Research, Development and MSE for the future

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Beit Issie Shapiro, Israel

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Oct 2010
Organizational Strategy

Beit Issie Shapiro

- Advocacy and influencing policy and attitude change
- Developing and disseminating knowledge: research, development of models
- Development & maintenance of innovative and high quality services

Partnerships in Israel and abroad
Human Resources
Financial Base
Development of Snoezelen according to strategy

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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<tbody>
<tr>
<td>1993</td>
<td>From Snoezelen to CMSR Controlled Multi-Sensory Room. First facility is set up in Israel –</td>
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<tr>
<td>1996</td>
<td>First course on MSE (40 hour): 3-4 courses a year New facilities of MSE springing up</td>
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<tr>
<td>2000</td>
<td>Ministry of Education and Ministry of Welfare adopt MSE Number of courses jump to 10 a year</td>
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<tr>
<td>Year</td>
<td>Event</td>
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<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
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<tr>
<td>2002</td>
<td>“Snoezeling – handbook” published in English – <em>teaching resources</em></td>
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<td></td>
<td>Renovation of schools – blue print according to MSE principles</td>
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<td></td>
<td>(show movie) - - <em>gaining credibility</em></td>
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<tr>
<td></td>
<td>Bi-annual Snoezelen newsletter - Course on Dementia</td>
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<tr>
<td></td>
<td>(collaboration with another organization)</td>
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<tr>
<td></td>
<td>Conference in Israel (Ad Verheul, Linda Messbauer, Pat Schofield,</td>
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<td></td>
<td>Barbara McCormac, Ilse Achterberg, Nechama Baum)</td>
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<td></td>
<td>Visit to Miami to run course at Jackson Memorial Hospital</td>
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<td></td>
<td>Research on Influence of Lighting on behavior (<em>publication in</em>)</td>
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<td>2004</td>
<td>Pilot research on reduction of stress in dental setting – adults</td>
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<tr>
<td></td>
<td>with autism</td>
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<tr>
<td></td>
<td>Setting up hydro-zen</td>
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<tr>
<td></td>
<td>First article on case study in JOURNAL OF ADOLESCENT MEDICINE AND</td>
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<tr>
<td></td>
<td>HEALTH</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
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<tr>
<td>------</td>
<td>----------------------------------------------------------------------</td>
</tr>
<tr>
<td>2006</td>
<td>Park Chaverim is opened (based on principles of MSE)</td>
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<tr>
<td></td>
<td>Empirical research on reduction of stress in dental settings</td>
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<tr>
<td>2006</td>
<td>New creative models</td>
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<tr>
<td>2007</td>
<td>Publication of article in Journal of European Oral Science</td>
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<tr>
<td></td>
<td>First course in Arabic language in collaboration with another</td>
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<tr>
<td></td>
<td>organization</td>
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<tr>
<td>2008</td>
<td>Publication of article in Journal of Pediatrics</td>
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<tr>
<td>2009</td>
<td>Publication of article in Journal of Pediatric Dentistry</td>
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<td></td>
<td>Publication of Hydro-zen pilot research</td>
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<td></td>
<td>Courses for parents</td>
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<td></td>
<td>Training the trainers (2 year course)</td>
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<tr>
<td>Year</td>
<td>Events</td>
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<td>------</td>
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<tr>
<td>2010</td>
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</table>
Empowerment  
Consolidation  
Spreading the word  
Research in next generation | Trainers give supervision  
New edition of book  
Development of course for Mental Health  
Steady increase in number of facilities- about 400  
Student research: research on change of attitude of caregivers, influence of colors  
Furthering development of MSE in North of Country |
| 2011 | Fifth International Conference with MSE tract – 6th, 7th July, 2011 Tel Aviv |
Project 1

Shapiro, Parush, Green & Roth. (1997).
The Efficacy of the “Snoezelen” in the Management of Children with Developmental Disabilities who exhibit Maladaptive Behaviors

Rational

• Need for assessment of the efficacy of a new treatment approach
Method

- Cross-over design
- N = 20
- Moderate to severe DD
Evaluation Procedure - behavioral

The Behavior Checklist

- 22 behaviors (16 stereotypic + 6 adaptive)
- Videos (20 minutes) with stopwatch
- Record number and duration of behaviors
- inter-rater reliability $r = 0.974$
Evaluation Procedure - physiological

- Measurement of ambulatory heart rate
  - Holter (electrocardiogram monitor)
  - Electrodes and vest
  - Computerized analysis
# Design of Study

<table>
<thead>
<tr>
<th>7 days</th>
<th>10 days</th>
<th>7 days</th>
<th>10 days</th>
</tr>
</thead>
<tbody>
<tr>
<td>Running-in</td>
<td>Assessment</td>
<td>Running-in</td>
<td>Assessment</td>
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<tr>
<td><strong>Start</strong></td>
<td><strong>Playroom</strong></td>
<td><strong>MSE</strong></td>
<td><strong>Playroom</strong></td>
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<tr>
<td>Stage 1</td>
<td></td>
<td></td>
<td><strong>Stage 11</strong></td>
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</table>

**Stage 11**
Mean duration (minutes) of maladaptive behaviors by group and treatment setting

p<0.001

Group A
- MSE: 1
- Playroom: 9.9

Group B
- MSE: 2.9
- Playroom: 7.7

p<0.001
Initial analysis:
Mean ambulatory heart rate from pre-treatment to treatment and from treatment to post-treatment by period and treatment setting

<table>
<thead>
<tr>
<th>Period</th>
<th>Treatment setting</th>
<th>MSE</th>
<th></th>
<th>S.D.</th>
<th></th>
<th>Playroom</th>
<th></th>
<th>S.D.</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
<td>n</td>
<td>Mean</td>
<td>S.D.</td>
<td></td>
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<tr>
<td>Pre</td>
<td>10</td>
<td>112.9</td>
<td>6.20</td>
<td>10</td>
<td>113.1</td>
<td>6.9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Treatment</td>
<td>10</td>
<td>113.0</td>
<td>11.40</td>
<td>10</td>
<td>112.3</td>
<td>7.84</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Post</td>
<td>10</td>
<td>116.8</td>
<td>7.11</td>
<td>10</td>
<td>117.8</td>
<td>6.62</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Absolute percentage of change in ambulatory heart rate relative to pre-treatment by period and setting

<table>
<thead>
<tr>
<th>Treatment setting</th>
<th>MSE</th>
<th>Playroom</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n</td>
<td>Mean</td>
</tr>
<tr>
<td>From pre-treatment to treatment</td>
<td>10</td>
<td>7.23</td>
</tr>
<tr>
<td>From treatment to post – treatment</td>
<td>10</td>
<td>7.68</td>
</tr>
</tbody>
</table>
Impact of the first research

- The Snoezelen is an effective therapeutic approach both behaviorally and physiologically.
- This means....different populations can utilize the approach,
- If this is so effective — what exactly was it that made the difference: multi-sensory stimuli, isolated equipment, etc. Attitude of caregiver?
- Importance of taking Snoezelen out of the room into the milieu.
Improving Dental Care for Children

• Dental care is a cause for concern, especially amongst children with special needs.
• They do not understand
• Limited cooperation and participation.
Parent reactions

- How does one explain to a child who cannot understand language that “We are going to the dentist now”? Or, “It’s just for a checkup today. I promise it won’t hurt”?
New Research
Influence of Adapted Environment (sensory dental clinic) on the Anxiety of Children with Developmental Disability (DD) Compared to Typical Children
Background and Rationale

• Anxiety and pain lessens cooperation
• Modes of management include:
Background and Rationale

• People with DD have substantial functional and behavioral limitations that impede participation in daily life functioning (Law, 1991, et al).
• Participation may be influenced by personal or environmental factors (Law, 2002).

The influence of environmental sensory stimuli on function and participation has been neglected.

• Suggested option: sensory adaptation of the clinical environment.
Research Objectives

1. To examine the influence of a sensory adapted environment on the behavior and physiological arousal level of children with DD, during a stress provoking medical situation – i.e. the dental clinic

2. To examine the influence of a sensory adapted environment on the behavior and physiological arousal level of typical children, during a stress provoking medical situation – i.e. the dental clinic

3. To compare the responses of DD and typical children.
Methods
Dental Treatment Procedure

- Calculus removal
- Performed by dental hygienist
- Manual (not ultrasonic) cleaning of the deposits off each tooth and brushing with a low speed driven hand-piece with rotary bristle brush
- No local anesthesia nor sedation
- Uniform and standard procedure for all.
Study Design

Random cross-over intervention (20-25 minutes dental session)

1  Sensory Adapted Environment
2  Sensory Adapted Environment

1  Regular Environment
2  Regular Environment

4 month period
Dental Settings
Characterized by:

- loud noises
- bright lights
- unpleasant aromas
- intrusive contact in mouth
- possibility of pain

Combination of the regular dental clinic setting + the altered physiological predisposition makes the dental visit very stressful.
Sensory Adapted Dental Environment

1. Visual Sensation (adapted lighting)
   - dimmed upward fluorescent lighting (30-40KHz)
   - slow moving, repetitive, visual effects on ceiling
   - head mounted LED lamp shining directly into mouth
Sensory Adapted Dental Environment

2. Auditory and Somato-sensory stimuli

- rhythmic **music** via loudspeakers (75db level)
- **bass vib**ra**tor** connected to dental chair

3. Tactile stimuli

- butterfly papoose for deep pressure “hug” for DD
- **X-ray vest** for typical
Regular dental setting

- regular fluorescent lighting: ceiling and dental lamp (50Hz) with inert flicker

- butterfly papoose to ensure safety (less tight) in DD children
- no X-ray vest in typical children

- no special visual effects on ceiling
- no music
- no vibro-acoustics
Measures
Measures

Behavioral measure
Negative Dental Behaviors Checklist (NDBC)

Physiological measure
Electrodermal Activity (EDA)
Research questions

• Will there be a decrease in the frequency, duration & magnitude of anxious behaviors?

• Will there be a reduction in physiological parameters of arousal?
Results
• Movie of three children in dental research
Figure 1: Mean duration of anxious behaviors (NDBC) by group and environment.

- Typical Children:
  - Regular Environment: 3.69 minutes
  - Adapted Environment: 1.48 minutes
  - p < 0.01

- DD:
  - Regular Environment: 23.43 minutes
  - Adapted Environment: 9.04 minutes
  - p < 0.001
Figure 2: Phasic responses by group and environment

![Bar chart showing phasic responses by group and environment. The chart compares typical children and DD groups with adapted and regular environments. The p-values indicate a statistically significant difference between groups, with p < 0.01.]
Child 1: **Typical**: common baseline, similar pattern for both, clear preference for SAE

SAE

RE

Time
Child 2. **Typical**: baseline preference for regular, short lived relaxation, not sustained.
Child 3. **DD**: large gap between treatment settings from the baseline. Obvious preference for SAE.
Child 4. DD: clear baseline preference for SAE, increases as the treatment progresses.
Conclusions (1)

• Sensory adaptation of the environment creates a significant calming effect on a potentially high anxiety procedure in both groups;

• This is reflected in both behavioral and physiological parameters;

• Substantial difference in environments in DD group confirms the greater degree of response in this group.
Conclusions (2)

• Modifying the sensory environment ‘cushions’ and therefore ‘protects’ from harsh stimuli;

• Focusing attention on visual, auditory and deep pressure, brings about an ‘altered state’ – the probable mechanism of the effect;

• Findings should encourage adaptation of physical environments to enhance handling for participation of people with and without DD.
## Possible reasons for differences

<table>
<thead>
<tr>
<th></th>
<th>DD children</th>
<th>Typical children</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Familiarity</strong></td>
<td>More familiar</td>
<td>Less familiar</td>
</tr>
<tr>
<td></td>
<td>Therefore started more relaxed</td>
<td></td>
</tr>
<tr>
<td><strong>Extent of influence</strong></td>
<td>Greater influence</td>
<td>Less influenced</td>
</tr>
<tr>
<td></td>
<td>When disturbing stimuli are removed and pleasant ones offered – they go into ‘state of altered awareness’</td>
<td>Buffered, but more independent of env factors</td>
</tr>
</tbody>
</table>
Interesting observations

• Influence of adapted environment on staff (low lights, repetitive music throughout the day) may lead to lethargy.

• Waiting area may need adaptation for client distraction.

• Design of overall dental environment (quiet waiting area far from the sound of crying).

• A need to find solution to smells of dental materials.