Measurement Properties of the Spanish Version of the Engagement in Meaningful Activities Survey in Parents of Children with Developmental Challenges

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ABSTRACT

Introduction

Parents of children with developmental challenges often face constraints that reduce engagement in meaningful activities (MA). This study evaluated the measurement properties of the Spanish version of the Engagement in Meaningful Activities Survey (EMAS) in this population.

Methods

A convenience sample of 688 Spanish parents (468 mothers, 220 fathers) of children with developmental challenges completed the Spanish EMAS, Occupational Balance Questionnaire (OBQ), Parental Stress Scale (PSS; Baby's Rewards [PSS-BR] and Stressors [PSS-S]), Hospital Anxiety and Depression Scale (HADS-A, HADS-D), and Psychological Well-Being Scale (PWBS). Internal consistency, test-retest reliability, structural, and construct validity were examined.

Consumer and Community Involvement

There was no consumer or community involvement in this study.

Results

EMAS scores averaged 31.1 (standard deviation [SD] = 7.1) for mothers and 33.4 (SD = 6.4) for fathers, with no floor or ceiling effects. Internal consistency was high ($\alpha = 0.88$ for mothers; α =0 .86 for fathers). Test-retest reliability in mothers (n = 75) was moderate (intraclass correlation coefficient [ICC] = 0.59, 95% confidence interval [CI]: 0.42, 0.72; rs =0 .62). A two-factor structure showed acceptable fit. Construct validity was supported through correlations with OBQ (rs_m [mothers] = 0.61; rs_f [fathers] = 0.63), HADS-A (rs_m = -0.41; rs_f = -0.36), HADS-D (rs_m = -0.50; rs_f = -0.47), PSS-BR (rs_m = 0.37; rs_f = 0.31), PSS-S (rs_m = -0.25; rs_f = -0.26), and PWBS (rs_m = 0.46; rs_f = 0.52).

Conclusion

The Spanish EMAS shows robust measurement properties for assessing engagement in MA among parents of children with developmental challenges. Its use may support family-centred interventions and research.

Keywords: Meaningful activities; Parents; Developmental challenges; Measurement properties; Validation studies.

PLAIN-LANGUAGE SUMMARY

This study evaluated how well the Spanish version of the Engagement in Meaningful Activities Survey (EMAS) works for parents of children with developmental challenges. The EMAS assesses how much people feel that their everyday activities are purposeful, satisfying, and aligned with their values. A total of 688 parents whose children attend early intervention centers in Spain completed the EMAS along with other measures of occupational balance, stress, anxiety, depression, and psychological well-being. The results showed that the EMAS is a reliable and valid tool for this population. Parents who reported higher engagement in meaningful activities tended to have better occupational balance and psychological well-being, and lower stress, anxiety, and depressive symptoms. These findings suggest that the EMAS can help occupational therapists understand how parents participate in activities that matter to them and support the design of interventions aimed at enhancing their well-being.

Key Points for Occupational Therapy

- Provides a reliable and validated Spanish measure of engagement in meaningful activities for parents of children with developmental challenges.
- Supports therapeutic dialogue, goal-setting, and family-centered, occupation-based interventions.
- Suitable for use in both clinical and community-based settings.

1. INTRODUCTION

Meaningful activities (MA) refer to everyday activities that generate positive subjective experiences, shaped by personal values, social context, and individual identity. These activities are perceived as purposeful and valuable by individuals who engage in them (Eakman et al., 2018). Building on this framework, Eakman and colleagues identify three core domains through which meaning is derived: social connection, selfhood, and pleasure. Hasselkus (2011) similarly emphasises that the meaning of daily activities emerges through lived experience, context, and identity. Together, these perspectives highlight the intrinsic link between MA and well-being, life purpose, and a sense of self (Eakman et al., 2018; Hasselkus, 2011). Empirical research further supports this view, consistently showing that engagement in MA is related to positive mental health and well-being across diverse populations (Bjørkedal et al., 2016, 2020; Eakman et al., 2018; Goldberg et al., 2002; Petruseviciene et al., 2018). These findings reinforce the relevance of MA within occupational therapy practice.

Despite its importance, the concept of “meaningful activity” is complex and multidimensional, which has posed challenges for developing instruments capable of accurately capturing meaning in occupation (Eakman, 2012). In response, Goldberg et al. (2002) developed the Engagement in Meaningful Activities Survey (EMAS), a 12-item self-report measure designed to assess this occupational dimension. Grounded in occupational therapy theory, the EMAS encompasses various facets of meaning, including the alignment with personal values and needs, contribution to a sense of competence, and their social and cultural significance (Goldberg et al., 2002). It encourages individuals to reflect on their daily activities in terms of creativity, enjoyment, satisfaction, belonging, and contribution to others. Its concise format enhances its suitability for both clinical and research contexts (Eakman, 2012). Subsequent psychometric evaluations have supported the instrument’s robust

measurement properties, including internal consistency, response scale structure, and differential item functioning by age and sex (Eakman et al., 2012). In line with the multidimensional nature of the construct, previous studies have also reported a two-component structure of the EMAS, reflecting personal-competence and social-experiential aspects of engagement in MA (Eakman et al., 2010; Kawakatsu et al., 2022).

The EMAS may be particularly valuable for populations whose participation is shaped by caregiving demands. Parents of children with developmental challenges frequently experience physical, emotional, social, and time-related pressures (Li et al., 2024; Shahali et al., 2024), which may affect their engagement in daily life and potentially limit their opportunities to participate in MA. Elevated levels of anxiety, depression, and stress have been widely documented in this population (Bourke-Taylor et al., 2021; Li et al., 2024), and reduced engagement in MA may further compromise their well-being (Hodgetts et al., 2014). These caregiving demands are often unevenly distributed within families, with mothers more frequently assuming primary caregiving responsibilities, which may differentially shape opportunities for engagement in meaningful activities and related well-being outcomes (Valera-Gran et al., 2025).

Although several instruments assess parental stress and caregiver burden (Berry & Jones, 1995; Zarit et al., 1980), there remains a lack of validated tools specifically measuring engagement in MA from the parents' perspective. This gap is particularly relevant in early intervention settings, where parents must navigate caregiving demands while striving to maintain personal identity and balance. A validated measure could support the development of more responsive, family-centred and occupational-based interventions.

Because the meaning attributed to activities is shaped by cultural values, it is essential to examine how individuals from different sociocultural contexts perceive and engage in MA.

Previous studies have shown that perceptions of value, satisfaction, and identity in daily activities may vary depending on sociocultural norms and expectations (Kawakatsu et al., 2022). This underscores the importance of evaluating the measurement properties of the EMAS within specific populations to ensure their contextual relevance and validity. To date, the EMAS has been translated and cross-culturally adapted into Japanese (Kawakatsu et al., 2022), Spanish (Fernández-Solano et al., 2022; Prat et al., 2019), Polish (Brożek & Tokarz, 2017), French (Lacroix et al., 2018), Persian (Cheraghifard et al., 2022), Norwegian (Nesse et al., 2021), Korean (Nam et al., 2018), Malay (Loh et al., 2021), Flemish (Cruyt et al., 2023), and Portuguese (Araujo et al., 2025). Its measurement properties have been examined in several of these versions across diverse populations and health conditions, including adults (Araujo et al., 2025; Brożek & Tokarz, 2017; Cruyt et al., 2023; Lacroix et al., 2018), older adults (Araujo et al., 2025; Kawakatsu et al., 2022; Nam et al., 2018), individuals with stroke (Cheraghifard et al., 2022), dual diagnosis (Nesse et al., 2021), cancer (Loh et al., 2021), and severe mental illness (Prat et al., 2019). This growing body of evidence reflects the EMAS's broad applicability across cultural and clinical settings. However, no studies have examined its psychometric performance in parents of children with developmental challenges. Therefore, the aim of this study was to assess the measurement properties of the Spanish version of the EMAS (Fernández-Solano et al., 2022) in this specific population.

2. METHODS

2.1. Positionality statement

The authors are researchers with training in epidemiology and quantitative methods, approaching the study from an analytical perspective centred on objectivity and empirical verification. We are not involved in early intervention services or in caregiving roles related to children with developmental challenges, which limits the influence of personal experience on the interpretation of the results. Observations regarding gendered patterns of caregiving

arise from the empirical data collected and established evidence, rather than from our own positionality. Standardised procedures for data collection and statistical analysis were followed to ensure methodological neutrality and minimise potential bias.

2.2. Participants

This validation study was conducted as part of the EQo-Mental Project (https://inteo.umh.es/eqomental/). Participants were recruited from public and private early intervention centers across the province of Alicante (Spain), all of which operate within the regional early intervention service framework coordinated by the Generalitat Valenciana.

A total of 468 mothers and 220 fathers were recruited between March 2023 and March 2025 using non-probability purposive sampling. Parents were invited to participate based on their availability and willingness to be involved. Individuals who were unable to fully understand the questionnaires due to language barriers were excluded from the study.

Sociodemographic, health, lifestyle, and reproductive history data were collected using ad hoc questionnaires developed based on instruments from epidemiological research, including the InProS study (Infancia y Procesamiento Sensorial, https://inteo.umh.es/inpros/) and the INMA Project (Infancia y Medio Ambiente, https://www.proyectoinma.org/). These questionnaires gathered information about parental age, education, employment status, nationality, relationship status, number of children, and other contextual factors relevant to family life.

2.3. Procedure

Data collection was carried out by trained evaluators. Parents were informed about the study and invited to participate. They were given the option of completing the assessments either on-site or at home, depending on their availability.

All participants completed the EMAS along with four additional instruments: the Spanish versions of the Occupational Balance Questionnaire (OBQ) and the Parental Stress Scale

(PSS), Hospital Anxiety and Depression Scale (HADS) and Psychological Well-Being Scale (PWBS). These measures were selected to examine the construct validity of the EMAS.

To assess test-retest reliability, the EMAS was re-administered to a subsample of mothers (n = 75) after a 2-4-week interval. The number of fathers who completed the second administration was insufficient for inclusion in the reliability analysis.

2.4. Instruments

2.4.1. Engagement in Meaningful Activities Survey

The EMAS is a self-report instrument consisting of 12 items assessing engagement in MA, capturing dimensions such as self-care, identity, creativity, accomplishment, competence, social value, contribution to others, pleasure, control, expression of personal values, satisfaction, and challenge (Eakman et al., 2010). Participants were asked to reflect on different aspects of their daily activities (e.g., "The activities I do help me take care of myself", "The activities I do express my creativity" and "The activities I do give me pleasure").

For this study, we used the Spanish version of the EMAS (Fernández-Solano et al., 2022), which is based on the 12-item, 4-point Likert-type scale recommended by Eakman (Eakman, 2012). Response options range from 1 (rarely) to 4 (always), with total scores ranging from 12 to 48. Higher scores indicate greater engagement in MA.

In line with previous validation studies (Brożek & Tokarz, 2017; Lacroix et al., 2018; Prat et al., 2019), we used only the 12-item self-report scale, excluding the optional open-ended interview component originally proposed by Goldberg (Goldberg et al., 2002).

Previous research using exploratory factor analysis suggested a two-dimensional structure underlying the EMAS, reflecting social-experiential and personal-competence aspects of engagement in MA (Eakman et al., 2010). The personal-competence factor encompasses aspects such as self-efficacy, achievement, control, and expression of personal values,

whereas the social-experiential factor reflects enjoyment, social connection, contribution to others, and shared meaning derived from activity participation (Eakman et al., 2010). Subsequent Rasch analyses supported the unidimensional functioning of the scale for measurement purposes and the use of a four-point response format (person reliability = 0.85; Eakman, 2012). Building on this evidence, several validation studies have applied confirmatory approaches to further examine the structural validity of the EMAS.

2.4.2. Occupational Balance Questionnaire

The Spanish version of OBQ is a 13-item self-report tool that assesses individuals' perceived satisfaction with the amount and variety of everyday occupations (Peral-Gómez et al., 2021). Each item is rated on a 6-point Likert scale that ranges from 0 (completely disagree) to 5 (completely agree), yielding a total score between 0 and 65. Higher scores indicate greater occupational balance (Wagman & Håkansson, 2014).

The OBQ has shown good measurement properties, including high internal consistency ($\alpha = 0.87$) and good test-retest reliability ($rs = 0.73$). It also showed positive correlations with Global Health Status (GHS) ($rs = 0.37$), Quality of Life (QoL) (rs = 0.42), and Satisfaction With Life Scale (SWLS) ($rs = 0.54$) (Peral-Gómez et al., 2021).

2.4.3. Parental Stress Scale

The Spanish version of the PSS is a 12-item self-report questionnaire that evaluates stress related to the parenting role (Oronoz et al., 2007). The instrument comprises two subscales: Baby's Rewards (PSS-BR), reflecting positive aspects of parenting (e.g., sense of fulfillment), and Stressors (PSS-S), capturing negative aspects (e.g., feelings of exhaustion). Items are rated on a 5-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree). Subscale scores range from 5 to 25 for PSS-BR and from 7 to 35 for PSS-S, with higher scores indicating greater perceived rewards and greater perceived stressors, respectively. When all items are summed, total scores range from 12 to 60, with higher scores

indicating greater parental stress. To calculate the overall score, some items must be reverse-coded to ensure that higher scores consistently reflect greater levels of parental stress (Berry & Jones, 1995).

The Spanish PSS showed acceptable internal consistency, with Cronbach's alpha of $\alpha = 0.77$ for the PSS-BR and $\alpha = 0.76$ for the PSS-S subscale. Moreover, the PSS-S was positively correlated with depressive symptoms ($r = 0.50$) and anxiety ($r = 0.47$), whereas the PSS-BR showed negative correlations with depressive symptoms ($r = -0.29$) and anxiety ($r = -0.32$) (Oronoz et al., 2007).

2.4.4. Hospital Anxiety and Depression Scale

Symptoms of anxiety and depression were assessed using the Spanish version of the HADS (Terol et al., 2007). The HADS is a 14-item self-administered questionnaire comprising two subscales: anxiety (HADS-A) and depression (HADS-D), with 7 items each. Items are rated on a 4-point Likert scale ranging from 0 to 3. Subscale scores range from 0 to 21, with higher scores indicating greater symptom severity. Scores of 8-10 reflect borderline symptomatology, whereas scores ≥11 indicate clinically significant anxiety or depression. Measurement properties for both HADS subscales are satisfactory, with internal consistency and test-retest reliability ≥0.70 and construct validity supported by correlations > 0.30 (Terol et al., 2007).

2.4.5. Psychological Well-Being Scale

Psychological well-being was assessed using the Spanish version of the PWBS (Díaz et al., 2006). This 29-item Instrument comprises six dimensions: self-acceptance, positive relations with others, autonomy, environmental mastery, purpose in life, and personal growth. Items are rated on a 6-point Likert scale ranging from 1 to 6, with negatively worded items reverse-coded. Higher total scores indicate greater psychological well-being. This 29-item Spanish version has shown acceptable to good internal consistency ($\alpha = 0.70$ - 0.84).

2.5. Statistical Analysis

All statistical analyses were performed using R statistical software (version 4.4.0, http://www.r-project.org). Statistical significance was set at $p < 0.05$. Measurement properties of the EMAS were evaluated following the COSMIN guidelines for studies on measurement properties (Mokkink et al., 2019).

In light of evidence suggesting that caregiving responsibilities may differentially shape participation experiences in mothers and fathers, all psychometric analyses were conducted separately by parent group to examine the stability of the EMAS measurement properties and construct validity across mothers and fathers.

2.5.1. Descriptive Analyses

Descriptive analyses were calculated using frequencies and percentages for the categorical variables. Quantitative variables were summarised as means and standard deviation (SD), when normally distributed, or as medians and interquartile ranges (IQR) when non-normally distributed. Normality was assessed using the Kolmogorov-Smirnov test with Lilliefors correction. Given departures from normality in several quantitative variables, subsequent analyses were conducted using non-parametric statistics or robust estimation methods, as appropriate.

2.5.2 Group comparisons

To explore potential differences between mothers and fathers, sociodemographic characteristics were compared across groups. The Mann-Whitney U test was used to compare age due to its non-normal distribution. For categorical variables, Fisher's exact test was used for dichotomous variables, while chi-square tests were applied for variables with more than two categories.

2.5.3. Internal consistency

Internal consistency was evaluated using Cronbach's alpha (α), with values ≥ 0.70 considered acceptable according to established psychometric standards (Terwee et al., 2007).

2.5.4. Test-Retest reliability

Test-retest reliability was evaluated in a subsample of mothers (n = 75) who completed the EMAS twice within a 2- to 4-week interval. Reliability was estimated using the intraclass correlation coefficient (ICC, two-way random effects model, absolute agreement), and Spearman's correlation coefficient (rs) to examine stability over time.

2.5.5. Structural validity

Structural validity was evaluated using confirmatory factor analysis (CFA), conducted separately for mothers and fathers. Sampling adequacy was assessed using the Kaiser-Meyer-Olkin (KMO) measure (Kaiser, 1974), with values ≥ 0.80 considered indicative of good adequacy. Bartlett's test of sphericity (Bartlett, 1950) was performed to determine suitability of the correlation matrix ($p < 0.05$). In line with the original conceptualisation of the instrument (Eakman et al., 2010) a two-factor model was specified: Personal-Competence (items 1-5), and Social-Experiential (items 6-12). Models were estimated using robust maximum likelihood estimation with a Satorra-Bentler correction. Model fit was evaluated using the comparative fit index (CFI), Tucker-Lewis index (TLI), root mean square error of approximation (RMSEA) with 90% confidence interval, and standardised root mean square residual (SRMR). The structural validity was considered acceptable when at least one of the following criteria was met: CFI or TLI > 0.95, or RMSEA < 0.06, or SRMR < 0.08 (Prinsen et al., 2018).

2.5.6. Construct validity

Construct validity was examined by testing a set of a priori hypotheses using Spearman's correlations (*rs*). Based on theoretical assumptions and previous empirical evidence, we expected EMAS scores to show positive correlations with the OBQ and PWBS scores, as

greater engagement in MA should correspond to greater occupational balance and enhanced psychological well-being. Additionally, we anticipated a negative correlation between EMAS scores and PSS-S, and a positive correlation with PSS-BR, assuming that higher engagement in MA would be related to fewer parental stressors and greater perceived rewards in the parenting role. Negative correlations were also expected between EMAS scores and HADS-A and HADS-D, reflecting lower levels of anxiety and depression. Correlation coefficients ≥ 0.50 were considered strong according to Cohen (1988).

3. RESULTS

3.1. Participant characteristics

General characteristics of the study participants are presented in Table 1. Mothers were significantly younger than fathers, with a median age of 37 years (IQR: 33-41) compared to 40 years (IQR: 35-43) for fathers ($p < 0.001$). A higher proportion of fathers were Spanish (84.0%) compared to mothers (73.7%, $p = 0.003$). Employment status also differed, with most fathers employed (84.8%), and only about half of the mothers were currently working (53.1%, $p < 0.001$). No statistically significant differences were observed in educational level and relationship status. Most families reported having one or two children (83.9% of mothers, 86.2% of fathers), and nearly all had one child attending early intervention centers (94.7% and 92.7%, respectively).

3.2. Assessment of the measurement properties of the EMAS

Item-level descriptive statistics and internal consistency estimates for the EMAS are shown in Table 2. Median item scores generally ranged from 2 to 3 for both mothers and fathers, with total scores slightly higher in fathers (34, IQR = 30-38) than in mothers (32, IQR = 26-36). Internal consistency was high, with α= 0.88 for mothers and α= 0.86 for fathers); α-if-item-deleted values followed a similar pattern. Test-retest reliability in the subsample of mothers showed moderate stability (ICC = 0.59, 95% CI: 0.42, 0.72); r_s = 0.62).

Assumptions for factor analysis were satisfied for both parents, with KMO values indicating excellent sampling adequacy (mothers = 0.92; fathers = 0.89) and Bartlett's tests of sphericity statistically significant ($p < 0.001$). Confirmatory factor analysis supported the hypothesised two-factor structure of the EMAS. For mothers, model fit was acceptable (χ^2 (53) = 171.57, $p < 0.001$; CFI = 0.936; TLI = 0.920; RMSEA = .075, 90% CI: 0.063, 0.088; SRMR = 0.048). For fathers, model fit indices were similarly acceptable (χ^2 (53) = 115.52, $p < 0.001$; CFI = 0.918; TLI = 0.898; RMSEA = 0.080, 90% CI: 0.060, 0.100; SRMR = 0.062). The two latent factors were strongly correlated in both groups (r = 0.92 in mothers; r = 0.90 in fathers). Standardised factor loadings are reported in Supplemental Table S1.

Table 3 summarises the distribution of total EMAS scores and construct validity correlations with related measures. EMAS scores covered the full theoretical range (12-48) and showed slightly higher medians for fathers (34) compared to mothers (32). No floor or ceiling effects were detected, as less than 1% of participants (0.4% of mothers and 0.5% of fathers) reached the minimum or maximum possible scores. Regarding construct validity, EMAS scores showed strong positive correlations with the OBQ, with rs_m (mothers) = 0.61 and rs_f (fathers) = 0.63, and moderate positive correlations with the PWBS, with rs_m = 0.46 and rs_f = 0.52. EMAS scores were moderately negatively correlated with the total PSS score (rs_m = -0.31; rs_f = -0.31), indicating that greater engagement in MA was correlated with lower overall parental stress. Consistent with this pattern, EMAS scores showed moderate positive correlations with PSS-BR (rs_m = 0.37; rs_f = 0.31) and small-to-moderate negative correlations with PSS-S (rs_m = -0.25; rs_f = -0.26). Moderate negative correlations were observed with HADS-A (rs_m = -0.41; rs_f = -0.36), and moderate-to-strong correlations for HADS-D in mothers (rs_m = -0.50) and moderate in fathers (rs_f = -0.47).

4. DISCUSSION

4.1. Summary of key findings

This study is the first to examine the measurement properties of the EMAS in parents of children with developmental challenges. Overall, the findings indicate that the Spanish version of the EMAS showed satisfactory internal consistency and moderate test-retest reliability. Confirmatory factor analysis supported the hypothesised two-factor structure, with acceptable model fit in both parents. Construct validity was confirmed, with correlations consistent with predefined hypotheses across occupational, psychological, and emotional measures. Together, these findings support the use of the EMAS for assessing MA engagement among parents navigating caregiving demands.

4.2. Engagement in meaningful activities among parents of children with developmental challenges

In our sample, EMAS scores were slightly lower than those reported in the general population (Lacroix et al., 2018), with means of 31.1 (SD = 7.1) for mothers and 33.4 (SD = 6.4) for fathers compared to 34.9 in the French validation. This difference suggests that parents of children with developmental challenges experience reduced engagement in MA, likely reflecting the constraints imposed by caregiving responsibilities. Moreover, the absence of floor and ceiling effects indicates that the EMAS captures a wide range of engagement levels, which is consistent with the observed correlation pattern: greater meaningful engagement was positively correlated with higher occupational balance and psychological well-being, whereas lower meaningful engagement was negatively correlated with increased emotional distress and perceived stress. This broader occupational-emotional profile aligns with previous evidence showing that reduced engagement in valued activities often co-occurs with heightened stress and disruptions in daily balance (Dür et al., 2022; Hodgetts et al., 2014). Such results highlight an important aspect of the lived experience of these parents and underscore the relevance of assessing MA engagement in this population.

4.3 Interpretation of measurement properties in relation to previous research

4.3.1 Temporal stability and internal consistency

The Spanish version of the EMAS showed moderate temporal stability over a 2- to 4-week interval (ICC = 0.59, 95% CI: 0.42, 0.72; $rs = 0.62$, $p < .001$), slightly lower than previous findings reported by Goldberg et al. (2002), who observed a test-retest correlation of $r = 0.69$. Internal consistency was high for both mothers and fathers, which is consistent with previous validations conducted in diverse populations, including post-stroke (Cheraghifard et al., 2022), employed adults (Brożek & Tokarz, 2017), and the general population (Lacroix et al., 2018). These findings suggest that the EMAS maintains robust reliability across different cultural and clinical contexts.

Within the established conceptual framework of the EMAS, engagement in MA encompasses dimensions related to social contribution, relational meaning, and personal agency, as described in its theoretical conceptualisation (Eakman et al., 2010, Eackman, 2012). These dimensions may be particularly salient when interpreting engagement in MA among parents of children with developmental challenges, , for whom caregiving roles and contributing to others may represent a central source of meaning in daily life and identity This interpretation is consistent with the Model of Human Occupation (Kielhofner, 2002), which emphasises the influence of personal values and social roles on occupational engagement. Prior studies have shown that parents of children with intellectual disabilities often identify positive aspects of caregiving, such as personal growth or a deeper appreciation of life (Beighton & Wills, 2017). These expereince may also be shaped by cultural values in Spain, where familism is strongly embedded and caregiving is viewed as a shared family responsibility. In this context, supporting others may be considered as a personal source of meaning and a socially reinforced expectation (Valarino et al., 2018).

4.3.2. Structural validity

From a theoretical perspective, the identification of personal-competence and social-experiential dimensions is consistent with the original conceptual framework of the EMAS, which conceptualises engagement in meaningful activities as encompassing both internally experienced components (such as competence, agency and personal values) and socially embedded components (such as enjoyment, contribution and social connection) (Eakman et al., 2010).

Confirmatory factor analysis supported the proposed two-factor structure of the EMAS; however, the very high correlation between the two latent factors suggests substantial conceptual overlap. This pattern indicates that engagement in MA may function largely as a unified construct rather than as clearly distinct domains. Similar findings have been reported in previous EMAS validation studies, which have reported variability in dimensionality, including unidimensional and bidimensional structures, and differences in item allocation across factors (Araujo et al., 2025; Cruyt et al., 2023; Kawakatsu et al., 2022).

At the item level, some variability in loadings warrants consideration. Item 7 ("The activities I do help other people") showed comparatively lower loadings, consistent with prior Rasch analysis identifying it as one of the most difficult items in the EMAS item hierarchy (Eakman, 2012). In our sample, helping and contributing to others may represent a normative component of parenting roles, reducing its discriminative contribution within this context. Similarly, Item 9 ("The activities I do give me a feeling of control") also showed lower loadings among fathers, possibly reflecting how caregiving-related uncertainty shapes perceptions of predictability or control. Previous research has documented disruptions in daily routines among parents of children with developmental challenges (Hodgetts et al., 2014), which may influence how this item is interpreted. Both items were retained to preserve theoretical coherence of the original scale.

4.3.3. Construct validity

Although previous validations of the EMAS have employed measures such as life satisfaction, sense of purpose and quality of life to evaluate convergent validity (Cheraghifard et al., 2022; Eakman et al., 2010; Kawakatsu et al., 2022; Lacroix et al., 2018; Loh et al., 2021), to our knowledge, none have included occupational balance as a related construct. The strong positive correlations between the EMAS and the OBQ observed in this study (rs_m = 0.61; rs_f = 0.63) are comparable to those reported by Eakman (2010) between EMAS and the Purpose of Life Test in older adults (r = 0.57), and higher than those found between EMAS and quality of life measures in a Japanese community-dwelling older adults (r = 0.23) (Kawakatsu et al., 2022) and in a Canadian general-population sample (r = 0.36) (Lacroix et al., 2018). Conversely, our correlations were lower than those reported in the Persian validation with stroke survivors, where EMAS scores showed strong estimates with Purpose in Life Test-Short Form (r = 0.86) and Satisfaction With Life Scale (r = 0.83) (Cheraghifard et al., 2022). These differences may reflect the influence of population characteristics and contextual factors. For example, among stroke survivors, reduced participation in MA due to disability has been associated with diminished life satisfaction (McKenna et al., 2009), which may explain the stronger correlations observed in that context. In contrast, the lower correlations observed in the Japanese samples (Kawakatsu et al., 2022) may be influenced by cultural factors, particularly in relation to the socially-oriented items of the EMAS, such as contributing to others or receiving social recognition.

Our findings support the relevance of occupational balance as a related construct in the validation of the EMAS and provide a foundation for further reflection on how different instruments capture the complexity of everyday occupations. The OBQ provides a holistic view of everyday occupations by assessing satisfaction with their amount and variety (Peral-Gómez et al., 2021). However, it focuses on perceived balance rather than the structure or qualitative features of occupations. Additionally, participants' interpretation of "current"

occupational balance may vary, potentially introducing response variability (Wagman & Håkansson, 2014). These conceptual features may help explain why correlations between EMAS and OBQ were slightly higher than those with more multidimensional instruments such as the PWBS.

The correlations between the EMAS scores and the PSS total and its subscales also confirmed the predefined hypotheses. Higher EMAS scores were correlated with lower overall parental stress and, at the subscale level, with greater perceived rewards (PSS-BR) and fewer perceived stressors (PSS-S) within the parenting role. These findings suggest that greater engagement in MA is related to lower perceived stress and also to a more positive appraisal of parenting experiences. This interpretation aligns with prior research indicating that occupational experiences and perceived stress are closely interconnected (Yu et al., 2018), and literature showing that parents of children with disabilities often report positive aspects of caregiving (Beighton & Wills, 2017). Similarly, the negative correlations between EMAS scores and symptoms of anxiety and depression measured by HADS scales support this pattern. Prior literature has linked meaning, purpose in life and sense of coherence with reduced psychological distress, which offers a plausible interpretative framework for understanding why parents with lower engagement in MAs may experience higher emotional burden (Boreham & Schutte, 2023).

The moderate positive correlations observed between EMAS scores and PWBS also support construct validity. The PWBS assesses multiple eudaimonic dimensions, including self-acceptance, positive relations, autonomy, environmental mastery, purpose in life, and personal growth, which converge conceptually with the experiential and purposeful aspects of MA engagement, though capturing a broader and more complex psychological profile. This may explain the slightly lower magnitude of correlations. Overall, these estimates align with prior evidence linking engagement in MA with dimensions of well-being such as purpose in

life and meaning (Eakman et al., 2010). Taken together, these findings are consistent with recent literature highlighting the relationship between engagement in MA and health (Eakman, 2026), reinforcing the relevance of the EMAS as a measure focused on engagement in MA to understand parental well-being.

4.4. Limitations

This study presents several limitations that should be considered when interpreting the findings. First, test-retest reliability was assessed only in a subsample of mothers. Although the sample size (n = 75) met the minimum threshold of 50 participants recommended by COSMIN (Mokkink et al., 2019), the absence of fathers limits the generalisability of these findings across genders. Recruitment was constrained by parents' limited availability due to caregiving demands and by changes in the caregivers accompanying the children to sessions, which complicated follow-up procedures.

The predominance of mothers in the sample should not be interpreted as a participation bias but rather as a reflection of prevailing gender roles in caregiving. In Europe, women represent the majority of informal caregivers, particularly in southern and central countries (Peña-Longobardo et al., 2021). Mothers may have been more likely than fathers to engage in a study focused on caregiving and child development, which aligns with broader patterns of gendered caregiving responsibilities. In our study, mothers were less likely to be employed than fathers and were more frequently the parent present at centers. From a broader occupational perspective, this pattern can be interpreted within ongoing discussions of occupational balance and occupational justice, as described in the occupational therapy literature (Townsend & Wilcock, 2004), highlighting the relevance of considering how caregiving roles may constrain opportunities for MA. However, the present study was not designed to empirically examine occupational inequities or marginalisation, and these considerations are introduced here solely to contextualise the sample characteristics rather

than as outcomes derived from the data. Future research explicitly focused on gendered caregiving experiences and occupational justice frameworks would be needed to examine these issues in greater depth.

Furthermore, we used a non-probability purposive sampling strategy, which may limit the representativeness of the sample. Nevertheless, participants were recruited from diverse centers across the province of Alicante, enhancing variability and contributing to the richness and applicability of the findings.

4.5. Research and practical implications

The EMAS offers valuable contributions to occupational therapy research and practice, particularly in settings that support families of children with developmental challenges. According to recent data from the Spanish Federation of Early Intervention Professionals (Federación Estatal de Asociaciones de Profesionales de Atención Temprana - GAT, 2022), approximately 10% of the Spanish population aged 0-6 years requires early intervention services. However, the organisation and delivery of such services varies internationally, underscoring the need to examine the applicability of the EMAS across diverse cultural and service contexts.

From a theoretical perspective, the EMAS aligns with core occupational therapy models. Within the Model of Human Occupation (MOHO) (Kielhofner, 2002), the EMAS reflects key components of volition −such as values, interests, personal causation− as well as habituation, through the roles and routines embedded in MA. From the perspective of the Canadian Model of Occupational Performance and Engagement (CMOP-E) (Townsend & Polatajko, 2007), the EMAS captures engagement within MA through the dynamic interaction of person, occupation and environment, reinforcing its relevance as a theoretically grounded instrument. In clinical practice, particularly within family-centred approaches, the EMAS can serve as a tool to elicit parents' priorities, values, and needs. Responses to the EMAS could guide

therapeutic dialogue, inform goal-setting, and enhance the relevance and adherence of interventions. Activities identified as meaningful can be used to anchor therapeutic goals, while those perceived as less meaningful may be adapted to better align with the family's context and preferences.

Future research should extend the validation of the EMAS to culturally diverse populations and service contexts, including underrepresented caregiving groups and varying family arrangements. Longitudinal studies are also needed to explore how the perceived meaning in everyday occupations evolves over time, particularly in response to developmental changes, caregiving demands, and life transitions.

5. CONCLUSION

This study provides robust evidence that the EMAS is a reliable and valid instrument for assessing engagement in MA among parents of children with developmental challenges. Its brevity and ease of administration make it a suitable tool for both clinical and community-based settings, where time and resources are often limited.

Incorporating parents' perspectives through the EMAS can strengthen family-centred, occupation-based interventions by enhancing understanding of the values, priorities, and sources of meaning that underpin parents' everyday occupations. Continued research is needed to further examine the applicability of the EMAS across diverse cultural, linguistic, and service contexts, and to explore how engagement in MA evolves over time in response to shifting caregiving demands and life transitions.

SUPPLEMENTARY MATERIAL

Supplementary Table S1 presents the standardized factor loadings of the a priori two-factor confirmatory factor analysis (CFA) model of the EMAS separately for mothers and fathers.

AUTHOR CONTRIBUTIONS

Paula Noce contributed to data curation, formal analysis, visualisation, and writing the original draft. Rocío Muñoz-Sánchez contributed to investigation, including participant recruitment and data collection, and data curation. Iris Juárez-Leal contributed to investigation and interpretation of the findings. Jessica Piñero-Peñalver contributed to investigation and facilitated access to collaborating centres and participants. Mónica Siendones-Molina contributed to formal analysis and interpretation of the findings. Miriam Hurtado-Pomares contributed to conceptualisation, ethical approval procedures, methodology, supervision, and interpretation of the findings. Eva-María Navarrete-Muñoz contributed to conceptualisation, methodology, formal analysis, funding acquisition, project administration, supervision, and interpretation of the findings. Desirée Valera-Gran contributed to conceptualisation, methodology, supervision, interpretation of the findings, and writing the original draft. All authors critically reviewed the manuscript for important intellectual content, approved the final version for publication, and agree to be accountable for all aspects of the work.

ETHICAL CONSIDERATIONS

Ethical approval for this study was granted by the Research Ethics Committee of Miguel Hernández University (reference DPC.MHP.01.22). The study was conducted in accordance with the ethical principles outlined in the Declaration of Helsinki (2013 revision) and relevant institutional guidelines. Written informed consent was obtained from all participants prior to their inclusion in the study. Confidentiality was ensured by anonymising all data through the use of unique identification codes assigned to each family unit. Participation was voluntary, and participants were informed of their right to withdraw at any stage without consequences.

FUNDING STATEMENT

This study received funding from the Conselleria de Educación, Universidades y Empleo of the Generalitat Valenciana (CIAICO/2022/088) and from Miguel Hernández University

(VIPROY23/12). Rocío Muñoz-Sánchez is supported by a predoctoral fellowship ("Contratación de Personal Investigador en Formación") awarded by the Vice-Rector for Research of Miguel Hernández University. The funders had no role in the design, conduct, or reporting of the study.

ACKNOWLEDGEMENTS

The authors would like to thank all the participants involved in the EQo-Mental project, as well as the institutions and professionals who contributed to participant recruitment. These include CAT ADA Almoradí, Fundación Salud Infantil (CDIAT I, II and CREA in Elche and CDIAT III in Crevillente), Asociación ANDA Alicante, Anda CONMiGO Alicante, FUNREDIS Elda, APCA CAT Infanta Elena Onil, Asociación LUDAI Denia, CDIAT Callosa de Segura, CAT Casa San José Novelda, APSA CDIAT San Vicente, APADIS CDIAT Villena, MONDALÚA Alicante, adiTEA Alicante, Senti2 Atención Infantil San Juan de Alicante, Unidad Funcional de la Mano Alicante, Ikigai Espacio Terapéutico Alicante, LUNA Espacio de Desarrollo Infantil Alicante, DEEA Alicante, CDIAT Pilar de la Horadada, Neural Kids Denia, ADIS Vega Baja Bigastro, CelesTEA Alicante, Boomerang Espacio Terapéutico Alicante, CAT Orihuela, Entre Burbujas Alicante, Inteligencia Activa Aspe, and Centro IDEAT Mutxamel.

We would also like to express our sincere gratitude to the professionals who contributed to participant recruitment: Lorena Chaves del Amo, Josue Esteve Esteban, Encarni Serrano Reina, Cristina Manresa, Alicia Fernández Álvarez, Beatriz Fernández Filloy, Carla Martínez Gil, Patricia del Saz Rubio, Empar Casaña Escriche, Paula Noce, Rocío Muñoz Sánchez, and Irene Campos Sánchez.

CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DECLARATION OF USE OF ARTIFICIAL INTELLIGENCE

The authors acknowledge the use of an AI-assisted tool (Microsoft Copilot) to support language polishing and structural refinement of the manuscript. All content generated with this assistance was critically reviewed, verified, and finalised by the authors, who take full responsibility for the scientific accuracy and integrity of the work.

DATA AVAILABILITY STATEMENT

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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Table 1. Sociodemographic characteristics of the study participants (n = 688)

	Mothers (n = 468)	Fathers (n = 220)	p-value
Age, median (IQR)	37 (33-41)	40 (35-43)	< 0.001
Educational level, n (%)			
Primary or less	135 (28.9)	82 (37.3)	
Secondary	174 (37.3)	79 (35.9)	0.057
University	158 (33.8)	59 (26.8)	
Country of origin, n (%)			
Spain	344 (73.7)	184 (84.0)	0.004
Other	123 (26.3)	35 (16.0)	
Relationship status, n (%)			
Married/partnership	292 (63.5)	154 (71.0)	0.057
Single/widowed/divorced	168 (36.5)	63 (29.0)	
Employment status, n (%)			
Employed	248 (53.1)	184 (84.8)	< 0.001
Unemployed	219 (46.9)	33 (15.2)	
Number of children, n (%)			
1	200 (42.9)	95 (43.8)	
2	191 (41.0)	92 (42.4)	0.744
≥ 3	75 (16.1)	30 (13.8)	
Number of children in early intervention centers, n (%)			
1	443 (94.7)	204 (92.7)	0.388
≥ 2	25 (5.3)	16 (7.3)	

Table 2. Descriptive item analysis and internal consistency of the EMAS scores among parents of children with developmental challenges

	Median (*IQR*)		**Cronbach's alpha (*α*)**	
EMAS	**Mothers** (*n* = 468)	**Fathers** (*n* = 220)	**Mothers** (*n* = 468)	**Fathers** (*n* = 220)
Item 1	2 (2-3)	3 (2-4)	0.87	0.85
Item 2	3 (2-3)	3 (3-4)	0.87	0.85
Item 3	2 (1-3)	3 (2-3)	0.86	0.86
Item 4	3 (2-3)	3 (2-4)	0.86	0.85
Item 5	3 (2-4)	3 (3-4)	0.86	0.85
Item 6	3 (2-3)	3 (2-3)	0.88	0.86
Item 7	2 (2-4)	3 (2-3)	0.89	0.87
Item 8	2 (2-3)	3 (2-3)	0.86	0.85
Item 9	2 (2-3)	2 (2-3)	0.87	0.87
Item 10	3 (2-3)	3 (2-3)	0.86	0.85
Item 11	3 (2-3)	3 (2-4)	0.86	0.84
Item 12	2.5 (2-3)	3 (2-3)	0.86	0.85
Total	32 (26-36)	34 (30-38)	0.88	0.86

EMAS: Engagement in Meaningful Activities Survey.

Table 3. Distribution of total EMAS scores and validity measures with OBQ, PSS, PSS-BR, PSS-S, HADS-A, HADS-D and PWBS

	Min.		**Max.**		**Median**		**P_{25}**		**P_{75}**		***Mean***		**SD**		***rs***	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
EMAS	12	12	48	47	32	34	26	30	36	38	31.1	33.4	7.1	6.4	-	-
OBQ	1	2	65	65	33	38	23	29	42	47	32.9	37.5	12.9	12.4	0.61*	0.63*
PSS	12	12	53	56	28	25	22	20	33	30	27.5	25.4	7.4	7.3	-0.31*	-0.31*
PSS-BR	11	6	25	25	24.5	24	23	22	25	25	23.4	23.1	2.2	2.7	0.37*	0.31*
PSS-S	7	7	35	34	21	19	16	15	26	22	21.0	18.6	6.5	5.9	-0.25*	-0.26*
HADS-A	3	2	17	15	8	7	6	6	11	9	8.8	7.5	3.0	2.7	-0.41*	-0.36*
HADS-D	0	0	17	17	5	3	3	2	7	6	5.1	4.1	3.2	3.3	-0.50*	-0.47*
PWBS	41	54	174	172	133	139	117	120.3	150	151	131.9	134.1	22.8	24.1	0.46*	0.52*

Abbreviations: EMAS, Engagement in Meaningful Activities Survey; OBQ, Occupational Balance Questionnaire; PSS, Parental Stress Scale; PSS-BR, Parental Stress Scale - Baby's Rewards subscale; PSS-S, Parental Stress Scale - Stressors subscale; HADS-A, Hospital Anxiety and Depression Scale - Anxiety subscale; HADS-D, Hospital Anxiety and Depression Scale - Depression subscale; PWBS, Psychological Well-Being Scale; M, mothers; F, fathers; SD, Standard deviation; *rs*, Spearman correlation coefficient.

Sample sizes by measure: EMAS (mothers = 468, fathers = 220); OBQ (mothers = 449, fathers = 214); PSS (mothers = 452, fathers = 214); PSS-BR (mothers = 462, fathers = 218); PSS-S (mothers = 455, fathers = 215); HADS-A and HADS-D (mothers = 459, fathers = 216); PWBS (mothers = 431, fathers = 201).

*p-value <0 .001