The importance of using computers in populations with Parkinson's disease and spinal cord injury: a patients' and caregivers' perspective

Meir Plotnik[1,6,7], Zoe Katsarou[2], Amihai Gotlieb[1], Adam Grinberg[1], Rachel Kizony[1,4], Gabi Zeilig[1,3], Sevasti Bostantjopoulou-Kambouroglou[5]

[1]Center of Advanced Technologies in Rehabilitation, Sheba Medical Center, Ramat-Gan, Israel. [2]Neurology, Hippokration Hospital, Thessaloniki, Greece. [3]Department of Neurological Rehabilitation, Sheba Medical Center, Ramat-Gan, Israel. [4]Department of Occupational Therapy, University of Haifa, Haifa, Israel. [5]3rd Department of Neurology, University of Thessaloniki, Thessaloniki, Greece. [6]The Sagol School of Neuroscience and [7]Department of Physiology and Pharmacology, Sackler Faculty of Medicine, Tel Aviv University, Tel Aviv

Background

People with severe disability face many operational difficulties when using computers. However, despite the barriers, computers have an enormous potential for promoting social integration in these populations.

Objective

To evaluate the importance of computer use as perceived by people with Parkinson's disease (PD) and spinal cord injury (SCI), as well as by their caregivers.

Methods

Subjects and Design

Twenty individuals with PD (mean age: 59.1±8.05 years) and eighteen with SCI (mean age: 45.4±15.5 years) were included in the study. Participants' working habits with the computer were explored by means of a structured interview. For this interview, we adapted parts of the matching person and assistive technology questionnaire (MPT)[1], to account for people with movement disabilities, and created a quantitative questionnaire, focused on the Contribution of the Computer to various aspects of Social Life (CCSL; see Fig. 1). In addition, each participant was asked to define the three most important aspects. In parallel, the PD and SCI participants' caregivers (20 and 11, respectively) were interviewed using the same method.

Statistical analysis

Reliability of the CCSL scale was assessed by means of Cronbach's alpha coefficient. Caregivers' scale scores were compared to those of their patients using Wilcoxon signed rank tests.

Fig. 1: The CCSL Questionnaire

How important is the contribution of computer use in the following aspects of your life?

CCSL Items	1- not important at all, 5- very important
1. Interpersonal interactions and relationships	1 2 3 4 5
2. Close, intimate relationships	1 2 3 4 5
3. Educational attainment	1 2 3 4 5
4. Work and employment status/potential	1 2 3 4 5
5. Participation in desired community, social and civic activities	1 2 3 4 5
6. Autonomy and self-determination (making decisions)	1 2 3 4 5
7. Fitting in, belonging, feeling connected	1 2 3 4 5
8. Emotional well-being	1 2 3 4 5

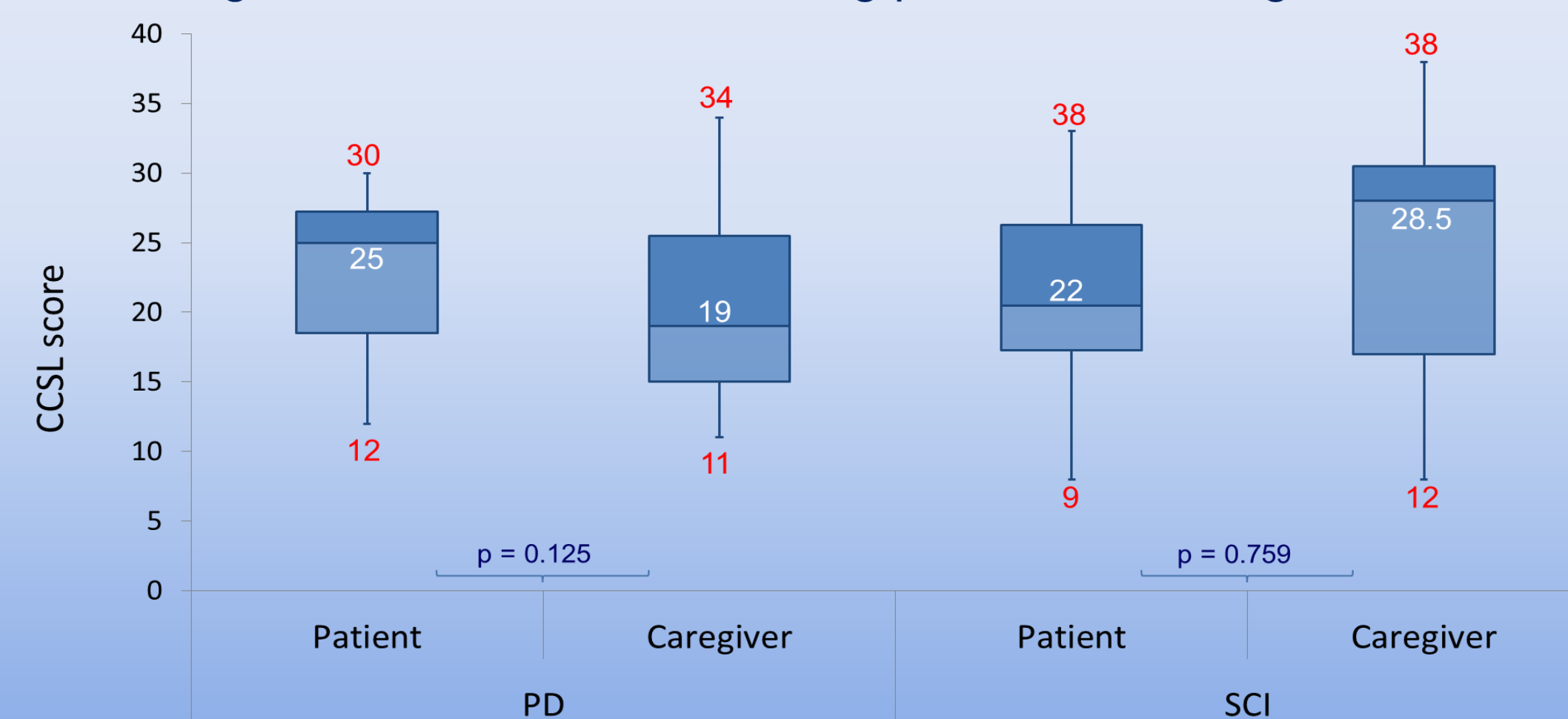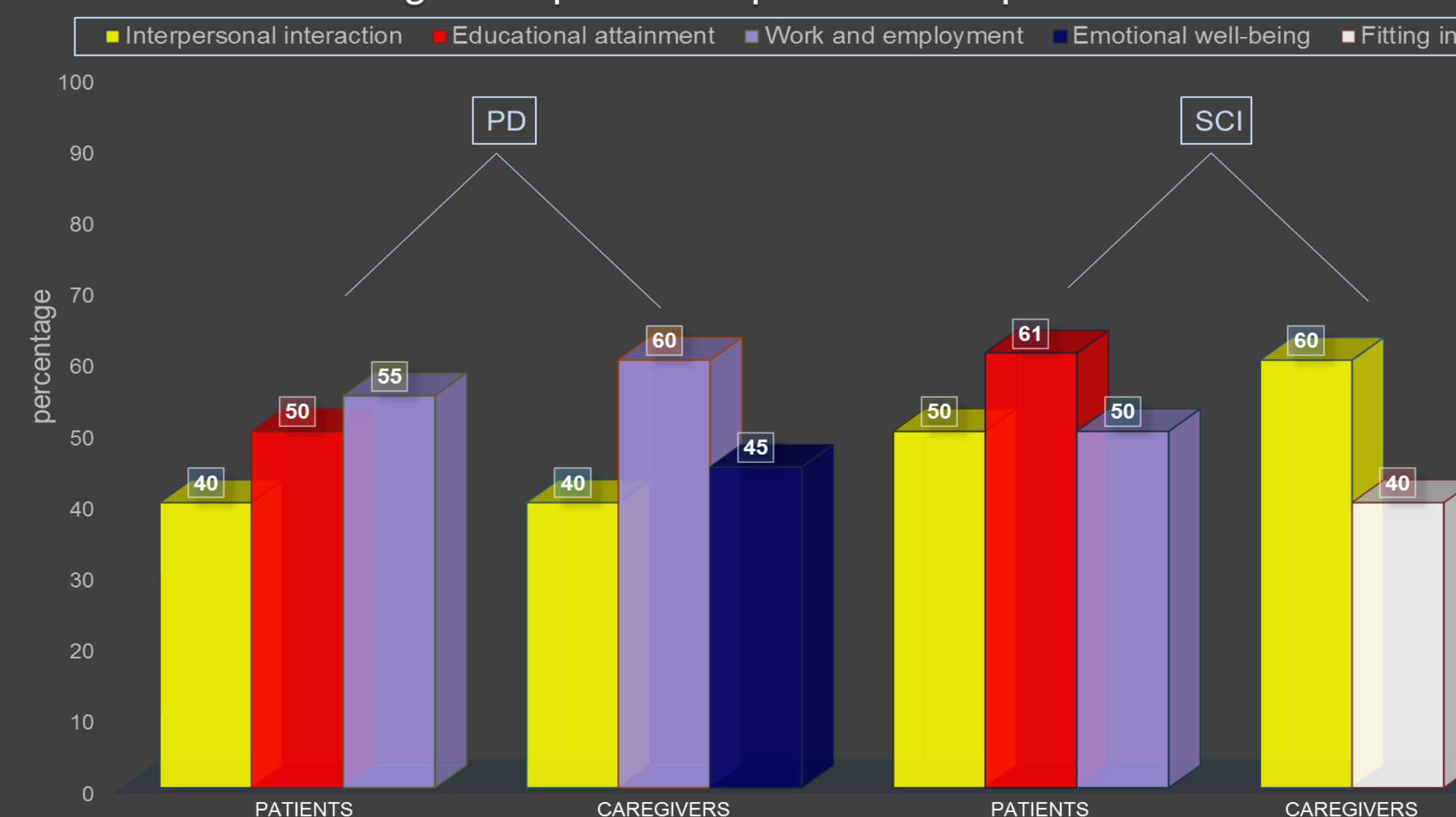*Fig. 2*: CCSL total scores among patients and caregivers

Fig. 3: Important aspects of computer use

Results

Mean values (±SD) of years of computer use were 13.6±9.1 and 20.5±9.1 years among the PD and SCI participants, respectively. The corresponding values for daily computer use were 3.9±2.4 and 5±3.4 hours. As for reliability analysis for the CCSL scale, Cronbach's alpha was 0.787. Item to total score correlations ranged from 0.279 to 0.703. Patients' and caregivers' total CCSL scale scores are plotted in *fig. 2*. No differences were found between patients and their caregivers' CCSL scores (*fig. 2*). Single items that ranked as most important are presented in *fig. 3*.

Conclusions

- PD and SCI individuals, and their caregivers, regard computers as important tools for their lives.
- Important aspects for all participants relate to interpersonal interaction (e.g., social media), education and work.
- **This information is crucial in validating the need for the development of innovating technologies to assist patients to overcome operational difficulties.**

Acknowledgements

References

1. Scherer, M. J. (2004b). *Matching person and assistive technology process and accompanying assessment instruments* (Rev. ed.). Webster, NY: Institute for Matching Person & Technology.