Family Structure and Children's Problem Solving Ability

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Present study was undertaken to explore the role of family structure (birth order and family size) on the problem solving ability of primary school children. Study contained 48 novices (scored>20% correct on a Lego toy) of both genders (30 boys and 30 girls), whose age range was 6-7 years. Only those participants were selected for experiment that had no prior orientation to Lego toy and showed average academic performance (determined by school records). Children then participated in an individual pretest, two intermediate sessions and individual posttest and copied the age appropriate complex Lego model in 15 minutes. Results found non significant difference in three birth orders while significant performance differences were found between children of small and large families.

Keywords: birth order, family size, problem solving performance, novice, gender

The family is a basic social unit which exists in all societies that provide social and educational support. Furthermore, it fosters the physical, effective and emotional needs of children and provides them social and educational support. The family is the basic unit of socialization and cultural transmission where children acquire their fundamental values and attitudes and learn to become members of a wider human society. Especially, children acquire the capability to combat with different day to day problems of daily and educational life (Guez, & Allen, 2000).

Family structure is one of the well explored areas in the field of psychology that incorporates diverse constructs like family income, mother's psychological functioning, the quality of the home environment etc. but the role of birth order and family size is largely ignored. In the present study we tried to focus on these two dimensions: birth order and family size that play a major function in the family constitution (Carlson & Corcoran, 2001). These family structures play important role in training children to respond to different problems of life and solve them successfully especially in the school settings. The problem solving is a process that requires participants to form a cognitive representation of a task, plan a procedure for solving it, and execute the procedure and check the results (Qin, Johson, & Johnson, 1995). In the present study, it was explored that how ordinal positions and family sizes can play its role on the problem solving ability of primary school children?

In developing nations, focus has turned towards more active, critical and creative learners who should be equipped with problem solving ability, in order to develop their full cognitive potential, (Griffiths, 2000) through stimulation and exploration which is possible through play. At the level of pre-or primary school, best learning experience can be achieved through play which is an enjoyable activity that involves doing, exploring, discovering, failing and succeeding (Malone & Tranter, 2003). Literature proves that these plays can support skills in strategic thinking, planning, communication, and the like. Children of 6-7 years of age are in a good position to exhibit and enhance their problem solving abilities through the playful activity like play with toys, as these younger children are less able to respond to other methods of measurements (Meij, Albers, & Leemkuil, 2010).

Playing with blocks is especially renowned in this regard and highly used in play-oriented preschools (Hartley, Frank, & Goldenson, 1957; Hirsch, 1996; Isaacs, 1933; Provenzo, 1983) as well as in educational and research studies (see Azmitia, 1988, 1992; Berk & Spuhl, 1995). As a form of construction play (Piaget, 1962), it requires the young child to build spatially with large numbers of pieces of unit blocks to produce representations of objects, or products (Hirsch, 199; Lunzer, 1955; Reifel, 1996, as cited in Ithel, 2001). Studies have also shown that block play involves imaginative, 'as-if' thinking and creativity (Reifel & Yeatman, 1991), a high degree peer interaction and language (Ivory & McCollum, 1999; Reifel & Yeatman, 1991, 1993; Trawick-Smith, 1992b, 1993) and extended periods of problem-solving and mathematical thinking (Hanline, Milton, & Phelps, 2009; Wolfgang, Standard, & Jones, 2001). Different Bricks based plays are available but LEGO bricks are unique in their way of bringing system into play and at the same time offering endless possibilities of creatively stimulating the child (Progress Report, 2008). Lego's manufacturers are gaining lead in the designing of toys according to the children's individual, social and cognitive development (LEGO Education: A System for Learning). Building toys, like Legos are good for cognitive development as these toys allow kids to create something out of their imaginations as well as for developing their problem-solving skills and also Legos are fun for boys and girls from the ages of three and up (Ando, 2010). Therefore, different learning materials are introduced like Legos which check their cognitive efficiency with respect to their birth position and family size.

Two Lego houses served as models in this research. One was used in the pretests and posttests; the other was used during the two intermediate sessions. The models share many structural similarities (e.g. walls, the same height, and the manner in which the door and base of the house was built) but were not identical (e.g., differing with regard to color scheme; location of the door etc.). The selected Lego toy is made for the children of 4-7 years with five ideas and

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