

## **SESSION SEVEN – ‘MATCHING’**

Many of the basic skills necessary to the development of ‘matching’ are closely related to those of the ‘sorting’ tool (introduced in Sessions Two and Three), and the sorts of experience a child gains during the first, second and third years which underlie ‘sorting’ also underlie ‘matching’; however in some ways these two vitally important learning-to-learn tools are diametrically opposed. Whereas the allocation-to-sets aspect of ‘sorting’ is guided by the recognition of features held in common by the newly awarded element and the other elements comprising the set, ‘matching’ is concerned with the differences between patterns.

In the activity of ‘sorting’, patterns are associated in virtue of even a small degree of sameness or similarity, a common feature often greatly outweighed in other respects by information which is not however common to all the members of a set. In ‘matching’, identity is being sought after so that attention is directed to the discovery of features which distinguish the candidate element from the model. In practice a match is represented by the candidate which evidences the least discrepancy in comparison with the model.

Thus, as will be seen, both tools derive from an earlier/prior-developed aptitude for remembering, recognising and comparing patterns with the development of an increasing skill in focussing attention on progressively less obtrusive similarities (‘sorting’) and differences (‘matching’).

Matching As with other learning-to-learn tools I have continued to use a label which is in common use but employ inverted commas to, in this case, remind us that the connotation of the term may be different from those associated with its common use.

Mature ‘matching’, whatever the functional level or discriminative ability of the child, implies capacity for and tendency to actively compare and contrast one pattern with another, which in turn implies its origin in the deliberate selection of a model followed by an active hunting for a match, even an active searching for possible candidates from which to choose.<sup>1</sup>

A child’s ability to discriminate between even quite complicated designs does not necessarily signify his having developed the ‘matching’ tool to an equivalent level although a normally developing child’s having spontaneously acquired such an ability would make it likely that such an attainment has been reached. It is in vulnerable children, where much teacher effort may have gone into training the child to discriminate between similar patterns, that a discrepancy between a sterile discriminative capacity, utilised like a circus act to entertain others, and actual ability to use ‘matching’ for the purposeful sampling of the surroundings towards increasing experience, might, or is likely to, occur.

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<sup>1</sup> It will be clear of course that, although we are attempting to discuss each ‘tool’ more-or-less in isolation, not only do the tools have a common origin and utilise similar mechanical operations, they also liaise and interact from quite early stages so that matching techniques are employed in ‘brick-building’ and, as we shall see, praxic analysis becomes evident in the comparing and contrasting of matching situations from 4/5 years onwards.

Success, in the sense of actually finding a suitable match, is of limited importance to the development and consolidation of the 'matching' tool and of virtually no importance to its use although the tool ultimately derives from such achievements and the establishment of the tool tends to lead to such achievements being the rule. It is the active striving after finding suitable patterns, and the active comparing of patterns, not the actual securing of a true match, which turn up new information.

Our object in teaching 'matching' is the establishing of a learning-to-learn tool which will be employed spontaneously all day long by the child – he must **first learn to 'match'** and then **'match' to learn**

### Evolution of the 'matching' tool (see Figure 1)

Following the early integration of the organism, the development of a capacity, in association with the structuring of space for 'focussing' the whole bodily attention through any part of the body, as well as the complementary use of the limbs and 'lateral preference' or 'dominance' which such a focussing inevitably imposes, the ability to rectify the earlier oscillatory activities into on-going or 'continuant' practice leads to a massive accumulation of experience. Concentrations of similar colours, forms, sizes, depths, consistencies etc.; local associations of similar or identical elements or patterns, producing contrasts with and against backgrounds of 'noise' where variety averages out significance within the irrelevant; the juxtaposition of perceptually isolated elements and the patterns produced by such structural combinations, etc. - these establish the substrates for the development of definitive learning-to-learn tools.

Somewhen during the early part of the third year the ability to reject certain evident elements in favour of choosing another which more closely resembles an element already secured by the attention (usually held in the hand in the early stages) becomes established so that by about 30 months a child may hold or deliberately establish one object whilst actively hunting for another or others like it (compare with early techniques in 'sorting'), even in the face of considerable potentially distractive influences. By this time graphic designs differentiated by a gross excess of information – size, shape, colour, density, etc. - can be treated similarly.

It should be noted that (i) the simultaneous picking up of two closely situated identical objects (early pairing) is a rather more rudimentary activity often seen in children during the second year and is simply evidence of the child's noticing the similarities and differences between objects and patterns; (ii) a child's looking for a 'named' object whether or not he also happens to be holding such an object is not necessarily a 'matching' act, being during the second year, simply the following of verbal instruction. It can readily be shown that a young normally developing child who cannot catch onto the practice of hunting for matches for the models indicated may well be able to find the objects when instructed to do so using verbal labels with which he is familiar.

By the second half of the third year he is commonly able to find a series of pairs of objects in this way 'continuantly' one after the other. It is normally found by this time that drawn patterns which are sufficiently monothematic to be taken in

visually as a whole may be paired as simple objects, without the great redundancy of information (colour, size, density, etc.) necessary a few months earlier.

At this stage the unassisted child faced with a number of models to satisfy will usually pick up the nearest available candidate and try it against each of the models until a match is made, whereas later, having attained a more mature state within the evolution of the matching tool, he will work from the model, deliberately hunting for a match to suit a particular model until all the vacancies are filled.

'Matching' activities Figure 1



Meanwhile increasing maturity will mean the child's requiring less and less information until he must depend on his attending to the bare minimum. By about three years he appears to be able to alternate his attention between the overall form and some subordinate fragment of the whole so that fairly simple shapes differing in some particular, restricted to one or other region of the whole shape, may be differentiated.

This capacity for directing the attention to and fro between features leads on steadily towards the child's being able to compare two criteria 'simultaneously'. At first this is more readily accomplished when there is a redundancy of information and/or the criteria bear some specific spatial relationship to one another such as one shape being contained by the other. By about 48 months the child can usually discriminate between differences involving two or three simple criteria without difficulty aided by his now more usual tendency to hunt for the match he needs rather than to pick up and try the first available candidate. It will be clear that in real everyday life where possible candidates greatly outnumber the chosen models, as well as under comparable conditions within the 'lesson', the more mature approach or technique confers considerable advantage, often representing virtually the only route by which the match may be made.

The younger child is little influenced by the particular or relative orientation of shapes during matching activities, although he may from an early stage insist on certain everyday objects being the right way up; however from about 48 months onwards the child becomes both more aware of relative orientation during comparison and more able to utilise it in the act of comparing. Candidate patterns are rotated in close proximity to the model until at least some parts of them coincide. In this way differences, particularly those of symmetry are accentuated.

By about 60 months a child commonly makes use of orientational cues in matching, and during his sixth year comes to notice and utilise the appearance of overlap of parts in design, as well as to check on the numerical quantities of pattern elements or components. At this time however 'counting' the quantity and recognising the various properties of number patterns are not yet complementary ideas so that the child may ignore relative density or number shape etc. in favour of unrealistic counting, or vice versa.

These confusions tend to resolve as he becomes more able to discriminate between differences of density, intensity, shade of colour and size. For example matching three or more forms wholly in terms of size is usually very much a hit or miss affair until the eighth year, although the same forms may be ordered in sequence a year earlier (see Session Ten - 'Sequencing and Seriation').

### The practical teaching of 'Matching'

As with any other learning 'tool' our purpose in teaching 'matching' should satisfy at least four criteria:

- 'Matching' should be taught with the intention of the child's acquiring an effective method of increasing his understanding, i.e. with the intention of encouraging the development and regular use of a necessary learning 'tool'.
- 'Matching' should be enjoyed as a game for its own sake, should be pursuable without the necessary intervention of other people, and be free of anxieties.
- 'Matching' should lead to the accumulation of patterns of experience which allow or foster the efficient and satisfactory handling of fairly frequently occurring situations, i.e. entails the development of 'useful skills'.
- The skill products of 'matching' activities should aid the child's satisfactory settling into his social environment.

That the third and fourth criteria will be satisfied in practice is taken for granted by most people who tend to assume that specific and particular usefulness – especially within social situations – represent the main reasons for teaching a skill. For example matching is seen as an aid to the acquisition of reading skills.

The first criterion is in fact one of the main aims of the approach advocated whilst the second is the objective of the 'asocial lesson'.

Clearly there must be many techniques for the application of a set of principles and how one starts to introduce matching must depend of course on the functional levels and previous experience of the child. If his level is less than 18/21 months one's concern should be entirely with ensuring the full and integrated use of his body and the exercise of continuant behaviours (see Session Two). If the levels appear to be of the order 21/27 months, the initial pairing activities, outlined below, should be rehearsed with variations of every kind but giving the child little opportunity for spontaneous behaviour. If of 27/30 months level the activities should be practised systematically through (over whatever period of time is necessary) the 'strengthening' exercises, the child being expected to respond appropriately *but being given help and support whenever any sign of confusion appears*. A child functioning at a 30 plus months level may be expected, with experience, to rapidly come to understand the operation of simple pairing sufficiently well so as to not be seriously confused and thereby made anxious by changes of conditions etc.

Summarising this we might say that a child is on average unlikely to be able to understand the principle of deliberately looking for a match to correspond with a model until functionally of about a 27 months (2¼ years) level. About three functional months (which with vulnerable children could correspond with virtually any chronological period) involving this kind of activity are necessary before the child comes to understand his own behaviours in this respect sufficiently well to be able to operate within non-supportive conditions.

Vulnerable children who appear to be well beyond this stage of development but who have not worked according to the principles advocated here (Waldon Approach) should be given at least some experience of the early object pairing etc., for whilst they cannot but enjoy and benefit from such simple activities it is easy for a teacher who has not analysed matching in this way to confuse simple discriminative ability with active 'matching'. It is not uncommon to find a child who under certain sets of conditions is able to pair fairly complex patterns but

who has no experience of selecting models and deliberately searching etc. for suitable matches.

### Developmental time versus chronological time

During Session One it was emphasised that fundamental learning development has little to do with achievement and attainment. Fundamental understanding can be encouraged and facilitated but it must develop systematically, each new stage or branch growing from and containing the essences of the earlier. Hence teaching understanding cannot be approached as we often approach the teaching of a simple skill. Teaching a learning tool is teaching understanding and this requires time as well as every other opportunity for experience and practice. From the time a 'normal average' child first comes to be able to 'catch on' to the idea of early pairing until he can understand it sufficiently well so that he is not easily confused by distraction, anomaly, etc., is about three months. As this is based on fundamental development deriving from the organised gaining of experience by a child who is well endowed in size, shape and competence, we might say that this process takes three functional months, which for him happen to occupy three chronological months. Some children will practise more and take less time, others will need more, and it should be clear that in working with vulnerable and vulnerable children these times must always be as long as or longer (often very much longer) than the average. Therefore the appearance of a child's 'knowing', that is to say fully understanding, a basic skill should be viewed with patient scepticism.

### Suggested Techniques for the teaching of 'matching'

#### Early stage for giving experience, introducing and/or practising early pairing

Having chosen perhaps five pairs of objects each pair of which is as different as possible from the other pairs, these may be distributed over an area of the table, perhaps 15 inches square, immediately in front of the child.

Alternatively only one of each pair may be spread in front of the child. Both techniques are valuable.

The teacher sitting behind the child selects an object as model (from the spread objects or in the case of the second alternative from her store), holds it in the palm of her hand in front of the child and then with her other hand causes the child to pick up the match and to place it on her palm beside the model. The two identical objects are placed close together at the side of the table. This is repeated until all the pairs are used up; then the whole is spread out and paired again; then replaced by a different set, and so on.

As is the general rule in 'lesson' activities there would normally be no speech and the process should be enacted dispassionately in an almost clockwork manner, the completion of one set being followed immediately by the setting out of the next. At the early stages when the child is given little opportunity other than to follow the teacher's lead, ten to a dozen (4-5 pair) sets may be paired

one after the other within five minutes, which implies some 25 – 30 seconds for the setting out and pairing of each set.

The child of 27 months and maturity will quickly begin to behave *as if* he understood the operation and can be progressively allowed to take over for himself more of the response (looking for, selecting, picking up and putting into the teacher's hand) behaviour, but it is very important during this phase that the child be given rather more help and support than he might seem to need and these should be immediately forthcoming at the first sign of any confusion.

### Activities for strengthening understanding

It will have been noticed that at this stage the teacher is selecting and presenting the model whilst the child is helped, encouraged or expected to look for and find the match. The child's abilities and understanding can be consolidated, once he has reached the stage of being able fairly consistently to pair the objects according to the simple set up described, by means of the following stratagems:

- (i) The total number of objects to be paired may be increased
- (ii) The objects may be spread over a wider field
- (iii) Instead of the number of objects diminishing, paired objects can be returned to the field so that the total number remains constant
- (iv) The speed of the game can be increased
- (v) The side the models are presented from may be varied irregularly, or alternated
- (vi) The models may be presented in such ways as to force the child to look up, down, round etc. for them, before looking for the relevant matches
- (vii) The models may be exposed for limited periods of time (flashed)

These variations should be introduced carefully one at a time at first and gradually combined until eventually the child can cope with any and all of them.

As the child's capacity for actively hunting for the matching object establishes itself he may be introduced to pairs of objects which are to be distinguished by fewer characteristics so as to concentrate his attention on these diminishing differences. One pathway leads naturally to the pairing of simple plane forms such as may be represented, for example, by cardboard cut-outs of geometric shapes or common objects.

The matching of cut-out shapes may be developed in its own right but the mounting of such shapes on plain background cards can be utilised as an (often unnecessary) step towards the matching of graphic patterns and pictures. The earliest drawn pairs should embody a high redundancy of information for example a relatively small red circle, larger green crosshatched triangle, wide blue cross and multicolour criss-cross network pattern might be contrasted in the early stages (30 months level) but quite quickly it should be possible to reduce the information to monochrome designs.

At first the cards may be used in the way that the early objects were paired but the conventions of setting out the models to be matched, the matching-cards



being placed by the child on top of or close beside the models, introduce more convenient ways by which the child can practice the activity. A cardboard or plywood frame, with perhaps eight stalls for the 'model' cards and appropriately situated stalls for the child to insert his choice of matches, is an easily made and useful piece of equipment but it is important that any one technique is not used as a routine, so that when used the orientation and position of the frame relative to the child's body should be changed frequently.

As always the activity is initiated and taught by causing the child to behave *as if* he already understood reasonably well the basis of what he is being taught. This allows for any and all ways in which the child might have demonstrated this, including producing and redressing errors. There is no place or need for explanation, commenting on the moves and decisions, planned secondary reinforcement, etc.

The child may now be expected to exercise his early pairing abilities with groups of eight or ten pairs of designs (of 33 months discriminative level – see illustrations) selected at random from a large repertoire. Later, when the child's discriminative abilities have reached a higher level, these same cards may be used to exercise more mature levels of active matching.

Meanwhile the child who pairs the early level monochrome patterns with ease may be introduced to sets of designs which contain forms which differ from each other by some feature affecting up to half the total figure. For example a simple form such as a circle, square or triangle may be mutilated in various ways to produce what for the less mature child will be new forms but can be viewed as a variant of a theme pattern by the more advanced child who is beginning to be able to alternate his attention between the whole and parts of the whole.

As he shows signs of being influenced by partial differences in form, patterns consisting of combinations of two shapes or colours from a repertoire of perhaps four forms may be used. Two colours of two shapes, or a combination of these features would be satisfactory. For example using three or four colours these might be arranged as squares of one colour containing circles of another and later, shapes divided evenly into two colours; perhaps four plane figures arranged in combinations of two, one inside the other (discrimination may be facilitated for most children by distinctive colours for outer and inner shapes) at first but later arranged side by side so as to eliminate this clue.

In parallel with such activities in which the child, being given the pairs in such a way that he must only find a mate for each card he happens to encounter, is (or needs only to be) working still at a pre-matching level, other activities should now be introduced to encourage or initiate real matching in which the child must *actively seek for* a design, rejecting all that do not fit his model. Clearly for this he must first choose a model. This may be induced by giving him a limited number of models, from which the child can choose, together with an excess of candidates some (later most) of which are irrelevant and simply represent potentially distracting 'noise'.

At first patterns which the child has previously has no difficulty with may be utilised so that the demands are only on his approach and technique, not on his discriminative abilities but, as he learns to hunt effectively through a wide range

of possible patterns as well as over a wide area of space, the demands on his discriminative capacity may be carefully increased. By the time the child has reached the stage where he tends to utilise a mature matching approach (selecting a model and hunting deliberately for its partner) it is time for him to begin to make greater use of orientational clues.

It will have been noticed before this that the children sometimes arrange the cards carefully yet other times leave the designs seemingly at any angle. Certain forms, particularly those resembling common objects, may from an early stage be orientated in keeping with the way that the objects would normally lie, and shapes which commonly tend to be put 'naturally' in one orientation (e.g. triangles, semicircles, etc.) are often arranged this way during matching. However certain orientational conventions may have to be deliberately introduced.

Orientations involving lateral or vertical order or arrangement may be facilitated by using cards on which are drawn pairs of objects having natural bases and being naturally tall or wide. For example a cup may be drawn above a fish, a dog above a plate, etc. as well as cards on which these relationships are reversed so that the child must not only match the presence or absence of the components but also their relative positions. Trees, towers, etc. may be used in cards where the relationship is intended to be a lateral one. It will be seen that the way in which the model cards are displayed can influence the ease with which a child may manage such matching, for laterally arranged components are more easily matched when model and match lie in a vertical plane, whilst vertical orientation is easier when model and match are placed side by side.

Opportunities for the practising of higher levels of orientational discrimination in matching, can be created in a variety of ways, including the division of cards into centre versus marginal regions, corner versus middle edge positions, 'right'-lateral versus 'left'-lateral, away-from versus closer-to observer, etc., but by this time it is the child's understanding of his environmental space and his abilities in the field of praxic perception, which must provide the necessary guidance (see Session Eight).

Before leaving this introduction to the use of the 'matching' tool, it should be pointed out, that in examining this and other tool activities, I have tended to assume that any and all appropriate sensory modalities would be utilised and that sight would play an initially contingent but often dominant role; however, matching lends itself more readily than 'sorting' and 'brick building' (and obviously conventional 'drawing') for sighted children, to activities in which general or global haptic discrimination (that is to say in which visual discriminations are less necessary or convenient or may prove misleading) might be utilised almost to the exclusion of the other 'senses'.

Two and three-dimensional forms, substance consistency, surface and thermal properties, baric (weight and density) properties, etc. may be matched (and sorted) under conditions excluding vision. Likewise various kinds of acoustic and olfactory matching are both possible and profitable.

*To be continued*

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