Learning to Use Tablets After 65: Auto-regulative Effects of a Training Program

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Abstract. Technology can play a part in the healthy aging process, helping people maintain their social life and remaining cognitively active. Individuals over 65 may have little or no knowledge on how to use technology, therefore they need to learn how to use it before being able to benefit from it. The aim of this paper is to test the efficacy of a digital education program in improving digital self-efficacy, self-esteem, and quality of perception of cognitive skills in older adults. Results show that digital self-efficacy significantly improves, while self-esteem and quality of life increase but not significantly after training. Perception of cognitive skills actually decreased or remain the same after the course.

Keywords: Healthy aging · Digital education · Self-efficacy
Satisfaction with life · Self-esteem · Cognitive abilities · Elderly

1 Introduction

Healthy aging is one of the priorities for many developed countries, as older adults are the fastest growing age bracket. The physical, cognitive, and psychological decline that comes with age can have a negative impact on aging individuals and therefore society: an unhealthy person is unhappy and also costs more in care and assistance. Recent Information and Communication Technologies (ICTs) can be an asset in making life easier and simple during the aging process, as suggested by the Positive Technology paradigm [1]. One of the issue with a wide spread use of technology to promote healthy aging is that many individuals aged 65 and over have little or no knowledge of ICTs: it is paramount therefore to teach older adults how to use technology [2]. In particular, as noted by the DESI country profile [3], in Italy only 43% of the population has basic digital skills (against 55% in Europe) and 63% uses Internet (against 76%), probably due to a large part of the population being 65 years and older. Czaja et al. in 2006 [4] wrote that the digital divide between those aged 65 and the younger generations is caused by external barriers, such as education, finances and physical abilities [5], and

internal factors, such as self-confidence [6], cognitive abilities, and computer anxiety [7, 8]. Training courses are a way of filling this gap in older adults' knowledge.

The aim of this contribution is to examine on an empirical basis if people aged 65 over perceive improvements in their auto-regulative skills (digital self-efficacy, self-esteem), perception of cognitive skills and of satisfaction with life when they take part in a training course designed specifically to teach older adults to use a specific technology (tablet).

1.1 Technology and the Older Adult

It is important for older adults to learn how to use technology because technology-based services and interactions are increasingly part of daily life and are essential to a heathy aging process. Auto-regulative skills and cognitive abilities come into play into this learning process.

Many older adults have little or no intention to learn, adopt, and use new technological devices, mostly because they have negative attitudes towards ICTs and low levels of Self-Efficacy [9]. Self-Efficacy is the belief a person has in his or her ability and skills to perform a task [10]. A low ICT-specific Self-Efficacy is therefore to be taken into account when older adults learn how to use technology. Perceived cognitive abilities (belief about memory, concentration, etc.) also may contribute to the belief of efficacy [11].

Similarly, Self Esteem is a (positive or negative) feeling of self-worth and is strongly connected to the experiences one has [12]: having positive experiences and achieving goals improve Self-Esteem. In particular, engaging in an experience to learn technology successfully can increase confidence and self-esteem in older adults [13]. Another overall evaluation of a person's experience over the course of his or her life is Life Satisfaction [14].

If the ICT learning experience can improve older adults' Digital Self Efficacy, their perception of cognitive skills, Self-Esteem, and overall Life Satisfaction may also increase.

1.2 Research Questions

The research had the following hypotheses:

H_1: Digital Self-Efficacy scores increase after the course in comparison to the baseline.
H_2: Life Satisfaction and Self Esteem levels improve after training in comparison to the baseline.
H_3: Perception of Cognitive Skills is higher at the end of the training in comparison to the beginning of the course.

2 Methodology

A longitudinal design was used for this study: participants were assessed before starting the training course and after the last session of the course. Total time between measurements was 12 weeks. Paired Sample T-Tests were used to assess differences between baseline and after course scores.

2.1 The Training Course

A total of 50 participants was divided into four groups and took part to the training. The course consisted of ten two-hour lessons where a group of 10–12 participants was trained in the use of tablets by a professional trainer and assisted by two tutors. Each class included a theory based introduction of the topic and the specific lexicon for the class, followed by practical exercise on the tablet. The course lasted 10 weeks, with one class help per week. The theoretical bases for the training are explained in detail elsewhere [15].

2.2 Measurements

The measures used in this study were the following. The research used the Italian validated version of each measure.

Digital Self Efficacy Questionnaire: A 23-item questionnaire with a 5-point likert scale, created to test self-efficacy with a tablet [16]. The questionnaire has two dimensions: a general digital self-efficacy scale, measuring the confidence people have with the basic functioning of the tablet (e.g. the operating system, writing, etc.), and an app-specific scale, measuring the confidence with using app to carry out specific tasks.

Life Satisfaction Index – Version A (LSIA-11): the LSIA-11 is a 11 item measure of perception of one's satisfaction with life. It has three subscales: Mood Tone, Zest for Life, and Congruence between desired and achieved goals [17].

Rosenberg's Self Esteem Questionnaire: The Italian version of this measure is a 10 item global score scale that assesses a person's self-esteem [18]. It's unidimensional.

Cognitive Failure Questionnaire: This instrument assesses an individual's perception of errors in the area of memory (general and memory of names), concentration, distractibility, and personal intelligence [19]. It comprises of 25 items on a 5 point Likert scale.

2.3 Sample

The sample of this study is composed of 50 people aged 65 and over, recruited through a Lifelong Learning center in Milan, Italy.

Thirty-five participants (74.5%) were women. Mean age for the sample is 70.68 year old. The sample has a high level education, with 57.4% (n = 27) of the participants having a high school diploma and another 23.4% (n = 11) having a university degree.

Twenty-eight participants (60%) had already attended a training course for technology (computer or tablet) at the time of the study.

3   Results

Table 1 shows the results for the Paired Sample T-Test in the two dimensions of Digital Self-Efficacy: changes in mean were highly significant, with measurements after the course having higher scores than baseline.

Table 1. Results for the digital self efficacy paired sample T-test

	m_{t1}	sd_{t1}	m_{t2}	sd_{t2}	T	df	Sig.
General digital self efficacy	0.98	0.66	2.36	0.71	−13.53	38	.001
App specific self efficacy	1.05	0.67	2.43	0.64	−12.53	38	.001

Paired Sample T-Test for the Rosenberg Self-Esteem indicated no significant change (t(38) = −.043, p = .966). Average score at baseline was m = 23.77, ds = 2.66, while at the end of the course it was m = 23.80, ds = 3.00, showing a slight upward trend.

Results for the dimensions of Satisfaction with life are in Table 2. The analysis did not reveal any significant changes in mean scores, even though the Zest for Life subscale presented a trend toward significance and the participants scored slightly higher after the course.

Table 2. Results for the LSIA-11 paired sample T-test

	m_{t1}	sd_{t1}	m_{t2}	sd_{t2}	T	df	Sig.
Mood tone	.80	.41	.85	.50	−.569	38	.572
Zest for life	.75	.36	.86	.32	−1.81	38	.077
Congruence	1.43	.57	1.48	.57	−.506	38	.616

The mean comparison for the Cognitive Failure Questionnaire (Table 3) pointed out to significant difference between before and after the course scores in two dimensions: Memory and Concentration. In both cases, average scores decreased significantly in T_2.

Table 3. Results for the cognitive failure questionnaire paired sample T-test

	m_{t1}	sd_{t1}	m_{t2}	sd_{t2}	T	df	Sig.
Memory	1.42	.59	1.19	.52	3.876	38	.001
Memory for names	1.67	.81	1.68	.94	−.119	38	.898
Concentration	1.92	.56	1.43	.65	7.681	38	.001
Distractibility	1.10	.57	1.08	.64	.332	38	.742
Personal intelligence	1.32	.67	1.33	.72	−.114	37	.906

4 Discussion and Conclusion

The hypotheses were only partially supported by the data.

In particular, Digital Self Efficacy improved significantly after the course, suggesting that training is viable path to make older adult more familiar and confident with a technological device. The training program seems to help participants to be more confident in handling the tablet: more in the app-specific Self Efficacy than general Digital Self Efficacy. The design of the IOS may explain the differences in General Digital Self Efficacy and App-Specific Self Efficacy: the operating system interface seems not to be linear, and thus generate difficulties in handling the tablet in its basic functions, while apps work linearly and thus are easier to handle for older adults.

Other auto-regulative skills did not show significant increase with the training, even though the upward trend of the scores suggest that the training may have more effect if it lasted longer and had a more intense schedule. Both Satisfaction with Life and Self-Esteem are general constructs that are built in time. The time of the training and actual use of the tablet was limited: only few participants had a tablet at home and could practice and use it in the context of their own lives. Therefore, both time between measurements and lack of actual use in context may have contributed to non-significant results in Self-Esteem and Satisfaction with Life. It is also worth noting that starting average scores for this sample are high. Future studies should also use more domain-specific measures and try to gauge the effects of the training with a follow up measurement one month or more after the training is over.

Rising difficulty in the course appears to make people less confident in their memory and concentration skills, probably because of the number of information needed to handle the tablet's more complex functions: it is necessary to calibrate better the courses, or to collect data not at the end of the class (when the participant's energy is depleted), but maybe half a day later after the end of the class and of the course.

One of the limitations of the study is the sample, which is limited to fifty people, who were all recruited from the same Learning Center. The participants were all already involved in learning: in the future, research should also focus on investigating the power of technology not just to close the generational divide but to promote social inclusion of other underserved, fragile populations (e.g. low income, low levels of education) who are not already involved in learning contexts: the training was proved to be effective in teaching older adults how to use tablets, and therefore can be used with different and larger populations.

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