompt for every OCE, the participants had their own strategies of sharing rather than answering the prompt directly. By examining the submissions, we found that only about 40 percent of the posts were related to the situated prompts. From the interviews, though users agreed that the prompts were useful sometimes to guide their submissions, we concluded the two main reasons why users did not follow the prompts: 1) the prompt was not very relevant in their specific situations 2) they preferred to share what they wanted to share rather than responding to the prompt. In addition, the differences in each user's sharing strategy can result in different participation expectations within the pair. For example, one user wished her partner's posts were more casual because she personally liked the quick, snap-and-go style of sharing. On the other hand, another user (from a different pair) wished his partner's posts were richer in detail so that he could understand his partner's experiences better. This shows that we need a more concrete design guideline on the situated prompts that 1) give users more flexibility regarding their personal preferences and their specific conditions in common situations 2) find a balance in self-disclosure to reduce the different expectations within the pair.

The follow-up interactions after viewing their partners' submissions also happened less frequently than our expectations, but we can still see cases where participants engaged in more conversations based on the new common ground surfaced in their collective experiences. Out of the 9 combined collective experiences from 4 pairs of users, only two pairs shared their reactions or asked curiosity questions around 3 collective experiences. In these 3 cases, we can see evidence of participants probing more details from their partner post-experience and developing the new common ground into a longer conversation. For example, one pair had a conversation about the neighborhood they are living in after completing an OCE on public transportation, which we can examine from their submissions and chat history that they disclosed new details about themselves via chat. In order to encourage more post-experience interactions, we have identified two usability problems with Cerebro in terms of reacting and commenting based on users' feedback: 1) there is no quick and intuitive way to react to their partner's post such as the "like" button or other emotions indicators on popular social media, and 2) because the OCE result page and the chat space are on two separate screens, it seems awkward or counterintuitive to bring up comments, and the comments seem disconnected from the content as opposed to a cohesive discussion. This will be another area of improvement for this project moving forward.

5 FUTURE WORK AND DISCUSSION

Our study result showed that OCEs make it easier for strangers to self-disclose at the early stages of friendship development as the system constantly surfaces new common ground for the users, but there are improvements we can make to increase the breadth and depth of self-disclosure. Our two main focuses will be 1) creating more concrete and robust design guidelines for situated prompts at different situations, and 2) improving the usability of the system interface to support sharing reactions and comments post-experience.

We are also planning to conduct two user studies. The first study will be larger in scale with 20 or more participants and a longer participation period, which will allow us to conduct quantitative analysis on the effect of situated prompts on post-submission interactions and further self-disclosure. The second study will be a comparison study between ice-breaking questions and OCEs with situated prompts. We are particularly interested in whether OCEs with situated prompts are more effective in making strangers self-disclose and how the follow-up conversations structure would be different for ice-breaking prompts and situated prompts.

ACKNOWLEDGMENTS

We thank Ryan Louie, Mason Lin, Grace Wainaina, Yvan Chu, Haoqi Zhang, Delta Lab, and the entire Design, Technology, and Research program for their continued guidance and support.

REFERENCES

[1] Erica J Boothby, Margaret S Clark, and John A Bargh. 2014. Shared experiences are amplified. *Psychological science* 25, 12 (2014), 2209–2216.
[2] Moira Burke, Robert Kraut, and Cameron Marlow. 2011. Social capital on Facebook: Differentiating uses and users. In *Proceedings of the SIGCHI conference on human factors in computing systems*. 571–580.
[3] Moira Burke, Cameron Marlow, and Thomas Lento. 2010. Social network activity and social well-being. In *Proceedings of the SIGCHI conference on human factors in computing systems*. 1909–1912.
[4] Nina Cong, Kevin Cheng, Haoqi Zhang, and Ryan Louie. 2021. Collective Narrative: Scaffolding Community Storytelling through Context-Awareness. In *Companion Publication of the 2021 Conference on Computer Supported Cooperative Work and Social Computing*. 40–43.
[5] Patricia M Duronto, Tsukasa Nishida, and Shin-ichi Nakayama. 2005. Uncertainty, anxiety, and avoidance in communication with strangers. *International Journal of Intercultural Relations* 29, 5 (2005), 549–560.
[6] Danielle Lottridge, Nazanin Andalibi, Joy Kim, and Jofish Kaye. 2019. " Giving a little'ayyy, I feel ya'to someone's personal post" Performing Support on Social

Media. *Proceedings of the ACM on Human-Computer Interaction* 3, CSCW (2019), 1–22.

[7] Ryan Louie, Kapil Garg, Jennie Werner, Allison Sun, Darren Gergle, and Haoqi Zhang. 2021. Opportunistic Collective Experiences: Identifying Shared Situations and Structuring Shared Activities at Distance. *Proceedings of the ACM on Human-Computer Interaction* 4, CSCW3 (2021), 1–32.

[8] Tien T Nguyen, Duyen T Nguyen, Shamsi T Iqbal, and Eyal Ofek. 2015. The known stranger: Supporting conversations between strangers with personalized topic suggestions. In *Proceedings of the 33rd Annual ACM Conference on Human Factors in Computing Systems*. 555–564.

[9] Donghoon Shin, Sangwon Yoon, Soomin Kim, and Joonhwan Lee. 2021. Blah-BlahBot: Facilitating Conversation between Strangers using a Chatbot with ML-infused Personalized Topic Suggestion. In *Extended Abstracts of the 2021 CHI Conference on Human Factors in Computing Systems*. 1–6.

[10] Anita L Vangelisti and Daniel Perlman. 2018. *The Cambridge handbook of personal relationships*. Cambridge University Press.