Participatory design of a web-based cognitive training to improve problem solving skills in older adults: a focus group study

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INTRODUCTION

The development of easily accessible and usable social and cognitive enhancement training is becoming a priority to reduce the impact of aging on quality of life. Since most activities of daily living (e.g., preparing a meal) require problem-solving, problem-solving interventions could be used to improve and/or maintain functional abilities in aging to prolong independence. To design an effective problem-solving training and increase older adults' adherence to the training, we examined older adults' perceptions of their challenges in activities of daily living, their skills and difficulties in using information technology (IT), and their motivations and expectations for participating in a web-based problem-solving training activity.

AIMS

1. To understand the social and cognitive concerns and needs of older adults;
2. To understand their familiarity and difficulties in using new technologies in everyday activities;
3. To explore their expertise in the specific activity of planning a trip;
4. To explore their motivation and expectations to participate in a web-based training activity to improve cognitive functions, specifically their problem-solving skills in travel planning;
5. To obtain suggestions for the development of the new training.

METHOD

Participants: Four focus groups, two in Italy (Padua and Bologna) and two in the Netherlands (Tilburg), were conducted with twenty-seven healthy older adults aged 65-84 years (see Table 1). Participants were recruited by contacting senior citizen associations in different cities. Inclusion/exclusion criteria were limited to age (>65 years) and absence of neurological or psychiatric disorders.

TABLE 1. CHARACTERISTICS OF PARTICIPANTS		ITALY N=14	NETHERLANDS N=13	Total N=27
GENDER	MEN	7	5	12
	WOMEN	7	8	15
AGE		M= 70.85 (5.06)	M= 75.23 (5.16)	M= 72.96 (5.48)
EDUCATION		M= 12.42 (4.89)	M= 12.38 (5.07)	M= 12.40 (4.88)

Procedure: All focus groups were conducted in university classrooms in the departments of the respective cities. The sessions lasted approximately 2 hours and were conducted by a qualified moderator and a second research assistant who monitored the technical aspects of the session and took notes. The discussion for the four focus groups followed a common interview script.

Data Analysis: after each discussion was transcribed and translated into English, thematic analysis was performed using Atlas.ti 8 software. The researchers first read through the transcriptions to gain an overall impression. In the second reading, the researchers identified and categorized central themes. The researchers revised some of the themes in light of the other focus group transcripts, including notes and comments. After comparing similarities and differences among the themes, the researchers refined the themes to develop a common analytical framework.

RESULTS

Interests and activities
(Personal characteristics, Leisure activities)
Almost all of the participants (26/27) are retired, and in their free time they engage in many activities to stay active: long-standing interests or activities that they were previously unable to devote time to (sports, reading, volunteering, traveling, and taking care of grandchildren).

Difficulties and concerns
(Concerns, Cognitive function, Cognitive difficulties)
Participants reported a high level of concern about the risk of cognitive decline, believing that efficiency in performing activities of daily living is consistently dependent on cognition. Participants often reported the differences between their current and past cognitive functioning. Another element of concern, reported only by the Italian participants, was loneliness.

Expertise and resources
(Needs, Previous experience with a cognitive training)
All participants see IT as an important tool for communication, for staying up to date and for keeping in touch with the new generations. However, this positive view is accompanied by concerns about their ability to adapt to modern technologies. The participants are very interested in traveling and talk about their different experiences. However, with age, insecurity increases and some participants feel less autonomous and independent. Fear of traveling is related to concerns about aging and self-perceived limited competence in using technological tools. In fact, few participants organize their own travel using computer devices or apps.

Experiences and motivations for training
(Technological skills, Travel experience, Travel planning skills, Organized group travel)
Participants expressed a need to improve cognitive and digital skills, as well as a need for support and socialization. The identified needs fuel the participants' motivation to engage in cognitive enhancement and training experiences (digital and otherwise). Participants in the two groups conducted in Italy participated in various cognitive enhancement and digital training initiatives proposed by psychology departments or third age associations.

Suggestions for the design of the new training
(Future Training, Collective training sessions)
Most of the participants expressed a willingness to participate in the project. All showed a strong interest in completing activities related to travel planning. Some made suggestions about possible activities to include in the training such as different types of trips (biking, hiking, camping)" and the budget. All participants emphasized only positive aspects of a collective training sessions.

DISCUSSION

In our study participants reported numerous concerns and self-reported cognitive difficulties but also a strong desire to improve their skills. All are interested in using new technologies, but they encounter numerous problems (e.g., excessive complexity and lack of clarity) in using them, which lead to feelings of inadequacy and frustration, and interfere with learning and subsequent IT use. When designing web-based cognitive enhancement programs, these feelings of inadequacy and difficulties with IT use need to be considered. Participants emphasized the need for support and assistance in learning new activities. Therefore, it is necessary to propose an online help system that provides the necessary information to resolve doubts and difficulties and to enable effective learning. Our study also emphasized that older adults prefer to challenge themselves in activities that are related to their desire for resilience and autonomy, as well as a sense of doing well. The training should be challenging and the level of difficulty should be adjusted to suit performance. It is also important to provide emotional feedback during and at the end of the training sessions in order to maintain motivation, and to strengthen and increase self-esteem. The new training will be based on the activity of planning a trip, according to the ideas and wishes of the older adults that emerged in the focus groups. To meet the need for socialization expressed by the participants, the new training will be structured to encourage social interaction among participants through online collaborative training sessions.