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

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## KEY WORDS

- age factors
- human activities and occupations
- motivation
- personal satisfaction
- psychometrics

**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 yr). 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, I found the EMAS to be a unidimensional measure. Differential item functioning was not detected using Bonferroni-adjusted statistical criteria.

**CONCLUSION.** The results confirm the potential to validly measure subjective qualities of meaningful activity participation. The EMAS can be used to evaluate processes and outcomes central to occupational therapy practice and to aid in the design of therapeutic occupations.

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The *Occupational Therapy Practice Framework: Domain and Process* (2nd ed.; American Occupational Therapy Association [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 term *meaningful* 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 light of other concepts central to occupational therapy. For example, uncertain ties between activity *meaning* and *purpose* have surfaced in the past decade, although the concepts are likely related and mutually influencing (Fisher, 1998; Park, 2010). Moreover, 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. Hammell (2004) succinctly argued that 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 Hammell (2004) addressed. According to its authors, the EMAS assesses aspects of activity meaning and has 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” (p. 19). The items in 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*, a term that reflects the integration of diverse bodies of knowledge to affect our understanding of a complex situation or phenomena. Thus, the EMAS brings together diverging perspectives on meaning and occupation. Nonetheless, further empirical study is needed to establish the validity, clinical, and theoretical utility of the EMAS.

A growing body of literature substantiates 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 institution-dwelling older adults, people 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 that link 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 an application of Rasch analysis, an analytic

method that is rapidly becoming adopted in occupational therapy. The Rasch measurement model places people and items on the same interval scale, thereby allowing items within a scale to differentiate among people with differing levels of the latent variable (Bond & Fox, 2007). Using a process of conjoint measurement, the Rasch model can characterize a person along a continuum (e.g., ascribing more or less meaning to their activity participation) and concurrently link the person to test items reflecting a relative ordering of the latent variable (e.g., 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, researchers use the Rasch model to test 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. However, extant theory may also be imposed on a scale’s design, and scale validity may be 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 motor and process skills used in instrumental activities of daily living (Fisher, 1993; Goto, Fisher, & Mayberry, 1996), infant motor performance (Barbosa, Campbell, Smith, & Berbaum, 2005), and social interaction (Simmons, Griswold, & Berg, 2010). With respect to the EMAS and its underlying construct, meaningful activity participation, no consensual theory appears to exist in occupational therapy from which to assert this relative ordering of scale items.

Rasch analysis, nonetheless, offers empirical data that may inform and advance theory regarding concepts important to a given discipline. Bezruczko (2003) asserted this perspective and argued that tools such as Rasch analysis are desperately needed to develop and refine theory in the social sciences. Results from the current study, especially with respect to the EMAS item hierarchy, can offer an important source of data that 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 the qualities of meaning that are more difficult to ascribe to activity participation versus those aspects of meaning that tend to more easily define meaningful activity participation.

## Purpose

The central purposes of this study were 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 included (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 degree 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 current study will offer evidence to support the validity of the EMAS and to add to our understanding of activity meaning, which is so deeply woven into 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*

I conducted secondary analyses on a combined sample of 276 participants from two prior studies (Eakman, 2011; Eakman et al., 2010a). I evaluated these two samples 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; the age range for the combined sample was 18–100 yr.

The first sample consisted of 154 older men and women who constituted a convenience sample from the greater Los Angeles area. Data were collected in 2004 after approval from the University of Southern California institutional review board. To be included in the study, participants had to be  $\geq 65$  yr old, sufficiently fluent in English, and cognitively able to participate in the study. Participants were recruited from senior centers and independent- and supported-living communities; they were informed of the chance to participate in the study by administrative or support staff at their respective facilities. Participants had an average age of  $80.5 \pm 7.1$  yr (range = 65–100). Most participants were female (77%) and White (82%), reported being married or living with another person (86%), indicated some post-high school education (66%), and were living independently (80%).

The second sample consisted of 122 students from Idaho State University, where I was employed. Data were collected in 2009 through Survey Monkey, an Internet-based survey company, after approval of the university's human subjects committee. To be included in the study, participants had to be enrolled at the university and  $\geq 18$  yr old. Randomly selected students were sent invitation e-mails to their university e-mail accounts, followed by two reminder e-mails informing them about the study; the response rate was 17.9%. This sample had an average age of  $27.1 \pm 8.0$  yr (range = 18–56), and a small majority were female (58%). Most participants were either seniors (25%) or in graduate school (26%). Most of the participants were White (82%).

### *Assessment*

The EMAS is a 12-item scale purported to reflect the construct of meaningful activity participation (Goldberg et al., 2002). In this study, the exact item wording and 5-point scale were 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 to provide greater clarity in response options. The 12 EMAS items begin with "The activities I do . . ." and continue as follows: "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*

I used the WINSTEPS Version 3.70.0.3 computer program's one-parameter Rasch model (i.e., Rasch-Andrich Rating Scale Model) to evaluate the EMAS (Linacre, 2009). Data included participants' EMAS item-level responses, gender (female or male), and group (older adult or 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 was to determine whether the response categories established for the EMAS (i.e., *never*, *rarely*, *sometimes*, *usually*, and *always*) provided for optimal measurement of the EMAS items. I examined the following indicators 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 of people selecting a given category value and should increase as the value of the categories increases. Step calibrations should also increase with category values. An outfit mean square (*MnSq*) fit statistic  $>2$  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 *MnSq* and standardized mean square (*Zstd*) statistics and eliminating people with both outfit *MnSq*  $> 1.4$  and *Zstd*  $> 2.0$  identified from the WINSTEPS output and then reestimating the Rasch model. Substantive differences in item measures (log equivalent units, or logits) in the reestimated model compared with the original model would indicate that the poorly fitting people negatively affect 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, I used both *MnSq* standardized residuals and *Zstd* statistics for each item in the EMAS. I evaluated the fit statistics of the EMAS items according to Wright and Linacre's (1994) criteria for rating scales, with values  $>1.4$  being misfitting. Poorly performing items would demonstrate both outfit *MnSq*  $> 1.4$  and *Zstd*  $> 2.0$ . The final assessment of unidimensionality involved principal-components analysis (PCA) of the standardized residuals from the Rasch-calibrated model (Linacre, 1995b, 1998, 2009; Smith, 2002). Evidence of unidimensionality would include variance explained by the first contrast in the residuals being  $<10\%$  and the eigenvalue of the first contrast being  $<3.0$ .

The item hierarchy of the EMAS items was also generated through the Rasch-Andrich rating scale model and is indicated in logits. Higher logit values indicate increasing item difficulty and are concurrently associated with greater levels of the meaningful activity participation construct. I calculated a person reliability estimate, which may be interpreted similarly to Cronbach's  $\alpha$ . Moreover, I calculated a separation ratio (SR) as an indicator of the number of statistically significant strata into which the

sample is divided ( $SR = [4G_p + 1] / 3$ , where  $G_p$  = 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.* I assessed differential item functioning (DIF) across the categories of gender and group (i.e., older adults or 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 Bonferroni 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 DIF.

## Results

I evaluated category frequencies, average measures, step calibrations, and category fit statistics to determine the utility of the EMAS response categories and scaling (Table 1). Each of the five rating scale categories had obtained 10 or more responses, satisfying the first indicator. However, the *never* category received  $<1\%$  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. Last, the *never* category had an outfit *MnSq* of 2.4, indicating that this response category was not contributing meaningful measurement information. Therefore, the lowest categories (*never* and *rarely*) were collapsed. I then reevaluated the rating scale design of the four-category EMAS and found that it satisfied each of the four indicators. I used the four-category EMAS 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 participants obtained acceptable fit; 27 had *MnSq*  $> 1.4$  and *Zstd*  $> 2.0$ , and of these, 20 were older adults. I temporarily eliminated the misfitting participants from the sample and reestimated the Rasch model. I found no substantial changes to the item measures in the reestimated model compared with the original model; therefore, I reintroduced the misfitting people 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 that the EMAS was assessing a unidimensional construct (Table 2). The EMAS item *MnSq* infit and outfit statistics were within acceptable ranges, with the

**Table 1. Rating Scale Design Statistics for the Engagement in Meaningful Activities Survey (N = 276)**

Category Labels <sup>a</sup>		Observed Count		Observed Average		Step Calibrations		Outfit <i>MnSq</i>	
Before <sup>b</sup>	After <sup>c</sup>	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	1,661	1,661	2.02	1.19	0.53	-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.

<sup>a</sup>1 = never, 2 = rarely, 3 = sometimes, 4 = usually, 5 = always. <sup>b</sup>Before collapsing response categories from five categories to four. <sup>c</sup>After collapsing response categories from five categories to four.

exception of “take care of myself,” which was considered to be misfitting (infit *MnSq* = 1.70, *Zstd* = 6.7; outfit *MnSq* = 1.60, *Zstd* = 5.3), although 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 “are valued by other people” (0.89) and “express my creativity” (0.84). The three least difficult items in ascending order of difficulty included “take care of myself” (-0.99), “reflect the kind of person I am” (-0.92), and “give me a sense of satisfaction” (-0.77). Additionally, certain EMAS item measures were equivalent in logit value (e.g., “give me a sense of feeling in control,” 0.51, and “have just the 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 that a normal distribution of person abilities exists, and the EMAS items and scaling are measuring an overwhelming majority of people; the exceptions are those few people above 5.5 logits and below -4.5 logits. These distributions offer substantive evidence that 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, indicating good measurement reliability in this sample. Additionally, person separation was 2.39, thereby dividing the sample into 3.52 strata and indicating that 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 = 0.00–0.67; *p* range = 1.000–0.007) or group (i.e., older adults or college students; DIF contrast range = 0.03–0.59; *p* range = .964–.009) when evaluated in terms of Bonferroni-adjusted statistical significance (*p* < .004). However, if the Bonferroni-adjusted criteria were loosened, then the item “take care of myself” 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, people rarely indicated that they did not experience meaning in the EMAS items. The extremely low use of the *never* category (i.e., <1% of all responses) may indicate that perceptions of meaning as assessed by the EMAS may be ubiquitous in these samples. This finding reflects multiple perspectives asserting 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 removal of the *never* category.

### EMAS Item Fit and Unidimensionality

Evaluation of the EMAS’s item fit discerned all but one item displaying an acceptable fit to the Rasch measurement model. General rules suggest an outfit *MnSq* > 1.40 as a cutoff for survey instruments; the statistic for the

**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 SE	Infit		Outfit	
				<i>MnSq</i>	<i>Zstd</i>	<i>MnSq</i>	<i>Zstd</i>
7	Help other people	1.22	0.10	1.19	2.2	1.23	2.6
6	Are valued by other people	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	Give me a feeling of control	0.51	0.11	1.21	2.4	1.21	2.3
12	Give me just the right amount of challenge	0.50	0.11	0.98	-0.2	0.99	-0.1
10	Help me express my personal values	-0.04	0.11	0.86	-1.6	0.82	-2.1
4	Give me a sense of accomplishment	-0.26	0.11	0.79	-2.6	0.77	-2.7
5	Contribute to my feeling 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	Give me a sense of satisfaction	-0.77	0.11	0.67	-4.2	0.64	-4.4
2	Reflect the kind of person I am	-0.92	0.11	0.95	-0.6	0.98	-0.2
1	Help me take care of myself	-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
<i>SD</i>		0.74	0.00	0.27	2.9	0.26	2.7

Note. Scale responses: (1) *never/rarely*, (2) *sometimes*, (3) *usually*, (4) *always*. *MnSq* = mean square; *SD* = standard deviation; *SE* = standard error; *Zstd* = standardized mean square.

EMAS item “take care of myself” 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]”). Respondents may evaluate these descriptors 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 current study also indicate that 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 unidimensionality is noteworthy given the relatively diverse concepts that 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 in occupational therapy and occupational science, as well as in 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.

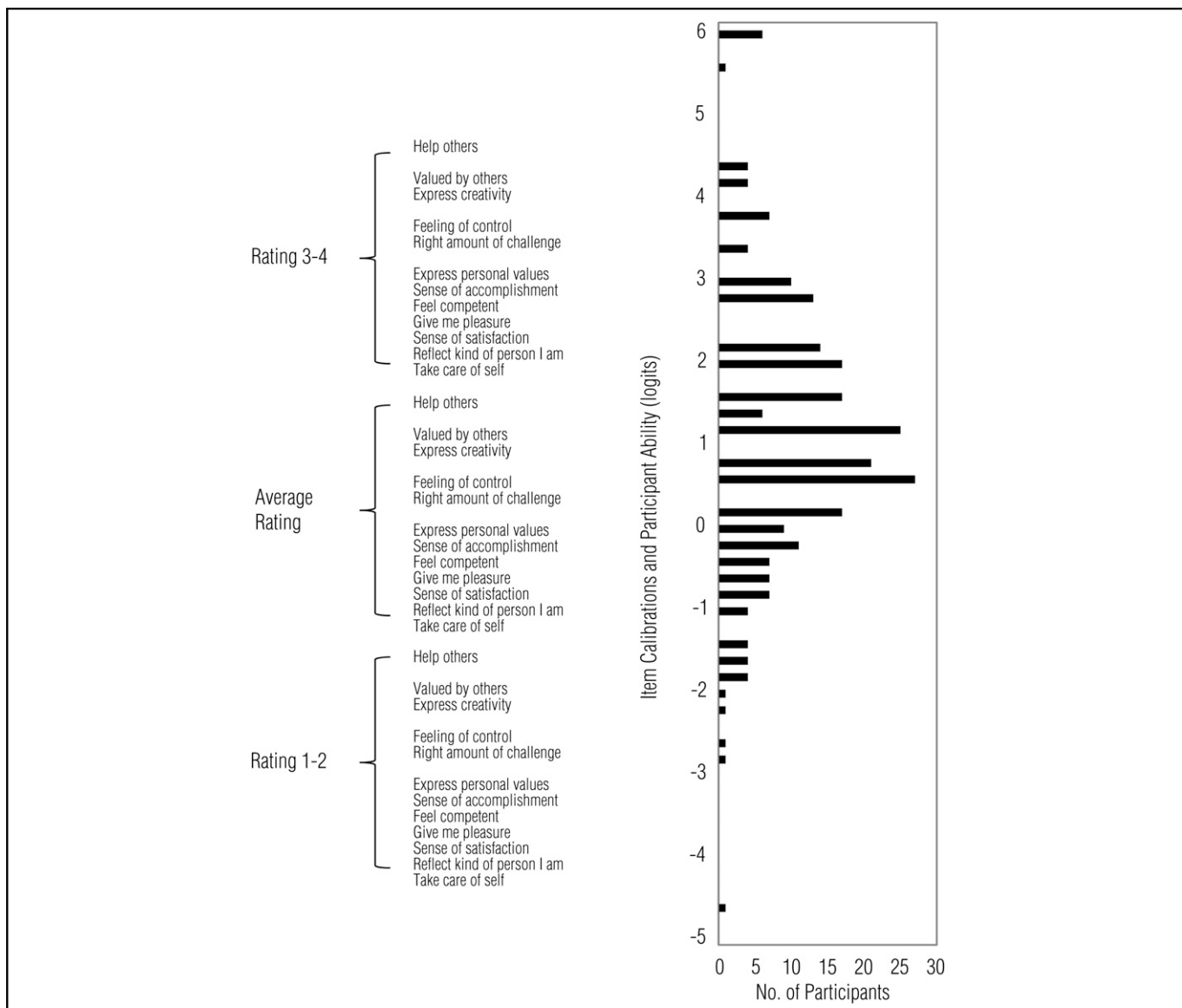
### *EMAS Item Hierarchy*

A notable benefit of applying the Rasch model to the EMAS is the potential to assess the construct of mean-

ingful activity participation by evaluating the relative ordering of the items (i.e., from least to most meaningful) in the scale. Because no consensual theory appears to exist 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 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, people reporting relatively low levels of pleasure and satisfaction could be considered most deficient in meaningful activity participation. Moreover, people 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 the same vein, the two items representing the greatest levels of the meaningful activity participation construct in the present samples explicitly relate perceptions of meaning



**Figure 1. Rasch item-participant map.** Bars indicate the number of participants (x axis) at each ability level (y axis). Items are presented at three step calibrations corresponding to a 50% probability of each item receiving a rating of 1-2 (i.e., *never/rarely* or *sometimes*), an average rating (*sometimes* or *usually*), or a rating of 3-4 (*usually* or *always*).

to a social context. That is, a person with a high level of perceived activity meaningfulness was more likely to report activities as allowing him or her to help others and be valued by others, suggesting that this individual is well integrated into a social milieu (King et al., 2003). The corollary afforded by using Rasch analysis is that people may typically find it easier to ascribe experiences of pleasure and satisfaction to their round of daily occupations than to the more challenging socially related aspects of perceived meaning.

Results from these analyses also identified two items (“give me a feeling of control” and “give me just the right amount of challenge”) that were practically identical in logit value. From a measurement perspective, one can conclude that these two EMAS items tapped the construct of meaningful activity participation in the same

manner in these samples. It would be premature, however, to suggest that 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 good, and the resulting person separation index indicated that 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 versus low levels of boredom, competence, and meaning and purpose in life (Eakman, 2011). Research with larger, more representative samples could also explore hypotheses regarding 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 and of the potential to meaningfully discriminate among people with more or less of the construct (Bond & Fox, 2007). Figure 1 illustrates a very good match between the EMAS items with respect to the ability levels of this age-diverse sample. Moreover, the EMAS appears to have ample room to precisely measure lower mean levels of meaningful activity participation than found in our study samples.

A few implications for definitions of activity meaning and models of occupation arise from the findings of this study. First, using the Rasch measurement model, the items of 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, distinctly definable aspects of meaning are likely to exist that represent more or less of the construct. Finally, as researchers study and define models of occupation, they should make an explicit effort to integrate and test differing concepts and measures of activity meaning. They should also evaluate perceptions of activity meaning with respect to the processes and outcomes inherent in both the negotiation of day-to-day life and occupational therapy interventions.

## Implications for Occupational Therapy Practice

These findings also have important implications for 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 requires little time and can offer important baseline, reassessment, and outcome data for practitioners. Next, the EMAS can afford therapists a standard format of specific items for interviewing clients regarding daily activities and contexts that either support

or hinder meaningful engagement. Finally, knowledge of EMAS item hierarchies can provide a basis on which to structure therapeutic occupations. For example, practitioners might integrate occupations that 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 include consideration and grading of multiple aspects of meaning (Hinojosa & Blount, 2009; King, 2004; Nelson & Jepson-Thomas, 2003).

Practitioners should apply the findings and implications of this study carefully, 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). Although the samples for the current study were diverse in age, most of the participants self-identified as White and resided in the United States. Future studies should therefore consider sampling people from ethnicities and cultures not fully represented in the current study. Also, the sampling methods used in the current study may have affected the results to some degree. The older adult sample was one of convenience, whereas the college sample was randomly selected and may have been biased to some extent because of a low response rate. Last, the EMAS items in this study did not display DIF when the Bonferroni-adjusted significance criteria were used; nonetheless, two items (“take care of myself” 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 (Smith, 2004).

In summary, the results of this study have the following implications for occupational therapy practice:

- The EMAS requires only a few minutes to administer and score and can be used to monitor client perceptions of change in meaningful activity. It can also be used to facilitate a clinical interview on meaningful activity.
- The EMAS items may offer occupational therapists examples for grading aspects of meaning in therapy.
- Practitioners should apply the findings of this study with caution because of the potential for cultural variations in definitions of occupation and meaning associated with activity participation.

## Conclusion

The findings from these analyses support the validity of the EMAS and indicate that the instrument is measuring a unidimensional construct. Access to a valid measure of meaningful activity participation benefits both clinicians



and researchers. Occupational therapy practitioners can rely on the EMAS as a brief assessment to aid in the development of therapeutic interventions and track clinical change. Researchers can use the measure to explore occupational therapy processes and outcomes with respect to meaningful engagement in activity. Nonetheless, future studies are needed to fully explore the utility of the EMAS. ▲

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