

Mutual Shaping in the Design & Use of Socially Assistive Robots: A Case Study on Social Robots for Therapy

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Electronic Supplementary Material 3: Full coding scheme applied to focus group transcripts.

First Level Coding Scheme. Those marked* have second level codes presented below:

Code	Description
[A] Application of Robots in Therapy	Direct suggestions or inferred applications/ functionalities of SARs in therapy (<i>in post-demo discussion</i>)
[A] Therapist Opinion of Social Robots	Any feedback on social robots or their use in therapy – could be appearance, functionality etc. from the therapists’ point of view (<i>in post-demo discussion</i>)
[A] User Opinion of Social Robots	As above but with therapist referencing user response
[B] Application of Robots in Therapy	Direct suggestions or inferred applications/ functionalities of SARs in therapy (<i>in pre-demo discussion</i>)
[B] Therapist Opinion of Social Robots	Any feedback on social robots or their use in therapy – could be appearance, functionality etc. from the therapists’ point of view (<i>in pre-demo discussion</i>)
[B] User Opinion of Social Robots	As above but with therapist referencing user response
Demo Feedback	Feedback on any aspect of the robot demonstrations
Factors relating to engagement	Anything about the factors which impact on adherence, including which factors are most important (e.g. around the ranking exercise)
Importance of self-practice	Any reflections on how important such exercises are to the overall therapy programme
Measuring motivation or engagement	Measures or indicators of how motivated/engaged a service user is
Mutual/ Social Shaping	Comments regarding societal influences in therapy, or issues likely to impact on real-world SAR deployment in therapy
Personalised Approaches	Comments regarding how therapy delivery or therapist approach might be adapted or personalised based on the service user
Prescription of Self-Practice	Anything describing the prescription of or detail about the type of self-practice exercises given to service users
Reporting of Self-Practice	Anything about whether the therapist monitors self-practice, or ways in which it might be measured
Robot Requirements	Anything around perceived difficulties the robot might face or useful references to what sensor/data collection capabilities might be required
Therapist Behaviour or Role	Anything about how the therapist might have an impact on motivation or engagement i.e. through taking a particular approach or adjusting their behaviour

Second Level Coding Nodes. Those marked^ have third level codes presented below:

First Level/ ‘Parent’ Code	Second Level/ ‘Child’ Codes
[A/B] Application of Robots in Therapy	Calming or anxiety Demonstrating or showing task Engagement in therapy^ Interpretation and Translation Medication Tele-operation

	Therapist or other feedback^ Therapist or other training User feedback
[A/B] Therapist Opinion of Social Robots	Positive Negative
[A/B] User Opinion of Social Robots	Positive Negative
Factors relating to engagement	Cognition Demographics Dynamic & individual Ease of access Enjoyment External feedback / encouragement / information^ Memory Mental health Mood & emotional state Routine Self-efficacy & expectations & ownership Severity of ailment Social^
Therapist Behaviour or Role	Boosting intrinsic motivation^ Feedback^ Make sessions enjoyable Observe & react to patient Persuasion & social influence / social interaction^ Scheduling

Third Level Coding Nodes:

First Level/ 'Parent' Code	
Second Level/ 'Child' Code	Third Level/ 'Grandchild' Codes
[A/B] Application of Robots in Therapy	
Engagement in therapy	Improving task value Prompting and facilitating Robot as third party Robot influence
Therapist or other feedback	Accurate reporting Quality/ ability of patient activity Useful data
Factors relating to engagement	
External feedback / encouragement / information	Progress based Effort based/ encouragement Functional/ medical purpose/ understanding
Social	Social influence/ pressure Social support
Therapist Behaviour or Role	
Boosting intrinsic motivation	Frame in term of functional goals Functional/ intrinsic motivators Improve patient understanding
Feedback	Effort based

	Feedback based
Persuasion & social influence / social interaction	`Cajoling' & accountability Expert support Interaction