Psychological interventions for offenders with intellectual and other developmental disabilities: The EQUIP feasibility trial and Virtual Immersion Therapy

Professor Peter Langdon
Aims

• Discuss and present the findings from our EQUIP treatment programme feasibility trial with offenders with intellectual and developmental disabilities.

• In a related study, discuss how we developed Virtual Immersion Therapy using the social skills training sessions from the EQUIP treatment programme and tested them out with offenders with intellectual and developmental disabilities.
Equipping Youth to Help One Another

• Langdon et al. (2013): Manualised multicomponent treatment programme grounded within “positive peer culture” which we previously adapted for men with intellectual and developmental disabilities.

• Developed in the United States and has its roots within both aggression replacement training and positive peer culture.

• Intensive. Four sessions per week as a minimum.
Equipping Youth to Help One Another

• Specific adaptations for people with intellectual disabilities.
  ▪ Focus on cognitive mediation training.
  ▪ Simplifications of concepts and homework.
  ▪ Cultural changes.
Why are we interested?

- Meta-analytic studies demonstrate a strong association between moral reasoning and criminal offending. (e.g. $d=0.76$; Stams et al., 2006). There is also a literature linking intelligence and offending behaviour (Farrington, 1996; Moffitt, 1993; Moffit et al., 1981).

- Developmental progression within moral reasoning is fueled by social role taking opportunities, and is dependent upon cognitive ability.

- Gibbs (2010) argues that a ‘developmental delay in moral judgment’, coupled with distorted cognitions and social skills deficits are common amongst offenders. He argues that moral reasoning relates to schema development, which in turn leads to distorted cognition in offenders, which supports the occurrence of offending behaviour.
Moral decision-making and moral development: Toward an integrative framework

Beverley Garrigan\textsuperscript{a}, Anna L.R. Adlam\textsuperscript{b}, Peter E. Langdon\textsuperscript{c,*}

\textsuperscript{a} Department of Clinical Psychology, Norwich Medical School, University of East Anglia, UK
\textsuperscript{b} School of Psychology, College of Life and Environmental Sciences, University of Exeter, UK
\textsuperscript{c} Tizard Centre, University of Kent, Canterbury and Broadland Clinic, Hertfordshire Partnership University NHS Foundation Trust, Norfolk, UK
Theoretical Perspectives

![Diagram of social information processing model]

**Fig. 1.** Crick and Dodge’s (1994) Social information processing model. Caption: From Crick, N.R., & Dodge, K.A. (1994). A review and reformulation of social information-processing mechanisms in children’s social adjustment. Psychological bulletin, 115(1), 74. Fig. 2. “A reformulated social information-processing model of children’s social adjustment”, p.76. Copyright 1994 by the American Psychological Association. Reprinted with permission.
# Theoretical Perspectives

Table 1  
The components of moral decision-making and development.

<table>
<thead>
<tr>
<th>Component type</th>
<th>Component</th>
<th>Theories/perspectives to have proposed this component is involved in moral decision-making or development</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cognitive</td>
<td>Working memory</td>
<td>Gibbs (2013)</td>
</tr>
<tr>
<td></td>
<td>Attention</td>
<td>Gibbs (2013), Crick and Dodge (1994)</td>
</tr>
<tr>
<td></td>
<td>Abstract thought/reasoning</td>
<td>Baird (2008), Piaget (1932)</td>
</tr>
<tr>
<td></td>
<td>Logical reasoning</td>
<td>Piaget (1932), Kohlberg (1984a, b)</td>
</tr>
<tr>
<td></td>
<td>Self-control</td>
<td>Rest (1984, 1999)</td>
</tr>
<tr>
<td></td>
<td>Emotion recognition</td>
<td>Anderson and Beauchamp (2012), Taber-Thomas and Tranel (2012)</td>
</tr>
<tr>
<td></td>
<td>Somatic markers</td>
<td>Baird (2008), Taber-Thomas and Tranel (2012)</td>
</tr>
<tr>
<td></td>
<td>Intuition</td>
<td>Haidt (2001)</td>
</tr>
<tr>
<td></td>
<td>Culture</td>
<td>Haidt (2001), Anderson and Beauchamp (2012)</td>
</tr>
</tbody>
</table>
Theoretical Perspectives

Fig. 2. The Social Information Processing-Moral Decision-Making Framework (SP-MDM).
EQUIP

Four different types of sessions:

- “Equipment” meetings – anger management (cognitive restructuring, relaxation training, imagery), social skills training (active role play), social decision making.

- “Mutual Help” meetings – active problem solving using the techniques learned during equipment meetings.
EQUIP

• Simple concepts
  - “Clown in the Ring”
  - Planet A or B?
  - TOP guy!
  - 12 problems and 4 thinking errors

• Each session builds on the previous.

• Can roll, and should be integral within the suite of treatment programmes.

• First line intervention which can be used as the springboard into other offence focused groups.
Example Potential Problems

“AGGRAVATES OTHERS” PROBLEM
You threaten and hassle other people
You bully other people
You tease other people
You try to “get back” at other people
Example Potential Problems

“TRICKS OTHERS” PROBLEM
You get others to do bad things for you
You get others to do your “dirty work”
You manipulate others
You pretend you had nothing to do with it when others get caught and you blame the other person
Example Potential Problems

“DRUG AND ALCOHOL” PROBLEM
You abuse alcohol and drugs
You are afraid to face life without using drugs or alcohol
You think that drug and alcohol abuse are not bad
You blame the drugs or alcohol when you do something wrong
Thinking Errors

- Being Self Centred
- Minimising and Mislabelling
- Thinking the Worst
- Blaming Others
Social Decision Making (Moral Development)

“Leon has been in a secure unit for a while and then he tried to escape. As a result, all of his leave was cancelled and he was moved to a different unit. It took Leon one year to earn the trust of the staff again. He now thinks it is stupid to try to escape. However, Bob, who is also in the secure unit, tells Leon that he is planning to escape that night. “I’ve got it all figured out,” Bob says. “I’ll hit the staff on the head and take their keys.” Bob asks Leon to come along. Leon tries to talk Bob out of it, but Bob won’t listen.

Should Leon tell the staff about Bob’s plan to escape?

What if Bob is a pretty violent kind of guy, and Leon thinks that Bob might seriously injure or maybe even kill the staff member? Then what should Leon do?

What is the staff member is mean and everyone hates him? Then what should Leon do?

Is it right to ever tell on someone?

Let’s change the situation! Let’s say that member of staff happens to be Leon’s uncle. Then what should Leon do?

Let’s change the situation! Let’s say that Bob is Leon’s brother. What should Leon do?

Which is most important? Not telling on your friend/not letting people get hurt/ minding your own business.
Initial Modelling

An Evaluation of the EQUIP Treatment Programme with Men who have Intellectual or Other Developmental Disabilities

Peter E. Langdon*†, Glynis H. Murphy‡, Isabel C.H. Clare§*, Emma J. Palmer∥∥∥ and Joanna Rees∥∥∥

*Department of Psychological Sciences, Norwich Medical School, University of East Anglia, East Anglia, UK; †Broadland Clinic, Hertfordshire Partnership NHS Foundation Trust, Norfolk, UK; ‡Tizard Centre, University of Kent, Kent, UK; §Department of Psychiatry, University of Cambridge, Cambridge, UK; ∥∥∥Cambridgeshire & Peterborough NHS Foundation Trust, Cambridge, UK; ∥∥NIHR Collaborations for Applied Health Research and Care, Cambridge, UK; ∥∥∥School of Psychology, University of Leicester, Leicester, UK; ∥∥Norfolk and Suffolk NHS Foundation Trust, Norwich, UK
Participants

- Participant 1 was 34 years old, with a Full Scale IQ of 77. He was diagnosed with Asperger Syndrome after pleading guilty to manslaughter. He had previous convictions for violent offences.

- Participant 2 was 28 years old, with a Full Scale IQ of 88. He was diagnosed with Asperger Syndrome after being convicted of arson. He had previous convictions for theft.

- Participant 3 was 21 years old, with a Full Scale IQ of 65. He had a diagnosis of mild intellectual disability and had been convicted of sexual offences involving a child under the age of 13 years. He had previous convictions for theft and sexual offending.

- Participant 4 was 25 years old, with a Full Scale IQ of 111. He was a man with a diagnosis of Asperger Syndrome who had pleaded guilty to arson.

- Participant 5 was 30 years old, with a Full Scale IQ of 65. He had a diagnosis of mild intellectual disability and depression. He had pleaded guilty to arson and had previous convictions for assault.

- Participant 6 was 23 years old, with a Full Scale IQ of 69. He had a mild intellectual disability and had been convicted of sexual offences involving children under the age of 13. He had previous convictions for theft and assault.

- Participant 7 was 36 years of age, with a Full Scale IQ of 77 and a diagnosis of Asperger Syndrome. He had pleaded guilty to manslaughter and had previous convictions relating to firearms.
### Initial Modelling

<table>
<thead>
<tr>
<th></th>
<th>Pre-treatment M (SD)</th>
<th>Post-treatment M (SD)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sociomoral Reflection Measure - Short Form</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contract (M)</td>
<td>283.43 (27.25)</td>
<td>309.52 (37.09)</td>
</tr>
<tr>
<td>Truth</td>
<td>250.00 (28.89)</td>
<td>300.00 (64.55)</td>
</tr>
<tr>
<td>Affiliation (M)</td>
<td>264.29 (43.96)</td>
<td>296.43 (50.89)</td>
</tr>
<tr>
<td>Life (M)</td>
<td>253.57 (56.70)</td>
<td>303.57* (22.49)</td>
</tr>
<tr>
<td>Property</td>
<td>216.67 (40.83)</td>
<td>285.71* (55.64)</td>
</tr>
<tr>
<td>Law</td>
<td>207.14 (93.22)</td>
<td>314.29* (55.64)</td>
</tr>
<tr>
<td>Legal Justice</td>
<td>228.57 (26.73)</td>
<td>307.14* (67.26)</td>
</tr>
<tr>
<td><strong>Total Score</strong></td>
<td>252.86 (26.73)</td>
<td>300.00** (33.32)</td>
</tr>
<tr>
<td><strong>How I Think Questionnaire</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Anomalous Responding</td>
<td>3.29 (0.82)</td>
<td>3.12 (1.22)</td>
</tr>
<tr>
<td>Self-Centred</td>
<td>2.10 (0.84)</td>
<td>1.43* (0.55)</td>
</tr>
<tr>
<td>Blaming Others</td>
<td>2.61 (1.50)</td>
<td>1.54 (0.61)</td>
</tr>
<tr>
<td>Minimising Mislabling</td>
<td>2.00 (0.83)</td>
<td>1.38* (0.57)</td>
</tr>
<tr>
<td>Asssuming the Worst</td>
<td>2.09 (0.84)</td>
<td>1.55* (0.57)</td>
</tr>
<tr>
<td>Opposition-Defiance</td>
<td>2.39 (0.95)</td>
<td>1.63* (0.64)</td>
</tr>
<tr>
<td>Physical Aggression</td>
<td>2.30 (1.60)</td>
<td>1.34* (0.56)</td>
</tr>
<tr>
<td>Lying</td>
<td>2.64 (0.81)</td>
<td>1.57** (0.66)</td>
</tr>
<tr>
<td>Stealing</td>
<td>1.64 (0.72)</td>
<td>1.40 (0.58)</td>
</tr>
<tr>
<td>Overt Scale</td>
<td>2.34 (1.24)</td>
<td>1.49 * (0.56)</td>
</tr>
<tr>
<td>Covert Scale</td>
<td>2.14 (0.69)</td>
<td>1.49 * (0.56)</td>
</tr>
<tr>
<td><strong>Total Score</strong></td>
<td>2.22 (0.93)</td>
<td>1.48 * (0.55)</td>
</tr>
<tr>
<td><strong>Problem Solving Task</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Problem Identification</td>
<td>3.86 (0.41)</td>
<td>4.20 (0.38)</td>
</tr>
<tr>
<td>Generation of Solutions</td>
<td>2.17 (0.85)</td>
<td>2.23 (0.39)</td>
</tr>
<tr>
<td>Solution Selection</td>
<td>3.00 (0.35)</td>
<td>3.31* (0.25)</td>
</tr>
<tr>
<td>Evaluation of Solutions</td>
<td>4.29 (0.78)</td>
<td>4.23 (0.82)</td>
</tr>
<tr>
<td><strong>Total Score</strong></td>
<td>16.64 (2.09)</td>
<td>17.46 (1.60)</td>
</tr>
<tr>
<td><strong>Anger Inventory for Mental Retarded Persons</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Score</td>
<td>78.00 (17.18)</td>
<td>72.29 (14.55)</td>
</tr>
</tbody>
</table>

*p<0.05
**p<0.001
***p<0.0001
EQUIP Feasibility Trial

• Aims
  - To test the EQUIP treatment programme with patients who have intellectual and developmental disabilities and a history of criminal offending behaviour in order to estimate appropriate parameters to inform the design of a definitive randomised control trial.
  - Objectives:
    - To examine the acceptability of the intervention.
    - To determine the recruitment rate.
    - To test methods of collecting data on resource-use and quality of life.
    - To describe and characterise TAU.
    - To examine whether there is evidence to suggest that treatment has the potential to bring about changes in moral reasoning, distorted cognitions, and problem-solving ability functioning in comparison to TAU.
EQUIP Feasibility Trial

• Method

- two armed open randomised controlled trial
- randomisation stratified according to site and gender. In the event that an odd number of participants are to be randomised, the final participant in the series will be allocated to an arm using simple randomisation. All randomisation will be handled independently by Norwich Clinical Trials Unit (CTU).
  Researchers/clinicians will enter participant details into a web-based data entry system for randomisation.
- recruitment will be open to participants who have IDDs living in hospital who have a history of forensic mental health problems.
EQUIP Feasibility Trial

• Method

  ▪ **Acceptability:** Using framework analysis (41), we will assess acceptability by randomly selecting participants and inviting them to take part in semi-structured interviews following the completion of the outcome assessments. We will examine views on several key areas, which include, a) accessibility of the intervention, b) helpful and unhelpful aspects, including barriers to change, c) understanding and usefulness of content, d) relationships with professionals within treatment, and e) perceived effectiveness. We will also carry out these interviews with participants who were randomised to the control arm in order to try to capture contamination.
CONSORT 2010 Flow Diagram

EQUIP

Enrollment

Assessed for eligibility (n=86)
- Excluded (n=1)
  - Not meeting inclusion criteria (n=0)
  - Declined to participate (n=0)
  - Other reasons (left service) (n=1)

Randomized (n=85)

Allocation

Allocated to TAU (n=42)
- Received allocated intervention (n=40)
- Did not receive allocated intervention (n=2)
  - Consent withdrawn (n=2)

Allocated to Treatment Intervention (n=43)
- Received allocated intervention (n=42)
- Did not receive allocated intervention (n=1)
  - Questions raised over capacity

Follow-Up

Lost to follow-up (n=7):
- Moved service/Missing data (n=6)
- Consent withdrawn (n=1)
Discontinued intervention (n=0)

Analysis

Data sets:
- Total/Complete/Incomplete T1 data (n=39/n=14/n=25)
- Total/Complete/Incomplete T2 data (n=33/n=8/n=25)

Lost to follow-up (n=3):
- Moved service (n=1)
- Consent withdrawn (n=2)
Discontinued intervention (n=0)

Data sets:
- Total/Complete/Incomplete T1 data (n=42/n=15/n=27)
- Total/Complete/Incomplete T2 data (n=39/n=8/n=31)
EQUIP Feasibility Trial

- Participants

  - TAU: $M_{IQ} = 61.85$, $SD = 8.90$; $n = 14 \text{s.3}$; $n = 10 \text{s.37}$; $n = 13 \text{s.37/41}$; $n = 2 \text{s.47/49}$. 
    $M_{age} = 33.95$, $SD = 9.88$.

  - Treatment Group + TAU: $M_{IQ} = 65.60$, $SD = 11.04$; $n = 12 \text{s.3}$; $n = 14 \text{s.37}$; $n = 11 \text{s/37/41}$; $n = 3 \text{s.47/49}$; $n = 1 \text{other}$. $M_{age} = 33.07$, $SD = 10.49$; $M = 30.04$ sessions attended, $SD = 9.74$.

No significant difference between the two groups with respect to Full Scale IQ, $t(55) = 1.40$, $p = .16$, or age, $t(76) = .38$, $p = .70$. 
<table>
<thead>
<tr>
<th>Index Offence</th>
<th>N</th>
<th>% of entire sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sexual Offences</td>
<td>36</td>
<td>42.4</td>
</tr>
<tr>
<td>Violent Offences</td>
<td>31</td>
<td>36.5</td>
</tr>
<tr>
<td>Theft</td>
<td>14</td>
<td>16.5</td>
</tr>
<tr>
<td>Property Offences</td>
<td>9</td>
<td>10.6</td>
</tr>
<tr>
<td>Weapons</td>
<td>9</td>
<td>10.6</td>
</tr>
<tr>
<td>Drug and Alcohol Offences</td>
<td>6</td>
<td>7.1</td>
</tr>
<tr>
<td>Breaking and Entering</td>
<td>4</td>
<td>4.7</td>
</tr>
<tr>
<td>Other Offences</td>
<td>5</td>
<td>5.9</td>
</tr>
</tbody>
</table>
EQUIP Feasibility Trial

• Sites
  - St. Andrews
  - Priory – Kneesworth
  - Priory – St. John’s and Burston House
  - Priory – Llanarth Court
  - Kent and Medway NHS Partnership Trust
  - Southern Health NHS Foundation Trust – Southampton
  - Nottingham Health Care NHS Foundation Trust
  - East London NHS Foundation Trust
  - Huntercombe Group – Cedar House
Results

Figure 1: Emotional Problems Scale - Behaviour Rating Scale

Number of EQUIP Sessions attended accounted for 13.1% of the variance in the EPS-BRS at Time 2 in those allocated to EQUIP + TAU, \( t = 2.19, p = .036 \).  

All Participants: \( F(1, 48) = <1, p = .36 \)

Those who attended at least 4 sessions: \( F(1, 43) = 5.54, p = .044 \)
Results

Figure 2: Emotional Problems Scale - Self Rating Scale

All participants: $F(1, 46) = 1.877, p = .20$
Those who attended at least 4 sessions: $F(1, 42) = 2.50, p = .15$
Results

Figure 3: How I Think Questionnaire

All participants: F(1, 44) = 2.41, p = .15
Those who attended at least 4 sessions: F(1, 42) = 2.53, p = .15
What do people think of their treatment?

• Semi-Structured Interviews
  ▪ We managed to interview 11 participants.
  ▪ Framework analysis was used to understand the data.
  ▪ Four participants were allocated to TAU.
What do people think of their treatment?

• Themes

  ▪ Research Process
    • Participation
      – some participants found it difficult to understand how the EQUIP Group and the trial were separate or similar.
      – Many willing to do more research, but some were uncertain.
    • Information Sheets and Consent Forms
      – Many liked the pictures, but some words were hard.
      – Needed staff to help them understand the process.
    • Questionnaires
      – Some found some items emotive
      – Some thought there were a lot of questions and there was some repetition.
      – Liked having breaks when completing the questionnaires
What do people think of their treatment?

• Themes
  ▪ The EQUIP Group
    • Opinion and Experience of the Group
      – Mainly positive opinions about the group
      – TAU participants were unable to share an opinion or commented about what other participants had said.
    • Challenges
      – Practical issues like timing, number of sessions and clashes with timetabling.
      – Other group members – interpersonal problems with other participants, sharing therapeutic space, talking in front of others, members missing sessions, and need for lots of repetition.
    • Relationships with Staff
      – EQUIP participants talked about having positive relationships with staff members, improvements in their relationships with others, and increasing trust.
What do people think of their treatment?

• Themes

  ▪ Programme Content

    • Treatment Impact
      – Group was seen as helpful or “good”.
      – Reluctant to talk about how they thought others found it.
      – Believed it helped with learning to help others, developing pro-social skills, and adopting positive roles.

    • Learning
      – Talked about learning skills – specifically anger management strategies and some of the concepts – clown in the ring.

  • Recommendations
    – More detail in some sessions and more relevant social decision making session examples.
    – Fewer but shorter sessions
    – More service user involvement in recruitment.
What do people think of their treatment?

• Themes

  ▪ Individual Needs and Motivations
    • Motivation to Change
      – Participants talked about wanting to complete treatment to return to the community or get more leave.
    • Attitudes toward Therapy
      – They spoke about proactively seeing help to improve their mental health and circumstances
        – this was a priority.
      – Some behaviours displayed conflict with this at times.
      – Some expressed a view that their own maladaptive strategies may be helpful and therapy doesn’t work.
EQUIP Feasibility Trial

• Challenges
  ▪ Recruitment: Participants and Therapists
  ▪ Participation in Treatment
  ▪ Austerity
  ▪ Integrating EQUIP into the culture of a service

• Next Steps
  ▪ Checking fidelity
  ▪ Health economics
  ▪ Characterise TAU
  ▪ Definitive trial
Virtual Environments

• There is increasing interest in using virtual environments as an adjunct within or as actual psychological therapy.

• These are used to simulate realistic situations in a safe manner.

• They have been used to help with post-traumatic stress disorder (e.g. Difede & Hoffman, 2002 – World Trade Centre).

• As well as social phobia (e.g. Anderson et al., 2005), and social skills/anxiety with people who have schizophrenia (e.g. Park et al., 2011; Gega et al., 2013)
Virtual Environments

• They have also been used to try to help people with autistic spectrum disorders with social skills and empathy development (e.g. Cheng & Chen, 2010; Cheng et al., 2010; Golan & Baron-Cohen, 2006; LaCava et al., 2007; Kandalaft et al., 2013).

• Some have made use of computer games with people with autism (Hopkins et al., 2011).

• Secret Agency Society (Beaumont et al., 2013; 2015) – teaching emotion recognition, regulation and social problem solving skills with kids who have autism.
Virtual Environments

• Considering the psychiatric morbidity, difficulties with social skills, perspective-taking, and risk of recidivism – virtual environments may be helpful with adults with intellectual and other developmental disabilities who have a history of offending behaviour.

• Hubel et al. (2008) made use of virtual environments with offenders with mental health problems but without intellectual disabilities. This was an avatar-based intervention where skills were modelled.
Virtual Environments

- Several other groups have been developing and piloting similar interventions with offenders with mental health problems (e.g. Wijk et al., 2009).

- Including sexual offenders (e.g. Renaud et al., 2014).

- Standen & Brown (2005) reviewed the literature in this area with respect to people with intellectual disabilities commenting that most studies cluster into those that aim to improve skills, including social skills, and cognitive abilities.
Aims

• To model whether virtual immersion therapy when used collaboratively with offenders with intellectual disabilities and/or and autistic spectrum disorder brought about improvements in:

  ▪ Social skills
  ▪ Social problem solving
  ▪ Empathy
  ▪ Emotion recognition
Participants

- 12 participants detained under the Mental Health Act, as amended, 2007.

- Participant 1: FIQ = 60; s.37/41; ABH; PTSD; depression.
- Participant 2: FIQ = 85; s.37/41; Attempted murder; autism.
- Participant 3: FIQ = 70; s.37; Emotionally unstable personality disorder; sexual offences.
- Participant 4: FIQ = 57; s.37/41; arson; autism.
- Participant 5: FIQ = 84; s.37/41; ABH; autism.
- Participant 6: FIQ = 64; s.37/41; arson and ABH.
- Participant 7: FIQ = 75; s.37/41; violent sexual offences; autism.
- Participant 8: FIQ = 60; s.37/41; murder; autism; schizophrenia.
- Participant 9: FIQ = 55; s.37/41; sexual offences; robbery; knife crime.
- Participant 10: FIQ = 65; s.37/41; sexual offences.
- Participant 11: FIQ = 96; s.37/41; arson; autism; schizophrenia.
- Participant 12: FIQ = 64; s.37/41; ABH; schizophrenia.
### Figure 2.1. Overview of Multiple Baseline Design

*Note. A₁ = baseline assessment phase; B = intervention phase; 1 x dose = one session of participation in 8 VI videos; 2 x doses = 2 sessions of participation with the same 8 VI videos from previous session; A₂ = follow-up phase; shaded area = different durations of baseline phases.*
Design

- Video display
- Camera
- Laptop
- Subject
<table>
<thead>
<tr>
<th>Video Number</th>
<th>Social Situation</th>
<th>Skills Targeted</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>The participant has bought something from a shop and has been short changed.</td>
<td>To express a complaint constructively</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Empathy</td>
</tr>
<tr>
<td>2</td>
<td>The participant is informed that their friend’s mother has died.</td>
<td>To manage peer pressure</td>
</tr>
<tr>
<td>3</td>
<td>Peer pressure to steal a DVD from a supermarket.</td>
<td>Managing conflict and avoiding fights</td>
</tr>
<tr>
<td>4</td>
<td>The virtual character thinks the participant is staring at him and tries to start a fight.</td>
<td>Managing a stressful situation</td>
</tr>
<tr>
<td>5</td>
<td>The virtual character has lost her handbag and is seeking support.</td>
<td>Managing conflict</td>
</tr>
<tr>
<td>6</td>
<td>Participants attended a meeting with a nurse/counsellor/doctor/psychologist where they are expected to talk about their difficult behaviour.</td>
<td>Expressing care and appreciation</td>
</tr>
<tr>
<td>7</td>
<td>The virtual character is angry with the participant for pushing past them in a supermarket.</td>
<td>Managing conflict</td>
</tr>
<tr>
<td>8</td>
<td>The virtual character is an old friend who had recently helped the participant move house.</td>
<td>Managing conflict</td>
</tr>
<tr>
<td>9</td>
<td>Their virtual friend accuses the participant of stealing their bus fare.</td>
<td>Managing conflict</td>
</tr>
<tr>
<td>10</td>
<td>Receiving feedback from a job interview and being told that they were are not successful.</td>
<td>Responding constructively to failure</td>
</tr>
</tbody>
</table>
Procedure

- $A_1$ – facilitators invited the participant to participate in two videos determined at random.

- $B$ – participants took part and interacted with eight videos – either one lot or two lots of training sessions with the eight videos. Facilitators worked with each participant to provide feedback on skills used and encourage skill development. This was manualised. Based on Equipping Youth to Help One Another Treatment Programme and Responsible Adult Culture.

- $A_2$ – participants took part in two videos to assess change.
Example
Measures

• Facial expression coding system (FACES; Kring & Sloan, 2007).
  • IRR = Intensity of Facial Expression = .93; Quality of Verbal Response = .90.

• Social Problem Solving Inventory (D’Zurilla et al. 2002).

• Morphed faces task; emotion recognition.

• Empathy Quotient (Baron-Cohen & Wheelwright, 2002).
## Results

<table>
<thead>
<tr>
<th>Measure / Sub-Scale</th>
<th>Pre-Therapy</th>
<th>In-Therapy</th>
<th>Post-Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPSI-R Total Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>10.42</td>
<td>10.83</td>
<td>11.33</td>
</tr>
<tr>
<td>$SD$</td>
<td>2.84</td>
<td>3.46</td>
<td>3.28</td>
</tr>
<tr>
<td>SPSI-R PPO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>10.92</td>
<td>10.75</td>
<td>10.12</td>
</tr>
<tr>
<td>$SD$</td>
<td>2.91</td>
<td>3.47</td>
<td>4.00</td>
</tr>
<tr>
<td>SPSI-R NPO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td><strong>11.00</strong></td>
<td>9.25</td>
<td><strong>8.92</strong></td>
</tr>
<tr>
<td>$SD$</td>
<td>4.86</td>
<td>5.74</td>
<td>4.42</td>
</tr>
<tr>
<td>SPSI-R RPS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>10.33</td>
<td>8.92</td>
<td>10.67</td>
</tr>
<tr>
<td>$SD$</td>
<td>3.37</td>
<td>4.81</td>
<td>4.58</td>
</tr>
<tr>
<td>SPSI-R ICS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>10.17</td>
<td>9.50</td>
<td>8.58</td>
</tr>
<tr>
<td>$SD$</td>
<td>5.17</td>
<td>5.62</td>
<td>4.32</td>
</tr>
<tr>
<td>SPSI-R AS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>7.75</td>
<td>6.92</td>
<td>7.33</td>
</tr>
<tr>
<td>$SD$</td>
<td>3.89</td>
<td>4.23</td>
<td>3.58</td>
</tr>
<tr>
<td>Empathy Quotient</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td>36.58</td>
<td>36.58</td>
<td>37.42</td>
</tr>
<tr>
<td>$SD$</td>
<td>11.05</td>
<td>11.73</td>
<td>11.64</td>
</tr>
<tr>
<td>Emotion Recognition Total Score</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>$M$</td>
<td><strong>28.83</strong></td>
<td>32.08</td>
<td><strong>33.17</strong></td>
</tr>
<tr>
<td>$SD$</td>
<td>5.32</td>
<td>4.56</td>
<td>4.71</td>
</tr>
</tbody>
</table>

Note: AS = Avoidant Style; CSC = Clinically Significant Change; EQ = Empathy Quotient; ICS = Impulsive/Careless Problem Solving Style; M = Mean; NPO = Negative Problem Orientation; PFA = Pictures of Facial Affect; PPO = Positive Problem Orientation; RPS = Rational Problem Solving Style; SPSI-R = Social Problem Solving Inventory Revised; SD = Standard Deviation.
# Results - FACES

<table>
<thead>
<tr>
<th>Variable</th>
<th>Pre-Therapy</th>
<th>In-Therapy</th>
<th>Post-Therapy</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Length of Response (sec)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>3.92</td>
<td>6.54</td>
<td>3.95</td>
</tr>
<tr>
<td>( SD )</td>
<td>2.24</td>
<td>4.37</td>
<td>2.21</td>
</tr>
<tr>
<td><strong>Intensity of Facial Expression</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td>2.21</td>
<td>2.06</td>
<td>2.12</td>
</tr>
<tr>
<td>( SD )</td>
<td>1.51</td>
<td>0.94</td>
<td>1.05</td>
</tr>
<tr>
<td><strong>Quality of Verbal Response</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( M )</td>
<td><strong>2.50</strong></td>
<td>3.44</td>
<td><strong>3.05</strong>*</td>
</tr>
<tr>
<td>( SD )</td>
<td>0.77</td>
<td>0.28</td>
<td>0.42</td>
</tr>
</tbody>
</table>
Results

- Those who received two training sessions had significantly higher rational problem solving scores at follow-up, compared to the training phase.

- However, there were no differences between those who had received one or two training sessions across all other variables.
Results – Participant 1

The graph shows the mean quality of verbal response per scene for Participant 1 over different intervention phases:

- **Baseline (A1)**: The quality of verbal response is relatively stable with some fluctuations.
- **Intervention (B)**: A noticeable increase in the quality of verbal response is observed, indicating a positive response to the intervention.
- **Follow-Up (A2)**: After the intervention, the quality of verbal response appears to stabilize near the baseline levels.

The x-axis represents the time points, and the y-axis represents the mean quality of verbal response per scene.
Results – Participant 5

Mean Quality of Verbal Response Per Scene

Baseline (A1)

Intervention (B)

Follow-Up (A2)

Time Points

A1 VIDEO 1 SCENE 1
A1 VIDEO 1 SCENE 2
A1 VIDEO 1 SCENE 3
A1 VIDEO 1 SCENE 4
A1 VIDEO 1 SCENE 5
A1 VIDEO 2 SCENE 1
A1 VIDEO 2 SCENE 2
A1 VIDEO 2 SCENE 3
A1 VIDEO 2 SCENE 4
A1 VIDEO 2 SCENE 5
A2 VIDEO 1 SCENE 1
A2 VIDEO 1 SCENE 2
A2 VIDEO 1 SCENE 3
A2 VIDEO 1 SCENE 4
A2 VIDEO 1 SCENE 5
A2 VIDEO 2 SCENE 1
A2 VIDEO 2 SCENE 2
A2 VIDEO 2 SCENE 3
A2 VIDEO 2 SCENE 4
A2 VIDEO 2 SCENE 5
Conclusions

• Using virtual immersion therapy with offenders with intellectual and other developmental disabilities is feasible.

• Participants liked the intervention. Appeared to enjoy taking part.

• One participant with autism was confused by the video using the city as a backdrop. Thought it must be a live broadcast.

• Another had a strong angry reaction to one video set. This provided an excellent therapeutic opportunity.
Conclusions

• One participant did not like one of the characters – decided he was “rude” (Job Interview).

• Overall, improvements in social skills and emotion recognition.

• However, uncontrolled study.

• All seemed to respond to the intervention in some way, but improvements were not always maintained.

• Greater focus on basic social skills within the intervention.

• Further refining and trialling comes next.