

SOME EFFECTS OF STAFFING LEVELS AND GROUP SIZE ON THE QUALITY OF DAY CARE FOR SEVERELY MENTALLY HANDICAPPED ADULTS

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INTRODUCTION

There is some evidence that the physical environment of a day care centre has observable effects on the behaviour of the staff and residents using the Centre (Dalglish and Matthews, 1980). Residents were more likely to be engaged and staff more likely to communicate with residents, in smaller areas and in areas that were enclosed, rather than in larger, more open areas. However it is possible that these effects could be accounted for by other factors: larger groups of residents may occupy the larger areas, and/or the ratio of staff to residents may be lower. It seems reasonable to hypothesise that increases in the ratio of staff to residents would be associated with increased resident engagement and increases in communication between staff and residents. The aim of this paper is to extend the analysis of the previous report by considering the effects of staff-resident ratios and group size.

At the two day centres studied, staffing levels were unusually high since neither centre had even half the anticipated numbers of attenders. However, with the emphasis on small group work, the staff felt the levels were appropriate. In both centres, activities were organised by two separate departments: teaching, where activities were organised by trained teachers assisted by untrained child care assistants, both employed by the Education Authority; and craft/occupational therapy, where activities were organised by craft instructors (or occupational therapists) the majority of whom were untrained. Untrained nursing staff from the associated residences assisted in both situations.

METHOD²

Subjects.

All individuals attending the two adult day care centres, A and B, in July 1979, were included in the study: 46 (9 females, 37 males) from Centre A and 36 (34 females, 2 males) from Centre B. The majority at both centres had severe social and physical incapacities and could not or did not speak.

Measures.

Observations of two aspects of the quality of the day care environment were made (a) resident engagement and (b) staff communication to residents. One minute observations of each resident were made noting whether a resident was engaged for the majority of that period or received any verbal or non-verbal communication from staff during the period.

Design.

Ten different situations (type of activity in a particular physical environment) were identified. At Centre A, which consisted of a large open-plan hall plus identical craft and teaching zones each comprising four inter-connecting, irregularly shaped areas,

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² Full details in Dalglish and Matthews (1980).

there were (1) teaching in the teaching zone; (2) teaching in the hall; (3) craft in the craft zone; (4) craft in the hall; (5) woodwork in the craft zone. At Centre B, which again had a large open-plan hall and identical craft and teaching zones, the latter each consisted of three small, fully enclosed rooms plus one larger open area. Five further situations were identified at this centre: (6) teaching in the enclosed rooms of the teaching zone; (7) teaching in the hall; (8) craft in the enclosed rooms of the craft zone; (9) craft in the hall; (10) craft in the open area of the craft zone.

Procedure.

Measures of group size, staff-resident ratios, engagement and communication were made in the different situations identified in ten half-day periods in each centre. Approximately 20-25 observations were made of each resident.

RESULTS

The results are summarised in Table 1. It can be seen that mean staff-resident ratios were high, the lowest being 2.5 residents per staff member (for woodwork at Centre A and craft in the open area of the craft zone at Centre B). Mean group sizes were also reasonably small, the largest, for craft in the hall at Centre A, being 9.6 residents.

(a) Overall Staffing differences between situations.

Two significant differences in staffing levels were apparent. Staffing levels were higher in teaching in the teaching zone compared to teaching in the hall at Centre A ($t = 2.68$, $df. 30$, $p \ll .02$). This could account for the significantly higher levels of engagement and communication received by residents in the former situation.² However, also at Centre A, staffing levels were significantly lower for woodwork than for craft in the craft zone ($t = 2.70$, $df. 23$, $p \ll .02$) although in this case, the former was associated with a significantly higher level of resident engagement. Means are shown in Table 1. This evidence does not suggest, then, that the higher levels of engagement observed in certain situations in the day centres can be accounted for by overall differences in staffing levels.

(b) Correlations across situations.

For the ten situations identified in Table 1, a correlation matrix was produced, shown in Table 2.

As suggested by the inconsistent results described above, there is no clear association between the number of residents per staff member and the average percentage of residents who were engaged. However, there is a low (non-significant) correlation, suggesting, as might be expected, that the fewer residents per staff member, the greater the percentage of residents who receive communication.

The major results from this table are that the percentage of residents who are engaged is significantly negatively associated with both room size and the average number of residents present. However, these two factors are themselves positively correlated. Removing the effect of this relationship using partial correlations (Ferguson, 1966), engagement is still negatively associated with room size ($r = -0.56$, $p \ll .05$) and with the number of residents present ($r = -0.59$, $p \ll .05$). The first correlation ties up with the lower engagement levels found in the hall compared to the smaller areas in the teaching/craft zones in both centres²; the second indicates that residents are more likely to be engaged when they are part of a smaller group.

² Full details in Dalgleish and Matthews (1980).

(ii) **Variations in staff-resident ratios within situations.**

To look more specifically at the effects of staff-resident ratios on engagement and communication, Spearman's Correlation Co-efficients were calculated within each activity, as shown in Table 3.

Only for teaching in the teaching zone (enclosed rooms) at Centre B were staff-resident ratios reflected in the percentage of residents who were engaged or received communication from staff: i.e. the fewer residents per staff member, the greater the percent of residents engaged or communicated with. Only in this situation, then, did changes in staffing levels have the expected significant effects on resident engagement and received communication from staff.

Table 1: Results of observations at the two day care centres.

	Approx. size of area available to residents (M ²)	Average number of residents per staff member	Average number of residents present	Average percentage of residents who were engaged	Average percentage of residents who received communication from staff
CENTRE A.					
Teaching in teaching zone (22 sessions)	93	1.6	5.6	44.0	47.1
Teaching in hall (10 sessions)	277	2.3	7.4	21.8	25.9
Craft in craft zone (13 sessions)	93	1.6	6.6	47.1	43.2
Craft in hall (7 sessions)	277	2.2	9.6	29.1	30.0
Woodwork in craft zone (12 sessions)	51	2.5	4.8	71.8	23.3
CENTRE B.					
Teaching in enclosed rooms in teaching zone (27 sessions)	28	2.0	6.1	52.1	43.3
Teaching in hall (3 sessions)	239	1.9	7.7	30.0	13.7
Craft in enclosed rooms in craft zone (19 sessions)	28	2.4	5.6	53.9	38.4
Craft in hall (13 sessions)	239	2.0	8.0	26.2	26.1
Craft in open area in craft zone (17 sessions)	52	2.5	8.1	35.6	20.2

Table 2: Correlations across the ten situations identified.

	Approximate size of area available to residents	Average number of residents per staff member	Average number of residents present	Average percentage of residents who were engaged
Average number of residents per staff member	- 0.12			
Average number of residents present	+ 0.73 *	+ 0.05		
Average percentage of residents who were engaged	- 0.82 *	+ 0.15	- 0.83 *	
Average percentage of residents who were communicated with by staff	- 0.46	- 0.52	- 0.45	+ 0.35

* $p < .01$

Table 3: Spearman's correlation coefficients between the number of residents per staff member and the percentage of residents who were engaged (top line) or communicated with by staff (bottom line).

	Teaching Department		Craft Department		
	Hall	Teaching zone	Hall	Craft in craft zone	Woodwork in craft zone
CENTRE A	0.39	0.01	0.41	0.14	0.27
	0.17	0.04	0.46	0.07	0.31
	(N = 10)	(N = 22)	(N = 7)	(N = 13)	(N = 12)
CENTRE B	Hall	Teaching zone (enclosed rooms)	Hall	Craft zone (enclosed rooms)	Craft zone (open area)
	insufficient data	0.54 *	0.25	0.23	0.07
	(N = 3)	0.46 * (N = 27)	0.21 (N = 13)	0.26 (N = 19)	0.23 (N = 17)

* $p < .01$

DISCUSSION

These analyses suggest that resident engagement is likely to be lower in a large room and when a large number of other residents are present, but overall is not related to staff-resident ratios. However, it must be remembered that staff-resident ratios in these two centres were particularly good, the lowest ever observed in any situation being 1:11. Lack of a relationship between staff-resident ratios and quality of care in *residential settings* has been reported by, amongst others, Raynes, Pratt and Roses (1979). The finding that being in a large room amongst many other residents may be a less advantageous learning situation is particularly disturbing considering many existing day care environments for severely mentally handicapped adults are of this type. In addition, there was a tendency for fewer residents to receive communication from staff in larger rooms. This factor, too, did not relate clearly to staff-resident ratios.

The one occasion where the effects of staff-resident ratios were directly observable in resident engagement and staff-resident communication, was in Centre B for teaching in the self-contained rooms in the teaching zone. Here, the activity was organised by a trained teacher, and in an area that had the characteristics (a size suitable for a smallish group and completely self-contained) that appear to be associated with high levels of engagement². Staff at both centres also believed this was the optimum arrangement for such structured activities. It may be that both factors are necessary for the presence of additional staff to have an observable effect on residents (once some minimum staffing levels have been met): the first (a trained member of staff in charge) so that assistants are efficiently organised and know what they are expected to do; the second (a small, enclosed room) to prevent distraction from neighbouring groups or passers by, and reduce resident wandering.

In the previous report,² residents were shown to receive significantly less communication from staff when doing craft in the open room of the craft zone (where two groups were often organised together) than when doing exactly the same activity with each in its own enclosed room. However, staff-resident ratios did not differ significantly in the two situations. One possibility is that, where two groups of residents plus their associated staff are placed together the staff from the two groups talk between themselves, at the expense of communication directed to the residents. This may relate to work by Michaelis (1978) on language programmes for profoundly handicapped children, where she notes that "the communication in a school or institution is usually between the adults, and the children are only objects that are given routine care". In a psychiatric unit, Sanson-Fisher *et al* (1979) found support for the hypothesis that staff may prefer contact with each other and the completion of bureaucratic tasks, to interaction with patients. Harris *et al* (1974) suggest that, in a large group, staff members consider themselves to be in charge of all residents; i.e. there is less specificity of care. They believe that it is not the overall staff-resident ratio which is important (a suggestion supported by the results shown in Table 3 in this report), it is the number of residents that one staff member has responsibility for. This leads them to suggest that "the impact of additional attendants might be magnified by assigning the (resident) management responsibility of specific residents to particular aides or by redesigning large ward environments into smaller units, each staffed by a single attendant". Certainly the latter suggestion is supported by the finding of Raynes *et al* (1979) that the presence of more than one staff person systematically *decreases* the frequency of informative remarks to residents.

The idea that improvements in day care environment can be produced by assigning staff more specific duties also underlies the work of Porterfield and Blunden (1978). Here, however, instead of assigning specific residents to each staff member, staff are assigned specific responsibilities to all residents: the room manager manages the entire group, talking to those who are engaged, praising those who have finished a task and offering

² Full details in Dalglish and Matthews (1980).

them alternative materials, and briefly prompting those who are not engaged to start working, while another staff member provides help to individuals for periods of about 10 minutes and is available in case of an emergency. Given lack of trained staff and/or lack of appropriate accommodation, the implementation of such specific staff programmes may provide one way of improving the quality of day care environments. It is certainly a less expensive option than modifying buildings to provide more suitable areas and employing sufficient trained staff to organise activities within each area, though it remains to be determined whether the two options have comparable benefits.

This study examines factors related to aspects of a day care environment by simple observation without experimental manipulation. This method of data collection, while having many advantages, does limit the type of analysis that can be done. Views of staff members are often important in substantiating interpretations of the findings. Characteristics of rooms and group size have specific effects on both residents and staff behaviour, and the beneficial effect of improved staff-resident ratios may also be dependent on these factors. The relative costs of building and staffing this type of facility are such that this is a particularly significant factor in relation to future design. More experimental studies, which could perhaps be designed in conjunction with day centre staff, are required in order to examine the inter-relationships between these variables in more detail.

SUMMARY

This research looks at the effects of (1) staff-resident ratios and of (2) size of groups of residents on resident engagement and on staff-resident contact. Ten situations in two new adult day care centres are compared. Staff-resident ratios did not affect either measure, but resident engagement was higher the fewer residents present. This was despite similar staffing ratios, suggesting smaller groups are more effective. Significant differences between situations did not relate to variations in staffing levels but could be explained by environmental design differences. Within situations, the effect of naturally occurring improvements in staffing levels was observable only in one situation: that involving *both* a highly trained staff member in charge *and* most favourable room characteristics (small and self-contained). High staffing levels in other situations did not increase resident engagement or staff-resident communication although the literature suggests this may be possible through the use of structured programmes and/or by subdividing spaces.

References

- Dalgleish, M., Matthews, R. (1980). Some effects of environmental design on the quality of day care for severely mentally handicapped adults. *Brit. J. Ment. Subn.* 26, 94-102.
- Ferguson, G. A. (1966). *Statistical Analysis in Psychology and Education*. McGraw-Hill, London.
- Harris, J. M., Velt, S. W., Allen, G. J., Chinsky, J. M. (1974). Aide-resident ratio and ward population density as mediators of social interaction. *Am. J. Ment. Defic.*, 79, (3) 320-326.
- Michaelis, C. T. (1978). Communication with the severely and profoundly handicapped: A psycholinguistic approach. *Mental Retardation*, 16, (5) 346-349.
- Raynes, N. V., Pratt, M. W. & Roses, S. (1979). *Organisational Structure and the care of the mentally retarded*. Croom Helm, London.
- Porterfield, J., Blunden, R. (1978). Establishing an activity period and individual skill training within a day centre for profoundly handicapped adults. *Report No. 6*. Mental Handicap in Wales, Applied Research Unit.
- Sanson-Fisher, R. W., Poole, A. D., Thompson, V. (1979). Behaviour patterns within a general hospital psychiatric unit. *Behav. Res. Therap.* 17, 317-332.