

# THE EFFECT OF ROOM MANAGEMENT PROCEDURES ON THE ENGAGEMENT OF PROFOUNDLY RETARDED CHILDREN

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## INTRODUCTION

The Education of the Developmentally Young Project (EDY) at the Hester Adrian Research Centre has been developing and evaluating an in-service training course for staff in ESN(S) schools on the use of a behavioural approach to teaching. It has become clear (and has been demonstrated by others) that staff can learn the techniques of behaviour modification and can show an acceptable level of skill in using the techniques. The major barrier to staff becoming autonomous in running their own programmes was found to be one of organisation. The average classroom in an ESN(S) school does not provide regular opportunities for one-to-one teaching. The school day is short (9.30-3.30) and is further encroached on by routine maintenance activities (toileting, feeding, undressing, etc.) which do not always form a focus for individual teaching. This is nowhere more apparent than in Special Needs classes (i.e. profoundly retarded children). Even given a ratio of three staff to nine children, the actual contact time in terms of one-to-one teaching is alarmingly low (see for example, Goldbart 1980).

One solution put forward for staff working in group settings has been termed 'environmental re-programming' (Baer, Wolf and Risley 1968). In a recent paper, the problem has been reiterated and the need for room management techniques identified (Hart and Risley 1976). Recent studies by Roger Blunden's team at the Mental Handicap in Wales Applied Research Unit have demonstrated the feasibility of such an approach, e.g. in a special needs setting for adults (Porterfield, Blunden and Blewitt 1977) and on a hospital ward (Coles and Blunden 1979). In the Porterfield et al study, a room management technique involving holding activities for profoundly retarded adults was developed. The results were dramatic: by changing the nature of staff activity without increasing it, the on-task behaviour of the adults rose from a baseline of 31% to a high level of 80% during the room management phase.

The research team of the EDY Project, in trying to meet the need for organising more time during the school day for one-to-one teaching without detriment to the whole group of children in a classroom, was impressed by the above findings. In May 1979, Foxen carried out a feasibility study in the nursery class at Melland School in Manchester. The study was in two parts: an engagement study followed by an intervention period using room management. On the strength of his findings it was decided to carry out a full study on engagement in a class of profoundly retarded children at the same school.

## AIMS OF STUDY

The primary aim of the study was to establish whether the results of the Porterfield et al study could be replicated in a class of profoundly retarded children: would engagement increase during room management as compared with baseline? A number of related factors were also to be explored:

- the relationship between individual attention from an adult and the engagement levels of the children,
- the relationship between staffing levels and engagement,
- the qualities required of a Room Manager.

## CHARACTERISTICS OF THE CHILDREN

The seven children in the class were all profoundly retarded and multiply-handicapped. Developmental level ranged from 1-12 months (on a variety of developmental checks, e.g. Uzgiris and Hunt, Gunzburg PPAC). Three were mobile and exhibited a variety of stereotyped behaviour (one self-mutilating); of the four non-ambulant children, two were able to sit unsupported.

## METHOD

An ABA design was used with a training period for staff taking place following the first baseline. Each condition was carried out for 45-60 minutes daily for a week.

**Baseline procedures:** The PLA-Check data sheets (Risley and Cataldo 1973) were used in a slightly adapted form to record data on engagement throughout the study. It was felt that collecting group data on engagement (as in Porterfield) would mask the large individual differences in this class. For example, a behaviour such as mouthing would be appropriate for a child functioning at a 1-2 month level but not for those at a 10-12 month level. The core staff consisted of a teacher (male), two Nursery Nurses and a Care Assistant (although all four were not always present owing to toileting, absences, etcetera). With the exception of the CA, all had had an extensive training in behavioural techniques.

Every minute each child was observed in a pre-determined order and a check made on the data sheet (see, Table 1a). Each minute was concluded by writing down the number of adults in the room (excluding the raters). Reliabilities at the end of the week had risen to 83% (using percentage agreement). Engagement criteria are listed in the Appendix.

## TRAINING OF STAFF

### Adult roles under a room management regime.

#### Room Manager (RM)

- is responsible for all children in the room except those receiving individual work,
- ensures there is at least one piece of equipment within reach of each child,
- goes to each child in turn and either PROMPTS an unengaged child or REWARDS an engaged one,
- does NOT spend more than a few seconds with each child but moves round quickly,
- does NOT toilet children or mop up,
- does NOT leave the room until relieved.

#### Mover

- toilets children, moves large pieces of equipment/children at request of RM,
- deals with all 'emergencies', e.g. spillages, visitors, with aim of keeping RM free of all distractions,
- when free, does individual work with children.

#### Individual Worker

- carries out programmes with one child in the classroom, returning him to the group and taking another,
- if Mover needs help, becomes a Second Mover,
- there may be more than one adult in this role.

The teacher discussed these roles with his assistants and planned a timetable such that room management took place for 45 minutes each day. The three adults spent 15

minutes in each role, the order being changed daily and the same times of the day being selected for room management as on baseline (A1).

**Coding of Room Manager's behaviour.** The RM was monitored by one of the research team during the training week. The PLA-Check data sheets were further adapted for this purpose. The rater observed the RM throughout the 15 minutes period. Each time the RM moved to a different child the rater scored the child's behaviour and the RM's first action. Scoring was then suspended until the RM moved to a different child.

Any combination of the codings (see Table 1a) was possible (although not all were observed). Combinations were grouped into three categories (see Table 1b). Of the unacceptable combinations, some are clearly less acceptable than others, e.g. ✓- and O-

**TABLE 1**  
**Coding System for Baselines and Monitoring of**  
**Room Manager Behaviour**

**1a Key to Codes**

Child's Behaviour	RM's Behaviour
O = no response	+ = positive reinforcement defined for each child
✓ = engaged	P = physical prompt
X = inappropriate behaviour	- = punisher (e.g. time out)
I = individual work with adult (not with RM)	A = change of activity
T = toileting (not RM)	G = gestural prompt
O = round score indicates attention from adult	V = neutral verbal comment/ prompt
	O = no response to child

**1b Combinations Observed**

<p><b>To be aimed for</b></p> <p>✓+ e.g. Mandy pulling toy and RM makes raspberry noise on her neck (reinforcer).</p> <p>OP e.g. Martin sitting passively and his hand is moved to hit a rattle.</p> <p>X- e.g. Rafat over-breathing and is given overcorrection.</p> <p>XP e.g. John lying down to rock and is led back to seat.</p>
<p><b>Acceptable but not more than about 10% of the time</b></p> <p>OG e.g. John sitting and RM points to block and post hole.</p> <p>OA e.g. David sitting and new rattle stuck on table in front of him.</p>
<p><b>Not acceptable</b></p> <p>OV e.g. Child doing nothing, RM says 'hallo', often indiscriminately.</p> <p>O+ e.g. Child doing nothing, RM tickles him behind ears (reinforcer).</p> <p>OO e.g. Child doing nothing, RM removes toy and replaces without gaining child's attention.</p> <p>O- e.g. Child doing nothing, RM says 'no'.</p> <p>XV e.g. John biting hands and RM says 'come on John'.</p> <p>✓A e.g. RM might forget criteria for engagement.</p> <p>✓V e.g. RM might forget criteria for engagement.</p> <p>✓- e.g. RM might forget criteria for engagement.</p>

**Feedback** in the form of verbal prompts and positive reinforcement was given during the practice sessions.

**Intervention.** Room management was carried out as in the practice week but no training was given. Engagement checks were made every day throughout the session.

**Return to baseline.** The same procedure was followed for these baselines (A2) as for the initial baselines (A1). The staff were asked to return to their usual method of working and not to practice room management. This was made easier by an unavoidable two week gap between the intervention (B) and the second baseline.

## RESULTS

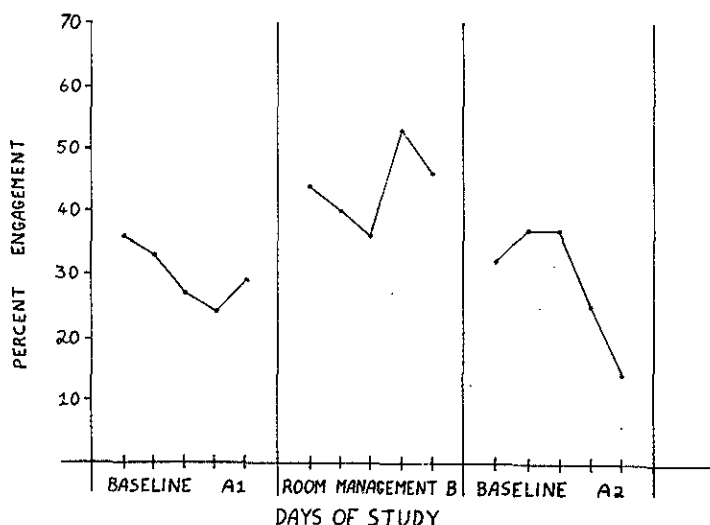
### 1. Room Management

Percent engagement levels were calculated using formula  $\frac{\text{number of } \checkmarks}{\text{total number of observations}} \times 100$ . Graph 1 shows the mean engagement levels for the group for each day of the study. Mean engagement on A1 = 30%, B = 44%, A = 30%. A 't' test indicated that the increase in engagement during room management was significant as compared with either baseline (see Table 2). The absence of a carry-over effect from B to A2 may have been due to the two week gap between these conditions.

**TABLE 2**  
Results of 't' Test

	t	P	
Mean engagement A1 = 30.04%	A1/B	5.51	0.01
" " B = 43.72%	B/A2	3.21	0.05
" " A2 = 30.03%	A1/A2	0.43	ns

**GRAPH 1: MEAN ENGAGEMENT FOR GROUP (N=7)  
OVER BASELINES AND INTERVENTION**



## 2. Individual attention from Adult

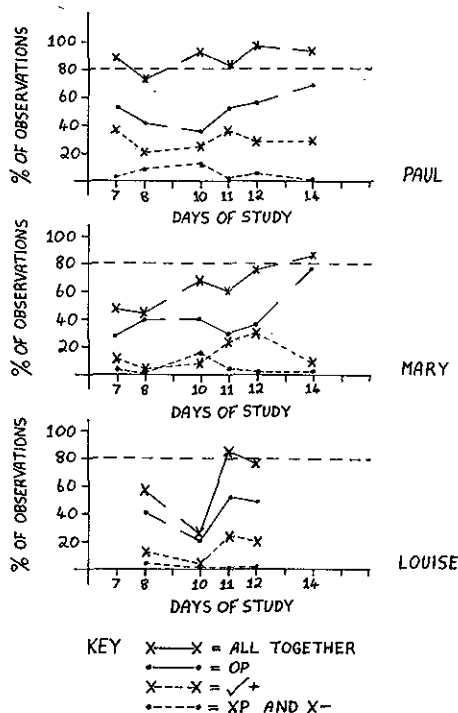
Results for individual attention are based on 'circle time', (✓), (x), (o). A circle round a score indicated that that child was receiving attention from an adult. The attention could be of any kind, e.g. changing a nappy, carrying, prompting, rewarding, etcetera. Table 3 shows the percentage of children receiving attention from an adult who were also engaged.

**TABLE 3**  
Percentage of Engaged/Attended-to Children

	No. of circled scores (attended-to children)	Instances of (engaged and attended-to)	% engaged/attended-to children
A1	465	222	48%
B	355	264	74%
A2	329	198	60%

This finding suggests that room management changed the quality of attention given to children in such a way as to increase their engagement. This can be compared with the data on coding RM behaviour (see, Graph 2). There seems to have been a carry-over effect from B to A2 in terms of maintaining the percentage of (✓) although this was not sufficient to increase the overall engagement of the group.

GRAPH 2: ROOM MANAGERS' BEHAVIOUR



### 3. Staffing Levels and Engagement

Table 4 indicates the mean engagement level for varying numbers of staff present in the classroom during each phase of the study. The fluctuation in numbers was beyond the control of the research team and therefore only a description of what happened is possible. However, the following tentative conclusions can be drawn:

On A1: the number of staff present did not seem to effect engagement levels of the children.

On B: the number of staff seemed to be inversely related to engagement.

On A2: the number of staff again did not seem to effect engagement.

**TABLE 4**  
**Effect of Number of Staff on Mean Engagement of Children**  
**(both attended-to and non attended-to)**

Baseline (A1)			RM (B)			Baseline (A2)		
No. of Staff	$\bar{x}$ eng	N	No. of Staff	$\bar{x}$ eng	N	No. of Staff	$\bar{x}$ eng	N
1	32%	19	1	57%	50	1	24%	135
2	29%	99	2	44%	63	2	31%	77
3	33%	68	3	31%	97	3	33%	59
4	31%	90	-	-	-	4	35%	9
5	31%	-	-	-	-	5	40%	5
6	25%	-	-	-	-	6	50%	2

N = number of observations.

### 4. The Qualities required of a Room Manager

The role of Room Manager (RM) can be divided into two parts: attending to all the children in turn regularly (quantity of interactions) and making an appropriate response to each child (quality of interactions).

#### Quantity of Interactions

Surprisingly, the RM did not need prompting to attend to children rather than to adults or disruptions. The Mover needed prompting to move children to new positions and there was some confusion over preparing drinks and toileting. After the first two days in the training week, the roles of the RM and Mover became clear. The total number of interactions for each RM was recorded (see, Table 5). Paul, the teacher had a high number from the start, Mary (nursery nurse) and Louise (nursery nurse but not trained in a behavioural approach as the other two were) quickly achieved what seemed a reasonable rate of attending to children. Nothing definitive can be said at this stage concerning what might be the optimum number of interactions per minute for this population.

#### Quality of Interactions

The number of times each interaction (see, Table 1b) for each RM was observed was calculated. The aim during training had been to increase the amount of  $\sqrt{+}$ , OP, XP and  $\bar{X}$ - (combined) to 80% of the observations. The changes in the quality of interactions are summarised on Graph 2. It is interesting to note that there was a high percentage of these codes from the start for Paul, both Mary and Louise increased to 80% very rapidly.

From these results, it is clear that all members of staff in this class could become competent room managers, one needing virtually no training at all. The data on Graph 2 suggest that a combined 80% score on the four acceptable categories was feasible. It also became clear that the most frequently occurring unacceptable category was verbal responses to a child. The selection of  $\sqrt{+}$  and OP as desirable interactions was borne out by the increased levels of engagement during the room management period. It was felt that further training might have resulted in even higher engagement levels for the class.

**TABLE 5**  
**No. of Interactions between RM and Children**  
**over 15 minute Periods of Room Management**

Day	Paul	Mary	Louise
7	58	43	.
8	61	40	30
10	64	63	26
11	68	67	51
12	63	65	48
14	73	33	.
Mean Interactions per min.	4.3	3.5	2.6

## DISCUSSION

### 1. Room Management

The engagement of the class of profoundly retarded children increased significantly during the room management phase. This is in keeping with the finding of Porterfield et al (1977), although the rise in engagement was less dramatic. One reason for this is likely to be the developmental level of the groups. A comparison of the engagement criteria for the children in this study (see, Appendix) with those from the adult special care clients in Porterfield's study suggests that our group were considerably more retarded and might have been expected to show less response to a changed strategy. It is extremely encouraging that the engagement of these children did increase and suggests that room management is a powerful approach, being of direct benefit to the children.

The original stimulus to this study was to investigate a method for releasing a member of staff to carry out regular one-to-one teaching sessions within the classroom. We have not been able to assess to what extent (if any) one-to-one teaching increased. This study was seen as an exploration of room management with this population and of related factors which might affect their level of engagement. It seems likely that the smoother operation of the classroom as an educational setting, brought about by (a) the clearer definition of staff roles and (b) the improved quality of interactions between the Room Manager and children, will result in greater opportunities for one-to-one teaching.

### 2. The Training of Room Manager and other Roles

It proved feasible to train a teacher and his two nursery nurses in the three roles in a week of 45 minutes per day. More research is needed to explore the qualities required of a Room Manager. These would be expected to vary according to the type of population.

The training strategy used could be improved (e.g. use of modelling, involving staff in recording engagement and each others' behaviour as Room Manager). The staff reported finding the technique useful but tiring - only 45 minutes could be managed per day. This could only be increased by restructuring the day and by training a large core of staff who could act as Room Managers.

The role of the Mover proved to be critical in order to ensure that the Room Manager could carry out his role to the full without disruption. Staff enjoyed changing roles (particularly seeing the teacher in the role of Mover).

### 3. Activities

The activities/toys used with the children during the study were 'holding activities', i.e. the children were being asked to engage themselves on tasks and behaviours already within their capabilities. As the Room Managers become more confident it is anticipated that a more careful analysis of activities (and also positioning of children) will be made. This would lend the Room Manager more of a teaching role than a holding role.

### 4. Individual Attention/Number of Adults in Room

There were not enough data to draw firm conclusions on the relevance of these two factors for engagement. Further research is planned to investigate the optimum number of staff under both Room Management and normal conditions for this group of children. However, our results suggest that to increase the engagement of these children, an increase in the number of staff is not as productive as examining the nature of staff/child interactions.

### 5. Engagement Measures

The method of data collection, utilising the PLA-Check data sheets, proved a simple and reliable time-sampling method of producing a large amount of detailed information on individual children. Such measures are quick and easy to take and could well be used by staff in their own classrooms for purposes of evaluating programmes with individual children and for looking in-detail at classroom organisation.

## ACKNOWLEDGEMENT

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## APPENDIX

## CRITERIA FOR ENGAGEMENT

**LYNN (LB)**

✓ engaged	Feeling/Reaching/Actively holding/Any vocalisation/Smiling/Cooperation with physical prompt/Drinking/Swallowing/Rejecting actively (e.g. Food).
'O' doing nothing	Passively holding.
'X' inappropriate	Nil.

**MARTIN (MB)**

✓ engaged	Actively holding/Mouthing/Any vocalisation/Moving around (e.g. Rolling over)/Drinking/Chewing/Cooperation with Physical prompt.
'O' doing nothing	Passively holding/Sneezing/Athetoid movement (including eyes).
'X' inappropriate	Nil.

**JOHN (JH)**

✓ engaged	Using materials (e.g. Stack, Pile up)/Walking with help/Stand, Sit, Walk on command/Vocalising/Drinking/Eating/Cooperation with physical prompt/Eye contact with adult with him.
'O' doing nothing	Mouthing/Holding.
'X' inappropriate	Screaming/Stereotyping (e.g. Rocking, Biting hands, Tearing Hair).

**LOUISE (LP)**

✓ engaged	Manipulating materials/Reaching for materials, people/Walking unaided/Standing, Sitting, Walking on command/Eye contact with adult with her/Cooperation with physical prompt/Pleasure expressed - No stereotypes present/Vocalisation/Drinking/Eating.
'O' doing nothing	Holding.
'X' inappropriate	Vocalising 'Ugh Ugh', 'Tich Tich'/Stereotyping (e.g. Biting hand, Holding ear, Waving head/Twiddling objects).

**RAFAT (RH)**

✓ engaged	Manipulating materials (e.g. Dropping, Reaching, Throwing, Mouthing)/Reaching for people/Walking with help/Sitting, Standing, Walking on command/Vocalisation/Drinking/Eating/Eye contact with adult with him/Cooperation with physical prompt/Pleasure expressed - No stereotypes present.
'O' doing nothing	Nil.
'X' inappropriate	Rubbing objects/Flicking objects/Stereotyping (e.g. Hand waving, Overbreathing).

**DAVID (DC)**

✓ engaged	Vocalisation/Holding/Very active (e.g. Kicking)/Cooperation with physical prompt.
'O' doing nothing	Nil.
'X' inappropriate	Hand rubbing/Lip flicking.

**MANDY (MG)**

✓ engaged	Tactile exploration/Banging objects/Mouthing/Vocalisation for Attention, or in response to adult/Chewing/Drinking/Cooperation with physical prompt.
'O' doing nothing	Holding.
'X' inappropriate	Stereotyping (e.g. Rocking violently, Bashing arm on mouth/Screaming).