# NORMALISED PHYSICAL ENVIRONMENT FOR THE MENTALLY HANDICAPPED, AND ITS EFFECT ON PATTERNS OF ACTIVITY, SOCIAL RELATIONS AND SELF-HELP SKILLS

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What effects does the type of accommodation for the mentally handicapped have upon the behaviour of residents? And, in particular, how far have buildings designed to implement the Normalisation Principle (Nirje, 1970) produced the effects which had been predicted?

The Normalisation Principle is an overall approach to the management of the mentally handicapped, whose aims have been stated as:

> "making it possible for the mentally subnormal to experience the normal rhythm of the day, the weeks, the seasons and the year, supporting the normal development of the life cycle, encouraging normal personal considerations, giving opportunity for bisexual contacts, confronting them with economic problems, and providing for them living facilities, all with due consideration to the specific handicap of the individual" (Nirje, 1970).

Not only does the Normalisation Principle seek to ensure the mentally handicapped person of his rights and benefits as a citizen; it is also advanced as a method of active intervention and amelioration of mental handicap. Normalisation can be implemented in the programmes, the facilities and in the architecture for the handcapped; and Gunzburg (1973a) has argued that, of these, architecture might be the most basic and influential.

Accommodation for the mentally handicapped has been the subject of much discussion during the past decade. In Britain, public concern was aroused by the Ely enquiry, which revealed the poor conditions existing in many subnormality hospitals; and the recommendations of the Government White Paper, published shortly afterwards, stimulated a major reappraisal of residential facilities (Better Services for the Mentally Handicapped, Cmnd 4683, H.M.S.O., 1971). The shift from hospital to community care, and the upgrading of existing facilities that has followed both can be seen as an effort after normalisation. However, it would seem that the approach has been adopted because of its intuitive appeal, rather than because there exists a body of empirical evidence to support it.

There have been several attempts to investigate the influence of the physical environment on both psychiatric patients and the mentally handicapped. Unfortunately, the difficulties of separating this variable from those pertaining to the psychosocial environment are very great and have rendered most findings equivocal. There have been three main approaches to the study of the physical environment: (a) Surveys reported descriptively, (b) manipulations of the environment reported anecdotally, and (c) manipulations of the environment assessed empirically.

The investigations of category (a) are characteristically surveys of a wide range of aspects of care for the retarded: for example, both physical facilities and management practices (e.g. Morris, 1969; King, Raynes and Tizard, 1971, Jones, 1975). One study concentrating solely upon the physical aspects of treatment was that of Llewelyn-Davies *et.al.* (1971). The result was a document presenting recommendations for the location and design of buildings for the mentally handicapped. It appears that the

authors have applied their conception of the Normalisation Principle to the institutions they visited and judged by it. Thus they have assumed their criteria rather than assessed it.

The second suggested category is that of manipulations of the environment reported anecdotally. These studies generally involve tracing the progress of a resident population through the upgrading of their ward. The Coldeast Hospital Design Team (1971) give a practical report of the reshaping of a ward for fifty-five residents to provide more homely accommodation for forty profoundly retarded individuals. The effect of the conversion was assessed in terms of individual improvement and achievements plus the anticipated saving of £296.25 per head per year as a result of reduced dependency. A resident training scheme was initiated in conjunction with the upgrading and as no control group was employed the effects of the physical environment could not be isolated. A similar problem prohibited the separation of causal factors in a study of a small number of mentally handicapped adults transferred from a large ward to a small intensive care unit (Nirje, 1970).

The difficulties encountered in obtaining a clear idea of the effects of a normalised physical environment from the studies cited above lead us to rely upon statistically analysed investigations for the elucidation of the problem. Unfortunately, these are also subject to the influence of extraneous variables. For example, alterations in the physical environment are frequently accompanied by the initiation of training programmes and control groups are often absent (e.g. Grunewald, 1971, May, 1976). In studies where ratings of residents are carried out by the staff before and after the environmental alteration, the results may be biased. Increases in staff morale which accompany the change could lead to increased positive feelings towards and tolerance of the residents which, alongside expectations of their improvement, may result in over-optimistic post-change scoring (e.g. James *et.al.* 1975). Differences betweeen experimental and control groups in degree of handicap, staff-to-resident ratio and resident experience of normal living are suggested as interfering variables in one study of two alternative forms of accommodation (La Court, 1977).

There have been three major studies which have largely avoided these methodological problems. The first is of unknown relevance as the psychiatric population involved may differ in its reaction to the physical environment from mentally handicapped residents: however, interesting implications emerge. The study involved a comparison of the behaviour, measured by a time sampling procedure, of psychiatric patients randomly assigned to one of two admission wards. Each ward had been identical until the extensive upgrading and remodelling of one. Tests six months after the change revealed that in the improved environment there was significantly more social behaviour and less isolated passive behaviour. The hypothesized increase in non-social activity was not supported. It was concluded that the physical environment could be utilised to increase desirable behaviours and decrease those undesirable (Holahan and Saegert, 1973).

The facilitatory effect of the environment was not found, however, in the self-help domain in a study by Murphy and Zahm (1975). This experiment involved twenty-four severely and profoundly retarded males divided into three groups of eight. Group one were the controls who remained on the ward from which all subjects had been selected and received custodial care over the ten week experimental period. Group two were placed in an improved physical environment with a higher staff-to-resident ratio and Group three received all these advantages plus intensive self-help skill training. Prior to the experimental manipulation the subjects were assessed on a self-help skills scale: this was repeated after the ten-week period. Significant increases in self-help skills were exhibited by Group three: however, Group two did not differ significantly from the control group. Although differing staff expectations of improvement between groups

may have been biasing, the equivalence of improvement of groups one and two would appear to rule this out. The authors conclude that upgrading and increasing staff-to-resident ratio without provision for resident training is of little value.

These results were contradicted in a study by Gunzburg and Gunzburg (1973). They tested severely retarded male residents on the Progress Assessment Chart of social and personal development (P-A-C) both before and four years after their ward was completely upgraded. Unfortunately, no control was provided in this study and over the four years since upgrading the staff completing the assessments had changed and only sixteen of the original subjects remained. Despite these difficulties and without any specific training programme it was in the area of self-help skills that improvements had occurred. In addition, overall losses in functioning in the domains of communication and socialisation were found: indeed, these numerically outweighed the other gains. Gunzburg and Gunzburg explain the losses in terms of the secondary effects of the improved physical environment which, in raising staff moral, instigated a more impersonal and efficient ward routine with a consequent reduction in resident participation and interaction.

It appears that work on the effects of the physical environment on the mentally handicapped has produced contradictory results. Findings do seem to indicate that environmental improvements do not necessarily herald beneficial reactions in terms of residential development. This is not, however, an unequivocal conclusion. It is not clear whether the physical changes have been of a less valuable passive type or what Gunzburg (1967) would term "actively therapeutic, positive stimulation." Campaign for the Mentally Handicapped[1] would probably argue that the upgrading has been insufficient to alter the essential abnormalities of institution life and suggest that should ordinary domestic housing be employed the advantages would be revealed. Whatever the value of these arguments we are presently accepting the Normalisation Principle as a guide in the upgrading and design of living units and it is overdue that we assess the real value of this approach for the clients.

## RATIONALE FOR THE PRESENT STUDY

The physical aspects of the total environment are those which appear to provide the basic raw materials for the "extracting of latent abilities" (Gunzburg, A. L., 1967). Indeed, Levy (1976) has outlined a variety of benefits which might be drawn from this resource, not only in terms of auditory, tactile and visual stimulation, but through the secondary effects such as boosted staff morale. The physical environment is also the most permanent feature of the mentally handicapped residents' surroundings. It is the aspect which will be the least amenable to change should the principle of design prove incorrect; and thus there is a pressing need for the evaluation of design decisions in actual projects.

The present study therefore assessed and compared the effects of the physical environment on the mentally handicapped residents of a new, purpose-built ward, and those of a superficially upgraded ward of the old institutional design. (The definition of the physical environment adopted for the purposes of the study encompasses the

(1) The Campaign for Mental Health is a British pressure group who argue for the placement of the retarded in ordinary domestic housing; and oppose the expensive upgrading of institutions and the construction of purpose-built accommodation on the grounds that the life situation remains abnormal. (See, for example, Shearer, 1973).

physical layout, the provision of amenities, the location and the visual impact of the building; in short those physical features of residential institutions which affect the resident's abilitiy to meet their needs.)

The basic hypothesis of the study was that, given equivalence of dependency, age and management of institutionalised mental retardates, the more normalised physical environment would facilitate resident activity and development.

## METHODOLOGY

### 1. Instruments

To assess the **equivalence of dependency and age,** an adapted form of the Mental Handicap Register, developed by Wessex Health Care Evaluation Team, was used. **Resident management practices** were measured, using the Inmate Management Scale developed by King and Raynes (1968): a scale which had been found to make effective differentiation between practices impressionistically assessed as different in six institutions on its subscales of rigidity, block treatment, depersonalisation and social distance.

To assess the **physical environment,** three measures were used: a checklist based on Gunzburg's "39 steps" (1973b), with additional items from several sources: Edney's 1976 conceptualisation of human territoriality; and that of privacy expounded by Laufer *et. al.* (1976); Osmond's discussion of 'sociopetal' and 'sociofugal' space (1957); and Lee's evidence on the behavioural improvements following the carpeting of a psychiatric ward (1965). The second measure, the Tyne "Quality of Life" Checklist (1978), was employed to give an impressionistic view of the physical environment, as well as an overview of the total atmosphere of care in each ward. The third measure was an adaptation of the children's ward questionnaire developed by Canter (1972); and was here used to obtain **clients'** perceptions of the physical environment of the ward (as reported, necessarily, by the staff), and an indication of the staff- or resident-orientation of the design.

Finally, **behaviour in the ward** was assessed using a behaviour observation sheet recording the incidence of Self-Help skills, Occupation/Activity, and Interaction/Communication for each resident. The major categories were suggested by Gunzburg's Progress Assessment Chart of personal and social development for retarded adults (P-A-C 2); and the scoring of sub-categories was developed in an earlier study by the first author (Tyerman, 1978). To examine the behaviour of residents, a time sampling procedure was used, following the technique used by Holahan and Saegert (1973). The behaviour of each resident was observed over an interval of one hundred minutes during the evening period, 6.30-8.10 p.m., each evening, chosen as the time at which all residents would be present and free to pursue any leisure activities.

### 2. Subjects and setting

Two wards of severely retarded females were selected for comparison; one of old institutional design (which will be referred to by the pseudonym, Gritmore One), and one newly built following normalisation principles ("Sheaf Villa"). Twenty-six residents and eleven staff members comprised the Gritmore sample; and nineteen residents and nine staff the Sheaf Villa sample: in either case, these were the total number of residents and staff who were present throughout the study period.

## RESULTS

### 1. Comparability between the two samples

A. **Resident dependency.** The total dependency score for each resident was calculated from the individual Mental Handicap Register forms, using the eleven criteria employed by the Sheffield Case Register. These scores were organised for a Mann-Whitney U test (two-tailed) to determine whether the residents of the two wards differed significantly in their degree of dependency. No significant differences were found: Gritmore One had a mean score of 4.654: Sheaf Villa 4.211 ($z = 0.02298$, $p < 0.984$). The residents in Gritmore One were, on average, rather older than those in Sheaf Villa (mean ages respectively of 53 and 40 years); but, as no overall relationship was found between age and dependency scores, it was felt that age could not be considered as a confounding variable.

B. **Resident management practices.** To test whether the wards differed in particular management practices, scores on the Inmate Management Scale were organised for a Fisher Exact Probability test. Each living unit was scored for Rigidity, Block Treatment, Depersonalisation and Social Distance. Both wards scored very positively on the scale, and no differences in management practice were found ($p < 0.414$). Thus, it may be concluded that Gritmoor One and Sheaf Villa are not significantly different in terms of either resident dependency or management practices.

### 2. Differences in Physical Environment

Descriptive statistics were applied to the Physical Environment Checklist; and confirm the differences between the traditional and normalised layouts which were discernable from the architectural plans of each. Only on those features of the environment which were governed by the health and safety regulations were the two wards identical (fire-fighting equipment; fire notices; provision of toilet and bathroom facilities). In all other respects, the two wards differed: in those aspects of environment open to manipulation by top-line hospital management (furnishings, kitchen equipment); those open to manipulation by the ward staff (degree of personalisation and privacy allowed); and basic architectural features (degree of supervision promoted by the design).

The Tyne Quality of Life Checklist (1978) bore out the differences in overall style between the two wards: Gritmore One rates as a more formal environment than Sheaf Villa on nearly every item: sleeping arrangements, washing facilities, dressing and clothes storage, eating faculities: and leisure facilities. Sheaf Villa does not present the appearance of a special unit, as does Gritmore One; but rather resembles a multiple occupancy building on a modern housing estate. It makes greater provision for residents' privacy, in their daily living, and their toilet facilities.

Interviews with staff about the ward physical environment - the third source of data on differences between the two wards - were independently coded by two judges. (Mean interjudge concordance was 71%; and was taken to indicate reliability of coding.) Staff of Sheaf Villa perceive the various rooms of their ward in a very different way from the staff of Gritmore One: a two-factor independent groups Analysis of Variance (F test) for unequal groups was performed, and a highly significant difference was found ($F = 68.02$, $p < 0.01$ (1, 18) = 8.29).

Thus, each of the three techniques employed to assess the physical environment bore out subjective impressions, and showed clear differences between the two wards, justifying the labels 'traditional design' for Gitmore One, and 'normalised design' for Sheaf Villa. Two of the measures represent external evaluations of the wards, and are in concordance with the third source of data, the perception of the wards by the staff users.

### 3. Behaviour Observations in Gritmore One and Sheaf Villa

Time-sampled behavioural observation generated a score for each resident on each behavioural sub-section of the three main categories; and the comparison between the means for the two wards are presented in Table 1.

**TABLE 1**

**Comparison of Behaviour Observation Scores in Two Wards**

| Behaviour | | Gritmoor One Mean | Gritmoor One S.D. | Sheaf Villa Mean | Sheaf Villa S.D. | t | p |
|---|---|---|---|---|---|---|---|
| Self-Help | Independent | 2.077 | 2.331 | 1.0 | 1.453 | 1.7746 | n.s. |
| | Supervised | 0 | 0 | 0.053 | 0.229 | -1.1745 | n.s. |
| | Aided | 0.654 | 1.231 | 1.947 | 1.985 | -2.6939 | 0.05 |
| Occupation/ Activity | Participatory | 1.923 | 4.52 | 2.263 | 4.1 | -0.2589 | n.s. |
| | Non-participatory | 0.346 | 1.294 | 1.789 | 2.82 | -2.305 | 0.05 |
| | Inactivity | 12.15 | 5.938 | 10.53 | 4.829 | 0.9803 | n.s. |
| | Stereotypy | 1.692 | 4.183 | 1.263 | 3.263 | 0.3717 | n.s. |
| Interaction and Communication | Resident-Resident | 0.269 | 0.851 | 0.632 | 1.039 | 1.2849 | n.s. |
| | Staff-Resident | 0.692 | 1.158 | 0.789 | 1.437 | -0.2511 | n.s. |

Residents of Sheaf Villa display higher levels of all positive activities and staff-related interaction, and lower levels of the negative behaviours of inactivity and sterotypy; but the differences only each significance in the case of non-participatory activity. However, residents of Shear Villa exhibit **less** independent and more aided skills (with the aided self-help difference between the two wards reaching significance); and the reason why this was found will be taken up in the Discussion section of the paper.

Qualitative descriptions of the participatory activity in the two wards bore out these findings. In Gritmore One, behaviour was in general more passive, and the major activity was the cursory flicking through magazines, paying them little attention. Residents' activity was therefore scored in terms of whether an activity appeared to engage their attention: a subjective judgement on the part of the experimenters, but one which we feel would be immediately recognised by visitors to such a ward. A Mann-Whitney U Test was used to compare the wards in terms of the proportion of participatory activity which was given such attention. There was found to be significantly more 'attended' participatory activity at Sheaf Villa than at Gritmoor One ($U = 8$, $p<0.05$ $(8,6) = 8$).

Thus, the more normalised physical environment is significantly related to non-participatory behaviour and attended participatory behaviour; and there is a trend toward a benefit in other behavioural categories measured. However, the more normalised ward environment shows **fewer** self-help skills than does the more traditional environment.

## DISCUSSION

It had been hypothesised that the normalised physical environment would facilitate the activity and development of its mentally handicapped residents, where these residents were compared with a matched group living in a more traditional ward. The

inhabitants of two wards studied were shown to be comparable in terms of dependency; and the management practises on the two wards were also shown to be similar.

The hypothesis was only supported in part by the behavioural observations in the two wards: the normalised physical environment proved to be most beneficial within the sphere of occupation and activity; only slightly beneficial in patterns of interaction and communication; and to be associated with **poorer** self-help skills than were found in the institutional ward.

Why should there have been a clear deficit in self-help in the normalised environment of Sheaf Villa, when Gunzburg and Gunzburg (1973) found that upgrading a ward led to increases in self-help? Two points should be made: first, that the Gunzburg's upgraded ward was "spruced up"; i.e. it received improved decor rather than major remodelling; and was perhaps comparable to Gritmoor One in the present study. Second, the facilities for the normalised ward, Sheaf Villa, included some sophisticated equipment aimed at lessening the caretaking burden upon the staff. The rationale for this was that staff would then be free for more educational and social contact with the residents. However, in practice, it was observed that the use of such facilities as a lifting chair was made by residents for whom it was not strictly necessary - and that, as a result, self-help skills declined. We feel that the full impact of a normalised environment will only be realised when accompanied by self-help training programmes, keeping the use of staff aids to the minimum practicable.

For the normalised environment **can,** as the present study has shown, increase participatory activity, and somewhat reduce stereotypy. Even such non-participatory activities such as television watching are promoted by the smaller living room of Sheaf Villa, compared with the large lounge of Gritmoor One, which lacked any focal point, and distributed its residents throughout the room. (Television watching may not be a particularly beneficial behaviour for residents, but it surely represents a major advance upon complete inactivity or stereotypy.)

The evidence of the present study thus provides some support for the hopes of those who campaign for a more normal physical and social environment for the mentally handicapped that the behaviour and well-being of residents will be improved (e.g. Shearer, 1973, 1975). It should be pointed out that, although considerably 'normalised' by comparison with traditional designs, Sheaf Villa does not represent a fully normalised environment. Few "normal" individuals live in groups of 24, have fire warning notices posted around their homes, have safety light fittings in each room, or any of the other minor "institutional" features which still remain at Sheaf Villa. Nor are the features of the unit exploited as recommended by Gunzburg (1967) as tools for learning. Therefore, it would be reasonable to expect a further-normalised project for the mentally handicapped to have further beneficial effects for the residents.

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