



# Enriching in-person encounters through social media: A study on family connectedness for the elderly



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## ARTICLE INFO

### Article history:

Received 24 May 2012

Received in revised form

13 November 2012

Accepted 3 April 2013

Communicated by S. Wiedenbeck

Available online 25 April 2013

### Keywords:

Ambient social network system

Elderly

In-person encounters

Sentient displays

## ABSTRACT

Social media sites have become immensely popular. In 2010 it was estimated that Americans spent a quarter of their online time using social networking sites (SNSs) and blogs. Prior studies have shown how people spend more time socializing through digital communication services such as SNSs reducing face-to-face interaction. Individuals limited offline interactions cause a sense of self-perception of being less socially involved. In this paper we explore how the use of an ubiquitous system we developed, Tlatoque, is able to adapt and move the SNS's social capital outside the desktop into a domestic setting to support older adults' offline interactions with their family. The findings of a 21 week deployment study uncovered the offline practices surrounding the use of Tlatoque and its social implications toward the existing family ties ( $n=30$ ). Results qualitatively indicate that the content shared in SNSs strengthens older adults' social network by enriching and complementing traditional social engagements such as those conducted over the phone or in-person.

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## 1. Introduction

Social media sites have become immensely popular. It has been estimated that in 2010 Americans spent a quarter of their time, and nearly 30% of their mobile time, using social networking sites (SNSs) and blogs (The Nielsen Company, 2012). This trend is being accelerated with the proliferation of smartphones facilitating access to SNSs at any time. Teenagers and young adults are devoted SNS users, 73% of online teenagers are using SNSs services while 82% of online younger adults are avid users of these sites (Lenhart et al., 2010). SNSs, in particular, allow users to sustain and strengthen their social relationships by exchanging significant life events or ephemeral information through status updates, photographs, or news feeds. Nowadays, adolescents and young adults not only use this information online, they also use it to enrich their in-person social encounters<sup>1</sup>, or those conducted over traditional media such as telephone conversations. They use SNS's services to plan events, communicate, and create opportunistic gatherings by using informal invitations posted on walls or through status updates (Barkhuus and Tashiro, 2010; Wohn et al., 2011). Moreover, young adults are strengthening their weaker ties by consulting

information of the people they are about to meet (Ellison et al., 2011; Lampe et al., 2008). Older adults are increasingly participating on SNSs; however the percentage of older adults with a SNS profile is still remarkably low. In 2010 it was estimated that only 4.2% of Facebook users in the United States were more than 65 years old (Gonzalez, 2010). In other countries the percentages are even lower, including those where higher percentages of the population are older adults: 2.51% in United Kingdom, 1.44% in Spain, 2.52% in Australia and 1.16% in Japan (Facebook, 2010). As a consequence, older adults are missing opportunities to strengthen their social ties through this social media, but more importantly, they have the risk of becoming isolated from their younger relatives who increasingly rely on social media to socialize.

Strong social networks may enhance the quality of life of older adults (Giles et al., 2005) improving their health (de Belvis et al., 2008), reducing their chances of developing cognitive decline (Fratiglioni et al., 2000), and eventually preventing an earlier death (House et al., 1988). However, the size of the social network of older adults decreases with age, therefore to stay socially active they need to be enrolled in other activities (e.g. volunteering in their communities, participating in religious activities Cornwell et al., 2008). In addition, older adults tend to concentrate their social ties upon family interactions (Cagley and Lee, 2009). For instance, a traditional social network of Mexican older adults is characterized by a large family and few friends, where a high percentage of social interactions rely on the family even though they have close relationships with friends (Doubova et al., 2010). Also, due to several factors, such as frailty, older adults tend to

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<sup>1</sup> As in [2], we use the term "in-person social encounter" to refer to those encounters that happen in the presence of others. Other terms used to describe these encounters include face-to-face and person-person.

refrain from community activities, limiting the opportunities where they can strength their social ties or create new social connections among peers with same interests. Both characteristics, social interactions relying on family activities and desisting from community activities, are consistent with previous studies done with older adults in Israel and the United States (Dobova et al., 2010).

The health and social benefits of using SNS motivated us to develop an interactive system called Tlatoque that provides older adults access to the social capital shared by their family in an SNS (Cornejo et al., 2012b). Our previous results of a 21-week deployment study of Tlatoque in two households ( $n=30$ ) revealed that the use of Tlatoque increases family awareness and SNS interaction (Cornejo et al., 2012b). But, we were additionally interested in evaluating whether the use of Tlatoque fostered offline interactions<sup>2</sup> either through its use or by triggering social activities. In this paper, we investigate the social implications towards the use of this technology in terms of in-person meetings. To this aim, we conducted additional interviews and analyzed our prior 21-week dataset to better understand participants' social practices and how technology influenced families' offline interactions.

These findings build upon our previous research (Cornejo et al., 2012b) uncovering the offline practices that surround the use of Tlatoque and its social implications on family in-person interactions triggered by the use of the ambient awareness provided by Tlatoque. In light of the related literature, prior studies have shown that the use of digital communication services weaken users' social ties making them feel less socially involved with their peers and family (Nyland et al., 2007), we found out that on the contrary, the content already shared in SNSs can be used to enrich family social encounters by providing social context during conversation or even further by promoting in-person social interactions around the technology.

This paper is organized as follows. Section 2 presents some background on interactive technologies designed to provide feelings of connectedness and reciprocity. In Section 3, we present the proposed system's architecture and its current implementation and Section 4 describes the evaluation methods followed during the complementary analysis conducted to explore families' offline interactions. Section 5 presents the results of this study and we end highlighting, in Sections 6 and 7, how ambient SNSs technologies circumvent negative aspects associated to frequent users of SNS, ease the adoption for less technically inclined users, such as older adults, and can be successfully used in homes to support in-person interactions.

## 2. Ubiquitous interactive family technologies

Efforts to connect families through information technology have explored how to provide a feeling of connectedness between relatives, couples, or family members living away (Dey and Guzman, 2006). These efforts highlight reciprocity and the asymmetries in relationships as important factors to consider in these designs.

Symmetry in relationships is important because people expect to receive as much as they provide to their contacts, however within families, reciprocity has been proved to behave asymmetrically, especially with older adults (Lindley et al., 2008). Older adults expect to maintain their role as providers within the family, contributing more in family relationships than receiving attention from their relatives. Taking into account this intergenerational

asymmetry, technologies have been designed to connect grandparents to their grandchildren by creating playful situations and supporting asymmetries in the content of the information. For instance, the VirtualBox system (Davis et al., 2007) was designed to mediate intimacy between grandparents and grandchildren. VirtualBox is based on a hide and seek game with virtual components where grandparents add content to a virtual box and hide it in a virtual floor plan. Using a PDA, the grandchildren can search for the hidden box and see the items added by the grandparents. Once the grandchildren find the box they can add virtual items and hide the box again, thus promoting reciprocity. The implementation of a game based on an ubiquitous environment, triggered a one-on-one asynchronous exchange of multimedia between grandparents and their grandchildren. Older adults were provided with intuitive interfaces for sharing emotive content that proved to be asymmetric *i.e.* older adults were more thoughtful in the process of adding meaningful items to their grandchildren. This is in-line with the goal of creating ubiquitous domestic spaces where older adults can interact remotely with their relatives (Judge et al., 2010; Keller et al., 2004).

Ubiquitous technologies have been also designed to provide family awareness through traditional objects for the elderly, for example, adapting elderly interaction with activities scheduled by family members (Plaisant et al., 2006), or sharing expressive messages (e.g. relative's whereabouts or emotional messages) in a situated display in the home (Saslis-Lagoudakis et al., 2006; Sellen et al., 2006). Adapting social interaction for the elderly through situated displays also highlights the asymmetry of relationships; older adults tend to share specific information about their activities on the calendar and relatives (used these displays) by sharing specific communication messages. Moreover, these results support those reported in Lindley et al. (2009) where older adults spend considerable effort balancing the time dedicated to keep in touch with their relatives through traditional media (e.g. phone calls) to avoid being a burden to them.

Along with the asymmetries in family relationships, reciprocity has been found to be an important factor in the design and adaptation of technologies for older adults (Lindley et al., 2009). Although researchers have reported how the lack of reciprocity mechanisms in their designs has no negative effect in older adult's relationships (Lindley et al., 2008), the importance of adapting common social reciprocity mechanisms relies on the positive effects older adults might see on their self-esteem contributing to the family interactions (Lindley et al., 2008). For instance, the "Family story play" system (Raffle et al., 2010) adapts social interaction for grandparents and young grandchildren through a bidirectional channel around a shared remote activity such as reading a story. The results of a deployment study of "Family story play" highlight the importance of using ubiquitous technology to engage grandparents in conducting an activity with their grandchildren exhibiting a proactive role and contributing to their grandchildren education.

Autonomy is also strongly related to family relationships. Older adults have reported feelings of overprotection over their relatives and older adults felt the need of emphasize their freedom (Spitze and Gallant, 2004). But while older adults need privacy to maintain their independence when aging; paradoxically, their younger relatives are increasingly concerned about their wellbeing. Several projects have investigated how to help older adults and their younger caregivers to balance this "caregiving asymmetry" using peripheral displays to provide younger caregivers with awareness of the whereabouts of older adults and their executed activities (Consolvo et al., 2004; Mynatt et al., 2001). Although these technologies do not support directly social interactions, their evaluation suggests that the use of personalized information evokes communication patterns to emerge from the increased

<sup>2</sup> In-person meetings with the use of traditional communication media such as telephone, face-to-face or postal mail.

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