**Correlations between child's characteristics and the perceived meaning of occupations**

Abstract

OBJECTIVE. To assess the correlations between the perceived meaning of occupations - value, challenge, sense of time, and autonomy with the socio-emotional characteristics and executive functions of typically developing school-aged children.

METHODS. A cross-sectional study comprising 80 children (6-13 years) and their parents. Parents completed theStrengths and Difficulties Questionnaire (SDQ) and the Behavior Rating Inventory of Executive Function (BRIEF). Trained occupational therapy students, assessed all the children, using the Perceived Meaning of Occupation Questionnaire (PMOQ), and the Verbal Working Memory test (VWM).

RESULTS. The perceived challenge, the perceived value and the perceived sense of time were mostly correlated with the child difficulties (internalizing behavior and lower executive functions) and the perceived value, however, was also correlated with the child's strength (prosocial behavior). The strength of the correlations was low or at most moderate.

CONCLUSION. Our finding revealed that the personal factors of the child were differently associated with different dimensions of meaning. The findings support the multi-dimensional approach to the study of occupational meaning among children. However, the strength of the associations implies the need to keep on study other determinants of occupational meanings among children, such as the characteristics of the occupation itself or environmental factors.

**Key words**: Perceived meaning of occupation, child's socio-emotional characteristics, executive functions

The perceived meanings of occupations are the emotional and cognitive qualities people attach to their occupations ("doing homework is boring, but mammy says it is important"). “Meaning” has various definitions offered by theorists from different disciplines, and within the occupational therapy and occupational science literature (Avrech Bar, Backman & Forwell, 2016; Reed, Hocking & Smythe, 2010). The literature reveals that the meaning of occupation could be reflected by different dimensions, such as its perceived importance and difficulty, or the sense of autonomy and enjoyment while engaging in this occupation (Fossey, Krupa, & Davidson, 2016; Hammell, 2004). To elicit the perceived meaning of occupations among adults with various health statuses, researchers utilize depth interviews or quantitative questionnaires. Their findings reveal that participating in meaningful occupations contribute to health and well-being (e.g., Eklund, Erlandsson, & Persson, 2003; Jonsson, 2008). However, among children, the literature on the perceived meaning of occupations is rather limited, nonetheless promising.

Previous qualitative studies revealed that healthy children, even young as five years old, were able to recognize the unique characteristics of self-care, play, and work, and their contribution to health and development. Children perceive play as something that you want to do; it is related to choice and it is fun. Play is related to the right amount of challenge not too difficult nor too easy and involves active doing. On the other hand, work, at least work at school, is something that you have to do, it is difficult and challenging. The difficulty of sitting still, listening, thinking and writing, require an effort (Chapparo, & Hooper, 2002, 2005; Howard, 2002; Miller, & Kuhaneck, 2008; Moore, & Lynch, 2018).

Besides the qualitative findings, quantitative studies are scarce among children. In an initial study, authors (deleted for review) aimed to assess the correlations between the perceived meaning of occupations and the actual participation in everyday activities. For that purpose, they developed the Perceived Meaning of Occupation Questionnaire, PMOQ. The PMOQ assesses four distinct dimensions of occupational meaning, the perceived value (importance), the perceived challenge (difficulty), the perceived sense of time (enjoyment), and the perceived autonomy. As hypothesized, the PMOQ dimensions were moderately correlated with the children's actual participation in everyday activities. However, the determinants of children's perceived meaning of occupations were not been studied yet. Children, as well as adults, participate in everyday activities that they need to do, want to do and are expected to do by parents, teachers or peers (World Federation of Occupational Therapists, 2012); hence, we assume that the meaning attached to occupations would be influenced by personal and environmental factors. The present study focuses on personal factor, specifically on the children's socio-emotional characteristics and executive functions as potential determinants of the children's' perceived meaning of occupations.

Socio-emotional characteristics relate to internalizing and externalizing behaviors. Children's internalizing behaviors refer to anxiety, depression, or withdrawal. Children's externalizing behaviors refer to impulsive, disruptive, and aggressive behavior (Achenbach, 1978). Both, internalizing and externalizing problems were found to predict developmental outcomes such as adjustment (Armstrong, Lycett, Hiscock, Care, & Sciberras, 2015), school-achievements (Masten et al., 2005), and social-competence (Bornstein, Hahn, & Haynes, 2010). Moreover, internalizing emotional difficulties were found to hamper children's enjoyment of their participation in out of school leisure activities (Rosenberg, & Bart, 2016). Hence, we assume that the children's internalizing or externalizing behaviors might/would affect the distinct dimensions of their perceived meaning of occupations. An internalizing child, for example, might perceive social activities as most demanding. In contrast, an externalizing hyperactive child would find school activities as more demanding and less valued. Except for socio-emotional characteristics of the child, other personal factors such as executive functions might also influence the perceived meaning of occupations.

Executive functions (EFs) are "specific mental functions …especially dependent on the frontal lobes of the brain, including complex goal-directed behaviors, such as decision making, abstract thinking, planning and executing plans, mental flexibility, and deciding which behaviors are appropriate and under what circumstances" (International Classification of Functioning, Disability, and Health [ICF-CY]; WHO, 2007, p.57 ). In many studies among typically developing children, EFs were found to predict outcomes such as engagement in play (Kelly, Dissanayake, Ihsen & Hammond, 2011), academic achievements (Roebers, Cimeli, Röthlisberger, & Neuenschwander, 2012), and behavior (Jacobson, Williford & Pianta, 2011). Moreover, EFs were found to promote independence in participation in everyday activities among children with and without developmental disabilities (Rosenberg, 2015; Rosenberg, Jacobi, & Bart, 2017). These findings highlight the vital role of EFs in the daily lives of children. Hence, we assume that executive functions would affect the distinct dimensions of the perceived meaning of occupations. For example, a child with executive deficit who needs frequent prompts to accomplish his daily chores would experience less autonomy. Hence, the present study aims to assess the correlations between children's socio-emotional characteristics and EFs and their perceived meanings of occupations, among typically developing school-aged children.

**Method**

**Study design**

We used a cross-sectional design.

**Participants**

A convenience sampling method was used by word of mouth to recruit 80 typically developing, healthy children (40 boys and 40 girls), aged 6-13 years, and their parents. Parents who agreed to participate in the study signed a consent form. All of the children attended mainstream schools. Children with any medical or developmental disabilities, as reported by their parents, were excluded from the study. Table 1 presents the sample socio-demographic characteristics.

<Insert Table 1 here>

**Measurements**

***Perceived Meaning of Occupation questionnaire, PMOQ*** (Rosenberg, Pade, & Avrech Bar, 2019). The PMOQ is a self-report questionnaire for children. It was designed to assess children's perceived meaning of everyday activities. In line with other questionnaires for children (e.g., CAPE; King et al., 2002; COSA; Keller & Keller; 2005), the PMOQ uses simple language and visual aids (such as happy or unhappy faces, stars, and animated clocks) to illustrate possible answers. In this study, we used an extended version contains 30 activities, that were chosen through a process of expert validation. The activities belong to seven domains of occupations: activities of daily living, instrumental activities of daily living, sleep, social participation, play, leisure, and education. For each activity in which a child participates, the child is asked to respond to four questions: a) Is this activity important to you? The child responds on a three-point rating scale: 3="very important to me"; 2="not so important to me"; 1="not important to me at all." b) Is this activity difficult for you? The child chooses one of the following responses: 3="very difficult for me"; 2="not so difficult for me"; 1="not difficult for me at all." c) How does the time pass for you? The possible answers are: 3="time passes quickly"; 2="time passes neither quickly nor slowly"; 1="time passes slowly." d) Finally, did you choose this activity or were you obligated to do it? The final scores for each dimension are: Valuable is the mean score for importance (the sum of importance divided by the number of activities the child participates in). A higher score indicates that the child attributes higher importance to his/her everyday activities. Challenge is the mean score for difficulty (the sum of difficulty divided by the number of activities the child participates in). A higher score indicates that the child perceives his/her everyday activities as more difficult. Felt time is the mean score for the sense of time passing (the sum of time divided by the number of activities the child participates in). A higher score indicates that the child experiences time as passing faster while participating in everyday activities. Autonomy is the difference between the number of activities a child "chooses to do" and the number of activities he or she "must do." A higher score indicates that the child experiences more autonomy in his/her everyday activities. In a previous study, the PMOQ had good internal reliability (Cronbach’s coefficient alpha = 0.76). Its construct validity was demonstrated by correlations with dimensions of participation (deleted for review).

***The Strengths and Difficulties Questionnaire, SDQ*** (Goodman, 1997). The SDQ is a brief screening questionnaire for measuring the mental health and psychological functioning of children aged 3–16 years. For each of the 25 items, parents report on the degree to which the item describes their child on a 3-point Likert scale (not true, somewhat true, or certainly true). The SDQ items produce three subscales: Internalizing behavior (emotional symptoms and peer problems), Externalizing behavior (conduct problems and hyperactivity/inattention), and Pro-social behavior (Goodman, Lamping, & Ploubidis, 2010). Higher scores indicate worse functioning, with the exception of the pro-social subscale, where higher scores indicate better functioning. The SDQ has good internal reliability, and its construct validity has been supported by comprehensive factor analysis and correlational studies (McCrory & Layte,2012; Stone et al., 2010). In the present study, we used the SDQ to assess the socio-emotional characteristics of the child.

***Verbal Working Memory, VWM*** (Shany et al., 2006; Shany & Share, 2011). This test comprises 12 sets of sentences. Each set comprises two to five sentences.

In each sentence, the participant is asked to fill in a missing word (e.g., "the elephant is big, the mouse is …"); then (s)he is asked to complete another sentence and to repeat the two words in the correct order. The number of repeated words increases from two to five. For each set of sentences the participant gains one point if (s)he repeated all the words in the correct order (maximum 12 points). The test is ended after two consecutive failures. In the present study, we used the VWM test as a performance measure of EF.

***Behavior rating inventory of executive function, BRIEF*** (Gioia, Isquith, Guy, & Kenworthy, 2000). The BRIEF is a parent questionnaire designed to measure behavioral manifestations of executive functioning. The BRIEF consists of 86 items that form eight clinical scales: Inhibit, Shift, Emotional Control, Initiate, Working Memory, Plan/Organize, Organization of Materials, and Monitor. For each item, the parents rate their child's behavior on a three-point Likert scale (Never, Sometimes, Often). Higher scores indicate greater perceived difficulties in each scale. Raw scores can be converted to standard scores. The BRIEF has good internal reliability scores (Cronbach alpha from 0.80-0.98), test-retest reliability (correlation from 0.76-0.85), and its construct validity has been supported by comprehensive factor analysis and correlational studies (Gioia, Isquith, Guy, & Kenworthy, 2000; Gioia, Isquith, Retzlaff, & Espy, 2002). In the present study, we used the BRIEF raw scores as the behavioral measures of EFs.

**Procedure**

Ethical approval was obtained from the departmental ethics committee at a central University (deleted for review). Parents who agreed to participate in this study received information about the procedure, and completed the BRIEF and SDQ independently at their convenience. Occupational therapy students were trained by the first author to use the PMOQ and VWM in a standard way. Each child was assessed individually in a quiet room in the child's home.

**Data analysis**

To explore the socio-demographic variables we used descriptive statistics. To test for normality, we used the Shapiro-Wilk test. To test the associations between the dependent (PMOQ) and independent variables (BRIEF, SDQ, VWM) we computed Spearman correlations. Data were analyzed using the SPSS-23 statistical package (SPSS Inc., Chicago-Ill., USA). The level of significance was set at 0.05 for all statistical tests.

**Results**

**The correlations between the perceived challenge and the child's factors**

The perceived challenge was positively associated with SDQ-internalization (r= 0.302, p=0.007), and negatively associated with VWM (r= -0.243, p=0.030).

**The correlations between the perceived value and the child's factors**

The perceived value was positively associated with SDQ-prosocial behavior (r= 0.223, p=0.050), and negatively associated with the BRIEF-Plan (r= -0.226, p=0.044).

**The correlations between the perceived felt time and the child's factors**

The perceived felt time was positively associated with BRIEF-Monitor (r= -0.270, p=0.016).

**The correlations between the perceived autonomy and the child's factors**

No significant correlations were found between the perceived autonomy and the child's factors.

**Discussion**

In the present study, we examined the correlations between the perceived meaning of occupations – value, challenge, the perceived sense of time and autonomy with the socio-emotional characteristics and executive functions of school-age children. Our main finding revealed that the dimensions of the perceived meaning of occupations were differently associated with the personal factors of the child. More specifically, the perceived challenge, the perceived value and the perceived sense of time were mostly correlated with the child difficulties (internalizing behavior and lower EFs) and the perceived value, however, was also correlated with the child's strength (prosocial behavior). Nevertheless, the strength of the associations was low or at most moderate, stressing the need to study further other determinants of children's perceived meanings of occupations.

The perceived challenge was associated with SDQ-Internalization. Children presenting internalizing behaviors might be withdrawn or underactive, rigid and constrained, not talkative; they may experience anxiety, somatosensory aches, and social difficulties (Henricsson, & Rydell, 2006). Moreover, previous studies found correlations between internalizing behavior and personal factors as sensory over-responsivity (Boterber, & Warreyn, 2016), or human environmental factor as negative parenting (Braza et al., 2015). Compatible with that, these children may also experience everyday activities as more challenging.

The perceived challenge was also associated with working memory. As working memory decreased, the perceived challenge increased. Working memory is the ability to hold information in mind and mentally work with it (Diamond, 2013). Children with working memory deficits are kwon to struggle in their learning; they tend to be inattentive and may have vulnerable self-esteem. They may perceive their everyday activities as more demanding and challenging due to their tendency to be distracted, forgetting instructions, and not completing the tasks (Alloway, Gathercole, Kirkwood, & Elliott, 2009).

The perceived value was positively associated with prosocial behavior. Being empathic, helping, sharing, or comforting are prosocial behaviors that are performed with the intention of benefiting others (Gross et al., 2017; Mikulincer & Shaver, 2010 introduction p. 4). Previous studies revealed the contribution of prosocial behavior to positive developmental outcomes, academic achievements and peer relations (Caprara et al., 2000). Moreover, personal values as conformity, benevolence, and self-direction were found to be associated with actual prosocial behaviors (Bardi, & Schwartz, 2003). Compatible with that, the prosocial children valued activities such as doing chores, praying, caring pet, helping sibling, learning, and training. However, the perceived value decreased with more planning difficulties. Planning and organizing skills refer to the capacity to manage current and future task demands and to bring order to information or equipment. A child with planning difficulties tends to postpone his duties and fails to deal with complex tasks. Frequently forgets his homework, chores or afterschool activities (Gioia et al., 2000; Luciana et al., 2009). Attributing less importance to everyday activities is an expected consequence.

The perceived felt time was associated with self-monitoring. Self-monitoring is a skill used to keep track of one's own actions and performance. It was found that the time was perceived moving faster as monitoring difficulties increased. Task-monitoring such as keeping accuracy, checking for mistakes, correcting spelling, or improving performance obviously takes time. No wonder less monitoring was associated with a faster sense of time. Moreover, executive dysfunction in self-monitoring may be related to temporal processing difficulties, as was found among children with ADHD (Meaux & Chelonis, 2003; Smith et al., 2002).

Contrary to our expectation, the perceived autonomy was not associated with any factor of the child. A sense of autonomy may arise through the autonomy-supportive social environment at home and school (Niemiec & Ryan, 2009; Smetana, 2017). Even neighborhood safety and other physical environmental factors may be relevant in the context of children's perceived autonomy in their occupations (e.g., Villanueva et al., 2014). However, environmental factors were not part of the current study.

Overall, our initial findings advance knowledge about the perceived meaning of occupation among typically developing healthy children and its determinants. The findings revealed that the perceived challenge, the perceived value and the perceived sense of time are mostly correlated with child difficulties (internalizing behavior and lower EFs). The perceived value, however, is also correlated with the child's strength (prosocial behavior). The perceived autonomy is not correlated with any of the child factors. Further studies are warranted to assess the contribution of environmental factors to the perceived meaning of occupation among children with and without developmental disabilities.

**Conclusions and limitations**

Our findings provide support to the multi-dimensional approach to the study of the perceived meaning of occupation, among children. The strength of associations between dimensions of occupational meaning and the child's factors were low to moderate. This leads us to suggest that beside the characteristics of the child, the characteristics of the occupation itself or the environment may determine the perceived meaning of occupation. Therefore, further studies should explore the occupational purpose (self-care, productivity or leisure), its physical demand (sedentary or active), the social context (formal or informal, solitary or co-occupation), and the environment (indoor or outdoor), and how they contribute to the perceived meaning of occupations among children. Notwithstanding, the generalization of the current findings is limited due to the sample characteristics. Most of the children had relatively educated parents with average or above-average income.

**Implications for Occupational Therapy Practice**

**In the academic setting**

• The PMOQ may assist researchers to continue exploring the perceived meaning of occupations and its determinants, among children.

• OT educators may use the PMOQ as an innovative tool for teaching on the meaning of occupations among children.

**In the clinical setting**

• The findings may encourage clinicians to consider how socio-emotional and meta-cognitive characteristics of a child, may also affect his/her perceived meaning of occupations.

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Table 1.Demographic variables of the sample (N=80)

|  |  |
| --- | --- |
| *M (±SD) or N (%)* | *Characteristics* |
| 40 (50) | Boys |
| 40 (50) | Girls |
| 8.75±1.74 yr | Child's age |
|  | Family |
| 3.33±1.43 | Number of children |
| 41.59±5.74 yr | Fathers' age |
| 30-56 yr | Fathers' age range |
| 38.76±5.69 yr | Mothers' age |
| 25-50 yr | Mothers' age range |
| 13.86±3.38 yr | Fathers' education |
| 0-22 | Fathers' education range |
| 14.46±3.95 yr | Mothers' education |
| 0-21 | Mothers' education range |
|  | Religiosity |
| 38(47) | Secular |
| 14(18) | Traditional |
| 28(35) | Orthodox |
|  | Total family income a |
| (15) 12 | Below average |
| (41) 33 | Average |
| (44) 35 | Above average |
|  | Place of living |
| 55 (69) | City |
| 25 (31) | Other |
| a According to the Israeli Central Boreau of Statistic, average family income was 3,450 $ per month, at the time of the data collection | |