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Chunk Controls – An Approach to Increase Usability In The OR

Von Saucken, A.-M.¹, Seifert, B.², Prümper, J.³, Kraft, M.¹, Zirk, A.²

¹Institute of Medical Engineering, Technische Universität Berlin (TUB), Germany

²Institute of Psychology and Ergonomics, Technische Universität Berlin (TUB), Germany

³International Reference and Development Centre for Surgical Technology (IRDC), Leipzig, Germany

⁴Business- and Organizational Psychology, HTW Berlin, Germany

vsaucken@zmms.tu-berlin.de

Introduction

The aim of this study was to analyze the usability of a recently developed prototype for device control (DIORS-Software) in an operation room. In order to make the usage and navigation of the DIORS-Software more easy and harmonic, chunk controls were implemented. Chunks are complex signs consisting of elementary signs of lower order (sub signs) (cf. Schrader, 2013). One central purpose of chunks is to support the human information processing within the human-computer interaction. To assess the usability of the DIORS-Software, it was compared to a clickable Mockup of the Olympus Software (EndoAlpha).

Methods

Participants were 16 surgery nurses who all interacted with each of the two software types. Eight of them started with the EndoAlpha, the others with DIORS. Participants executed one sequence of the laparoscopic colon resection. They had to follow commands by using mock-up versions on a tablet. This simulated scenario was used to test whether providing chunks increases usability compared to sequential commands. After each trial, participants completed the ISONORM 9241-110/S via paper/pencil. Attitudes regarding chunks were assessed via questionnaires.

Independent variables were (1) the type of software (EndoAlpha vs. DIORS) and (2) the type of command (chunks vs. sequential commands). While interacting with the DIORS software, eight of the participants received chunks, eight of them sequential commands.

Results

The DIORS-Software received significantly higher ratings regarding all factors (dependent variables) of the ISO 9141-10/S, which are suitability for the task, self-descriptiveness, controllability, conformity with user expectations, suitability for individualization and suitability for learning. Furthermore, fewer problems in using the DIORS-Software occurred. Chunks revealed high acceptance ratings but did not influence the usability significantly.

Conclusion

A helpful scale to measure attitude towards chunks was developed. Further investigations with an extended experimental group within a real hospital context should take place, as the first results of this simulation seem to be very promising.