An approach to the stimulation of vision in the profoundly handicapped, visually handicapped child

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This article looks at some of the justifications for including visual stimulation as a curricular component for the profoundly handicapped child who is operating as if visually handicapped. It sets out a four stage approach to the stimulation process and argues that if this is not followed there is a danger that the teacher will have difficulty in knowing where such intervention is leading. The progression through the stages is seen as a gradual shift from visual stimulation as a curricular content to visual stimulation as a teaching method. The idea is put forward that rather than teaching a child to see, visual stimulation is more concerned with attempts to manipulate the environment to promote maximum use of vision.

"I want you to teach my child to see again." This was the rather touching request from the mother of a little girl labelled as cortically blind following the removal of a cerebral tumour. Although most parents do not have such great faith in my teaching skills, I am frequently asked, by both parents and teachers, about the possibility of visual stimulation, or the systematic presentation of stimuli of abnormal intensity, as a means of improving sight. Interest in visual stimulation for the profoundly handicapped child seems to have grown apace in recent years with the success of visual enhancement programmes for children of normal ability, the boom in the use of dark rooms and ultra violet lighting and also, perhaps, the feeling that something 'visual' should be done for the child who seems so totally unresponsive to all external events. But can we really teach children to see? Is all this effort worth it or would energies and time be best channelled into the development of alternative ways of gaining information and understanding of the world?

Certainly some advocates of visual stimulation believe strongly that where the brain is unable to process correctly the information received from the eyes, the systematic and frequent stimulation of the visual pathways and cortex will lead to the development of a compensatory neural mechanism which will enable vision to develop. Whether or not this is true seems to be more in the field of research for the neurologist than for the teacher, but the mere possibility of its truth suggests that it is worth trying.

One of the difficulties in putting the 'compensatory neural development' theory into practice is that we frequently do not know which of the children who are operating as visually impaired are, in fact, cortically blind. Some of the children who may benefit from an intervention programme designed to improve visual functioning may not be cortically blind, but they may have recognised eye defects. Some may simply lack the motivation to look, whilst others may be at such an early developmental stage that their visual skills are concomitantly immature. In practice, of course, a mixture of these causalities may come together in any particular child. A justification for the use of visual stimulation which can be more readily defended for all these categories of children is that it may motivate a child to look; it may make him aware that he has some vision and it provides the conditions under which he can learn to use his sight and develop his visual skills.

How then do we go about setting up a programme of visual stimulation? Although initially it may be defensible simply to flash lights and shake shiny paper at children – what one teacher has described as 'the psychedelic wallpaper syndrome' – this cannot be carried on for long without the question "where do we go from here?". Inevitably, boredom for both child and teacher will set in and 'visual stimulation' will become 'visual depression'. In order to avoid this it would seem to be sensible to identify four stages in the stimulation process: bombardment; assessment; teaching; generalisation.

Stage 1: Bombardment

This is the stage at which, as long as it is not harmful, visually 'anything goes'. It is the stage at which the teacher should try out as many different types, colours, patterns and intensities of light producing, projecting, diffracting and reflecting devices as possible with maximum contrast between the presented stimuli and background. The visual predilections of profoundly handicapped children are often so unpredictable that it is difficult to be definitive about precisely what stimuli should be used. However, it is useful to bear in mind the known visual preferences of very young infants as these may also appeal to older children at a very early stage of development. The work of Miranda et al (1974, 1977) and Hyvarinen and Lindstedt

(1981) is particularly useful in identifying these preferences. As the provision of strong stimuli is at the heart of the stimulation process, it is necessary that sessions take place in an area where good figure-ground contrast is readily achievable. A small dark-room with independently controlled lighting and no external light sources is ideal. However, as this is not always available in the school or home, it is possible to improvise with cupboards, curtains or even large cardboard boxes.

To be effective, stimulation at this stage should be carried out frequently and regularly. Two ten-minute sessions per day are advisable over a minimum of one and a maximum of two terms. Initially, to continue longer than this is to risk the onset of the dreaded 'visual depression', but to try to make do with less is to ensure almost inevitable failure. If the following stages are inconclusive or unsuccessful this stage of 'bombardment' is one which can be returned to.

Stage 2: Assessment

The period of assessment of preferred visual stimuli and conditions will develop gradually from the preceding stage. It is designed to discover whether any of the stimuli which have been presented and the various conditions under which they have occurred have resulted in any increase in visual activity. Inevitably, this has to be rather a subjective assessment, although it may be useful to employ the preferential-looking techniques described in Hyvarinen and Lindstedt (1981). Many variables have to be taken into account, including some, such as sitting (or lying) position, level of hunger or nappy-comfort, which seem to have little to do with the use of vision. Generally, it is necessary to try to establish which of the following seem to result in increased visual activity:

Overall lighting conditions

Light source — position
colour
type
intensity

The stimulus — colour
position of presentation
shape
size
degree of movement
function
degree of reflection
or projection

Stage 3: Teaching

The teaching of skills using stimuli and conditions established and identified during the preceding two stages would seem to be the logical progression in a programme of visual stimulation. These skills will either be of a visual nature themselves, such as fixating, tracking or shifting focus from one stimulus to another; or they will be drawn from an area of the school curriculum not concerned only with vision. Two examples may serve to illustrate these categories.

It was discovered that Billy, who was not registered as visually handicapped but who gave only the most fleeting of glances to anything in his classroom or at home, was able to fixate and track a torch at distances up to three feet from his eyes but that once his attention was held by a stimulus he was unable to transfer his gaze to anything else. It was decided that it would be useful to try to teach this skill, and so a programme was drawn up for use in the dark-room with this as the objective.

Janine, who was not thought to have any useful vision at all, was found to be fascinated by the reflection of a 100 watt bulb on blue and silver striped reflective paper, although she showed no interest in any other form of visual stimulus. Her teacher knew that she was able to grasp and shake an object when it was placed in her hand, but that she made no attempt to reach for presented objects, even when they produced a sound which she liked. It was decided that it would be useful to combine this discovered visual preference with attempts to get her to reach and grasp. Accordingly, a large variety of rattles and shakers was constructed with the silver and blue paper for use in conjunction with an Angle-Poise lamp in the school's dark-room.

For some children, at some stages of their education, visual stimulation may be viewed as a curricular component in its own right with a discrete identity and objectives unconnected with any skill other than the use of vision. For others, as for Janine, it may best be seen as a 'method' for achieving an objective in a separate area of the school's curriculum. The perception of visual stimulation as either content or method cannot be viewed as static for any single child. As the child's needs change and as she/he develops there may have to be a shift of emphasis away from content to method, or possibly vice versa. In fact the development of a programme of visual stimulation as presented here can be viewed as a gradual shift from visual stimulation as a content (stages 1 and 2) to visual stimulation as a method (stages 3 and 4).

Stage 4: Generalisation

Although it may be possible to awaken some degree of visual awareness and to teach skills to profoundly handicapped children by adherence to the stages of visual stimulation thus far outlined, we are left with the inevitable question 'so what?'. If the child is able to perform the newly acquired skills in conditions similar to those of a discotheque, of what value is that to him? It is vital that generalisation to normal environmental conditions should take place if the whole exercise is to be something more than just training children to respond in very specific situations. Attempts must be made to fade in normal conditions of lighting, sound and competing visual stimuli whilst a newly acquired skill is being practised. This is made considerably easier if the dark-room used has a dimmer switch connected to its overhead lighting and if the room is geographically close to a main classroom.

In such a case the ambient level of background lighting can gradually be raised over a number of sessions and the door to the classroom gradually left open to allow the penetration of more and more everyday sounds.

Conclusion

To return to the question posed at the beginning of this article: can we really teach the profoundly handicapped, visually handicapped to see? In respect of the little girl with cortical blindness following massive brain surgery, the answer was no. Despite considerable efforts by all concerned we never got beyond the second stage as here outlined, and as she was becoming increasingly frustrated by the whole affair, the decision was taken to divert attention to the development of alternative sensory skills. A more realistic way of looking at the subject of visual stimulation must be to recognise that it is possible to manipulate both the environment and our teaching to encourage the maximum use of sight. However, whilst there is still hope that conclusive evidence will show that the brain is capable of being stimulated to evolve a compensatory mechanism, visual stimulation must remain firmly both as a curricular component and as a teaching method for the profoundly handicapped.

References

Hyvarinen, L. and Lindstedt, E. (1981), *Assessment of Vision in Children*, SRF Tal and Punkt, Stockholm.

Miranda, S.B. and Fantz, R.L. (1974), Recognition memory in Down's Syndrome, *Child Development, 45*, 651-660.

Miranda et al. (1977), Neonatal pattern vision: a predictor of future mental performance, *J. Pediatrics, 91*, 642-647.