

## Report of Research Results

1. **Title:** Social TV for the Elderly: Effects of Co-Viewing a Television Program via Interactive Social TV on Subjective Well-being, Enjoyment, and Perceived Social Interaction
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### 3. Summary

The purpose of the current study is to investigate how virtual social interactions via social TV among the elderly would influence their social life. In an experiment ( $N = 127$ ), we examined the effects of engagement level, program genre, and message type on overall entertainment experiences and elderly's life satisfaction. The preliminary results showed that the elderly enjoyed their social TV experience, great intention to use social TV, and strong belonging to the centre.

### 4. Aim of Research

The purpose of the current study is to address mental health issues among the elderly in Singapore, through the usage of new communication technology. Specifically, we examine the effectiveness of Social TV as a tool for the elderly to build and maintain social ties, which may enhance their mental health and sense of belonging to the community. Social TV is a combination of the entertainment activity (i.e., watching TV) and the social activities (i.e., chatting and interacting with co-viewers) via communication technology. In the current study, we developed a new Social TV prototype, including an interface, utilizing simple and intuitive touchscreen controls, large text and visible icons so that the elderly can share their feelings with their co-viewers with simple clicks on the Social TV.

One of the functions of Social TV can be to increase the level of community engagement of the elderly, encouraging them to step out and participate in events organised by grassroots organisations and senior activity centres. This promotion of community engagement via Social TV can inculcate in them a sense of belonging to the centres and also the community in general. Subsequently, their subjective well-being may be improved, ensuring that they have healthy social relationships. Having said that, we tested the hypotheses that interactions via Social TV by the elderly will lead to greater TV enjoyment, greater social presence of others, less psychological distance with co-viewers, higher perceived level of social interaction, greater sense of belonging to the community and more intention to participate in advertised activities.

Our project is a novel approach in using new communication technologies to help the elderly establish and expand their social network even in old age. In the long term, the elderly's use of new technologies has potential to enhance their subjective well-being. However, previous literature has shown that technology incompetency and low self-efficacy among the elderly might create barriers against the initiation and constant use of said technological tools. In this regard, we choose to use Social TV in our project because TV is one of the devices with which older generations have affinity. As the very basic function of smart TV is same as traditional TV, it is expected that the elderly would be less apprehensive of this medium. Social TV with user-friendly applications can therefore serve as a tool for the elderly to build and maintain their social ties, which will in turn enhance their subjective well-being. Although there has been previous research on TV tailored for the elderly in other countries, our project is timely in the context of Singapore. Teletext, a free analogue information service in Singapore, ended its service in September 2013. Many elderly depended on Teletext as a source of information and

entertainment while watching TV. The Social TV application we are experimenting may be a good substitute to Teletext.

## **5. Method of Research**

### *Sample*

A total of 127 participants were recruited from a pool of elderly living in the Jurong and Clementi area. Recruitment was done with the help of People's Association and Jurong NTUC ElderCare. Participants were all Chinese, aged 60 and above. There were a total of 28 males and 99 females with the average age of 68, ranging from 60 to 81 ( $SD = 5.53$ ).

### *Design*

This study utilised a 2 (program genre: entertainment vs. informative) x 2 (level of engagement: active vs. passive) x 2 (message type: by community leader vs. no leader) between-subjects factorial design.

**Program Genre:** Video clips shown are in Mandarin, as it is the dominant language understood by the elderly in Singapore. The program selected for the entertaining genre was Episode 5 of "Say It!", which is a local variety show featuring two well-known celebrities who are pit against each other to learn an unfamiliar language. The program content is lighthearted and easy to understand even for those who are illiterate. The program used for the informative genre was Episode 2 of "Frontline 2013", a local current affairs program exploring social issues. The program content is factual and serves to inform the public through discussion of the latest social issues.

**Tablet Use:** Participants in the active condition were taught how to use a Samsung Galaxy Tab and encouraged to use it for interacting with other co-viewers while watching the program. Participants in the passive condition were merely informed that other co-viewers could chat while the program was going on, and they could take a look at what others were saying. To increase accessibility of the tablet, the software developed for the tablet had the most basic function of allowing only emoticon input. The technological and language literacy rate of the elderly in Singapore is low, but the use of simple emoticons would facilitate understanding of the meanings that they can convey and also reduce the fear of approaching technology in most elderly.

**Message Type:** The community leader was selected after consulting Jurong NTUC ElderCare for a prominent figure that would be recognised by most of the elderly in the Jurong and Clementi area. Participants in one group viewed the message with a photo of the community leader, while those in the other group viewed the message without the photo. The message was in the form of a poster advertisement for a fictional outing to the SEA Aquarium Singapore, crafted based on a recent similar event organised by the community. The message was inserted into the video clips at the 6 minute mark. Participants were informed that the message was an announcement from Jurong Green Community Club, where the experiment was held.

### *Setting*

The experiment was conducted at Jurong Green Community Club, a place that was familiar to the elderly in the area. Many activities and classes were held regularly at this venue situated in the Jurong neighbourhood, thus making it an accessible and familiar location for the elderly. A set of sofas and a carpet were used in creating an environment as similar to a living room as possible. We used a 55 inch Smart TV from Samsung to show the Social TV program.

### *Experimental Procedure*

Participants were told that a new TV for the elderly has been designed, and they were here to try it out, after which they completed a survey regarding the TV. The participants watched the

social TV program for about 10 minutes. For participants who did not understand English, the experiment and survey were conducted in Mandarin. Prior to the experiment, the survey was translated to Mandarin by native speakers of both English and Mandarin, and then back-translated to English by the other two native speakers to ensure its accuracy.

### *Measures*

*Level of TV enjoyment* was measured using a list of six adjectives adapted from Tamborini et al. (2010). Participants were asked how much each adjective described their Social TV watching experience, on a 7-point response scale. The final measure was obtained by averaging the scores for the six items, and deemed to be reliable ( $M = 4.97$ ,  $SD = 1.3$ ,  $\alpha = .89$ ).

*Sense of belonging to the community* was measured using eight items adapted from McMillan and Chavis (1986), such as “I feel connected to this senior activity centre” and “I have a good bond with others in this senior activity centre.” Higher scores indicated stronger sense of belonging to the activity centre ( $M = 4.97$ ,  $SD = 1.14$ ,  $\alpha = .87$ ).

*Intention to participate* in the advertised community event was measured using six items adapted from Ng and Detenber (2005). Participants responded to statements such as “I would like to contribute to the event” and “I am interested in reading more about this event.” Higher scores indicated greater intention to participate in the advertised community event. ( $M = 5.15$ ,  $SD = 1.3$ ,  $\alpha = .89$ ).

*Social presence* was measured using 5 items from Nowak and Biocca (2003), such as “While watching TV, I felt like the other viewers were in the same room” and “While watching TV, I felt like the other viewers were watching the TV program together.” Higher scores indicated a greater feeling of social presence of the co-viewers ( $M = 4.43$ ,  $SD = 1.35$ ,  $\alpha = .84$ ).

*Level of perceived social interaction* was measured using four 7-point semantic differential items from Baym, Zhang and Lin (2004). Participants were asked to rate the quality of social interaction on Social TV by using four pairs of adjectives. Higher scores indicated a greater level of perceived social interaction while watching Social TV ( $M = 5.05$ ,  $SD = 1.01$ ,  $\alpha = .71$ ).

*Satisfaction with life* was measured by five items from the Satisfaction with Life Scale (Diener, Emmons, Larsen & Griffin, 1985). Participants were presented with statements like “In most ways my life is close to my ideal” and “I am satisfied with my life.” Higher scores indicated greater satisfaction with life ( $M = 5.52$ ,  $SD = 0.96$ ,  $\alpha = .81$ ).

*Perceived usefulness* of Social TV was measured using three items from Shin (2012). Participants were presented with statements like “I think Social TV is useful to me” and “I think Social TV can help me with many things.” Higher scores indicated greater perceived usefulness of Social TV ( $M = 5.05$ ,  $SD = 1.47$ ,  $\alpha = .87$ ).

*Perceived ease of use* of Social TV was measured by five items adapted from Heerink, Krose, Evers and Wielinga (2008). Higher scores indicated greater perceived ease of use ( $M = 4.99$ ,  $SD = 1.24$ ,  $\alpha = .88$ ).

*Intention of use* of Social TV in the future was measured by three items from Shin (2012). Participants were presented with statements like “I recommend the use of Social TV to others” and “I intend to continue using Social TV in the future.” Higher scores indicated greater intention of using Social TV in the future ( $M = 5.06$ ,  $SD = 1.49$ ,  $\alpha = .88$ ).

## **6. Results of Research**

The preliminary results of one sample t-test (compared with the median score of four on a seven point scale) showed that the elderly enjoyed their social TV experience,  $t(126) = 8.4$ ,  $p < .01$ ; showed strong belonging to the centre,  $t(126) = 9.61$ ,  $p < .01$ ; a high level of life

satisfaction,  $t(126) = 17.87, p < .01$ ; great intention to use social TV in the future,  $t(126) = 8.03, p < .01$ ; and great interests in participating in the advertised community activity,  $t(126) = 9.96, p < .01$ .

Overall, these preliminary results imply that virtual social interactions via social TV could provide the elderly with positive impact on their social life. The elderly can enjoy their regular TV watching experiences and some level of virtual interactions with co-viewers without physically being together with other people. Besides, an advertisement for community engagement can be announce via the interactive feature of social TV, which may increase the participation level of the elderly and result in stronger feelings of belonging to the community.

However, there are still many issues that need to be further studied for practical implementation of social TV systems. For example, additional analyses showed that the elderly in the passive condition without entering their feelings to share with the others reported a greater level of enjoyment,  $F(1, 119) = 4.08, p < .05$ ; easier use of social TV,  $F(1, 119) = 3.36, p = .07$ . Taken together, it seems that the elderly still felt challenges to use the social TV system although we took into consideration elderly use when we designed the interface. The elderly may prefer a minimum interaction with the system although they appreciated the presence of their co-viewers on the TV screen. This implies that we need more empirical research to learn how to lower the psychological barrier of the elderly for using new technology.

### **7. Future Direction**

The current study showed the potential of using social TV to enhance subjective well-being and social life of the elderly. However, the preliminary results showed that there are more areas that need to be studied in order to develop an easy to use interface for social TV. In the future, we are planning to apply for a research grant to test this model in real-life settings and introduce it into senior activity centres, elderly care centres and residential homes so as to benefit the elderly in various environments.

The next step is to refine our results to present our study in an international conference such as annual meetings of International Communication Association and submit our paper to a prestigious journal for publication. We are grateful for the MSIWF research grant and will acknowledge the MSIWF grant when we publish our research in conferences and journals.