

Multisensory therapy did not result in statistically or clinically important changes in behaviour in individuals with a dual diagnosis of intellectual disability and mental illness

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CLINICAL SCENARIO: Multisensory therapy, sometimes referred to as Snoezelen, involves using an environment that is designed to stimulate the senses through light, sound, touch and smell. Multisensory therapy is used for more than leisure, and is now used in assessment, directed therapy and teaching. Multisensory therapy is often assimilated into education curricula and used in speech and language therapy, physiotherapy and occupational therapy. The importance of sensory experiences to people with intellectual disabilities has been acknowledged and documented. It is reported that approximately 40% of individuals with intellectual disability are also diagnosed with a psychiatric illness; however the effectiveness of multisensory therapy in a population with a dual diagnosis is often not addressed. As developing a multisensory environment can be costly, it is important to ascertain whether multisensory therapy for individuals with a dual diagnosis of intellectual disability and mental illness is of clinical benefit, and is more than simply an enjoyable experience.

FOCUSED CLINICAL QUESTION: Does multisensory therapy decrease the frequency of challenging behaviours in individuals with a dual diagnosis of intellectual disability and mental illness?

SUMMARY of Search, 'Best' Evidence' appraised, and Key Findings:

- Sixteen citations were located which addressed the focused clinical question.
- The randomised controlled trial (RCT) by Chan, Fung, Tong and Thompson (2005) was deemed the "best" evidence and appraised.
- This RCT focussed on individuals with intellectual disability and mental illness, and used five outcome measures to measure both the immediate and long term effects of multisensory therapy: participants' level of relaxation, pulse rate, emotional state, and frequency of challenging, stereotypic self-stimulating and adaptive behaviours.
- A clinically significant change was only found in one outcome measure. An increase in positive mood in participants' was found immediately after the intervention.
- No clinically significant changes were found in participants' level of relaxation, pulse rate, frequency of challenging, stereotypic self-stimulating or adaptive behaviours after 36 sessions of 1 hour over 12 weeks.

CLINICAL BOTTOM LINE: Multisensory therapy produced no clinically significant changes in the frequency of challenging, stereotypic self-stimulating or adaptive behaviours, or levels of relaxation, but produced a clinically important increase in mood post-intervention.

Limitation of this CAT: This critically appraised paper has been individually prepared as part of a university subject and has been marked by a lecturer, but has not been externally peer-reviewed.

SEARCH STRATEGY:**Terms used to guide Search Strategy:**

- **P**atient/Client: Intellectual disability, developmental disability, mental retardation, psychosis, mental illness, psychiatric illness, schizophrenia
- **I**ntervention: Multisensory therapy, multisensory room, Snoezelen, sensory room.
- **C**omparison: No multisensory therapy
- **O**utcome(s): Improved psychological well-being, decrease in challenging behaviours, increased relaxation, increased concentration.

Table 1: Summary of search

Databases and sites searched	Search Terms	Limits used
Cinahl	<ol style="list-style-type: none"> 1. multisensory 2. multi sensory 3. snoezelen 4. intellectual disability OR developmental disability OR mental retardation 5. mental illness OR psychosis OR psychiatric illness OR schizophrenia 6. #1 AND #4 7. #2 AND #4 8. #3 AND #4 9. #1 AND #4 AND #5 10. #2 AND #4 AND #5 11. #3 AND #4 AND #5 	
<p>.....</p> Database of Abstracts of Reviews of Effectiveness (DARE) Google Scholar Medline PsychINFO Pubmed <p>.....</p>	<ol style="list-style-type: none"> 1. multisensory 2. snoezelen 3. intellectual disability OR developmental disability OR mental retardation 4. mental illness OR psychosis OR psychiatric illness OR schizophrenia 5. #1 AND #3 6. #2 AND #3 7. #1 AND #3 AND #4 8. #2 AND #3 AND #4 	Studies published in English
<p>.....</p> Cochrane Library National Guidelines Clearinghouse New Zealand Guidelines OTseeker (Occupational Therapy Systematic Evaluation of Evidence)	<p>.....</p> Multisensory therap*, multisensory room, snoezelen	

INCLUSION and EXCLUSION CRITERIA

Inclusion criteria:

- Individuals diagnosed with an intellectual impairment and a mental illness according to the Diagnostic and Statistical Manual of Mental Disorders –IV Classification (DSM-IV)

Exclusion criteria:

- Other cognitive issues in population studied, such as dementia and autism.
- Studies where multisensory therapy was one component of a multiple complex intervention.
- Studies where that only examined multisensory therapy as a leisure activity.
- Studies that only focused on one type of outcome measure, such as level of relaxation. As the clinical question aimed to ascertain whether multisensory therapy was of clinical benefit and reduces the occurrence of challenging behaviours, a variety of outcome measures are required to evaluate the complete effect of the intervention.

RESULTS OF SEARCH

Sixteen relevant studies were located and categorised as shown in Table 1 (based on Levels of Evidence, Centre for Evidence Based Medicine, 1998)

Table 2: Summary of Study Designs of Articles retrieved

Level of Evidence	Study Design/Methodology of Articles Retrieved	Number Located	Source(s)	Citation
1a	Systematic reviews and meta-analyses of randomised controlled trials	0		
2a	Systematic reviews and meta-analyses of randomised and non-randomised controlled trials	2	Citation appeared in: DARE (3); Google Scholar (2,3); Medline (2,3); PsychINFO (2); Pubmed (2,3).	Hogg et al. (2001); Lancioni et al. (2002).
1b	Randomised controlled trials (with narrow confidence intervals)	1	Citation appeared in: Cochrane Library (1); Medline (1); PsychINFO (1); Pubmed (1).	Chan et al. (2005).
2b	Individual cohort study or low quality randomised controlled trials	6	Citation appeared in: Cinahl (5); Cochrane Library (7); Google Scholar (4,5,6,7,8,9); Medline (4,6,7,8); OTSeeker (6,7); PsychINFO (4,5,6,8,9); Pubmed (4,6,7,8).	Cuvo et al. (2001); Lindsay et al. (2001); Lindsay et al. (1997); Martin et al. (1998); Singh et al. (2004); Vlaskamp et al. (2003).
3	Case-control studies	0		
4	Case-series studies	0		
5	Expert Opinion including literature/ narrative reviews, consensus statements, descriptive studies and individual case studies.	7	Citation appeared in: Cinahl (10,11); Google Scholar (13,14,15); Medline (13,14,15); PsychINFO (13,16); Pubmed (12,13,14,15).	Hong (2001); Lloyd (1999); Kaplan et al. (2005); Matson et al. (2004); Merrick et al. (2004); Slevin & McClelland (1999); Smiroldo (1999)

BEST EVIDENCE

The randomised controlled trial by Chan, Fung, Tong and Thompson (2005) was identified as the 'best' evidence and selected for critical appraisal. Reasons for selecting this paper were:

- Although there have been two systematic reviews published regarding the effectiveness of multisensory therapy in 2001 and 2002, both reporting inconclusive results, the randomised controlled trial by Chan et al. (2005) is the more recent and is the best level of evidence and had informative results.
- This study focused on the specific population identified in the clinical question; individuals with a dual diagnosis of intellectual disability and mental illness.
- As the focussed clinical question was concerned with evaluating clinical effectiveness, the use of varied outcome measures is needed in order to measure the complete effectiveness of multisensory therapy. This study used a variety of outcome measures to measure clinical effectiveness.

SUMMARY OF BEST EVIDENCE

Description and appraisal of the randomised controlled trial by Chan et al. (2005):

Aim/Objective of the Study/Systematic Review

To design, implement and evaluate the efficacy of multisensory therapy in individuals with intellectual disability.

Study Design

24 participants were female, while 17 were male. All participants were receiving neuroleptic medications. Other demographic data is displayed in the table below.

Table 3.1: Demographic data of participants (adapted from Chan et al., 2005)

	Experimental Group (n = 48)	Control Group (n =41)
<i>Age</i>		
11-20	4	3
21-30	13	9
31-40	13	11
41-50	10	8
51-60	4	8
61-70	4	0
Over 71	0	2
<i>Level of intellectual disability</i>		
Mild	22	22
Moderate	14	11
Severe	12	8
<i>Diagnosis of mental disorder</i>		
Schizophrenia	29	24
Behavioural disorders	12	11
Personality disorders	7	6

There does not appear to be any dropouts throughout the study. However, all study participants may not have received all complete sessions of either the experimental or control intervention. When a participant demonstrated behaviour during the individual therapy session that indicated they did not want to participate, the research was discontinued for that reason.

Intervention Investigated

Control: While the experimental group was receiving multisensory therapy, participants in the control group participated in activity therapy under the supervision of an occupational therapist. The activity therapy consisted of simple work activities for 1 hour on alternate days for a 12-week period (a total of 36 sessions).

Experimental: The experimental group received 1-hour sessions of multisensory therapy on alternate days for a 12-week period (a total of 36 sessions). The authors report that the duration of therapy follows the recommendations of Slevin and McClelland (1999). Participants were divided in groups of 5 or 6 according to their IQ level to attend the multisensory room. The multisensory therapy occurred in the hospital's multisensory room, which occupied a gross area of approximately 300 square feet. The room was equipped with a multicolour bubble tube, revolving mirror ball, colour wheel, projector and effect wheels, Catherine wheels, magic glow panel, sound light wall unit, musical hopscotch pad, tactile board, bean bag chair, massage pillow, aroma diffuser and sensory ball. When participants were inside the room, different types of music (both Western and Chinese) of a quiet, tranquil nature was played. A nurse specialist (developmental disability nursing) acted as a carer and facilitator in the multisensory therapy. The nurse specialist adopted a non-directive approach in which she followed the participants' lead. She did not unnecessarily interfere or correct behaviour. On entering the room, participants were allowed to explore the environment on their own, and verbal and other interactions were avoided as this may have provided an extraneous influence to that of the multisensory environment.

No Blinding of Therapists or Participants: There was no blinding of health professionals who administered the therapy, as the health professional would obviously be aware of whether they were facilitating multisensory therapy or the activity group. This could be a source of bias. It is reported in the study that the purpose of the study was discussed with both participants and their parents/guardians. Due to participants' having an intellectual disability of varying severity, some participants may not have been completely aware of what group they were in, or that they were even participating in a study. However, this possibility cannot be relied upon, and is not specifically 'blinding', therefore participants were not blinded.

Outcome Measures

Both the immediate and long-term effects of the multisensory therapy were evaluated. The immediate effect of the multisensory therapy on the experimental group was assessed immediately before and after each session. Unfortunately, no data were collected from the control group on short term outcomes (only long term outcomes).

The outcome measures examining the long-term effects of multisensory were completed before the intervention (Pre-), at the midpoint of the intervention at six weeks (Mid-), immediately after the 12-week intervention sessions (Post-1), 5 weeks after the completion of intervention (Post-2) and 12 weeks after the completion of intervention (Post-3).

It is not reported whether the authors had chosen a primary outcome, however the author of this CAT has determined that the frequency of challenging behaviour, as measured by the Checklist of Challenging Behaviour (CAB) is the primary outcome measure.

Blinded Assessors: Outcomes were assessed by two research assistants. One research assistant, who would enter the multisensory room with the experimental group, assessed outcomes for the experimental group, while the second research assistant assessed outcomes for the control group. The assessors were not blinded.

Outcome measures concerned with the immediate effects of multisensory therapy

(a). Level of relaxation

The Behavioural Relaxation Scale (BRS) was used to assess participants' level of relaxation. The BRS consists of a description of 10 postures or behaviours characteristic of a fully relaxed person whose body is supported fully by a reclining chair (Norton, Holm &

McSherry, 1997). A 5-point score is used for each of the 10 items on the BRS, with the total score of the scale ranging from 10 to 50. Lower scores on the BRS indicate greater relaxation and a score of 50 indicating extreme tenseness. The BRS has been used with similar populations with inter-rater reliability of 0.87.

(b) Pulse rate

Assessment of participants' pulse rate was used as an additional indicator of relaxation and was monitored and recorded immediately before and after each intervention. A reduction in pulse rate post-intervention to below the pre-intervention pulse rate indicated relaxation.

(c) Participants' emotional state

Participants' emotional state (happy, agitated, relaxed, depressed, and neutral) in the multisensory room was recorded using the Snoezelen diary card (SDC). The researcher also qualitatively recorded the participant's response to the multisensory environment. The total score for the Snoezelen diary card is not known.

Outcome measures concerned with the long term effects of multisensory therapy

(d) Frequency of challenging behaviour

The frequency of challenging behaviour in participants was measured by the Checklist of Challenging Behaviour (CAB) in both the experimental and control groups. This instrument was modified for the purposes of measuring the frequency, managing difficulties and severity of challenging behaviours with populations relevant to this study. The original CAB contained 23 items (To & Chan, 2000), while the modified CAB used in this study contains 17 items with different types of commonly seen challenging behaviours, such as shouting, swearing, throwing items at others and damaging furniture. The total score of the Checklist of Challenging Behaviour is not known. The CAB was validated with inter-rater reliability of $r=0.91$.

(e) Stereotypic self-stimulating and adaptive behaviour

The Behaviour Checklist (BC) was used to measure stereotypic self-stimulating behaviour and adaptive behaviour. The scale consists of 19 behaviours; 13 self-stimulating behaviours such as flapping hands, rocking and twirls, and 6 adaptive behaviours, such as exploring, initiating contact and smiling. The total score of the Behaviour Checklist is not known. The BC is reported to have good validity and inter-rater reliability of $r=0.90$.

Main Findings:

As shown in Table 3.2, there was a decrease in scores on the BRS after the multisensory therapy session occurred. There was also an increase in positive mood and a decrease in negative and neutral mood in participants as measured by the Snoezelen diary card.

No significant difference in pulse rate was detected.

Mean differences and confidence intervals were unable to be calculated for the above data, as measurements were not taken from the control group when assessing immediate effects of multisensory therapy.

Table 3.2: Immediate and long term (at 6, 12, 17 and 29 weeks) efficacy of the intervention (from Chan et al., 2005)

IMMEDIATE EFFICACY OF INTERVENTION (NB: Data not collected from control group) <i>Data collected immediately before and after each intervention session.</i>					
Outcome measures				Mean (SD)	t (p-value)
Behavioural Relaxation Scale (BRS) total score (10-50)		Before		20.7 (1.57)	1.03 (0.05)
		After		16.53 (1.4)	
Snorezelen Diary Card (SDC)					
Positive mood total score (happy, relaxed)		Before		3.3 (0.4)	5.86 (0.05)
		After		11.7 (0.9)	
Negative mood total score (agitated, depressed)		Before		2.3 (0.9)	2.18 (0.03)
		After		0.45 (0.2)	
Neutral mood total score		Before		15.3 (1.2)	7.53 (0.03)
		After		3.7 (0.3)	
Pulse rate		Before		79 (3.46)	1.09 (0.27)
		After		77 (3.59)	
LONG TERM EFFICACY OF INTERVENTION (at 6, 12, 17 and 29 weeks)					
Outcome measures		Mean (SD)		Mean Diff.	95% Confidence Intervals
		Experimental (n=48)	Control (n = 41)		
Checklist of Challenging Behaviour (CAB) total score	Pre-	4.0 (1.0)	2.7 (0.8)	1.3	0.9 to 1.7
	Mid-	4.0 (1.0)	2.1 (0.7)	1.9	1.5 to 2.3
	Post-1	3.8 (0.8)	1.1 (0.4)	2.7	2.4 to 3.0
	Post-2	3.2 (0.7)	1.7 (0.2)	1.5	1.3 to 1.7
	Post-3	3.0 (0.8)	1.7 (0.2)	1.3	1.0 to 1.6
Behaviour Checklist (BC): Self-stimulating behaviour (SSB) total score	Pre-	30.3 (4.4)	27.7 (2.5)	2.6	1.1 to 4.1
	Mid- (6 weeks)	23.0 (4.6)	26.5 (4.5)	-3.5	-5.4 to -1.6
	Post-1 (12 weeks)	25.2 (4.4)	24.5 (4.0)	0.7	-1.1 to 2.5
	Post-2 (17 weeks)	24.2 (3.9)	25.2 (3.5)	-1.0	-2.6 to 0.6
	Post-3 (29 weeks)	19.7 (3.7)	20.4 (3.5)	-0.7	-2.2 to 0.8
Adaptive behaviour (AB) total score	Pre-	15.4 (1.0)	17.8 (2.9)	-2.4	-3.3 to -1.5
	Mid- (6 weeks)	14.6 (1.9)	15.3 (1.2)	-0.7	-1.4 to 0.0
	Post-1 (12 weeks)	12.9 (1.7)	13.0 (1.0)	-0.1	-0.7 to 0.5
	Post-2 (17 weeks)	12.0 (1.9)	12.3 (2.0)	-0.3	-1.1 to 0.5
	Post-3 (29 weeks)	12.1 (1.9)	13.5 (1.5)	-1.4	-2.1 to -0.7

Original Authors' Conclusions

Multisensory therapy promoted participants positive emotions, and participants were observed to be happier and more relaxed. It was also found that positive emotions were increased and less negative emotions displayed immediately after therapy sessions. However, there was no evidence that multisensory therapy was more effective than activity therapy in reducing aggressive behaviour and stereotypic self-stimulating behaviour or promoting adaptive behaviour. Multisensory therapy can be used to promote leisure and promote psychological well-being, rather than for reducing problem behaviour in individuals with a dual diagnosis of intellectual disability and mental illness.

Critical Appraisal

Validity

- The calculated score on the PEDro scale (partitioned) for this study was 2/8 for internal validity and 2/2 for statistical reporting (**4/10 total**). Eligibility criteria were specified.
- Ethical considerations were described in detail. Ethical considerations are especially important when study participants have cognitive issues, as participants may be less likely to fully understand the specifics of a study. If the participant demonstrated behaviours during the multisensory therapy that indicated they no longer wished to participate, it is reported that the research would be discontinued. The authors do not state whether this actually occurred. The author of this CAT attempted to contact the authors of the study to clarify this, though no reply was received. Although this could be seen as a possible introduction of bias, as not all participants may have received complete sessions, it was important for the researchers to do this, as it is likely that not all participants could verbally communicate effectively and participants still should retain the right to discontinue therapy.
- This study was held in a regional mental health hospital in Hong Kong, where approximately 200 individuals with intellectual disability with additional mental health issues, such as psychosis, personality and behavioural disorders, resided. Therefore, the results of this study may not generalise to other populations of individuals with intellectual disability and mental illness who live in the community. It is also questionable whether the study would generalise to the Australian population.
- The experimental intervention of multisensory therapy was well described by the authors, ensuring the intervention can easily be replicated in the future.
- There was no blinding of health professionals. This could be a source of bias.
- There was no blinding of assessors, allowing for a measurement detection bias.
- The control group was not assessed on outcome measures concerned with the immediate effect of the multisensory therapy; level of relaxation, pulse rate and participants emotional state. The authors do not state why the control group was not assessed for these measures.
- It can be questioned whether a reduction in pulse rate truly reflects relaxation, as a reduction in pulse rate could be due to other causes. For instance, a participant may have completed a vigorous activity just prior to the multisensory therapy, and the reduction in pulse rate may simply be due to the change from vigorous activity to a calmer activity.
- Limited information is reported on the Snoezelen diary card. The Snoezelen diary card also allowed records of qualitative data (descriptive comments regarding participants responses to the environment). The results from this measure may not be very reliable.
- It is not reported that there was an intention to treat, or that all participants received the experimental intervention or control intervention as originally allocated.

Interpretation of Results

- As discussed above, the control group was not evaluated with the measures on the immediate effect of the multisensory therapy. This is unfortunate, as the results for the experimental group concerning the immediate effect of the multisensory therapy are not as meaningful as there is no comparison.
- The authors of the study do not report what was deemed to be the minimum clinically significant change on any of the five outcome measures. The author of this CAT attempted to contact the authors of the study via email to ascertain what was the minimum clinically significant change, however no reply was received. The author of this CAT searched for this information from other data sources, but was unable to find information regarding this. Calculating the minimal detectable change was attempted for the Behaviour Rating Scale, Checklist of Challenging Behaviours and the Behaviour Checklist through the method

presented by Haley & Fragala-Pinkham (2006) and Wyrwich (2004). A ballpark figure of 10% change is therefore used as minimum change desired.

- When determining what would constitute clinically significant change, the cost and time involved when setting up a multisensory environment was considered. Creating a multisensory room or environment is expensive, and any benefits to clients should reflect the cost of the treatment. However, as a small reduction in aggressive or challenging behaviours in an individual may make a significant difference to families or carers. The requirements for clinically significant change and the results from the outcome measures are presented in the table on the next page.
- As Table 4.1 shows (Page 10), the only outcome measure that showed clinically significant differences was the Snoezelen Diary Card, which demonstrated an increase in participants' positive moods and a decrease in participants' neutral moods.

Summary/Conclusion: This randomised controlled trial examining the efficacy of multisensory therapy demonstrated no clinically significant changes in the frequency of challenging, stereotypic self-stimulating or adaptive behaviours, and no worthwhile changes in participants' level of relaxation. However, an increase in positive mood was found directly after intervention, however no control group data were available for comparison immediately post-intervention

IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH

- Multisensory therapy is used in Australia, with several multisensory rooms operating in Sydney. Multisensory rooms are operating in Sydney at the Children's Hospital at Westmead, Interaction Disability Services in Castle Hill, and the Wangee Park School. The therapy is not specifically taught in university or while on clinical placements, however the importance of sensory experiences for people with disabilities is addressed while at university. Most clinicians that work in areas where multisensory environments are commonly used, such as with individuals with disabilities and dementia, are aware of the principles of multisensory therapy.
- Due to the cost involved in establishing a multisensory environment, it should be determined whether clients' receive any benefit from them. This randomised controlled trial by Chan et al. (2005) only demonstrated clinically significant differences in 1 of the 5 outcome measures. Therefore, the results of the study by Chan et al. (2005) do not yet support the use of multisensory therapy as a clinical tool.
- Multisensory therapy is still considered to be an enjoyable experience, and the results of Chan et al. (2005) reflect this, as there was a clinically significant increase in participants' positive mood. However, it is debateable whether the expensive nature of a multisensory environment is justifiable based on this sole positive outcome.
- The results from Chan et al. (2005) are however consistent with those from systematic reviews by Hogg, Cavet, Lambe and Smeddle (2001) and Lancioni, Cuvo and O'Reilly (2002). These authors noted that positive effects from multisensory therapy for people with intellectual disabilities tend to occur in studies with lower quality methodology/design, while in higher level studies, multisensory therapy does not necessarily have positive clinical effects but may result in an enjoyable experience. Hogg et al. (2001) liken the enjoyable experience of multisensory therapy to that of other available sensory therapies, such as aromatherapy and music, as the effect of multisensory therapy does not seem much greater than these. Due to the expensive nature of establishing a multisensory environment, and the relatively low cost of aromatherapy [and music therapy to a lesser extent], it may be better to use sensory therapies like aromatherapy or music therapy. Although the review by Hogg et al. (2001) was concerned with individuals with intellectual disability, and not a dual diagnosis of intellectual disabilities and mental illness, this study should still be considered when examining the population in the focused clinical question of this CAT, as the populations are very similar.

Table 4.1: Mean between group differences for outcomes at 6 weeks (short term) and 12 weeks (long term)

Outcome measures		Mean (S.D.)		Mean Between Group Differences	Confidence Intervals			
		Experimental (n=48)	Control (n = 41)					
BRS total score (10-50)	Before	20.7 (1.57)	No data collected after baseline					
	After	16.53 (1.4)						
SDC	Before	3.3 (0.4)						
	After	11.7 (0.9)						
Positive mood total score (happy, relaxed)	Before	2.3 (0.9)						
	After	0.45 (0.2)						
Negative mood total score (agitated, depressed)	Before	15.3 (1.2)						
	After	3.7 (0.3)						
Neutral mood total score	Before	79 (3.46)						
	After	77 (3.59)						
Pulse rate	Pre-	4.0 (1.0)				2.7 (0.8)	1.9	1.5 to 2.3
	Mid-	4.0 (1.0)				2.1 (0.7)		
	Post-1	3.8 (0.8)	1.1 (0.4)	2.7				
	Post-2	3.2 (0.7)	1.7 (0.2)					
	Post-3	3.0 (0.8)	1.7 (0.2)					
BC: Self-stimulating behaviour (SSB) total score	Pre-	30.3 (4.4)	27.7 (2.5)	-3.5	-5.4 to -1.6			
	Mid-	23.0 (4.6)	26.5 (4.5)					
	Post-1	25.2 (4.4)	24.5 (4.0)			0.7		
	Post-2	24.2 (3.9)	25.2 (3.5)					
	Post-3	19.7 (3.7)	20.4 (3.5)					
Adaptive behaviour (AB) total score	Pre-	15.4 (1.0)	17.8 (2.9)	-0.7	-1.4 to 0.0			
	Mid-	14.6 (1.9)	15.3 (1.2)					
	Post-1	12.9 (1.7)	13.0 (1.0)			-0.1		
	Post-2	12.0 (1.9)	12.3 (2.0)					
	Post-3	12.1 (1.9)	13.5 (1.5)					

IMPLICATIONS FOR PRACTICE, EDUCATION and FUTURE RESEARCH *(continued)*

- From the results of this CAT, it can be seen that the results concerning the clinical effectiveness of multisensory therapy are inconclusive. Although multisensory therapy may be an enjoyable experience for people with intellectual disabilities and mental illness, the expenses involved in setting up a multisensory environment do not justify its use.
- There is a need for further research into multisensory therapy with people with intellectual disability and mental illness, as the randomised controlled trial by Chen et al. (2005) is the only study that examines this specific population. The authors collected data from a relatively large sample, given the nature of the population, although a larger sample is probably needed to truly evaluate the treatment effectiveness. There is also a need for research that examines individuals with intellectual disability and mental illness in the community.

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Article that was critically appraised:

1. Chan, S., Fung, M.Y., Tong, C.W., Thompson, D. (2005). The clinical effectiveness of a multisensory therapy on clients with developmental disability. *Research in Developmental Disabilities, 26*(2), 131-142.

Related Articles (not individually appraised)

Level 1a Evidence: Nil

Level 1b Evidence: See article that was critically appraised

Level 2a Evidence:

2. Hogg, J., Cavet, J., Lambe, L. & Smeddle, M. (2001). The use of 'snoezelen' as multisensory stimulation with people with intellectual disabilities: A review of the research. *Research in Developmental Disabilities, 22*(5), 353-372.
3. Lancioni, G.E., Cuvo, A.J. & O'Reilly, M.F. (2002). Snoezelen: An overview of research with people with developmental disabilities and dementia. *Disability and Rehabilitation, 24*(4), 175-184.

Level 2b Evidence

4. Cuvo, A.J., May, M.E., & Post, T.M. (2001). Effects of living room, snoezelen room, and outdoor activities in stereotypic behaviour and engagement by adults with profound mental retardation. *Research in Developmental Disabilities, 22*(3), 183-204.
5. Lindsay, W.R., Black, E., Broxholme, S., Pitcaithly, D. & Hornsby, N. (2001). Effects of four therapy procedures on communication in people with profound intellectual disabilities. *Journal of Applied Research in Intellectual Disabilities, 14*(2), 110-119.
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Level 3 Evidence: Nil

Level 4 Evidence: Nil

Level 5 Evidence:

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