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**Title: Play Characteristics and Executive Functions among Children of the Arab Sector Referred to Occupational Therapy Evaluation Compared to Children not referred.**

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**Abstract**

**Introduction and Background:** Playing games is central to children's lives; the motivation for the game activity is usually intrinsic and provides enjoyment and amusement (Bundy, 1993; Yalon-Chaimoviz et al., 2006). The child's play's characteristics may provide the occupational therapist with information about the child's function in the cognitive, motor, social and emotional areas.

The game allows the child to cope with different situations of daily life, and provides opportunities for experiences and learning of flexible thinking to solve problems. Flexible thinking and problem solving skills are components of executive functions. Executive functions are a multi-dimensional structure that holds a number of high cognitive processes that control a variety of cognitive, behavioral, and emotional functions, and regulates them (Vriezen & Pigott, 2002). They have a central role in the child's cognitive, behavioral, and emotional development (Isquith, Crawford, Epsy & Gioia, 2005).

Significant information about a child's play can be received by the parents; in today's literature the parents are perceived as having a high level of awareness of their child's development, and they are responsible for creating game opportunities for the child. This responsibility is reflected in creating the physical and human play environment (Johnson & Myers, 2010).

There are a number of tools for evaluating the play, such as "Revised Knox Preschool Play Scale" (Knox, 2008), "Play History" (Takata, 1974) and more. The use of these tools is relatively small, due to lack of resources to perform the diagnosis in the natural environment of the child as required, and a lack of an effective tool and questionnaire for the parents that will allow receiving information about the child's play in a short time. Therefore, while delivering these diagnoses and questionnaires, occupational therapists use the play as a therapeutic tool to achieve deeper

observation or skills improvement, such as: attention, motor skills, and processing ability

(Stagnitti, Unsworth & Rodger, 2000). However, it is mostly done without evaluating the characteristics of the play with a standardized tool.

There is very little research about play characteristics and executive functions among children of the Arab sector in Israel. Bana Naamana (2011), for example, have checked the differences in play characteristics and game preferences among children from different cultural backgrounds: Jewish and Arab children in Israel. The research findings showed no differences between the sub-cultures, but raised the need to validate and strengthen the reliability of the MCP (My Child's Play) questionnaire (Schneider & Rosenblum, 2013), a questionnaire that may contribute extensively to the understanding of play characteristics of the child who has been referred to occupational therapy among the Arab population in Israel. Hence the need to examine the differences between play characteristics among typical children and children with developmental delay in the Arab sector in Israel.

**The Goal of the Study** to establish discriminant validity and parallel validity for the questionnaire: "My Child's Play"- MCP (Schneider & Rosenblum, 2013) among children of the Arab sector, aged 3–6 years, who have been referred to occupational therapy due to suspected developmental delay, compared to children of the same ages who have not been referred.

**Method:** Discriminant validity would be examined by checking the differences in play characteristics and executive functions as measured in the MCP questionnaire, between children who have been referred to therapy and children who have not been referred (control group). Parallel validity would be examined by checking the correlation between "executive functions" factor of the MCP questionnaire and the BRIEF P questionnaire, to assess executive functions.

**Tools and Procedures:** The three questionnaires, MCP, CHECK (Child Evaluation Checklist, a function questionnaire that designed to collect preliminary information to identify children with developmental difficulties who need referral clinics, child developmental center or other therapies) and BRIEF P, have been translated into Arabic and then back to Hebrew by the researcher. **The**

**data gathering** was performed by the researcher after receiving the approvals from the Ethics Committee, the Ministry of Education, and the children's mothers. Each mother independently filled the demographic and functions questionnaire first, then the MCP and BRIEF questionnaires, in Arabic. A correlation was performed between the two research groups according to the following variables: gender of child, age of child, and residential environment.

For data processing, SPSS (Statistical Package for social science) version 21 was used, and to characterize the research population, descriptive statistics was used. The internal validity of the MCP and CHECK questionnaires was performed with Cronbach's Alpha. In order to compare the play characteristics according to MCP questionnaire between the two groups, MANOVA test (multivariate analysis of variance) was used, and t test was used to compare the total score of the questionnaires. To compare the executive functions according to Brief P questionnaire between the two groups, MANOVA test was used, and t test was used to compare the total score of the questionnaires. In order to check the parallel validity of the MCP questionnaire with the CHECK questionnaire, Pearson correlation was used. In order to check if the scores of CHECK predict the level of play according to MCP, Stepwise regression was used. All tests were considered significant if  $p < 0.05$ .

**Results:** The current study found that the reliability and internal consistency of MCP questionnaire ( $\alpha = 0.71$ ) and the executive functions factors ( $\alpha = 0.78$ ), interpersonal interaction and social participation ( $\alpha = 0.72$ ), and choice and play preferences of MCP ( $\alpha = 0.61$ ) is good, and the reliability of the allowing environment factor of the MCP ( $\alpha = 0.53$ ) is medium.

In addition, significant differences were found in general play characteristics of MCP questionnaires, and also in the factors: interpersonal interaction and social participation, executive functions, and allowing environment, between children of ages 3–6 that have been referred to occupational therapy evaluation, compared to children who have not been referred, thus the discriminant validity of MCP questionnaire was established. Additionally, significant differences between the groups were found in general executive functions according to BRIEF P questionnaire,

and also in all factors of executive functions in the actual questionnaire. A strong negative correlation was found between the executive functions according to BRIEF and the executive function factor in MCP, and so the parallel validity of the MCP questionnaire was established. In addition, it was found that 23% of the variance in child's level of participation in a game according to the MCP questionnaire was predicted by the Check questionnaire.

**Discussion and Conclusions:** The research findings supported the assumptions, and have showed significant differences in play characteristics and executive functions between children referred to occupational therapy and those not referred. This finding shows that the play reflects the children's abilities, and in future, it can be used to examine whether a child needs an occupational therapy intervention.

The findings also showed that an MCP questionnaire is valid and reliable, and sensitive enough to be used to get comprehensive information about the child's control over executive functions. according to this, the use of this tool may contribute to understanding the characteristics of a child's functions in the process of evaluation and occupational therapy treatment. Using the questionnaire may help occupational therapists in planning therapeutic goals which focus on improving process skills (that is, executive functions) that are required for functioning and participating in the fabric of life.