Simulation Review

PSYCHE-PATHS, *$2.98, KMS Industries, Inc., Scientific Games Division, Ann Arbor, Michigan. 1968. Available through book and game sellers. During the week from October 16 to October 23, 1970, Julia Shea's sixth-grade class at Wylie Middle School in Dexter, Michigan, played Psyche-paths. The week prior, 4 of these students had been among the 27 from Wylie who had competed in an Equations tournament in nearby Ann Arbor, and they had won. Mrs. Shea's students are sophisticated game players. All of them have access to chess, Equations, Probe, On-Sets, Eurocard, Nim, Perquacky, and Clue, as well as games they create whenever their regular assignments are finished. They play for fun and they play to learn, and we wanted their reaction to Psyche-paths.*

"The game puzzle people play," the box proclaims; a statement which captures a few of the pertinent characteristics of Psyche-paths. It comes in a standard box-game package and consists of 85 hexagonal cardboard playing pieces, each measuring one-and-one-quarter inches across. The background color of all pieces is green and on all but three of them are printed three stripes, or paths. Paths are red, purple, or blue, and the object of the competitive game is to add pieces to those already played so that path segments of the same color are connected. Additional points may be earned by forming loops in a path or by closing a path. At any point where paths meet they must be of the same color.

Since there are three paths on each piece, the number of possible moves facing a player quickly becomes very large. One obvious strategy for a

beginner is to trace a reasonable number of these visually until he feels that he knows which one gains the largest number of points. He then plays as many pieces as necessary from his stock, connecting as many segments as possible.

Psyche-paths is similar to jigsaw puzzles in that it requires matching shapes and colors; it differs in that it can be played solitaire, competitively, or cooperatively by from one to six players. Also, it cannot be "learned" since each game will probably result in a different final design. It is suitable for all ages from small children to adults.

A copy of the game was placed in a classroom for a week in order to get some idea of its acceptance and use by children. Since there are many games in Mrs. Shea's room which are used daily for learning and recreation, introducing this game was not unusual. A brief announcement was made that it was available and how it was played and then it was put with the other games. During the ensuing week the children played with it about fifteen times during the day. It was also taken home overnight twice. Use of the game was noted as unobtrusively as possible.

Those children who played Psyche-paths ranged from good readers to poor readers, but there seemed to be some difference in playing style. Better readers frequently attempted to reproduce the design that is printed on the front cover of the direction booklet, a difficult task requiring about two hours of concentrated effort. Poorer readers tended to play pieces more or less at random just to watch the paths grow. Again, play could be cooperative, competitive, or solitaire, but it was most often solitaire. The most surprising finding was that it tended *not* to induce competition. Only once during the week was it observed being used this way; most uses were solitaire, with the remainder cooperative. In general the game was very well accepted by the children.

Certain types of behavior are required and reinforced by Psyche-paths and these are worth mentioning, since it might be reasonable to "prescribe" the game for specific perceptual-motor, academic, or behavioral difficulties. First, there is color discrimination. This is required in two situations: when a piece is placed on the board next to other pieces, and when an attempt is made to duplicate a model. In the first instance the player is trying to extend a particular path of a certain color, so he selects a piece with a stripe of the proper color and places it next to those already played. He must now, however, check to see that *all* intersections that occur because of the new piece result in the same colors meeting. This can involve up to six color matchings for each piece moved.

A different type of color discrimination occurs when a player attempts to duplicate a model. In this case the discriminations are considerably more difficult, since the model is some distance away from the playing pieces and may be reduced in size, as in the case of the design on the cover of the rule booklet.

If practice on these skills is desired, it would be relatively simple to take colored photographs of appropriate designs and ask the children to duplicate them. Polaroid photographs would be particularly convenient. Another useful routine would be to pair up children who were deficient in color discriminations with others who were not, and let them play together cooperatively.

Secondly, there is visual shape orientation that results from the four different types of paths that may appear on a piece. Paths can be straight lines, *S* curves, small arcs, or large arcs. These shapes must be combined to connect pre-existing segments in order for points to be scored, so there is an extensive amount of synthesis of these basic shapes into complex shapes. Furthermore, there are bonus points to be earned by making loops in path segments or by connecting the ends of a segment to form a closed path.

As in the case of color matching, the work with shapes is done under two conditions: duplicating a model, and creating a new design. Again, it can be used for specific practice of deficient skills through the use of photographs or student tutorial pairs.

Eye-hand coordination and motor control are required in the placing of pieces during play. If the precision of these requirements is too much for the students, they can be helped by any method that holds the board pieces steady. One way would be to use a flannel-covered playing board and another would be to put small, self-adhesive magnets on the back of each piece. The game would then be played on a metal surface with little danger of scattering pieces already played. Actually, it would be desirable to have the pieces made of substantial plastic or wood for classroom use. At present, the fragile cardboard pieces chip quite easily. The resulting slightly tattered appearance reduces the enjoyment of creating a design.

Counting, addition, and multiplication are required for computing the number of points earned per play when the game is used competitively, but these skills are also applicable to cooperative and solitaire modes of play. Skills required in scoring can be adjusted to reflect the children's ability by adding or eliminating scoring rules. The range of mathematical involvement is from none, in which scoring is simply eliminated, up to

application of the distributive law. This occurs when a play has resulted in the formation of at least one loop plus the joining together of the ends of a segment into a closed figure. The player must double the sum of the individual path score plus the loop bonus. Additional scoring rules could be added at the option of the teacher and players if desired to provide practice on operations such as squaring.

Concentration is required in that the length and color of a particular segment must be kept in mind from the time tracing is started until it is completed. Players seem to prefer keeping this information in immediate memory rather than writing it down. Organization then comes into play in matching the requirements and restrictions of the board with the available pieces. From this data-gathering and analysis activity, a hypothesis is developed that is tested by moving pieces to the playing board. Although the hypotheses developed are simpler and more concrete than those of chess, it quickly becomes apparent that effort invested in concentration, analysis, and organization pays off in terms of points and satisfaction.

In summary, Psyche-paths is a potentially useful and well-accepted game that accommodates a wide variety of ages, interests, and playing styles. Beyond the simple enjoyment of playing, the game involves a number of skills that are of special interest to teachers and parents. Probably its main advantage lies in its flexibility, for children having difficulty in an area can be accommodated by modifying features of the game, allowing them to gain more difficult skill levels gradually. Psyche-paths could be best used as a supplemental free-choice game with special utility for children with problems.

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