Modeling, Simulation and Training Procedural Skills: 
User experience and acceptability of a virtual reality 
simulator for scrub nurses in neurosurgery

To cite this version:
Marie-Stéphanie Bracq, Estelle Michinov, Bruno Arnaldi, Alexandre Audinot, Benoît Caillaud, et al.. Modeling, Simulation and Training Procedural Skills: User experience and acceptability of a virtual reality simulator for scrub nurses in neurosurgery. 19th International Meeting on Simulation in Healthcare (IMSH), Jan 2019, San Antonio, TX, United States. 36, pp.1, 2019. hal-02123682
Modeling, Simulation and Training Procedural Skills: user experience and acceptability of a virtual reality simulator for scrub nurses in neurosurgery

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Introduction & Purpose
Assess acceptability and user experience of a VR simulation to train procedural skills for scrub nurses with dedicated models and validated tools

Materials & Methods
✓ Scenario based on annotated video observations recorded in the OR
✓ 150 surgical instruments and 50 different interactions
✓ Acceptability assessed with the Unified Theory of Acceptance and Use of Technology (UTAUT) questionnaire¹
✓ User experience assessed with NASA TLX² (workload), SUS questionnaire³ (presence) and SSQ⁴ (simulator sickness )
✓ Qualitative data from post test interviews and logs

Results

<table>
<thead>
<tr>
<th>Participants</th>
<th>Non-expert users</th>
<th>Expert users</th>
</tr>
</thead>
<tbody>
<tr>
<td>PhD students/students/engineers</td>
<td>8 males 8 females mean age : 26.6 (SD = 7.54)</td>
<td>Scrub nurses in neurosurgery 13 females mean age : 42 (SD=7.7 )</td>
</tr>
<tr>
<td>Presence</td>
<td>4.47/7 (SD = 1.14)</td>
<td>5.10/7 (SD = 0.96)</td>
</tr>
<tr>
<td>Time</td>
<td>13.44 min (SD = 3.65)</td>
<td>14.71 min (SD =19.25)</td>
</tr>
</tbody>
</table>

Discussion and Conclusion
• Acceptability the VR simulator was demonstrated for all participants
• No statistical significant differences regarding age, gender and expertise
• Most participants stressed its pedagogical interest, fun and realism
• VR simulator was validated for initial and vocational training

Limits
• small sample size
• experts from only one specialty and department

Following steps
• Measure transfer of skills to the OR
• Development of Non-Technical Skills (NTS) scenarios
• Intercultural studies