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Psychometric Properties of the Make My Day Tool to Assess Perceived Performance of Children's Daily Activities

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Psychometric Properties of the Make My Day Tool to Assess Perceived Performance of Children's Daily Activities

Abstract

Background: No instrument with strong psychometric qualities exists to measure occupational performance in young children through child-reporting. We investigated the reliability and validity of the Make My Day (MMD) tool for children aged 4 to 7 years and their parents.

Method: We administered a demographic questionnaire, the MMD, and two other tools having similar objectives to a sample of 75 typically-developing Jewish-Israeli children aged 4 to 7 years and their parents. For internal consistency, we pooled the data with those from our earlier study involving 62 typically-developing Arab-Israeli children.

Results: The MMD exhibited acceptable to good internal consistency for the pooled children's ($\alpha = .65 - .89$) and parental ($\alpha = .68 - .84$) data. Paired student's t-testing revealed significantly higher children's self-ratings than parental ratings for performance quality, independence, and performance satisfaction in some activity areas. Factor loadings were of adequate strength, significant, and consistent with the theoretical underpinnings of the tool. The parental version of the MMD exhibits good concurrent validity and good discriminant validity.

Conclusion: The MMD has good reliability and validity and, although some aspects remain to be investigated, the MMD is the first self-report tool for children in this age group for which any such data have been reported.

Keywords

child; child preschool; self-assessment; occupational therapy; needs assessment; task performance and analysis

Since the beginning of the occupational therapy profession, engagement in occupation has been valued as the primary therapeutic agent as well as the goal of intervention (Fisher, 2013), and the profession has strongly favored a client-centered approach (Mroz, Pitonyak, Fogelberg, & Leland, 2015). At the heart of client-centered practice lies the collaboration and partnership between therapist and client (for widely-accepted definitions of client-centered practice, visit

<https://www.caot.ca/pdfs/otprofile.pdf>).

The emphasis on client-centered intervention has provided the impetus for the development of hundreds of self-report assessment tools (see the OT Assessment Index at <https://mh4ot.com/resources/ot-assessment-index/> for a list of 282 such tools). Many researchers have assumed that the processes of self-assessment and goal setting are too abstract for young pediatric clients and that the therapist should determine the direction of therapy in consultation with the child's parents (as in family-centered practice) and/or teachers (Dunford, Missiuna, Street, & Sibert, 2005; Missiuna, Pollock, & Law, 2004). However, findings suggest that preschool children and kindergarteners can self-assess with respect to other abstractions, such as the quality of their life (Varni, Limbers, & Burwinkle, 2007), and between multiple dimensions of self-concept (physical, appearance, peers, parents, verbal, and math) (Marsh, Ellis, & Craven, 2002) when given an age-appropriate instrument.

A central focus in occupational therapy is the performance of routine daily activities. With this in mind, we designed and developed the Make

My Day (MMD) (Ricon, Hen, & Keadan-Hardan, 2013) to enable children aged 4 to 7 years and their parents to inform therapists about the children's strengths and difficulties in performing routine daily tasks and so aid in the collaborative identification and prioritization of relevant occupational therapy intervention goals. The MMD was recently assessed by Cordier et al. (2016), who undertook a systematic review to identify instruments that measure occupational performance in children through child-report methods and to appraise their psychometric properties. Their review identified six instruments that had been designed for use by occupational therapists to measure skills and behaviors relating to occupational performance in children aged 2 to 18 years (including identifying the child's occupations, what occupations are important, and how the child's characteristics combine with the occupational environment to create successful occupational performance) and for which psychometric data were available. Four of these six measures aimed to evaluate children's perceptions of their competence in performing activities. However, only three of the four were designed for use with young children, namely the Perceived Efficacy and Goal-Setting System (PEGS) (Missiuna & Pollock, 2000), the Child Occupational Self-Assessment (COSA) (Keller, Kafkes, & Kielhofner, 2005; Keller & Kielhofner, 2005) and our MMD tool (Ricon, Hen, & Keadan-Hardan, 2013).

The review (Cordier et al., 2016) evaluated the studies with respect to the relevant COnsensus-based Standards for the selection of health measurement INstruments (COSMIN) quality

domains (see Table 2 of Cordier et al., 2016, for a complete yet concise description of the COSMIN domains). For each tool, the review authors examined (a) its reliability through the measurement properties of internal consistency, reliability, and measurement error; and (b) its validity, via the measurement properties of content validity, construct validity (i.e., hypothesis testing and structural and cross-cultural validities), and criterion validity. Among the instruments of relevance to the current study, the PEGS, which was designed to enable children aged 5 to 9 years to report how they perceive their competence in everyday activities and to set their own goals for intervention, scored the best. The review found it to have excellent reliability, good hypotheses testing, and excellent cross-cultural validity, but no data were reported for the other measurement properties. The COSA, which measures how competently children aged 6 to 17 years feel engaging in and completing activities and the values associated with these activities, was rated as having fair structural validity and hypotheses testing, but again there were no reports for any of the other measurement properties. The MMD was found to possess fair internal consistency and hypothesis testing, but similar to the other tools, it was found not to have reported against any of the other measurement properties. Thus, no tool having strong psychometric qualities currently exists for young children. The current study aimed to begin to rectify this lack with respect to the MMD.

The specific aims of this study were twofold. We sought to investigate the reliability of the MMD by exploring its internal consistency for

children in different age sub-groups and its inter-rater reliability in a comparison between children aged 4 to 7 years and their parents. We also examined the validity of the MMD by determining its content validity with children aged 4 to 7 years and its concurrent validity, including its discriminant (or divergent) validity and its convergent validity. Investigating the other aspects of the COSMIN quality domains that Cordier et al. (2016) found lacking was beyond the scope of the present work, which was in advanced stages of preparation when the Cordier et al. (2016) review came to our attention; however, we intend to examine these domains in the future.

Reliability is defined as the degree to which the measurement is free from measurement error (Mokkink et al., 2010). The COSMIN relates to three reliability measurement properties (internal consistency, reliability, and measurement error), with the reliability measurement property having three components, namely, test-retest, inter-rater, and intra-rater (Mokkink et al., 2010). Here we focused on the internal consistency measurement property, which we measured by means of correlation, and the inter-rater component of the reliability measurement property, which we examined by t-test. In our context, internal consistency describes the degree of correlation between the MMD items in each of the occupational dimensions of its activity domains. The term inter-rater reliability may imply that, in the case of disagreement, one rater is more or less reliable than another. This implication is somewhat problematic in our context because the MMD was designed to enable children's concerns to be discussed in a

therapy context alongside those of their parents in the full expectation that they may differ considerably from each other on some points. Therefore, we also aimed to explore the differences (i.e., analyze the variance) that we expected to find between the child and parental ratings and, in particular, if and how these differences correlated with the child's demographic characteristics (e.g., age and gender).

Content validity is defined as the degree to which the content of an instrument adequately reflects the content to be measured (Cordier et al., 2016), and we investigated it by means of factor analysis. Discriminant (or divergent) validity is an aspect of construct validity that tests whether constructs that should have no relationship do, in fact, have no relationship. We examined the ability of the MMD to discriminate between children in three different age groups and between the parents of the children in each age group.

Finally, we set out to determine the concurrent validity of the MMD by means of Pearson's correlations. Concurrent validity is an aspect of criterion validity, which assesses the degree to which the scores on an instrument (the MMD) satisfactorily reflect a gold standard (Cordier et al., 2016). However, as detailed above, no currently-available tools can be considered to approach such a standard. We therefore compared the MMD to the PEGS and the Children Participation Questionnaire (CPQ/CPQ-School). We chose the PEGS because, although the COSA also shares aims similar to those of the MMD, the PEGS was designed for a younger age group, closer to that targeted by our instrument. No validity data

are available for the PEGS, and therefore we also used the CPQ, for which such data are available (Rosenberg, Jarus, & Bart, 2010; Rosenberg & Bart, 2015). Since the CPQ does not include a child self-assessment version, the MMD to the CPQ correlation was necessarily limited to their respective parental versions.

Research Questions

We sought to answer the following research questions:

1. What is the internal consistency of the MMD for Jewish- and Arab-Israeli children aged 4 to 7 years and their parents when examined as pooled and separate samples?
2. What is the inter-rater reliability of the MMD between Jewish children aged 4 to 7 years and their parents?
3. Does the MMD possess content validity with Jewish children aged 4 to 7 years?
4. Does the child version of the MMD possess concurrent validity when compared with the child version of the PEGS with Jewish children aged 5 to 7 years?
5. Does the parental version of the MMD possess concurrent validity when compared with the caregiver versions of the PEGS and of the CPQ/CPQ-School (Rosenberg et al., 2010; Rosenberg & Bart, 2015) with respect to the parents of Jewish-Israeli children aged 4 to 7 years?
6. What is the discriminant validity of the MMD with respect to Jewish-Israeli children in three age subgroups: pre-kindergarten (4

to 5 years); kindergarten (5 to 6 years); and grade 1 (6 to 7 years)?

Method

Participants

The participants were a convenience sample of 75 typically-developing Jewish-Israeli children aged 4 to 7 years ($M = 5.5$ years, $SD = 0.90$) and their parents. To examine discriminant validity, the sample was divided into three age groups: 4 to 5 years, 5 to 6 years, and 6 to 7 years, containing an adequate numbers of boys and girls. In most instances, the parental couple provided a single joint assessment, although in some instances only the mother completed the assessment.

The inclusion criteria were: (a) Jewish-Israeli children aged 4 to 7 years studying in a general education kindergarten or school and (b) both parents living together with their child. Exclusion criteria included: (a) a diagnosis of developmental, behavioral, emotional, communicative, sensory, or neurological impairment; (b) previous or current treatment with developmental therapy or medication on a regular basis; and (c) born preterm (prior to 37 weeks gestation). These inclusion/exclusion criteria were the same as those used in an earlier study of the psychometric properties of the MMD conducted by Keadan-Hardan (2012) on 62 normative Arab-Israeli children aged 4 to 7 years ($M = 5.16$ years, $SD = 0.92$).

For internal consistency testing, the data from the current study were pooled with those of Keadan-Hardan (2012). The pooled sample contained 137 Jewish- and Arab-Israeli children

who matched the Jewish-Israeli sample with respect to age, gender, socioeconomic status, and pregnancy and developmental history.

Instruments

Demographic questionnaire. This questionnaire was developed by Keadan-Hardan (2012). It includes items related to age, gender, socioeconomic variables, pregnancy history, and birth and developmental details.

Make My Day (MMD). This 34-item tool is designed to assess the perceptions of children aged 4 to 7 years regarding the number of activities they perform (performance), the quality of their performance (quality), their level of independence (independence), and their level of satisfaction with their performance (satisfaction). It includes a children's version comprised of picture cards that illustrate a child performing typical age-related daily activities and a parental questionnaire including statements that correspond to the children's pictorial version. The MMD examines four occupational dimensions, namely, a child's performance (performance), the quality of that performance (quality), the degree of independence the child exhibits during performance (independence), and how satisfied the child is with his or her performance for a wide range of activities (satisfaction). The first of these dimensions, performance, stands alone, while the last three dimensions are examined with respect to three activity domains, namely, basic activities of daily life (BADL), instrumental activities of daily living (IADL), and play (PLAY), such that the MMD comprises a total of 10 subscales or outcome measures.

In the MMD, BADL include waking up, tidying the bed, brushing teeth, washing myself, getting dressed, combing hair, putting on socks, tying laces, preparing to leave the home, and organizing clothes for the next day; whereas IADL cover drinking, eating, eating with cutlery, preparing a sandwich, organizing my school/kindergarten bag, and doing homework or working in an activities book. The PLAY dimension of the MMD examines enjoying family time, playing outside or with friends, talking on the phone, reading or looking at a book, doing craft activities, working or playing on computer, playing by myself, and watching TV. The dimensions of the MMD accord with the Occupational Therapy Practice Framework: Domain and Process (OTPF) (American Occupational Therapy Association [AOTA], 2002). Specifically, the MMD covers six of the eight areas of occupation defined by the OTPF, namely, activities of daily living (covered by the BADL dimension of the MMD); instrumental activities of daily living and education (covered by the IADL dimension of the MMD); and play, leisure, and social participation (covered by the PLAY dimension of the MMD). The MMD does not investigate the rest and sleep or the work areas of the OTPF. The specific activities included in the MMD are consistent with a study by Hofferth and Sandberg (2001) on the typical daily routine activities performed by young children (0 to 12 years of age).

Children are first asked to select cards representing their routine daily activities, so providing data for the performance domain. Next,

with the mediation of the therapist, the children rate their performance with respect to the remaining three domains of quality, independence, and satisfaction according to a 4-point smiley-Likert scale (1 = *not well*, 4 = *very well*; 1 = *independent*, 4 = *requires complete assistance*; and 1 = *not satisfied*, 4 = *very satisfied*; respectively). It should be noted that verbal mediation provided by the therapist as the children examine the concrete pictures is in their mutual native tongue, namely, Hebrew for the Jewish-Israeli children who are the focus of the current work and Arabic for the Arab-Israeli children in the pooled sample. The concepts that we have translated here as performance, quality, independence, and satisfaction are verbalized by the therapist to the children in ways that young typically-developing children can be expected to understand, such as the Hebrew/Arabic equivalents of “how pleased are you with how you do this.”

For the parental component of the tool, the parents are asked to indicate activities performed by their children on a dichotomous scale (performs/does not perform), and to rank each activity (via a regular 4-point Likert scale, as described above) according to performance, quality, level of independence, and their satisfaction with their child's performance. This enables a comparison between the parent and child reports.

Initial validation of the MMD was accomplished through expert validation performed by six occupational therapists with expertise in pediatric/family-centered therapy from six medical clinics. Later, aspects of the reliability and validity of the tool were examined by Keadan-Hardan

(2012) among 62 typically-developing Arab-Israeli children aged 4 to 7 years. She found that the internal consistency of the research variables was moderate to very high (Cronbach's $\alpha = 0.66 - 0.96$), given that acceptable values of Cronbach's alpha range from 0.70 to 0.95 (Tavakol & Dennick, 2011). Her analysis of the concurrent validity between the children's versions of the MMD and the PEGS (Missiuna et al., 2004) for children in the same age range (5 to 7 years) revealed moderate to strong correlations (Pearson's $r = .30 - .65$). Moderate to strong correlations were also found between the tools' respective parental versions (Pearson's $r = .28 - .58$).

Perceived efficacy and goal setting in young children (PEGS). The PEGS (Missiuna & Pollock, 2000) was designed to enable children aged 5 to 9 years to reflect on their ability to perform everyday occupations and identify goals for occupational therapy intervention. The tool presents children with pictures of 24 items: catching balls, cutting food, sports, playing video games, finishing work on time, making things with hands, taking part in games and sports, tying shoes, skipping, cutting with scissors, taking part in playground activities, doing up buttons, working on computer, building things, bicycle, putting on clothes, ball games, printing, kicking balls, doing up zippers, keeping desk tidy, painting, running, and drawing (Missiuna, Pollock, Law, Walter, & Cavey, 2006). These items represent fine and gross motor skills and reflect daily occupations that would typically be performed on a regular basis by all children who are attending school. The PEGS items are grouped into three categories: self-care (5

items), school-related tasks (9 items), and leisure and play activities (10 items).

The items are presented to the child sequentially as pairs of picture cards, with one picture depicting a child performing a daily task competently and the other showing a child who demonstrates less competence. A forced choice format is used in which the therapist reads the statements under each picture and then asks the child to select the picture that is most like him or her. The therapist then asks the child whether the picture is "a lot" or "a little" like him or her. For the goal-setting process, the therapist selects the cards in which the child indicated that she or he was "a lot" like the child who was less competent; lays them out in front of the child; and prompts the child to discuss the context of the task, what makes the task difficult, and how frequently the child performs the tasks. The children's version of the PEGS is solely pictorial, and we used the Hebrew-language version of the parental PEGS version (Hillel-Miller, Rosenblum, & Josman, 2011). The PEGS has been found to have excellent reliability (79.5) and cross-cultural validity (80.5), but no data are available regarding its internal consistency and content and concurrent validity (Cordier et al., 2016).

Children participation questionnaire (CPQ). The CPQ (Rosenberg et al., 2010; Rosenberg & Bart, 2015) is a parent-completed questionnaire constructed according to the OTPF classification system and designed to measure the participation of preschool children aged 4 to 6 years (Rosenberg et al., 2010). The CPQ has been adapted to create the CPQ-School version, which assesses the participation patterns of schoolchildren

aged 6 to 9 years (Rosenberg & Bart, 2015). The CPQ for preschoolers (ages 4 to 6) includes 44 activities, whereas the CPQ-School version (ages 6 to 9) contains 55 activities. Both versions are divided into six areas of occupation: BADL, IADL, play, leisure, social participation, and education. Similar to the MMD, the CPQ/CPQ-school does not cover the areas of rest and sleep or of work.

Parents report on five dimensions of their child's participation in each area of occupation. The dimensions are participation diversity (number of activities in which the child participates), participation intensity (mean participation frequency, from 0 = *never* to 5 = *everyday*), independence (assistance needed, from 1 = *needs much assistance* to 6 = *fully independent*), child enjoyment (mean level of child's enjoyment from participation, from 1 = *doesn't take pleasure* to 6 = *takes much pleasure*), and parent satisfaction (i.e., with their child's performance, from 1 = *not at all satisfied* to 6 = *very satisfied*). The CPQ was found to have good internal reliability with Cronbach's alpha of 0.79 – 0.9 for the participation measures. Intra-class correlations of 0.71 – 1.00 indicate that it has good temporal stability, too. The discriminant CPQ is able to discriminate between children with and without disabilities in all the CPQ, between age groups, and between groups of varying socioeconomic status and showed both convergent and divergent validity (Rosenberg et al., 2010).

Procedure

Approval for this study was granted by the Haifa University Ethics Committee. Recruitment letters were sent to parents explaining the purpose of the study, and the parents of children meeting the

study criteria were asked to sign their informed consent to participate. The study goals were also explained to the children and their assent to participate was obtained. The parents completed the parental version of the PEGS, the CPQ (pre-school/school versions, as appropriate) and the MMD, in that order. The children aged 5 to 7 years completed the PEGS (which is not designed for use with 4-year olds). Both sessions with the children took place at their kindergarten/school and lasted from 30 to 45 min.

Data Analysis

The results were analyzed using SPSS 21 software. Population characteristics were described by descriptive statistics. We examined internal consistency in the pooled data set (RQ1) by means of Cronbach's alpha co-efficient, because it is widely considered the most suitable means for assessing internal consistency, that is, the extent to which all items contribute positively toward measuring the same concept (Gwet, 2014). We examined inter-rater reliability among Jewish-Israeli children and their parents (RQ2) by means of paired Student's t-tests. We chose parents for inter-rater reliability testing, as they are the most widely used proxy raters for children (Matza, Swensen, Flood, Secnik, & Leidy, 2004). The degree of inter-rater agreement between parents and children can vary widely, but has been found to correlate better for observable physical domains than for nonobservable emotional domains (Matza et al., 2004). The MMD focuses on functioning in daily activities, which falls in the observable physical domain, and we therefore hoped to observe an acceptable Cronbach's alpha of 0.7 (George &

Mallery, 2003). However, we did not expect to achieve agreement much greater than that, as young children and their parents can be expected to differ with respect, for example, to what activities are important and what performance level is satisfactory, and therefore view an otherwise questionable Cronbach's alpha of 0.6 (George & Mallery, 2003) as acceptable in our context.

We investigated the content validity of the MMD among Jewish-Israeli children (RQ3) using confirmatory factor analysis, which is a technique for estimating the population level factor structure underlying the sample data in the case of theory testing (Matsunaga, 2010). We assessed whether the factors corresponded to the theory-based occupational dimensions (namely, participation, BADL, IADL, and PLAY) of the MMD. Only those items completed by 90% or more of the total sample were included in the analysis. Our sample size was 75, and 90% of the sample reduces it to a size of 68, which is borderline with respect to size for this type of analysis.

We then examined the concurrent validity of the MMD against two similarly purposed tools (RQ4 and RQ5). We determined concurrent validity using the Pearson's correlation coefficient (r), because these analyses aimed to calculate the degree of consistency between the judges (i.e., children and their parents). We conducted the Pearson's correlations by comparing the Jewish-Israeli child and parental scores from the MMD with those obtained from the PEGS and the CPQ. Whereas the CPQ, like the parental MMD, is designed for use with parents of children aged 4 years and older, the PEGS tool was designed for an

older minimum child age (5 years). Therefore, the Pearson's correlations undertaken with respect to the PEGS relate only to data from the children aged 5 to 7 years ($n = 50$) and their parents. Greater concurrent reliability is expressed by Pearson r values closer to 1. A p value of < 0.05 was considered significant.

Finally, we used MANOVA to examine differences between the MMD scores of children in the three age groups and between the parents of the children in each age group to determine the discriminant validity of the MMD (RQ6).

Results

Demographic Data

The Jewish-Israeli children studied had a mean age of 5.5 years ($SD = .90$) and were one of three to four children (mean, 3.6 children; $SD = .90$) in their families, who lived primarily in rural areas. Their parents were in their middle years (mean age: mother, 34.8 years, $SD = 4.0$; father, 36.4 years, $SD = 4.2$). Most of the parents had post-secondary education (mean years of education: mother, 16.4 years, $SD = 1.5$; father, 16.1 years, $SD = 2.1$ years).

Internal Consistency

Cronbach's alpha values demonstrated acceptable to good internal consistency (George & Mallery, 2003) for the pooled children's ($\alpha = .65 - .89$) and parental ($\alpha = .68 - .84$) data for all study variables (see Table 1). A much greater internal consistency spread was found when the data from each sample were analyzed separately for children (Arab, $\alpha = .48 - .94$; Jewish $\alpha = .55 - .93$) and adults (Arab; $\alpha = .55 - .83$; Jewish $\alpha = .63 - .81$) (see Table 2). A Cronbach's α value of less than .6 was a single outlier in the parent samples, but were

more common among the child samples;
nevertheless, all but one of the child Cronbach's α

values (PLAY satisfaction among Arab children)
were greater or equal to .55.

Table 1

Internal Consistency of the Make My Day (MMD) as Assessed by Cronbach's Alpha for a Pooled Sample of Jewish-Israeli (n = 75) and Arab-Israeli (n = 62) Children aged 4 to 7 years

MMD Tool Subscale	No. of items	Child Reports		Parental Reports	
		Mean (SD)	α	Mean (SD)	α
Performance	24	20.94(2.26)	0.78	20.80(2.63)	0.68
BADL activities: Quality of performance	10	3.23(0.54)	0.83	3.55(0.44)	0.83
BADL activities: Independence	10	3.08(0.64)	0.84	3.39(0.54)	0.84
BADL activities: Satisfaction	10	3.55(0.46)	0.80	3.55(0.48)	0.86
IADL activities: Quality of performance	6	3.67(0.32)	0.72	3.75(0.34)	0.65
IADL activities: Independence	6	3.60(0.35)	0.74	3.71(0.33)	0.65
IADL activities: Satisfaction	6	3.82(0.26)	0.71	3.75(0.48)	0.87
PLAY activities: Quality of performance	8	3.77(0.25)	0.69	3.84(0.26)	0.74
PLAY activities: Independence	8	3.70(0.29)	0.73	3.85(0.19)	0.66
PLAY activities: Satisfaction	8	3.86(0.18)	0.68	3.78(0.41)	0.89

Note. N = 137. The children's group included equal numbers of boys and girls.

Table 2

Internal Consistency of the Make My Day Tool as Assessed by Cronbach's Alpha for Jewish-Israeli (n = 75) Children and for Arab-Israeli Children (n = 62) aged 4 to 7 years

MMD Tool Subscale	No. of items	Cronbach's α			
		Child Reports		Parental Reports	
		Arabs	Jews	Arabs	Jews
Performance	24	0.56	0.58	0.55	0.81
BADL activities: Quality of performance	10	0.88	0.69	0.83	0.78
BADL activities: Independence	10	0.90	0.55	0.81	0.81
BADL activities: Satisfaction	10	0.94	0.58	0.73	0.74
IADL activities: Quality of performance	6	0.70	0.60	0.73	0.68
IADL activities: Independence	6	0.64	0.68	0.74	0.74
IADL activities: Satisfaction	6	0.88	0.86	0.72	0.69
PLAY activities: Quality of performance	8	0.61	0.81	0.69	0.67
PLAY activities: Independence	8	0.72	0.55	0.75	0.67
PLAY activities: Satisfaction	8	0.48	0.93	0.72	0.63

Note. N = 137. Each group included equal numbers of boys and girls.

Inter-Rater Reliability

Paired Student's t-testing revealed that the children's self-ratings with respect to BADL performance quality, independence in BADL and in

PLAY, and satisfaction with IADL and PLAY were significantly higher than their parents' ratings (see Table 3).

Table 3*Paired Student's t-Test Comparison of Parents' and Children's Make My Day (MMD) Ratings*

MMD Tool Subscale	Parents (n = 75)		Children (n = 75)		Paired Student's t t (df = 73)
	Mean	SD	Mean	SD	
Performance	20.10	2.33	19.50	2.60	1.83
BADL activities: Quality of performance	3.31	0.48	3.60	0.39	-4.78***
BADL activities: Independence	3.23	0.56	3.55	0.45	-5.89***
BADL activities: Satisfaction	3.54	0.41	3.51	0.50	0.45
IADL activities: Quality of performance	3.68	0.32	3.72	0.38	-0.65
IADL activities: Independence	3.68	0.33	3.76	0.33	-1.70
IADL activities: Satisfaction	3.70	0.26	3.81	0.53	2.22*
PLAY activities: Quality of performance	3.78	0.24	3.80	0.31	-0.08
PLAY activities: Independence	3.70	0.30	3.88	0.16	-5.05***
PLAY activities: Satisfaction	3.67	0.18	3.84	0.51	2.90**

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Content Validity

Restricting the factor analysis to items completed by at least 90% of the raters (at least 68 respondents) limited it to 24 of the tool's 34 items, which we then examined in the satisfaction domain. The factor loadings were: BADL (range, 0.42 – 0.75; mean, 0.54); IADL (range, 0.44 – 0.85; mean, 0.62); and PLAY (range, 0.62 – 0.79; mean: 0.68), which is in agreement with the theoretical categorization of ADL into BADL, IADL, and PLAY as formulated in the OTPF (AOTA, 2002). Average factor loadings should be at least $r \geq .5$ to indicate adequate convergent validity (Hair, Black, Babin, Anderson, & Tatham, 2006). Not only do all the means exceed this minimum, so too do most of the individual items.

Concurrent Validity: Comparison of the MMD with the PEGS and the CPQ

Pearson correlations (see Table 4) having moderate to high significance were found between the child MMD and the PEGS scores ($r = .30 - .65$).

Moderate to highly significant correlations were also found between the parental MMD and the PEGS scores ($r = .28 - .58$), with the exception of the parental ratings of independence in performing IADL, for no linear relation was found. However, the strength of the association between the MMD and the PEGS scores was low for both children and their parents, as indicated by the low r values, with only the Pearson values for the performance score exceeding $r = .5$.

Pearson correlations were also computed between parental responses on the MMD and the CPQ/CPQ-School scores (see Table 5). Moderately significant correlations were found between the parent's scores from the two instruments. Overall, greater r values and statistical significance were found between the scales evaluating similar behaviors (e.g., the MMD and the CPQ/CPQ-school parental satisfaction and independence scales) and lower r values and the absence of statistical significance were found between scales that

measure different parameters (e.g., MMD satisfaction verse CPQ/CPQ-school frequency), so

supporting the convergent and divergent validity of the MMD with respect to the CPQ.

Table 4

Pearson's Correlations between Scores Obtained from Jewish Children (aged 5 to 7 years) and their Parents (n = 50, N = 75) using the Make My Day (MMD) and the Perceived Efficacy and Goal Setting in Young Children (PEGS) to Investigate the Concurrent Validity of the MMD

MMD Subscale	Pearson's r values for the equivalent PEGS scores ¹	
	Child Version	Parental Version
Performance	0.65***	0.58***
BADL: Quality of performance	0.49***	0.33*
BADL: Independence measurement	0.35*	0.28*
BADL: Satisfaction	0.54***	0.29*
IADL: Quality of performance	0.37**	0.38**
IADL: Independence	0.32*	0.04
IADL: Satisfaction	0.47***	0.28*
PLAY: Quality of performance	0.43**	0.30*
PLAY: Independence	0.30*	0.38**
PLAY: Satisfaction	0.48***	0.33*

Note. ¹ For this analysis, we compared the number of PEGS items that the rater (child/parent) considered "competently performed" with the performance activity domain of the MMD; the PEGS self-care domain with the BADL activity domain of the MMD; the PEGS school-related tasks domain with the IADL activity domain of the MMD; and the PEGS leisure and play domain with the PLAY activity domain of the MMD. * $p < .05$. ** $p < .01$. *** $p < .001$.

Table 5

Pearson's Correlations between Scores Obtained from the Parents of Jewish Children (aged 4 to 7 years; n = 50, N = 75) using the Make My Day (MMD) and the Children Participation Questionnaire (CPQ/CPQ-School) (N = 75) to Investigate the Concurrent Validity of the MMD

MMD Subscale	CPQ Subscale				
	Parent satisfaction	Enjoyment	Independence	Frequency	Variety
Performance	0.26*	0.15	0.25*	0.23*	0.42***
BADL: Quality of performance	0.32**	0.10	0.50***	0.39**	0.24*
BADL: Independence	0.21	0.70	0.49***	0.38**	0.32**
BADL: Satisfaction	0.40***	0.19	0.37**	0.13	0.15
IADL: Quality of performance	0.32*	0.16	0.42***	0.17	0.17
IADL: Independence	0.14	0.10	0.40***	0.22	0.23*
IADL: Satisfaction	0.27*	0.18	0.22	0.03	0.60
PLAY: Quality of performance	0.33**	0.25*	0.37**	0.27*	0.17
PLAY: Independence	0.19	0.10	0.43***	0.38**	0.32**
PLAY: Satisfaction	0.21	0.19	0.18	0.03	0.05

Note. * $p < .05$. ** $p < .01$. *** $p < .001$.

Discriminant Validity: Comparison between Age Groups

The results of the MANOVA demonstrated that children aged 5 to 6 years reported a significantly greater degree of independence in daily activities than children aged 4 to 5 years. However, pre-kindergarteners aged 4 to 5 years and first graders aged 6 to 7 years reported a significantly greater degree of satisfaction in performing play activities than kindergarteners aged 5 to 6 years.

MANOVA of the parental reports from the three age groups revealed that the older the age group, the higher their parents rated their performance scores to a significant degree ($F [(η^2) = 7.52 (0.17), p < .01]$). Similar results were found for BADL performance quality ($F [(η^2) = 7.80 (.018), p < .01]$) and independence in BADL performance ($F [(η^2) = 16.60 (.32), p < .001]$). This age-related pattern was also found for scores of independence in PLAY performance ($F [(η^2) = 8.30 (0.19), p < .001]$). Regarding IADL, the ratings of the parents of kindergarteners aged 5 to 6 years were significantly higher than the ratings reported by the parents of the other age groups.

Discussion

This study aimed to investigate aspects of the reliability and validity of the MMD. With respect to reliability, we found the MMD to exhibit acceptable to good internal consistency. It is not surprising that the parental responses exhibited greater internal consistency than the child responses. The MMD also exhibited good inter-rater reliability, with no significant difference found between the means for the child and the parental

reports in most subscales and with greater child-parent agreement in the oldest age group. The subscales in which the children and their parents gave significantly different ratings were performance quality and independence with respect to BADL, satisfaction with IADL and PLAY, and independence in PLAY. In every instance, the children rated themselves more highly than their parents, as would be expected.

We then examined the tool's validity. The MMD was designed to cover six of the OTPF's eight dimensions (AOTA, 2002) by means of three domains (BADL, IADL, and PLAY). Confirmatory factor analysis of the satisfaction domain revealed that the MMD indeed exhibits three factors with reasonable factor loadings, so supporting its content validity. Pearson correlations to investigate concurrent validity between the MMD and the PEGS found significant associations, but they were of low strength for both child and parental reports. This analysis indicates that the MMD and the PEGS do not examine the same measures. This is not surprising, as the two tools do not share the same theoretical basis—the MMD was designed to reflect the OTPF (AOTA, 2002), whereas the PEGS was not designed to reflect a specific theoretical framework and (perhaps consequently) its content validity has not been examined (Cordier et al., 2016). We also explored the concurrent validity of the MMD vis-à-vis the CPQ/CPQ-school tool, with the results supporting the concurrent (convergent and divergent validity) of the parental version of the MMD for children aged 5 to 7 years. Finally, we found that the parental version of the MMD possesses good discriminant validity in that it

successfully discriminates between pre-kindergarten children (4 to 5 years), kindergarteners (5 to 6 years), and first graders (6 to 7 years) in all activity domains and in the expected direction of higher scores in each domain with increasing child age. This finding is consistent with the claim made by Larson (2001) that children's age and developmental level affect the type of activities they perform and how they perform them. It also supports the conclusion of Sturges, Rodger, and Ozanne (2002) that the developmental stage influences the performance and number of activities a child performs because of differences in, for example, cognitive ability, level of intelligence, and language skills.

Overall, this study supports the reliability and validity of the MMD tool and therefore confirms, using a sample of typically-developing Jewish-Israeli children and their parents, the findings of an earlier study involving Arab-Israeli children and their parents. Although some aspects of the reliability and validity of the MMD remain to be investigated, the MMD is the first self-report tool for children in this age group for which any such data have been reported.

Future studies should complete quality testing for the MMD. Our examination of the content validity of the MMD remains preliminary—using a larger sample of at least 100, the factor loadings of every item should be examined against every construct to examine whether items examined on more than one factor. The similarities of findings using Jewish-Israeli and Arab-Israeli participants (approached in Hebrew and Arabic, respectively) is suggestive of good cross-cultural

validity; however, this should be systematically examined over a wider range of cultures, which will also widen the generalizability of the findings. Furthermore, we did not attempt to observe the children's actual performance to confirm the veracity of the children's and their parents' reports. Such a study would provide important additional information about inter-rater reliability. Although it is not surprising that young children are more satisfied with their BADL and IADL performance than are their parents, we also found that among children (but not their parents) satisfaction did not increase with increasing age. This was somewhat surprising given the findings of Hayase et al. (2004) that the sharpest rise in the amount and objective quality of typical children's daily activity performance occurs between the ages of 3 and 6 years, with children becoming increasingly proficient in the performance of more sophisticated and complex skills through practice. A longitudinal study to investigate the development of the children's performance, as well as the quality and degree of satisfaction with their performance over time, is needed to better understand this finding. For the tool to be useful with children whose development is atypical, its discriminant validity should also be examined between normally-developing children and those with specific developmental difficulties, such as attention deficit/hyperactivity disorder and autism spectrum disorder, and indeed we have begun research in this area. Finally, the test-retest reliability of the MMD should be examined. Power calculations should be employed to identify the sample size needed to

increase the statistical robustness and sensitivity of future investigations.

Given the scarcity of self-report tools that relate to children's performance of routine daily activities and that children's perception of their abilities is an essential aspect of client-centered intervention (Sturgess et al., 2002), the MMD's reliability and validity suggest that it can be used to identify child needs for intervention and assist in intervention planning and can play an important role in ensuring best practice and more favorable treatment outcomes. Our results suggest that therapists should expect children (especially very young children) and their parents to disagree somewhat, so supporting previous studies (Dunford et al., 2005; Missiuna et al., 2006) that found that the perceptions of children do not necessarily coincide with those of their parents. Indeed, children may be satisfied with their performance when significant adult figures in their lives (parents, teachers) are not, as was previously found by Rosenberg et al. (2010).

By collecting information regarding the authentic self-perception of a child, the MMD reduces reliance solely on the reports of adult proxies. This is likely to be significant in planning a course of treatment suited also to the child, whose cooperation is fundamental to the success of treatment, in both client-centered and family-centered contexts. In both treatment contexts, the MMD provides children with the opportunity to participate actively in intervention goal-setting processes. Respecting the child's input during the goal-setting process can serve to motivate him or her to persist in therapy and improve perceived self-

efficacy, thus supporting better treatment outcomes (Goldstand, Gevir, & Cermak, 2014; Missiuna et al., 2006; Schunk, 1996; Sturgess et al., 2002). Considering the children's treatment priorities can also improve their developing awareness of their functioning and the therapeutic process, and may help determine the selection of more realistic treatment goals (Kielhofner & Forsyth, 2001). In a family-centered context, the involvement of parents (via the parental MMD tool) in their child's intervention can contribute to treatment efficacy by enabling parent-child differences to be identified and addressed early on, so increasing parental satisfaction with the intervention (Volenski, 1995). The therapist will need to endeavor to identify the reason for each discrepancy, which may lie on the adult's and/or on the children's side. For example, parents may have expectations for their children that are not suitable to the child's functional level (Green & Wilson, 2008; Missiuna et al., 2006), or they may not be aware of all the activities their child is involved in and of the subjective significance of these activities to the child (Dunford et al., 2005). In a similar way, young children cannot be expected to understand the importance of acquiring skills in areas that do not hold intrinsic interest to them. Indeed, Missiuna and Pollock (2000) found that while the children preferred to work toward improving activities in the areas of ADL, play, and leisure, their parents preferred treatment toward improving their academic success. Furthermore, in treating pediatric clients, therapists, children, and parents each bring very different perceptions with regard to preferences, values, and abilities, as reflected in their expectations from the

intervention (Pollock, Missiuna, & Rodger, 2010). The MMD (child and parental versions) provide therapists with a means of considering all points of view during the treatment planning stage in a manner that conforms to the principles of the family-centered approach (Block & Block, 2002; Hanna & Rodger, 2002; Raina et al., 2005).

In summary, the findings of this study and those from the preceding research on the MMD in the Arab-Israeli sector support the validity and reliability of the MMD. The MMD enables children and parents to act as full partners with therapists in the treatment and goal-setting processes. Moreover, this study expands the available knowledge regarding aspects of typical young children's daily performance and how these change as they develop.

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