The Assessment of Motor and Process Skills of Persons With Psychiatric Disorders

Ay-Woan Pan, Anne G. Fisher

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Objectives. The purpose of this study was to examine the discriminant validity of the Assessment of Motor and Process Skills (AMPS) when used to evaluate a heterogeneous sample of subjects with psychiatric disorders.

Method. Sixty subjects, ranging in age from 16 to 72 years, participated in this study; 30 were persons without disorders living in the community; 30 had diagnosed psychiatric disorders. Two univariate F tests were used to test the hypothesis that mean AMPS measures would differ significantly between the group with and the group without psychiatric disorders.

Results. The hypothesis was supported for both AMPS motor and process scale measures. As would be expected among a sample that includes many higher functioning persons, many subjects with psychiatric disorders did just as well as subjects in the group without psychiatric disorders.

Conclusions. Motor as well as process skill abilities of persons with psychiatric disorders should be evaluated. Because the AMPS provides more specific features than other global functional instruments, it can help clinicians plan treatment and intervention more effectively. Further examination of the motor and process skill deficits within and among diagnostic subgroups and of the effect of medication and prolonged hospitalization on AMPS motor and process abilities is indicated.

Ay-Woan Pan, MS, OTR, is a doctoral candidate, Department of Community Health Science, School of Public Health, and a Research Assistant, Department of Occupational Therapy, College of Associated Health Professions, 1919 West Taylor, The University of Illinois at Chicago, Chicago, Illinois 60612.

Anne G. Fisher, PhD, OTR, is Professor, Department of Occupational Therapy, College of Applied Human Sciences, Colorado State University, Fort Collins, Colorado.

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During administration of the AMPS, the client is asked to choose to perform, from more than 50 tasks, two or three that are familiar and that he or she views as relevant within the context of his or her daily life. The provision of a choice is based on the premise that a person may perform ADLs better when he or she is doing something meaningful and the chosen task matches the person’s ability, interests, and values (Doble, 1991; Fisher, 1992b; Kielhofner, 1985). This consideration of motivational and environmental components in the evaluation of functional ability is an innovative step in the field of functional assessment. Motivational and environmental components can affect the functional performance of people with psychiatric disorders, but they seldom are considered in the evaluation process (McGourty, 1988).

The opportunity for choice of tasks to perform is possible because many-faceted Rasch analysis (Linacre, 1988) was used to determine the hierarchical ordering of tasks on the basis of the challenges they offer to clients (see Fisher, 1993, in press, for a discussion of the application of many-faceted Rasch analysis to the development of the AMPS). Because the challenge of the tasks and the ability of the persons are calibrated along the same equal-interval scale, the Rasch analysis enables adjustment of AMPS person ability measures to account for differences in task challenges. Moreover, the Rasch model enables adjustment of person ability measures independent of the number of tasks the person performs. Thus, when time constraints or client-related factors (e.g., client chooses to perform only one or two tasks) limit the number of tasks performed, we can still obtain person ability estimates. The advantage of having the client do more tasks is that it reduces standard error for that person’s ability estimate.

There is another benefit of using Rasch analysis to calibrate persons’ abilities and tasks onto the same hierarchical scale. When the person’s ability measure represents a position on the same scale that is defined by the hierarchy of task challenges, it becomes possible to determine where along this hierarchy the person is located (see Figure 1). The therapist can then determine which tasks the client is most likely to be able to perform and which ones are likely to offer sufficient difficulty to warrant targeting them for intervention. That is, tasks that are positioned below the person on the line are those the person is likely to find easy to perform, and those positioned above the person on the line are those the person is likely to find difficult. Moreover, the farther the task from the person, the easier or harder the task is likely to be for that person. As a result, the therapist can use the hierarchical ordering of the tasks as an explicit guide for sequencing intervention as the client improves and moves up the AMPS scale.

Another set of factors led to our decision to implement a pilot study examining the discriminant validity of the AMPS in persons with psychiatric disorders. The process skills scale was originally developed for use with persons with chronic psychiatric disorders (Doble, 1991; Fisher, 1992a). Despite the growing body of literature examining the validity and reliability of the AMPS among healthy persons and persons with a variety of neurologic, orthopedic, medical, cognitive, or psychiatric disorders (Doble, 1991; Dickerson & Fisher, 1993, in press; Fisher, 1993, in press; Fisher, Liu, Velozo, & Pan, 1992; Park, Fisher, & Velozo, 1994), no studies have been reported that specifically examine the validity of the AMPS when used to assess persons with psychiatric disorders. We thought that if the AMPS could discriminate between an available heterogeneous sample of persons with psychiatric disorders and a matched sample of persons without disorders, then this preliminary study would support future research focusing specifically on discrete psychiatric diagnostic subgroups. Therefore, the purpose of this study was to examine the validity of the AMPS as an evaluation tool of functional skills used to differentiate between persons with and without psychiatric disorders. The specific hypothesis of the study was that there would be significant differences in mean AMPS motor and process ability measures between persons without disorders and persons with psychiatric disorders.

Method

Subjects

The 60 subjects in this study were drawn from an available sample of subjects included in the AMPS database. Thirty
psychiatric subjects were selected on the basis of the criteria that they (a) had performed at least two AMPS tasks, (b) were clients in inpatient or partial hospitalization programs within the United States, and (c) were diagnosed with affective disorders \( (n = 22, 73\%) \), delusional disorder \( (n = 3; 10\%) \), schizophrenia \( (n = 3; 10\%) \), personality disorder \( (n = 1; 3\%) \), or alcohol hallucinosis \( (n = 1; 3\%) \). Because the focus of this study was to determine whether persons with psychiatric disorders differed in IADL motor or process ability from persons without disorders, and not to determine why they might differ, specific diagnosis or use of medication were not considered important inclusion criteria. Thirty adults without disorders who lived in the community and were matched to the subjects with psychiatric disorders as closely as possible for age, gender, and race (see Table 1) were also drawn from the AMPS database. A chi-square test of significance revealed a difference between the groups for gender \( \chi^2(1, 90) = 6.65; df = 1; p < 0.05 \) but no difference for race.

**Procedure**

The AMPS was administered in accordance with the standardized administration procedures described in the manual (Fisher, 1992a). Consistent with these administration procedures, each subject performed two to four IADL tasks and each subject’s performance was scored by at least one trained and calibrated rater. The overall agreement between raters exceeded 95%. Interrater and intrarater reliability were confirmed by fit of the raters to the measurement model (see Fisher, 1992c; 1993 for further discussion of this procedure).

Standardized AMPS administration procedures also specify that all subjects are fully oriented to the test environment before initiating an AMPS observation. Finally, before administering the AMPS, the examiner interviews each subject to determine which tasks from the AMPS manual are familiar and perceived as relevant to the subject’s daily life. Each subject typically performs two or three tasks.

**Data Analysis**

The person ability measures for the motor and process scales of the AMPS were computed with the FACETS many-faceted Rasch computer program (Linacre, 1988). To test the hypothesis that there is a significant difference in mean AMPS IADL motor skill ability and IADL process skill ability between persons with and without psychiatric disorders, two univariate \( F \) tests were performed. The level of significance was set at \( p \leq 0.05 \).

**Results**

The mean AMPS IADL motor and process skill ability measures for each group are shown in Table 2; the location of the subjects on the AMPS scales are shown in Figure 2. The group without disorders had higher overall mean AMPS ability measures (see Table 2). The ability of the subjects in the group with psychiatric disorders was more variable, and the male subjects were relatively equally distributed between the upper and lower halves of each group (see Figure 2).

The results of the univariate \( F \) tests revealed that the mean AMPS IADL motor and IADL process ability measures differed significantly between the two groups (Motor: \( F (1, 58) > 11.0, p < 0.05 \); Process: \( F (1, 58) > 17.7, p < 0.001 \)). These results support our hypothesis that AMPS ability measures differentiate between persons without disorders and persons with psychiatric disorders.

**Discussion**

The purpose of this investigation was to examine the
Table 2. Mean and distribution of AMPS IADL motor and process ability measures by gender. M = male, F = female, AMPS = Assessment of Motor and Process Skills, IADL = instrumental activities of daily living.

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Usefulness of the AMPS for measuring the functional abilities of clients with psychiatric disorders. It is important that an instrument measure what its developer purports it to measure, that it is valid. This study focused on one aspect of validity, the ability of AMPS IADL motor and process ability measures to differentiate between groups of persons without disorders and persons with psychiatric disorders. The results supported our hypothesis. Significant differences in AMPS motor and process ability measures were found between the two groups.

We anticipated that the group of subjects with psychiatric disorders would show more variability of their motor and process abilities than would the group without disorders. We also anticipated that among those subjects

Figure 2. Mean and distribution of AMPS IADL motor and process ability measures by gender. M = male, F = female, AMPS = Assessment of Motor and Process Skills, IADL = instrumental activities of daily living.
with psychiatric disorders who were higher functioning, many would perform as well as did the subjects without disorders. Our results were consistent with our expectations. The most able of the subjects with psychiatric disorders performed as well as the most able of the well subjects. There are, however, more subjects with psychiatric disorders at the lower end of the AMPS IADL motor and process ability scales, with all but 5 subjects performing below the mean of the well group on both scales. Moreover, some of the subjects with psychiatric disorders had very low AMPS IADL motor or process ability measures, performing below the least able of the well subjects.

One concern often raised about the AMPS is that men will be at a disadvantage because the IADL tasks involved are related to home maintenance and meal preparation tasks more commonly performed by women. Furthermore, the results of the chi-square test revealed a difference between groups by gender. However, we did not anticipate this difference to be a problem because the AMPS is designed to control for differences in experience among all persons, men and women. This control is accomplished by ensuring that all persons tested with the AMPS perform tasks that are familiar, that they know how to perform, and that they perceive as relevant to their everyday lives. Because there was a relatively larger proportion of men in the group of subjects with psychiatric disorders, we thought that it was important to examine the AMPS person ability measures to evaluate whether that proportion accounts for lower overall performance in the group with psychiatric disorders (see Figure 2). The 4 men in the group without disorders all performed near the group mean on both the AMPS motor and process scales. The 13 men in the group with psychiatric disorders were relatively evenly distributed throughout the range on both AMPS scales. The lack of discernable clustering by gender suggests that the results cannot be attributed to gender bias.

We performed a similar descriptive analysis of the relative ability of the subjects with psychiatric disorders by diagnosis. No clear pattern emerged. Subjects with affective disorders were among the highest and lowest on both the AMPS motor and process scales. The remaining subjects appeared to be evenly distributed throughout the range of the group. For example, on the AMPS process skill scale, one person with schizophrenia was among the most able five subjects, one was performing just below the mean, and one had the lowest AMPS process skill ability measure.

The results of this pilot study suggest that, overall, subjects with psychiatric disorders show diverse process as well as motor IADL abilities, thus they need to be assessed carefully. Although motor deficits often are not regarded as a major problem for persons with psychiatric disorders, we found that the overall performance of the psychiatric group was lower than that of the subjects without disorders and that the difference in IADL motor ability between the two groups was significant.

Further examination of the extent and variability of motor or process skill deficits within and among diagnostic subgroups clearly is indicated. Future studies might examine the effect of specific medication or prolonged length of hospital stay on AMPS motor or process ability. Until such studies are implemented, it is important that occupational therapists evaluate the extent to which motor and process skill deficits affect the IADL performance of individual clients. Otherwise, these problems may be overlooked. Because the AMPS measures motor and process IADL ability concurrently, the evaluation for motor deficits that affect IADL performance does not add to the overall time for the IADL functional assessment. The result is a cost-effective method for determining the extent to which either discrete motor or discrete process skill deficits affect global IADL task performance.

The AMPS permits the client to choose which tasks he or she will perform from a group of 50 tasks. However, we noticed that some subjects, especially those with psychiatric disorders, tended to respond that they did not have a strong preference for which tasks they performed when asked to make task choices. A few subjects even requested that the examiner make the task choices for them. One possible explanation for this behavior was that the offered tasks were not sufficiently varied or motivating for all of the subjects. However, all of the subjects were interviewed before task choices were offered to ensure that all choices offered would be relevant to each person.

Another explanation for a subject’s unwillingness or inability to make choices may be decreased volitional ability. Not choosing also may have been a coping mechanism to defend against feelings of failure at task performance. Finally, letting the examiner choose which tasks the subject would perform was one available option. When asked to choose four or five tasks of similar relevance and challenge from more than 50, subjects may have perceived the choice option as inconsequential. Because choosing is regarded as an important factor influencing motivation and task performance, further study on the effects of choosing and task relevance on the functional performance of clients with psychiatric disorders would be helpful.

Summary and Clinical Implications

The findings of the study support the validity and clinical usefulness of the AMPS when applied to clients with psychiatric disorders. Moreover, four features of the AMPS make it more useful for determining level of function than other global functional instruments. First, the AMPS makes it possible to put all subjects’ ability measures and all task challenges on two single equal-interval scales, one for IADL motor ability and one for IADL process ability. This feature provides the therapist with information...
about the location of the subjects on the scale relative to all of the calibrated tasks. This means that the therapists can predict (a) which tasks persons should be able to perform and which tasks are likely to be too challenging, and (b) what types of tasks and in what order they should be introduced in therapy (see Figure 1). Second, the AMPS scales are likely to be sensitive measures of client ability change over time, a feature that needs to be evaluated empirically. Third, simultaneous evaluation of a client’s IADL functional performance and underlying motor or process skill deficits can provide the therapist client-centered information for use in treatment and placement planning. The determination of whether discrete skill deficits actually affect global performance no longer must be inferred. Finally, the AMPS use of tasks that are familiar and ecologically relevant to the client avoids the limitations inherent in the use of highly standardized, often contrived tests in which all persons perform the same tasks whether the tasks are related to the person’s interests and values or the tasks have any apparent relationship to the ability to live independently.

Recommendations for Future Research

Although the results of this study supported the validity of the AMPS motor and process scale, the clinical use of the AMPS should be validated through further research. Additional research focused on clarifying the generalizability of the results should include (a) examination of the effect of environment (home vs. clinic) on performance, (b) investigation of the effect of choice-making on the performance of clients with psychiatric disorders, (c) investigation of the motor and process characteristics of clients with specific psychiatric disorders, (d) examination of the reliability of AMPS ability measures over time, and (e) validation of the use of the AMPS as the evaluative tool in treatment efficacy research.

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References