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Nilsson, Ingeborg; Argentzell, Elisabeth; Sandlund, Mikael; Leufstadius, Christel; Eklund, Mona

Link to publication

Measuring Perceived Meaningfulness in Day Centers for Persons with Mental Illness

Authors:

Ingeborg Nilsson, Reg OT., PhD., Department of Community Medicine and Rehabilitation *and* Ageing and Living Conditions Programme, Umeå University, Umeå, Sweden

Elisabeth Argentzell, Reg OT., Postgraduate student, Department of Health Sciences, Lund University, Lund, Sweden *and* Faculty of Health and Society, Malmö University, Malmö, Sweden

Mikael Sandlund, M.D., Ph.D., Department of Clinical Science/Psychiatry, Umeå University, Umeå, Sweden

Christel Leufstadius, Reg OT., PhD., Department of Health Sciences Centre, Lund University, Lund, Sweden

Mona Eklund, Reg. OT., Ph.D., Department of Health Sciences, Lund University, Lund, Sweden *and* Faculty of Health and Society, Malmö University, Malmö, Sweden

Corresponding author:

Ingeborg Nilsson, PhD., Reg OT., Department of Community Medicine and Rehabilitation, Occupational Therapy, Umeå University, S-901 87 Umeå, Sweden, phone: +46 90 7866133, fax: +46 90 7869267, mail: ingeborg.nilsson@umu.se

Short running headline in manuscript:

Measuring perceived meaningfulness…

ABSTRACT

Rationale: As support in leading a meaningful and active life, a person with mental illness is often given the opportunity to attend day centres. However, few studies have investigated the meaningfulness perceived by the person visiting a day centre. For such a purpose, a self-report instrument was developed.

Aims: To explore whether perceived meaningfulness, as expressed in the recently developed instrument Evaluation of Perceived Meaning in Day Centers (EPM-DC), could be viewed as one dimension and also to investigate the psychometric properties of this instrument.

Methods: Persons with mental illness, attending five day centres in Sweden, participated and completed the questionnaire. The data were analysed by Rasch analysis.

Major findings: The study showed that the concept captured in the instrument could be viewed as unidimensional and the result gave preliminary evidence for sound psychometric properties.

Principal conclusion: The results indicate promising signs of validity and reliability, but the suitability of self-reporting may be questioned.

MEASURING PERCEIVED MEANINGFULNESS IN DAY CENTERS FOR PERSONS WITH MENTAL ILLNESS

To enable people to engage in meaningful occupation is a marker in occupational therapy (1-2) and the concept of meaning, as well as the relationship between meaning and occupation, is an emerging field of occupational therapy research. On the basis of qualitative research, and with a focus on participants' subjective experiences, one way of summarizing themes of meaning is in terms of doing, being, belonging and becoming (3). An increasing concentration on meaning has taken place during the past decades, which has also inferred a change of focus within occupational therapy research, from occupational performance to engagement (2) in meaningful doing. As support in leading a meaningful and active life, a person with mental illness is often given the opportunity to attend a day centre (4). As a consequence of the growing focus on meaningfulness, there is also an increasing need for measures that capture the richness and complexity of different aspects of meaning (5). Accordingly, the focus of this study is on evaluating an instrument, recently developed to measure meaningfulness in day centers, as perceived by persons with mental illness.

There is a general belief within the occupational therapy literature that occupation enhances well-being and/or health among humans (6-7), and several studies have described a relationship between aspects of health and occupation among people with mental illness (8-9). However, there is not a clear pattern regarding which aspects of occupational engagement are associated with the aspects of self-rated health and well-being (10), neither are there any robust estimations about power in such associations (11). Among people with mental illness, meaningfulness has been highlighted as an active component in this relation (9, 12-14) This underscores the need for sound measures of the meaning generated by occupations, and Goldberg and associates (9) developed such instruments. However, meaningful occupation is a multifaceted concept. It may

refer to the occupations everyone generally performs in everyday life, which was the case in the instrument developed by Goldberg and colleagues (9, 15). However, meaningful occupation could also be about specific occupations that take place in specific contexts.

According to policies in different countries (4), and as stressed by advocates of occupational justice (16-17) people with severe and disabling mental illnesses have the right to meaningful daily occupation. The same policies also request that the municipalities, as part of community-based psychiatry, should provide such meaningful occupations, which generally take place in day centers (18). These centres thus constitute specific contexts where meaningful occupations are supposed to take place. They offer a number of types of activities for the visitors, who have a great variation of social and psychological needs and different types of cognitive difficulties. Some day centers offer work-like programs, while others are meeting-place oriented and focus on social needs. Yet, although the activities that such places provide are a most common and central type of intervention for a large number of people with severe and disabling mental illness, research within this area is very scarce. According to a Cochrane review (19), no controlled randomized studies of day centers exist at all, and therefore there is limited evidence of their usefulness or effectiveness. Thus, a commonly used intervention for a great number of people, which is a feature of community-based psychiatric services in most countries, remains largely unresearched. A few studies have been carried out within the field, although not based on controlled designs. A cross-sectional quantitative study comparing people with mental illness attending day centers with other groups, one engaged in work and one without any daily regular occupation, found that the working group was more satisfied with their daily occupations than the other two groups (8). However, those who visited day centers did not differ from those having no structured daily activity concerning satisfaction with daily occupations. Neither were they more satisfied with their well-being, quality of life, or self-mastery. On the other hand, a recent qualitative study showed that participation in day centers functioned as a satisfactory

substitute for work, and the participants also found the activities in the centers to be meaningful (12). However, this study also showed that meaning was found in all areas of daily life, by both visitors to day centers and people without such a regular daily occupation. Consequently, any advantages from taking part in the activities offered at day centers remain obscure. Consumer-run activity centers or programs may be seen as a related type of support, and it has been found that members improved their quality of life while taking part in such programs (20). Moreover, there are indications that work cooperatives and sheltered workshops are seen as supporting and that they enhance identity and self-esteem (21-22). Although these types of units partly serve other purposes, such as empowerment and preparing for the labour market, they resemble the day centers that are work-oriented.

Thus, very few studies have investigated the usefulness or importance of attending day centers, and the findings so far are inconclusive. Moreover, the existing studies have been mostly based on qualitative methods on small, purposefully selected samples, and, to our knowledge, no study seems to have addressed how visitors in general perceive the meaningfulness of the activities provided in day centers. This might partly be due to the lack of a suitable instrument that reflects the characteristics of the activities used and how these are organized in a day center. For such purposes, the author group recently developed an instrument, Evaluation of Perceived Meaning in Day Centers (EPM-DC). This instrument, however, needs to be tested before use in measuring user's experiences in day centres. Evidence needs to be developed that the items in the test, when taken by persons from relevant target groups, can lead to results that are consistent with the intention of the test, but also that the pattern of responses from relevant persons is consistent with expectations (23).

By using Rasch analysis, the aim of this study was to explore in detail the concept of meaningfulness, as perceived by persons with severe and disabling mental illness when

attending day centers, and to verify if a self-report questionnaire reflecting this concept could be viewed as unidimensional when evaluated in this group. Based on the Rasch assumption, an expectation is that a person who experiences more meaningfulness when attending day centers is more likely to have a greater probability of endorsing any item than persons experiencing less meaningfulness when attending day centers. Another expectation is that items that are easy to endorse as meaningful by a visitor to a day center are more likely to be easy for all persons than are those that are harder to endorse (23). The research questions to be answered are:

1. Does a four-category rating scale used in the EPM-DC demonstrate sound psychometric properties?

2. Do the persons with severe and disabling mental illness show a valid pattern of responses, determined by acceptable goodness-of-fit to the rating Rasch model?

3. Do the items show unidimensionality, determined by acceptable goodness-of-fit to the rating Rasch model and principal component analysis (PCA)?

4. Does the scale show acceptable reliability, determined by item and person separation?

METHODS

Participants

For this study, a convenience sample, in terms of all persons who attended day centers for people with psychiatric disabilities in five different municipalities, two in the north and three in the south of Sweden were asked to voluntarily participate. These day centers offered a broad range of activities, and their approaches differed from being mostly a meeting-place oriented day centre to offering a more work-like atmosphere, and also combinations of these. Potential participants who did not have enough knowledge of Swedish to complete a questionnaire were excluded; the evaluation of language proficiency was conducted by a staff member at the centre. Those who agreed to complete the questionnaire and were included as participants in this study were in total 149, with an almost equal distribution between women and men (49% women), and 80% were in

the age span between 36-65 years. Almost six out of ten reported that they visited the day center

3-5 days per week, and about half of the sample (46%) stayed an average of 3-5 hours per visit

(Table 1). With this sample size the item calibration will even with a poor targeting (99%

confidence) stay stable within 0.5 logit (24). Some of the participants did not answer all the

questions in the questionnaire; this means that we do not have a complete list of gender, ages or

their usual attendance profile at the day center. The participation rate varied between the centers,

from 100% of the eligible visitors to 50%. This variation was due to varying efforts made by the

respective contact persons. The highest participation rate was in one of the larger units, and in

average the participation rate was about 70%.

Instrumentation

The tool, Evaluation of Perceived Meaning in Day Centers (EPM-DC[1]), was developed by the

authors and designed to generate descriptive individual profiles concerning degree of perceived

meaningfulness among visitors attending a day centre. The development of the tool was based

on the body of knowledge about meaningfulness in daily life when living with a mental illness

(9-10, 12, 14, 25-27) together with information derived during a workshop with staff and visitors

at community-based day centers. The workshop was organized by the authors in order to test

preliminary ideas about the contents of the tool. The staff and the visitors verified that the

preliminary ideas based on research were adequate, and also added further aspects of importance

for such a tool. As a result, the instrument came to include four aspects of perceived

meaningfulness; aspects of the activities (17 items), aspects of personal development (21 items),

aspects of the social context (11 items), and aspects of the organization of the day centre (11

items) (Table 2). The questions concern the participants' experiences of creativity, daily

structure, sense of belonging to a group, and participation in the planning of the activities. All

together the instrument covers 60 items, characterizing the day centre and its activities regarding

meaningfulness, all to be rated on a four-step rating scale (1=low extent, 2=rather low extent,

3=rather great extent, and 4=great extent).

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[1] The tool is still under development and the last author can answer questions about access.

Procedures

The principle of informed consent was applied, and the study followed the Swedish Law on

Ethical Review of Research Involving Humans. A staff member at each day centre was

approached by a researcher from the project and asked to serve as a contact person and organize

the gathering of data. The contact persons were informed in both oral and written form about the

questionnaire and the purpose of the study. All contact persons were then encouraged to

carefully read the questions and to discuss any uncertainties with the researcher. The contact

persons were also informed about how to practically assist a participant to complete a

questionnaire emphasizing the importance not helping to answer but instead of repeating or

describing the question. The participants were asked to complete the questionnaire when

attending the day centre and it could be done with or without support from the staff. However, a

few participants who wanted to complete the questionnaire at home were allowed to do so. The

questionnaires were all completed anonymously and kept in sealed envelopes, and later collected

by the researchers..

Data Analysis

The raw scores were analyzed using the Statistical Package for Social Sciences (SPSS) and

WINSTEPS Rasch computer software program, version 3.65.0 (28). Rasch analysis procedures

have been described elsewhere in detail (29-30).

To answer the first research question and ensure sound psychometric properties of the rating

scale, guidelines from Linacre (31-32) were followed. This means that we examined frequency

distribution, the use of each response category, category measures, threshold calibration and

scale category mean square. A uniform peak in central or extreme categories forms the most

optimal distribution and at least 10 endorsements on each category are needed. The average

category measures should advance monotonically up the rating scale indicating that persons with higher level of perceived meaningfulness have higher item ratings (33), also the threshold calibrations should advance monotonically. Finally, the mean square (*MnSq*) values should be ≤2.0.

The general criteria for failure to meet the basic Rasch assertions about unidimensionality were in this study based on *MnSq* and standardized *z* goodness-of-fit statistics (34). Items or persons targeted for removal were planned to be the ones provided with an $MnSq \geq 2.0$ (28, 35) and $z \geq 2$ (34). $MnSq > 2.0$ is according to Linacre (28) interpreted as distorted or degrading for the measurement system and thereby a threat to the internal scale validity. A level of >95**%** of both persons and items are expected to meet the basic Rasch assertion (28)

To answer the second research question, an exploration of the usefulness of the scale for all persons who had taken the test, including all items, was performed. If this strategy of initial examination of validity fails to meet success, and 5% or more of the persons fails to meet the assertions of the rating scale Rasch model, the next step would be to analyze the response strings, and remove those that are distorted and interpreted as random errors.

The third research question concerned whether all of the items of the EPM-DC formed a single unidimensional scale that would work with the whole sample. To be considered as a global scale, >95% or more of all items have to meet the fit-criteria for inclusion. We also evaluated unidimensionality through a principal component analysis (PCA) of the residuals. If the proportion of variance explained by the measures (Rasch dimension) is **≥** 50% (considered as good) and the proportion of unexplained variance accounted for by the first contrast (the largest secondary dimension) is **<** 5% (considered as excellent), the results are considered to support unidimensionality (28).

Once scale validity and person response validity were completed, the procedure with the fourth

research question and examination of the reliability followed. For this purpose, the person and

item separation indices were examined, as well as the standard error (SE) and a visual

examination of a graphic distribution of item and persons. The separation index should be at

least 2.0 in order to obtain the desired reliability coefficient of 0.80 or more. A person separation

index of 2.0 indicates that the sample of persons can be separated into at least three distinct

groups (36), and an item separation index of 2.0 indicates that the items on the scale define at

least three levels of the targeted phenomenon, in this case perceived meaningfulness. The

separation index can be translated into the number of item strata defined by the test (30, 37).

Also a visual examination of how items, persons and steps were spread when plotted on the

same scale was made. This gives information about how well the items are targeted to the ability

level of the sample. A low level of SE means that the test is precise, which is preferred.

RESULTS

Rating scale and structure

The response structure showed that there was no category disordering in the scale (Table 3). The

average measures for categories as well as a structure (threshold) calibration advanced, why no

category was determined as noisy. The evaluation of the psychometric properties of the rating

scale revealed a distribution with a peak in a central category (the third category) which gave

evidence for a good distribution where all categories were well used. The mean-square of

categories were all below 2.0. All together this gave evidence for sound psychometric

properties, a conclusion that further on was confirmed in the category probabilities (Figure 1),

where each step in the rating scale was explored by a distinct curve and hump.

Goodness-of-fit and Principal Component Analysis

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Rasch analysis was used to generate measures on responses from all 149 persons on all 60 items in the scale. This first step revealed 19 people (13%) with degrading misfit, both infit and outfit. According to the described procedure, our examination of the response strings showed random errors where misfitting persons were spread in ability level, age, gender, day centers as well as different response patterns, and therefore the misfitting persons (n=19) were excluded. Thus, the next analysis was based on all 60 items, but with only 130 people. Out of the included 130 persons, 4% showed infit misfit and 3% showed outfit misfit, indicating that the general criteria of fit < 5% were met.

In this second analysis, based on 130 persons, the examination of unidimensionality of the scale revealed one item with degrading outfit misfit (2%), and all items met the infit criteria. The following PCA further confirmed unidimensionality since 54% of the variance was explained, as well as an additional 4.8% of the unexplained variance in the first contrast. All together these results supported unidimensionality, and therefore this second analysis with 130 persons was used in the continuing exploration of reliability.

Item and person separation

Item separation was determined at 3.86. The associated reliability coefficient was 0.94. The person separation index amounted to 5.33, with an associated reliability coefficient of 0.97. This means that the persons could divide items into at least 4 different levels of difficulty and that the items could divide the persons into at least 5 or 6 different levels of perceived meaningfulness. Furthermore, the items in the test seemed to be well targeted to the persons taking the test (Figure 2), implying that all persons had items that matched their degree of perceived meaningfulness.

DISCUSSION

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The concept of perceived meaningfulness when attending day centers, as reported by persons with severe and disabling mental illness, could be viewed as unidimensional. In this population, the items within the questionnaire Evaluation of Perceived Meaning in Day Centers (EPM-DC) captured the concept very well and generated measures with a high level of reliability. The persons that met the fit criteria could distinguish four different strata, or levels of difficulties, within the items, and the items could discriminate the sample into five or six levels of perceived meaningfulness. Taken together, these are promising signs, indicative of a sensitive tool.

The persons who completed the EPM-DC failed in too many cases to fully meet the Rasch model expectations (23), as 13% did not follow the expected pattern. The study sample comprised a broad range of persons with different prerequisites, which is common in day centers (8, 19). The sample consists of persons with relatively mild current symptoms as well as visitors with rather prominent signs of mental disorder, and the administration procedure with self-report might have been less suitable for some of the participants. Previous studies using self-report assessments among people with schizophrenia have shown that there could be problems if independent responding and administration is expected (38-39).

As the idea of person fit is a focal point for usefulness in the measurement process (40), these results should be further examined. There are several ways of correcting a misfitting response record, by diagnosing the pattern (such as sleepy, fumbling, guessing etc.) and then statistically ''correcting'' the response. The method is discussed in respect to fairness, however, and as this study was aimed to discover unidimensionality (23), it was not correct to use here. However, our experience from decades of research on this target group is that some have cognitive and/or concentration problems that make their responses less reliable. One possible solution to this problem is to employ a more strict procedure when using the questionnaire. A more thorough instruction and manual, but also personal support or assistance, could be means for obtaining

reliable responses for an acceptable proportion of persons. Therefore, administering the EPM-DC as an interview, with possibilities for clarifications and support, is highly recommended when using the instrument in future studies.

The Rasch model relies on probability, which means that even if there is a high probability for a certain event, it is not certain that it will take place, although we would be surprised if it did not. According to this, a misfit is flagged as differing from the expectations. Instead of judging misfit as unacceptable, the fit is a gauge of how the test construct works in the circumstances where it was used (41). A reasonable conclusion is therefore that the results from the present study gives evidence that the instrument is valid and reliable, but that the circumstances must be more supportive to give the persons taking the test a fair chance to give their true answers to the questions.

Thus, this study successfully endeavored to obtain interval measures based on a self-report questionnaire about perceived meaningfulness when attending day centers. The phenomena of perceived meaningfulness in occupations have previously only been investigated in qualitative studies (9, 21-22), which have not generated any evaluation tools to be used in community-based day centers. The EPM-DC therefore gives unique possibilities for future evaluation of the effectiveness of units intended to provide meaningful activities to people with mental illness. By identifying critical areas to improve concerning meaningfulness, the instrument gives a foundation for further development of day centers, so that their activities and organization can meet the requirements from the visitors in an optimal way. With the use of the EPM-DC as an evaluation tool, communities will be able to monitor and improve their services and support in such a way that the visitors' motivation increases and they can develop a more meaningful life. The EPM-DC could also be used as a continuous evaluation instrument to observe changes in the experience of meaning when activities are being altered for a certain visitor, in the search for an optimal mix of daily occupations for him/her. Moreover, there is a great need for assessment of

perceived meaningfulness in daily occupations among people with mental illness in other types of care and support, such as day hospitals and work cooperatives, and it may be valuable to develop the EPM-DC further within these areas.

Experiences of meaningfulness are important for individuals' drive and their choices of occupations in daily life, as well as for their possibility to maintain health and wellbeing (42-43). The EPM-DC could therefore also be used to further clarify the relationship between meaningful occupations and wellbeing. The instrument addresses a wide range of aspects of meaning, and it is well suited to be used by occupational therapists, because of their expertise regarding occupations. However, other professionals within community services may also find the assessment of use. The EPM-CD may also be combined with other methods, for example qualitative interviews that go deeper into certain areas. Besides, since the EPM-DC characterizes the unit, it may need to be supplemented with instruments that address the personal level, such as quality of life and satisfaction with the rehabilitation.

Methodological discussion

The information about the participants of this study was limited regarding diagnosis and sociodemographic characteristics, since day centers in Sweden do not keep medical records. This is of course a limitation of the study, which makes it difficult to estimate the generalizability of the study. It is known, however, that visitors to day centers represent a variety of psychiatric conditions and disablement, and that they all have some kind of severe and disabling mental illness (8, 19). Besides, although the proportion of non-participants was rather low, it is possible that the most disabled visitors did not respond to the questionnaire. The results thus might not be valid for all visitors. On the other hand, the results showed that the items separated four groups of respondents according to perceived meaningfulness, which indicates that there was variation among the participants. Additionally, previous studies have indicated that diagnosis and sociodemographic characteristics have not been related to subjective estimates of daily

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occupations (10). In all, despite some ambiguity regarding certain characteristic of the study sample, there are no indications that the EPM-DC should not be generally suitable for use in day centers for people with severe and disabling mental illness.

Conclusion

The EPM-DC seems to be a promising instrument for assessing the meaningfulness perceived by visitors to day centres for people mental illness. However, too large a proportion of misfitting persons indicated that the instrument should be used with caution, and it is recommended that it is administered as an interview. Further testing and development is needed, including the influence of cognitive problems, but on the basis of the present findings, the EPM-DC may be a useful tool for developing, monitoring and evaluating community-based day centres for people with mental illness.

REFERENCES

1.		Griffith J, Caron CD, Desrosiers J, Thibeault R. Defining spirituality and giving meaning to occupation: The perspective of community-dwelling older adults with autonomy loss. Can J Occup Ther. 2007;74:78-90.

2.		Townsend E, Polatajko HJ. Enabling Occupation II: Advancing an occupational therapy vision for health, well-being, & justice through occupation. Ottawa: CAOT Publications ACE; 2007.

3.		Hammell KW. Dimensions of meaning in the occupations of daily life. Can J Occup Ther. 2004;71:296-305.

4.		Ministry of Health and Social Affairs. Välfärd och valfrihet - service, stöd och vård för psykiskt störda [Welfare and freedom of choice - service, support, and care for the mentally ill]. Stockholm:Socialdepartementet [The Ministry of Health and Social Affairs] 1992.

5.		Coster W, J.,. Embracing ambiguity: Facing the challenge of measurement. Am J Occup Ther. 2008;62(743-752).

6.		Doble SE, Caron Santha J. Occupational well-being: Rethinking occupational outcomes. Can J Occup Ther. 2008;75:184-90.

7.		Hammell KW. Reflections on...well-being and occupational rights. Can J Occup Ther. 2008;75:61-4.

8.		Eklund M, Hansson L, Ahlqvist C. The importance of work as compared to other forms of daily occupations for wellbeing and functioning among persons with long-term mental illness. Community Ment Health J. 2004;40:465-77.

9.		Goldberg B, Britnell ES, Goldberg J. The relationship between engagement in meaningful activities and quality of life in persons disabled by mental illness. Occup Ther Ment Health. 2002;18:17-44.

10.   Eklund M, Leufstadius C. Relationships between occupational factors and health and well-being in individuals with persistent mental illness living in the community. Can J Occup Ther. 2007;74:303-13.

11.   Nilsson I, Bernspång B, Fisher AG, Gustafson Y, Löfgren B. Engagement in occupations and life satisfaction in the oldest old: The Umeå 85+ study. OTJR: Occup Particip Health. 2007;27:131-9.

12.   Argentzell E, Håkansson C, Eklund M. Experience of meaning in daily occupations among unemployed people with severe mental illness. Manuscript submitted for publication. 2010.

13.   Bejerholm U, Eklund M. Framing occupational engagement among men and women with schizophrenia. Occup Ther Int. 2006;13:100-21.

14.   Leufstadius C, Erlandsson L-K, Björkman T, Eklund M. Meaningfulness in daily occupations among individual with persistent mental illness. J Occup Sci. 2008;15:27-35.

15.   Eakman AM, Carlson ME, Clark FA. Factor structure, reliability, and convergent validity of the engagement in meaningful activities survey for older adults. OTJR: Occup Particip Health. 2010;30:111-21.

16.   Townsend E, Wilcock AA. Occupational justice and client-centred practice: A dialogue in progress. Can J Occup Ther. 2004;71:75-87.

17.   Whiteford G. When people cannot participate: Occupational deprivation. In: Christiansen CH, Townsend EA, editors. Introduction to occupation The art and science of living. New Jersey: Prentice Hall; 2004. p. 221-42.

18.   Goodwin S. Comparative mental health policy - from institutional to community care. London: Sage; 1997.

19.   Catty J, Burns T, Comas A, Poole Z. Day centers for severe mental illness. Cochrane Database of Systematic Reviews 2007. 2007:Issue 1. Art. No.: CD001710. DOI: 10.1002/14651858.CD001710.pub2.

20.	Rebeiro KL, Day DG, Semeniuk B, O'Brien MC, Wilson B. Northern Initiative for Social Action: an occupation-based mental health program. Am J Occup Ther. 2001;55:493-500.

21.	Gahnström-Strandqvist K, Liukko A, Tham K. The meaning of the working cooperative for persons with long-term mental illness: A phenomenological study. Am J Occup Ther. 2003;57:262-72.

22.	Strong S. Meaningful work in supportive environments: experiences with the recovery process. Am J Occup Ther. 1998;52:31-8.

23.	Wright B, Stone MH. Best test design. Chicago: MESA Press; 1979.

24.	Linacre JM. Sample size and item calibration or person measure stability. Rasch Measurement Transactions. 1994;7:328-30.

25.	Nagle S, Valiant Cook J, Polatajko H. I am doing as much as I can: Occupational choices of persons with a severe and persistent mental illness. J Occup Sci. 2002;9:72-81.

26.	Aubin G, Hachey R, Mercier C. Meaning of daily activities and subjective quality of life in people with severe mental illness. Scand J Occup Ther. 1999;6:53-62.

27.	Eklund M. Occupational factors and characteristics of the social network in people with persistent mental illness. Am J Occup Ther. 2006;60:587-94.

28.	Linacre JM. A user's guide to Winsteps®: Ministep Rasch-model computer programs. Retrieved November, 2, 2008, from http://www.winsteps.com/a/winsteps.pdf1991-2008.

29.	Bond TG, Fox CM. Applying the Rasch model: Fundamental measurement in the human sciences. Mahwah, NJ: Lawrence Erlbaum; 2001.

30.	Wright B, Masters GN. Rating scale analysis. Chicago: MESA Press; 1982.

31.	Linacre JM. Category disordering vs. step (threshold) disordering. Rasch Measurement Transactions. 1999;13:675.

32.	Linacre JM. Optimizing rating scale category effectiveness. J Appl Meas. 2002;3:85-106.

33.   Linacre JM. Investigating rating scale category utility. J Outcome Meas. 1999;3:103-22.

34.   Wilson M. Constructing measures, An item response modeling approach. Mahwah, NJ: Lawerence Erlbaum; 2005.

35.   Wright B, Linacre M. Reasonable mean-square fit values. Rasch Measurement Transactions. 1994;8:370.

36.   Fisher WP. Reliability statistics. Rasch Measurement Transactions. 1992;6:238.

37.   Wright B, Masters GN. Number of person or item strata. Rasch Measurement Transactions. 2002;16:888.

38.   Goldberg RW, Seybolt D, Lehman A. Reliable self-report of health service use by individuals with serious mental illness. Psychiatr Serv. 2002;53:879-81.

39.   O´Malia L, McFarland B, Barker S, Barron NM. A level-of-functioning self-report measure for consumers with severe mental illness. Psychiatr Serv. 2002;53:326-31.

40.   Smith RM. Person fit in the Rasch model. Educ Psychol Meas. 1986;46:359-72.

41.   Shaw F. Fits about "Misfit". Rasch Measurement Transactions. 1991;5:1:132

42.   Christiansen CH, Backman C, Little BR, Nguyen A. Occupations and well-being: A study of personal projects. Am J Occup Ther. 1999;53:91-100.

43.   Wilcock AA. An occupational perspective on health. 2nd ed. Thorofare, NJ: Slack; 2006.

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Table 1. Description of the participants; their age, sex and pattern of visits.

		n	%
Total sample		149	100
Gender (n= 145)	Women	71	49
	Men	74	51
Ages (n=146)	20-35	20	14
	36-50	57	39
	51-65	60	41
	66-80	8	5
	80-	1	1
Regularity (n=147)	A couple of days per month	3	3
	1-2 days per week	56	38
	3-4 days per week	54	37
	Almost everyday	33	22
Length of stay (n=140)	Less than 3 hours	48	34
	3-5 hours	65	46
	More than 5 hours	27	19

Table 2. Examples of questions included in the questionnaire.

Aspects of activities	What I do at the day center contributes to a feeling of creativity
Aspects of personal development	My participation at the day center contributes to me getting structure for my day
Aspects of social context	What I do together with the others at the day center contributes to a feeling of belonging to a group
Aspects of the organization of the day center	The organization of the day center gives opportunities for me to participate in the planning of the activities

Table 3. Summary of Category Structure based on all 149 persons who took the test.

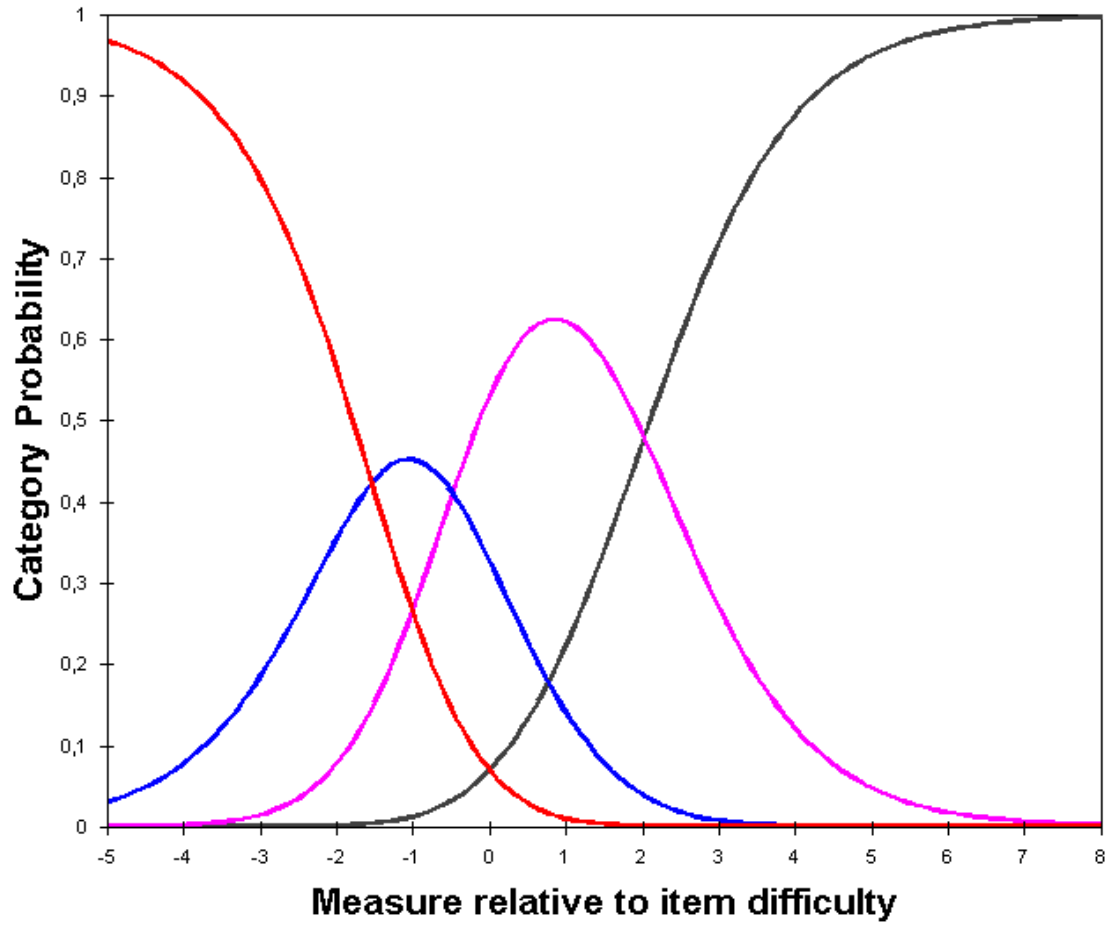| Category label		Observed count	Infit MnSq	Outfit MnSq	Structure calibration	Category measure
1	**Low extent**	938	1.15	1.36	None	(-2.45)
2	**Some extent**	1589	.85	.86	-1.06	-.86
3	**Rather great extent**	3376	.83	.84	-.49	.68
4	**Great extent**	2304	1.06	1.08	1.55	(2.74)

Figure 1. Visual description of the category probability curves for the rating scale of the test.

```
MAP OF Persons AND Items
MEASURE            | BOTTOM P=50% | MEASURE    | TOP P=50%   MEASURE
 <more> ----- Persons-+- Items    -+- Items    -+- Items     <rare>
   5            XXX +            +            +                 5
               X |              |            |
                 |              |            |
                 |              |            |
                 |              |            | X
                 |              |            |
   4               +            +            +                 4
               X |              |            |
                 |              |            |
              XX |              |            |
               X |              |            |
              XX |              |            | XX
   3            X +            +            + XXXXX             3
                 |              |            | XXXX
               X |              |            | XX
               X |              |            | XXXX
              XX |              |            | XXXXXXXX
             XXX |              |            | XXXXXX
   2            X +            + X          + XXX               2
            XXXX |              |            | XXXXXXXX
             XXX |              |            | XXXXXXXXX
             XXX |              |            | XXXXX
          XXXXXXX |              |            | X
           XXXXXX |              |            | XX
   1        XXXXXX +            + XX         +                 1
            XXXXX |              | XXXXX      |
         XXXXXXXXX |              | XXXX       |
          XXXXXXXXX |              | XX         |
           XXXXXX |              | XXXX       |
        XXXXXXXXXX | X            | XXXXXXXX   |
   0      XXXXXXXX +            + XXXXXX     +                 0
          XXXXXXX |              | XXX        |
           XXXXX |              | XXXXXXXX   |
              XX |              | XXXXXXXXX  |
             XXX |              | XXXXX      |
             XXX | XX           | X          |
  -1         XXX + XXXXX        + XX         +                -1
              XX | XXXX         |            |
               X | XX           |            |
                 | XXXX         |            |
                 | XXXXXXXX     |            |
                 | XXXXXX       |            |
  -2           X + XXX          +            +                -2
              XX | XXXXXXXX     |            |
               X | XXXXXXXXX    |            |
                 | XXXXX        |            |
               X | X            |            |
                 | XX           |            |
  -3               +            +            +                -3
                 |              |            |
                 |              |            |
                 |              |            |
                 |              |            |
                 |              |            |
  -4               +            +            +                -4
                 |              |            |
                 |              |            |
                 |              |            |
                 |              |            |
                 |              |            |
  -5          XXXX +            +            +                -5
 <less> ----- Persons-+- Items    -+- Items    -+- Items     <frequ>
```

Figure 2. The targeting of the persons to the items in the test.