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Measurement Characteristics of the Engagement in Meaningful Activities Survey in an Age-Diverse Sample

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Abstract

Objective—This study evaluated the measurement characteristics of the Engagement in Meaningful Activities Survey (EMAS) in an age-diverse sample.

Method—The sample included 154 older adults and 122 college students (age range = 18 – 100 years). A Rasch-Andrich rating scale model was used to evaluate the EMAS. Analyses addressed: rating scale design, person and item fit, item hierarchy, model unidimensionality, and differential item functioning.

Results—Category functioning was improved by reducing the EMAS item responses to four categories. Adequate person response validity was established and all but one EMAS item demonstrated an ideal fit to the Rasch measurement model. After establishing the item hierarchy the EMAS was found to be a unidimensional measure. Differential item functioning was not detected using Bonferoni adjusted statistical criteria.

Conclusion—The results confirm the potential to validly measure subjective qualities of meaningful activity participation. The EMAS is capable of being used to evaluate processes and outcomes central to occupational therapy practice, and to aid in the design of therapeutic occupations.

Keywords

human activities; validity; questionnaires; adaptation (psychological); outcome and process assessment (health care)

INTRODUCTION

The Occupational Therapy Practice Framework: Domain & Process, 2nd Edition (AOTA, 2008) has identified engagement in meaningful occupations as a key outcome of occupational therapy intervention. Diverse definitions of occupation found within that document highlight the critical role of personal meaning in contextualizing and defining occupation. Conceptual models of therapeutic occupation also integrate the concept of activity meaning as being essential to the process and outcome of effective occupational therapy treatment (e.g., Townsend & Polatjko, 2007). Therefore, valid indicators of subjective appraisals of meaning are critical to measure the full richness and depth of human engagement in occupation.

The availability of relevant psychometrically sound instruments has, in part, been hampered by theoretical and definitional ambiguity surrounding the concept of activity meaning. The

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term “meaningful” occupation is an inherently difficult construct to define and measure despite its ubiquitous use within the profession. Some difficulties have been related to the challenge of defining meaning in relation to other concepts central to occupational therapy. For example, uncertain ties between activity meaning and purpose have surfaced in the past decade, though these concepts are likely related and mutually influencing (Fisher, 1998). Further, a nearly singular focus on the purposive nature of occupation such as goal directed behaviors or tasks may have inadvertently hindered theoretical development in this area. Hammel (2004) has succinctly argued occupational therapy will need to direct greater attention to affective and experiential qualities of occupation such as basic human needs fulfillment through choice, control, and belonging.

The Engagement in Meaningful Activities Survey (EMAS; Goldberg, Brintnell, & Goldberg, 2002) has recently emerged as one instrument intended to tap the ideas addressed by Hammell (2004). According to its authors, the EMAS assesses aspects of activity meaning with a particular emphasis on, “the activity’s congruity with one’s value system and needs, its ability to provide evidence of competence and mastery and its value in one’s social and cultural group” (pg. 19). The items comprising the EMAS reflect multiple propositions from occupational therapy and occupational science addressing constituents of meaningful engagement (Kielhofner, 1983; Trombly, 1995; Yerxa et al., 1990). The concepts addressed by the EMAS are also relevant to contemporary social psychological theories such as perceived control, behavioral regulation and motivation which are sensitive to the subjective nature of human action (e.g., Baltes & Baltes, 1990; Emmons, 1999; Heckhausen, Wrosch, & Schulz, 2010; Ryan & Deci, 2000).

The strength of the EMAS may ultimately lie in the breadth and conceptual congruence by which subjective perceptions of meaning are linked to convergent aspects of human action and motivation. That is, the EMAS approaches the assessment of activity meaning from a perspective of concilience by bringing together diverse perspectives on meaning and occupation. Nonetheless, further empirical study is needed to establish the validity, clinical, and theoretical utility of the EMAS.

There is a growing body of literature substantiating the psychometric properties of the EMAS. The scale has demonstrated positive relationships with measures of life satisfaction and health-related quality of life, and negative relationships with measures of boredom, depression, and negative affect in community and institutional dwelling older adults, persons with persistent mental illness, and university students, (Eakman, 2011; Eakman, Carlson, & Clark, 2010a, 2010b; Goldberg, et al., 2002; Zimolag & Krupa, 2009). The EMAS has been related to measures of activity meaning, meaning and purpose in life, and basic psychological needs (e.g., relatedness, competence, and autonomy) thereby supporting its criterion-related and convergent validity. These findings have substantiated theoretical models and propositions in occupational therapy and occupational science linking meaningful activity participation to basic psychological needs and life meaning.

Applying Rasch Analysis to Assess Scale Validity and Inform Theory

A useful approach for further testing the validity of the EMAS is through an application of Rasch analysis, an analytic method that is becoming rapidly adopted in occupational therapy. The Rasch measurement model places persons and items on the same interval scale, thereby allowing items within a scale to differentiate among persons with differing levels of the latent variable (Bond & Fox, 2007). Using a process of conjoint measurement, the Rasch model can characterize an individual along a continuum (i.e., ascribing more or less meaning to their activity participation) and concurrently link the person to test items comprising a relative ordering of the latent variable (i.e., greater to lesser degrees of activity meaning).

The potential to evaluate an underlying continuum of items from least to most difficult is an inherent benefit of assessing scale validity with Rasch analysis. Moreover, an intention of the researcher when employing the Rasch model is to test the data with respect to a predefined definition or model of a construct (Wilson, 2005). Typically a construct map is used to outline the construct of interest, as was proffered briefly above via theoretical review. However, extant theory may also be imposed on a scale's design and scale validity assessed in terms of items reflecting a continuum of lesser to greater attributes of a given construct.

This use of the Rasch measurement model has been fruitful for validating measures of constructs such as IADL motor and process skills (Fisher, 1993; Goto, Fisher, & Mayberry, 1996), infant motor performance (Barbosa, Campbell, Smith, & Berbaum, 2005), and social interaction (Simmons, Griswald, & Berg, 2010). With respect to the EMAS and its underlying construct, meaningful activity participation, there does not appear to be consensual theory in occupational therapy from which to assert this relative ordering of scale items.

Rasch analysis, nonetheless, offers empirical data which may inform and advance theory regarding concepts important to a given discipline. This perspective has been asserted by Bezruczko (2003) who argues that tools such as Rasch analysis are desperately needed to develop and refine theory in the social sciences. Results from the present study, especially with respect to the EMAS item hierarchy, can offer an important source of data which may influence both theory and practice in occupational therapy. It would therefore be of great interest to determine how a Rasch calibrated EMAS might inform our understanding of meaning in occupation. For example, by examining the hierarchy of EMAS items derived through Rasch calibration, it will be possible to determine which qualities of meaning are more difficult to ascribe to activity participation versus those aspects of meaning which tend to more easily define meaningful activity participation.

Purpose

The central purposes of this study are to examine the validity and item hierarchy of the EMAS by applying the Rasch measurement model in an age diverse sample. More specifically, the study aims include: 1) determining the most efficient rating scale design for the EMAS; 2) examining item fit, or the extent to which the items on the instrument match the samples; 3) establishing the item hierarchy, or ordering of items from greater to lesser degrees of meaning; 4) evaluating differential item functioning with regard to gender and age; and 5) offering insights regarding the theoretical and clinical implications of these results.

Findings from the present study may offer additional evidence to support the validity of the EMAS and will add to our understanding of activity meaning which is so deeply woven in the occupational therapy fabric. Beyond this, by establishing a clearer understanding of the EMAS at the level of its items clinicians would have access to information to structure therapeutic occupations sensitive to variations in meaningful activity. Therapeutic outcomes could also be assessed with explicit links to varied aspects of activity meaning.

METHOD

Sample and Procedures

Secondary analyses were conducted on a combined sample of 276 persons from two prior studies (Eakman, 2011; Eakman, et al., 2010a). These two samples were evaluated collectively to test the utility of the EMAS across a greater range of ages than could be

addressed with just one of the samples. This purpose appears to have been achieved because the age range for the combined sample was 18 – 100 years.

The first sample consisted of 154 older men and women who constituted a convenience sample from the greater Los Angeles California area in the United States. Data were collected in 2004 following institutional review board approval. To be included in the study participants had to be at least 65 years of age, sufficiently fluent in English, and cognitively able to participate in the study. Participants were recruited from senior centers, independent and supported living communities and informed of the chance to participate in the study by administrative or support staff at the respective facilities. Persons within the sample were on average 80.5 ± 7.1 years old (range 65 – 100). A large majority was female (77%), Caucasian (82%), reported being married or living with another (86%), indicated some post-high school education (66%) and was living independently (80%).

The second sample comprised 122 university students from a northwestern public university in the United States where the author was employed. Data were collected in 2009 through Survey Monkey, an internet-based survey company, following approval of the university's human subjects committee. To be included in the study participants had to be enrolled at the university and 18 years of age or older. Randomly selected students were sent invitation emails to their university email accounts, followed by two reminder emails informing them about the study; the response rate was 17.9%. This sample was on average 27.1 ± 8.0 years old (range 18 – 56) and consisted of a small majority of females (58%). Most participants were either seniors (25%) or in graduate school (26%). A large majority of the participants were Caucasian (82%).

Assessment

The Engagement in Meaningful Activities Survey (EMAS) is a 12-item scale purported to reflect the construct of meaningful activity participation (Goldberg, et al., 2002). The exact item wording and five-point scale had been maintained from the original article. However, the adjectival descriptors of (2-Rarely, 3-Sometimes, and 4-Usually) were added between the (1-Never and 5-Always) endpoints with the intention of providing greater clarity in response options. Each of the 12 EMAS items begins with, "The activities I do…" and includes respectively: help me take care of myself (e.g., keep clean, budget my money), reflect the kind of person I am, express my creativity, help me achieve something which gives me a sense of accomplishment, contribute to my feeling competent, are valued by other people, help other people, give me pleasure, give me a feeling of control, help me express my personal values, give me a sense of satisfaction, and have just the right amount of challenge.

Data Analyses

The WINSTEPS version 3.70.0.3 computer program's one parameter Rasch model (i.e.,Rasch-Andrich rating scale model) was used to evaluate the EMAS (Linacre, 2009). Data included participants' EMAS item-level responses, gender (female/ male), and group (older adult/ college student) identifiers.

Rating Scale Design

Analyses first addressed the rating scale design and followed procedures reviewed by Bond and Fox (2007). The intent of these analyses were to determine if the response categories established for the EMAS (i.e., Never, Rarely, Sometimes, Usually, and Always) provided for optimal measurement of the EMAS items. The following indicators were examined in combination to determine category efficacy: category frequencies, average measures, step calibrations, and category fit statistics (Linacre, 1995a, 1999). To evaluate category

frequency it is recommended that each category within a scale have a minimum of 10 responses. Average measures reflect the average ability for persons selecting a given category value and should increase as the value of the categories increase. Step calibrations should also increase with category values. An outfit mean square (MnSq) fit statistic greater than 2 indicates a poorly performing response category that is adding noise to the measure. An evaluation of these indicators may indicate the need to collapse two categories into one as a means of improving the utility of a scale.

Person Fit, Item Fit, and Model Unidimensionality

Person fit (person-response validity) involved estimating outfit mean square (MnSq) and standardized mean square (Zstd) statistics and eliminating persons with both outfit MnSq > 1.4 and Zstd > 2.0 identified from the WINSTEPS output then re-estimating the Rasch model. Substantive differences in item measures (logits) in the re-estimated model compared to the original model would be indicative of the poorly fitting persons negatively impacting model estimates (J. M. Linacre, personal communication, May 28, 2010). A point-measure correlation was determined for each item as an indicator of the relationship between the observations on an item and the corresponding person measures. Items with negative point-measure correlations could provide initial evidence of multidimensionality (Linacre, 1995b, 2009).

To further evaluate unidimensionality both MnSq standardized residuals and Zstd statistics were used for each item in the EMAS. The fit statistics of the EMAS items were evaluated according to Wright and Linacre's (1994) criteria for rating scales, with values greater than 1.4 being misfitting. Poorly performing items would demonstrate both outfit MnSq > 1.4 and Zstd > 2.0. The final assessment of unidimensionality involved principal component analysis (PCA) of the standardized residuals from the Rasch calibrated model (Linacre, 1995b, 1998, 2009; E. V. Smith, 2002). Evidence of unidimensionality would include variance explained by the first contrast in the residuals being less than 10%, and the eigenvalue of the first contrast below 3.0.

The item hierarchy of the EMAS items was also generated through the Rasch-Andrich rating scale model and is indicated in log equivalent units (logits). Higher logit values are indicative of increasing item difficulty and concurrently are associated with greater levels of the meaningful activity participation construct. A person reliability estimate was calculated which may be interpreted similarly to a Cronbach's alpha. Further, a separation ratio (SR) was calculated as an indicator of the number of statistically significant strata to which the sample is divided [SR = (4Gp + 1) / 3, where Gp = person separation reliability]. Evidence of these strata in the sample may allow for classifying each strata into meaningful categories (e.g., "low", "medium", and "high" ascriptions of meaningful activity) (Wright & Masters, 1982, 2002).

Differential Item Functioning

Differential item functioning (DIF) was assessed across the categories of gender and group (i.e., older adults/ college students). Student's *t*-tests were estimated as DIF size divided by the DIF standard error (Linacre, 2009). Statistical significance of the *t*-tests involved a Bonferoni adjustment from $\alpha = .05$ to $\alpha = .004$ (i.e., .05 / 12 EMAS items) because no empirical basis was present to assign a-priori hypotheses to item DIF.

RESULTS

Category frequencies, average measures, step calibrations and category fit statistics were evaluated to determine the utility of the EMAS response categories and scaling (see Table

1). Each of the five rating scale categories had obtained ten or more responses, satisfying the first indicator. However, the "Never" category received less than 1% of total responses. The observed average measure did progress from low to high across the five categories satisfying the second rating scale design indicator. Step calibrations were also observed to increase with category values. Lastly, the "Never" category had an outfit MnSq of 2.4 indicating this response category was not contributing meaningful measurement information. Therefore, the lowest categories (Never and Rarely) were collapsed. The rating scale design of the four category EMAS was then re-evaluated and satisfied each of the four indicators. The four category EMAS was used for subsequent analyses.

An evaluation of the person fit statistics indicated adequate person-response validity for the EMAS. In the present sample 90.0% of the persons obtained acceptable fit; 27 persons had MnSq > 1.4 and Zstd > 2.0 and of these persons 20 were older adults. The misfitting persons were temporarily eliminated from the sample and the Rasch model was re-estimated. There were no substantial changes to the item measures in the re-estimated model compared to the original model therefore the misfitting persons were re-introduced for subsequent analyses. Point-measure correlations for the EMAS items were good ranging from .51 to .73.

Interpretation of item fit and subsequent PCA of the standardized residuals from the Rasch calibrated model indicated the EMAS was assessing a unidimensional construct (see Table 2). The EMAS item MnSq infit and outfit statistics were within acceptable ranges with the exception of "Take care of self" which was considered to be misfitting (infit MnSq = 1.70; Zstd = 6.7, outfit MnSq = 1.60; Zstd = 5.3); though the MnSq values were only marginally outside of typically acceptable ranges. The Rasch model explained 47.9% of the raw variance in the EMAS which was nearly identical to the variance expected by the model (48.0%). The PCA resulted in a first component Eigenvalue of 1.8 representing just 8.0% of the residual variance. An Eigenvalue of < 3.0 is considered good and < 1.5 is deemed excellent (Linacre, 2009).

The EMAS item hierarchy is illustrated in Table 2 in descending order of item difficulty. In reviewing the item difficulty measures (in logits) the most difficult items were "Help others" (1.22) followed by "Valued by others" (0.89), and "Expressing my creativity" (0.84). The three least difficult items in ascending order of difficulty included "Take care of self" (−0.99), "Reflect the kind of person I am" (−0.92), and "Sense of satisfaction" (−0.77). Additionally, certain EMAS item measures were equivalent in logit value (e.g., "Feeling in control" [0.51] and "Right amount of challenge" [0.50]).

An item-person map linking EMAS item difficulties to the person abilities of the sample across the three response scale thresholds (i.e., 1 to 2, 2 to 3, and 3 to 4) is presented in Figure 1. In reviewing this figure it is evident a normal distribution of person abilities exists and the EMAS items and scaling are measuring an overwhelming majority of persons; the exceptions being those few persons above 5.5 logits and below −4.5 logits. These distributions offer substantive evidence indicating the mean item difficulty calibrations (0.00, SD = 0.74) matched mean person ability measures (1.24, SD = 1.79) fairly well. A person reliability index of 0.85 was obtained, which was indicative of good measurement reliability in this sample. Additionally, person separation was 2.39 thereby dividing the sample into 3.52 strata indicating the EMAS was capable of discerning three statistically distinct levels of person abilities.

The EMAS items did not display DIF across gender (DIF contrast range: .00 – .67; *p*-value range: 1.000 – .007) or group (i.e., older adults/ college students) (DIF contrast range: .03 – .59; *p*-value range: .964 – .009) when evaluated in terms of Bonferoni-adjusted statistical significance ($p < .004$). However, if the Bonferoni-adjusted criteria were loosened, then the

item “Take care of self” was easier for women (DIF = 0.67, $t(276) = -2.74$, $p = .007$) and “Give me pleasure” was easier for older adults (DIF = 0.59, $t(276) = -2.63$, $p = .009$); each item displayed uniform DIF.

DISCUSSION

The central purposes of this study were to examine the validity and item hierarchy of the EMAS by applying the Rasch measurement model. Overall, the EMAS showed sound psychometric properties in this age-diverse sample. As analyses proceeded, the five category rating scale required modification because of infrequent and inefficient use of the “Never” category. A shift to a four category scale demonstrated good performance. That is, persons rarely indicated that they did not experience meaning in the EMAS items. The extremely low use of the “Never” category (i.e., less than 1% of all responses) may indicate that perceptions of meaning as assessed by the EMAS may be ubiquitous in the present sample. This finding reflects multiple perspectives which assert that perceived meaning plays an important role in the actions of our daily lives (Engelhardt, 1983; King, Brown, & Smith, 2003; Klinger, 1977; Maddi, 1998). Nonetheless, future research should continue to evaluate the instrument’s category functioning and consider the removal of the “Never” category.

Evaluation of the EMAS’ item fit discerned all but one item displaying an acceptable fit to the Rasch measurement model. General rules of thumb suggest an outfit MnSq of > 1.40 as a cutoff for survey instruments; the statistic for the EMAS item “Take care of self” was just above the recommended threshold. One factor affecting fit may have been the use of multiple qualifiers in the item’s wording (i.e., “The activities I do help me take care of myself [e.g., keep clean, budget my money]”). These descriptors may be evaluated quite differently thereby negatively influencing item fit. Future development of the EMAS could test the effects of eliminating the item’s qualifiers and feasibly retain a useful scale item. Additionally, research could also evaluate related concepts such as occupational value (Eklund, Erlandsson, Persson, & Hagell, 2009; Persson, Erlandsson, Eklund, & Iwarsson, 2001), so as to identify the relative congruence between concepts and items underlying their operational definitions.

Findings from the present study also indicate the items underlying the EMAS are assessing a unidimensional construct. The PCA of the Rasch model residuals offers the most telling evidence in this regard. This is noteworthy given the relatively diverse concepts which appear to frame the operational definition of meaningful activity found in the EMAS. Multiple perspectives related to how activity may be conceived of as meaningful have been asserted within occupational therapy and occupational science, as well as from related fields such as social and developmental psychology. These ideas have directly influenced the development of the scale and support its validity, which in turn may allow for a more refined study of meaningful activity.

A notable benefit of applying the Rasch model to the EMAS is the potential to assess the construct of meaningful activity participation by evaluating the relative ordering of the items (i.e., from least to most meaningful) comprising the scale. Because there does not appear to be consensual theory in occupational therapy from which to assert this relative ordering of scale items, results from this study can offer substantive evidence to advance and refine definitions of activity meaning and to inform clinical practice.

EMAS items reflecting lower levels of the meaningful activity construct included perceptions of pleasure and satisfaction derived through occupation. These aspects of activity meaning are commonly referred to in occupational therapy. However, present definitions and propositions do not indicate how or why certain aspects of activity meaning

may be more or less representative of meaningful activity (e.g., Hammell, 2009; Persson, et al., 2001; Trombly, 1995). The present findings, however, offer evidence to suggest that perceptions of pleasure and satisfaction may represent the more basic or requisite experiences defining meaningful occupational engagement. With respect to measuring occupational therapy processes and outcomes, persons reporting relatively low levels of pleasure and satisfaction could be considered most deficient in meaningful activity participation. Furthermore, persons less likely to identify with their present occupations (i.e., activities tend not to reflect the kind of person they are) may be least capable of indicating high levels of meaningful activity participation; a finding supporting personal identity as a basic constituent of perceived meaning (Christiansen, 1999; Jackson, Carlson, Mandel, Zemke, & Clark, 1998; Little, 1999).

In this same vein, the two items representing the greatest levels of the meaningful activity participation construct in the present sample explicitly relate perceptions of meaning to a social context. That is, a person with a high level of perceived activity meaningfulness was more likely to report activities as allowing her to help others and be valued by others, suggesting this individual is well integrated in a social milieu (King, Brown, & Smith, 2003). The corollary afforded by employing Rasch analysis is that persons may typically find it easier to ascribe experiences of pleasure and satisfaction to their round of daily occupations compared with the more challenging socially-related aspects of perceived meaning.

Results from these analyses also identified two items (“Feeling of control” and “Right amount of challenge”) which were practically identical in logit value. From a measurement perspective it can be concluded that these two EMAS items tap the construct of meaningful activity participation in the same manner within these samples. It would be premature, however, to suggest the ideas underlying these EMAS items are synonymous and interchangeable. Therapeutic efforts that match the demands of an activity to the skills of a client would likely engender experiences of both competence and control which are familiar to occupational therapists and central tenets within theories of intrinsic motivation and lifespan development (Deci & Ryan, 2002; Heckhausen, et al., 2010).

The person reliability estimate for the EMAS was also quite good and the resulting person-separation index indicated three statistically distinct levels of ability (i.e., low, medium, and high perceptions of meaningful activity participation) could be identified. Future research should consider assessing samples with respect to variations in levels of attributes likely associated with meaningful activity participation. Prior research has identified likely candidates such as high vs. low levels of boredom, competence, and meaning and purpose in life (Eakman, 2011). Research with larger more representative samples could also explore hypotheses testing the adequacy of measuring only levels of activity participation (e.g., frequency and diversity of activities) with respect to life satisfaction, quality of life, and life meaning with and without consideration for the perceived meaningfulness of activity participation.

Rasch measurement also allows for a determination of the spread of the items along the distribution of the sample as well as the potential to meaningfully discriminate amongst persons with more or less of the construct (Bond & Fox, 2007). Figure 1 illustrated a very good match between the EMAS items with respect to the ability levels of this age-diverse sample. Further, there appears to be ample room in the EMAS to precisely measure lower mean levels of meaningful activity participation than was found in the present samples.

Briefly, a few implications for definitions of activity meaning and models of occupation arise from the findings of this study. First, by employing the Rasch measurement model, the

items comprising the EMAS appear to form a valid and unidimensional measure. In this regard, the construct of meaningful activity participation can be measured and represented on an interval-level scale. Next, the hierarchy of EMAS items identified through Rasch analysis offers an empirical basis to suggest tentative principles for advancing definitions of meaningful activity participation. As one example, activity meaning may be construed as a complex construct; nonetheless, there are likely distinctly definable aspects of meaning that represent more or less of the construct. Finally, as models of occupation are studied and refined, there should be an explicit effort to integrate and test differing concepts and measures of activity meaning. Perceptions of activity meaning should also be evaluated with respect to the processes and outcomes inherent in both the negotiation of day to day life and occupational therapy interventions.

There are also significant implications for these findings with respect to the practice of occupational therapy. First, the EMAS is a brief 12-item survey requiring only a few minutes to administer and score. Therefore, assessing meaningful activity participation with the EMAS would require little time and could offer important baseline, reassessment, and outcome data for practitioners. Next, the EMAS could afford therapists a standard format of specific items for interviewing clients regarding daily activities and contexts which either support or hinder meaningful engagement. Finally, knowledge of EMAS item hierarchies can provide a basis upon which to structure therapeutic occupations. For example, therapists might integrate occupations which support personal identity and experiences of satisfaction and pleasure as a starting point for clients who report low levels of perceived meaning. Activity synthesis and the design of therapeutic occupations would therefore consider and grade multiple aspects of meaning (Hinojosa & Blount, 2009; King, 2004; Nelson & Jepson-Thomas, 2003).

The findings and implications of this study should be carefully applied, in part, because of the potential for cultural variations in definitions of occupation and perceptions of meaning ascribed to activity participation (Hammell, 2009; Iwama, 2005). Though the samples for the present study were diverse in age, a large majority of the participants self-identified as Caucasian and resided in the United States. Future studies should therefore consider sampling persons from ethnicities and cultures not fully represented in the present study. Also, the sampling methods employed in the present study may have affected the results to some degree. The older-adult sample was one of convenience, whereas the college sample was randomly selected, it may have been biased to some extent because of a low response rate. Lastly, the EMAS items in this study did not display DIF when the Bonferoni adjusted significance criteria were used; nonetheless, two items (“Taking care of self” and “Give me pleasure”) did display DIF when these criteria were loosened. DIF analysis should therefore be carefully applied in future studies involving the EMAS (R. M. Smith, 2004).

In conclusion, the findings from these analyses were most supportive of the validity of the EMAS and indicate the instrument is measuring a unidimensional construct. Access to a valid measure of meaningful activity participation affords a benefit to both clinicians and researchers. Therapists could rely on the EMAS as a brief assessment to aid in the development of therapeutic interventions and track clinical change. Researchers could use the measure to explore occupational therapy processes and outcomes with respect to meaningful engagement in activity. Nonetheless, future studies will need to be conducted to fully explore the utility of the EMAS.

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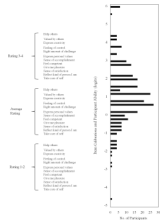

Figure 1. Rasch Item-Participant Map

Bars indicate the number of participants (x-axis) at each ability level (y-axis). Items are presented at 3 step calibrations corresponding to a 50% probability of each item receiving a rating of either 1–2 (i.e., Never/ Rarely or Sometimes), an average rating (Sometimes or Usually), and a rating of 3–4 (Usually or Always).

Table 1

Rating Scale Design Statistics for the Engagement in Meaningful Activities Survey (N = 276)

Category Labels		Observed Count		Observed Average		Step Calibrations		Outfit Mnsq	
Before	After	Before	After	Before	After	Before	After	Before	After
(1)	–	28	–	−1.00	–	None	–	2.39	–
(2)	(1)/(2)	118	146	−0.26	−1.34	−2.51	None	1.22	1.43
(3)	(3)	738	738	0.58	−0.34	−1.70	−2.55	0.89	0.90
(4)	(4)	1661	1661	2.02	1.19	.53	−0.33	0.86	0.88
(5)	(5)	671	671	3.63	2.86	3.68	2.88	0.99	0.99

Note. MnSq = mean square., 1 = Never, 2 = Rarely, 3 = Sometimes, 4 = Usually, 5 = Always

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Table 2

Item Hierarchy and Fit Statistics for the Engagement in Meaningful Activities Survey after Rasch Calibrations (N = 276)

Item Number	Abbreviated Items	Item Difficulty in Logits	Model S.E.	Infit		Outfit	
				MnSq	Zstd	MnSq	Zstd
7	Help others	1.22	0.10	1.19	2.2	1.23	2.6
6	Valued by others	0.89	0.10	0.98	−0.2	1.00	0.0
3	Express my creativity	0.84	0.10	1.09	1.1	1.12	1.4
9	Feeling of control	0.51	0.11	1.21	2.4	1.21	2.3
12	Right amount of challenge	0.50	0.11	0.98	−0.2	0.99	−.1
10	Express personal values	−0.04	0.11	0.86	−1.6	0.82	−2.1
4	Sense of accomplishment	−0.26	0.11	0.79	−2.6	0.77	−2.7
5	Feel competent	−0.33	0.11	0.74	−3.3	0.73	−3.3
8	Give me pleasure	−0.66	0.11	0.83	−2.0	0.84	−1.8
11	Sense of satisfaction	−0.77	0.11	0.67	−4.2	0.64	−4.4
2	Reflect kind of person I am	−0.92	0.11	0.95	−0.6	0.98	−0.2
1	Take care of self	−0.99	0.11	1.70	6.7	1.60	5.3
Mean		0.00	0.11	1.00	−0.2	0.99	−0.3
SD		0.74	0.00	.27	2.9	0.26	2.7

Note. Scale responses: (1) never / rarely, (2) sometimes, (3) usually, (4) always; S.E. = standard error; MnSq = mean square; Zstd = z-standardized.