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Validity and reliability of the electronic Faces Thermometer Scale for pain assessment—study protocol including pilot testing and primary results in the paediatric population

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Electronic Faces Thermometer Scale

The electronic Faces Thermometer Scale (eFTS) is an interactive digital smartphone- or tablet-based symptom management tool to support self-assessment of pain in childhood. Development follows the UK Medical Research Council's (MRC) guidance for complex interventions in healthcare and the universal design for maximum accessibility and equality. The eFTS visualize the child's pain with colour and a face with a mimic representing the intensity of pain on a one-item measure with 11 numeric rating scale. The child assesses his or her pain on the tablet by moving the finger on the eFTS until the colour and face represent their appraised level of pain.

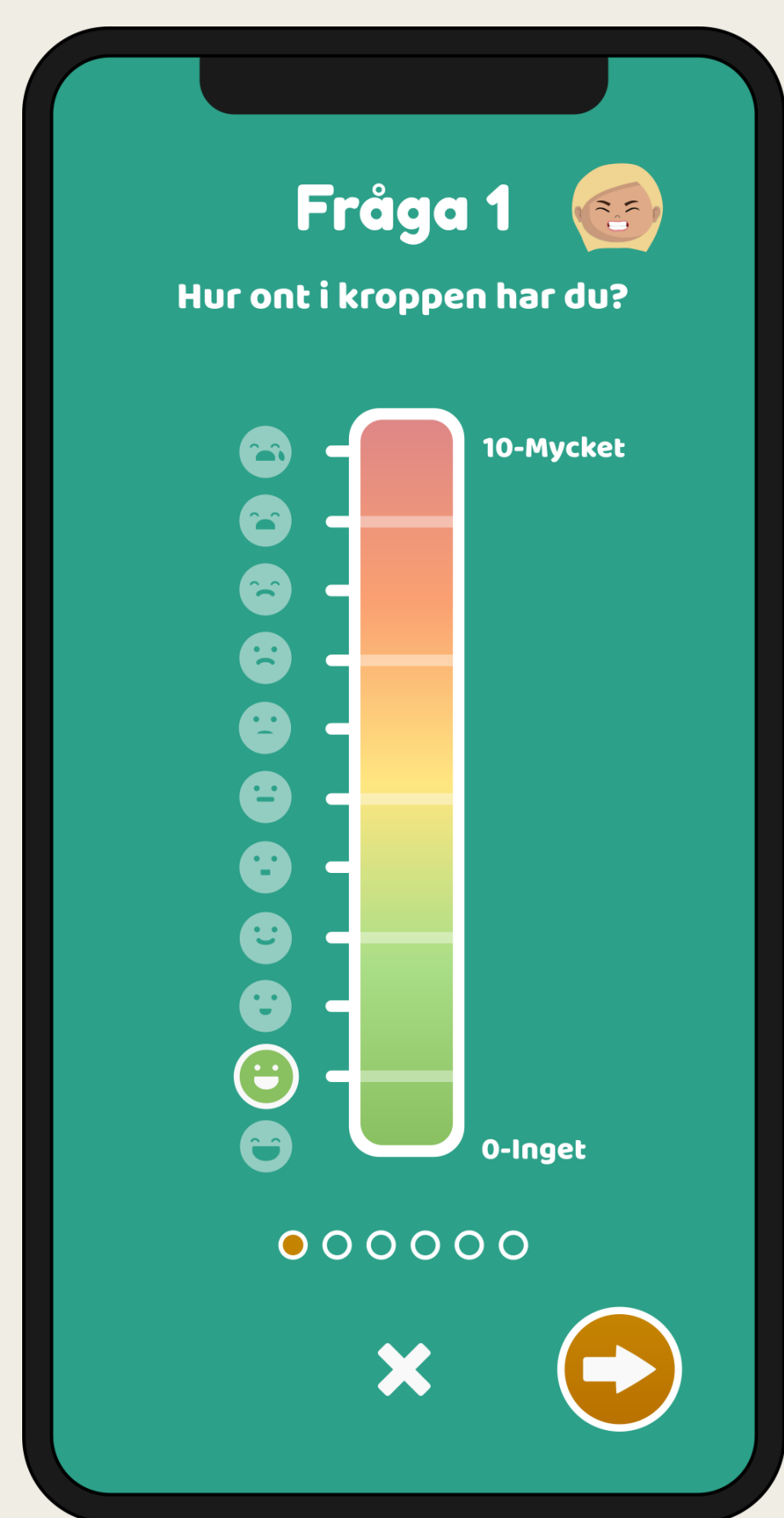


Figure 1. eFTS

Rationale

New digital technologies provides unique opportunities to let children decide themselves when and how to assess their pain. Children have shown a preference for the use of digital assessment tools compared to paper versions. The child's perception of pain assessment may differ between the digital format. There is a need to test new digital tools for reliability and validity in various situations to facilitate improved pain management for children.

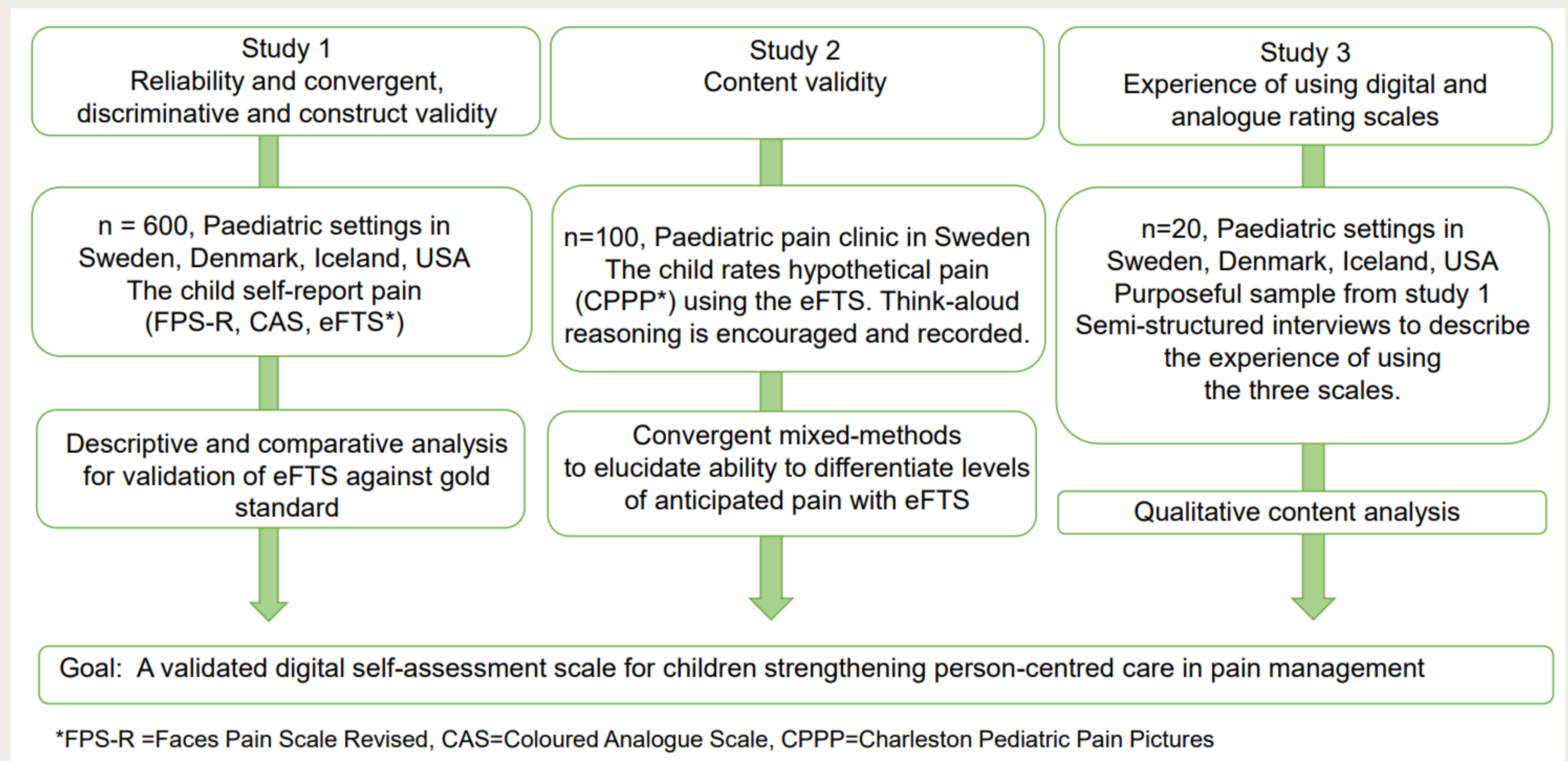


Figure 2. Protocol flowchart: Prospective three-armed multi-site study at paediatric units in four countries

Preliminary results: Study 1 in Sweden

Step one involved protocol testing with children (n=8) and nurses (n=2). Children reported all three pain assessment tools (FPS-R, CAS, eFTS) feasible for pain management and instructions easy to understand. Small alterations in the questionnaire for background data were made.

Step two involved the exploration of the preliminary data. Currently, 24 children have completed the study. These children were experiencing surgical pain. The mean age was 12.75 years. Of the 24 children, nine were girls (37.5%), 21 (87.5%) were born in Sweden, and 19 (79%) had Swedish as their mother tongue. Each child assessed their pain three times, i.e., in total 72 data points. Pain scores were interpreted on a scale from 0-10. The median for the three pain scales were: FPS-R 2 (min 0; max 8), CAS 2 (min 0; max 9), eFTS 3 (min 0; max 8).

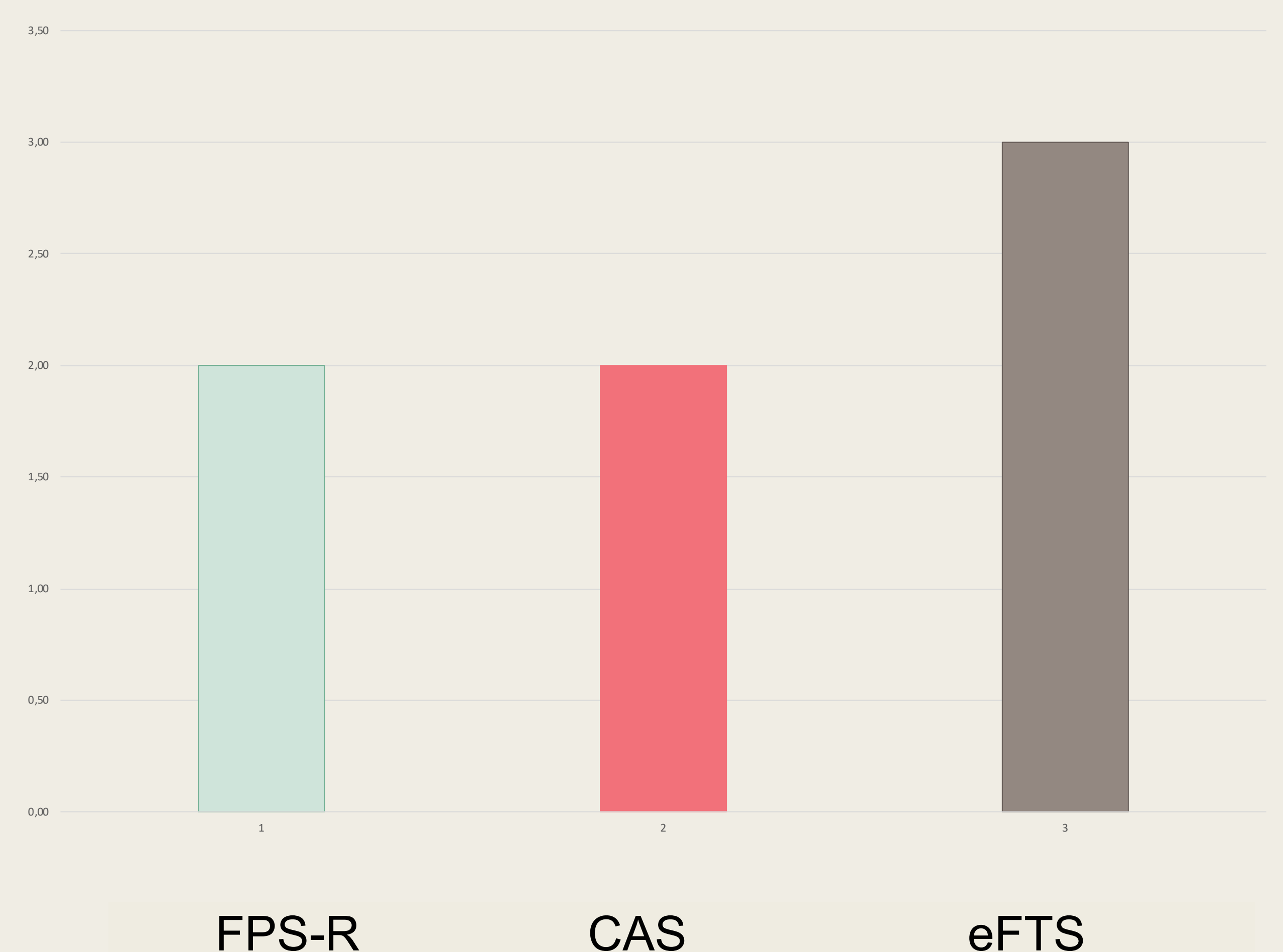


Figure 3. Median scores for FPS-R, CAS and eFTS

Overall, there was high levels of acceptability of and adherence to study protocol by participants. Preliminary results indicted our ability to capture psychometric values of eFTS in a broad spectrum.

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