



OVERVIEW OF AND INTERPRETATION GUIDELINES FOR THE ASSESSMENT OF MOTOR AND PROCESS SKILLS (AMPS)

Description of the AMPS

The AMPS is a standardized, observation-based evaluation of a person's quality of performance of personal and domestic activities of daily living (ADL) tasks. When a person is evaluated using the AMPS, the occupational therapist observes the person perform at least two ADL tasks that the client identified as presenting a challenge in his or her everyday life.

An important feature of the AMPS is that it is an evaluation of occupational skill; not underlying body functions, person factors, or environmental factors. More specifically, the AMPS is comprised of two scales, an ADL motor scale and an ADL process scale. The ADL motor scale includes 16 occupational performance motor skills (e.g., *Reaches, Grips, Lifts, Transports*) and the ADL process scale includes 20 occupational performance process skills (e.g., *Searches/Locates, Chooses, Gathers, Initiates*). These occupational performance skills are the AMPS items and they represent small observable units of ADL task performance.

Scoring the AMPS is criterion-referenced based on a criterion of competence. That is, the occupational therapist rates the quality of each of the 36 occupational performance skills based on how much clumsiness or physical effort, time and space inefficiency (i.e., time and space organization), safety risk, and/or need for assistance the person demonstrated when performing ADL tasks. To this end, each AMPS item is scored = 4 (competent, no problem), 3 (questionable, possible disruption), 2 (ineffective, clear disruption), or 1 (severe; marked physical effort or fatigue, marked inefficiency, markedly unsafe, need for verbal or physical assistance).

The occupational therapist enters each AMPS item score into the OT Assessment Package (OTAP) and uses the OTAP software to calculate linearized ADL motor and ADL process measures that are reported in logits (log-odds probability units). When the AMPS measures are placed along the ADL motor and ADL process scales, their locations indicate the level of the person's observed quality of ADL task performance. The higher the person's AMPS measures along the respective scale, the higher was his or her observed occupational skill during ADL task performance. Both AMPS scales are included in the person's "Results and Interpretation of an AMPS Observation" report (*AMPS Results Report*). As discussed below, the AMPS measures can be interpreted from a criterion-referenced and a norm-referenced perspective.

Criterion-referenced Interpretations

Commonly observed quality of ADL task performance: Two different criterion-referenced interpretations of a person's AMPS measures are possible. The first is based on comparing (a) the location of the person's AMPS measures to (b) the quality of ADL task performance commonly observed among people who have AMPS measures in the same range along the AMPS scales. For example, an ADL motor measure of 1.0 logit is located in the range where it is most common to observe "mild to moderate clumsiness and/or increased physical effort or fatigue."

Cutoffs for competent quality of ADL task performance: The second criterion-referenced interpretation is based on comparing the person's AMPS measures to the criterion-referenced cutoff measures of 2.0 logits on the ADL motor scale and 1.0 logit on the ADL process scale. These cutoff measures indicate the lower limit for competent ADL task performance. More specifically:

- An ADL motor measure above the cutoff indicates that the person competently moved him- or herself and ADL task objects during the performance of ADL tasks.
- An ADL process measure above the cutoff indicates that the person competently (a) selected, interacted with, and used task tools and materials; (b) carried out individual ADL task actions and steps; and (c) modified ADL task performance to prevent problems.

- ADL motor or ADL process measures below the cutoffs indicate that the person demonstrated at least minimally diminished competence (lowered quality of observed occupational skill) when performing ADL tasks.

Special considerations when testing children and older adults: It is important to note that quality of ADL task performance increases during childhood and begins to decline around the fifth or sixth decade. Therefore, a child or older adult may have AMPS measures below the cutoffs merely as a function of his or her age. For example, young children have not yet developed the occupational skill needed to perform ADL tasks efficiently and without clumsiness or increase in physical effort. To determine if a person's quality of ADL task performance is at or below a level expected for someone of the same age, it is necessary to also apply a norm-referenced interpretation of his or her AMPS measures.

Norm-referenced Interpretation

When a norm-referenced interpretation is made, the occupational therapist compares the person's AMPS measures to the normative mean (average) and variation in quality of ADL task performance among age-matched, healthy, well people. Approximately 95% of healthy, well people of the same age as the person who was tested have AMPS measures within ± 2 standard deviations (SD) of the normative mean. This range (± 2 SD) representing the expected variation in quality of ADL task performance is depicted by a vertical band to the left of the respective scale on the person's *AMPS Results Report*. The normative mean is located in the middle of each vertical band and is represented by a dark dot. When a person's ADL motor or ADL process measure is within the range illustrated by the vertical band, the person's observed quality of ADL task performance was within ± 2 SD of the mean. The respective percentile ranks (percentage of healthy, well, same-age people with lower AMPS measures) and z scores also are reported in a table that is included in the person's *AMPS Results Report*. A person's z score represents how many SD above or below the normative mean is his or her AMPS measure.

Note. AMPS reports display the mean ± 2 SD because it is the most commonly used criterion to determine a person's need for services; other criteria (e.g., $z \leq -1.5$ or $z \leq -1.0$) are used in some settings.

Evaluation of Change

When the AMPS is used to evaluate change in a person's quality of ADL task performance, the person performs two ADL tasks for each AMPS observation, and the Time 1 and Time 2 ADL motor and ADL process measures are compared. The Time 1 and Time 2 AMPS measures are reported in a table in the *AMPS Progress Report* and are shown graphically along the respective AMPS scale. There are two ways to evaluate if the person's quality of ADL task performance has improved, stayed the same, or decreased. The first is based on whether the change is great enough to be observable. The second pertains to whether or not the change is likely to be statistically significant.

Observable change: Two ADL motor or two ADL process measures that differ by at least 0.3 logit have changed in a practical and meaningful way. That is, a change of at least 0.3 logit indicates that there has been an observable change in the person's quality of ADL task performance; a higher ADL motor or ADL process measure for the second AMPS observation indicates that there has been an observable improvement in the person's quality of ADL task performance. If two ADL motor or two ADL process measures do not differ by 0.3 logit, they can be considered to be essentially the same; there has been no observable change between Time 1 and Time 2.

Significant change: The standard error of measurement (SE) values for each of the person's AMPS measures can be used to determine whether the change between Time 1 and Time 2 is likely to be statistically significant ($p \leq .15$). That is, if the change between the Time 1 and the Time 2 AMPS measures is at least as large as the sum of the SEs for each of those measures, then there has likely been a statistically meaningful change in the person's quality of ADL task performance. For example, to determine if there was likely a significant difference between two ADL motor measures for Time 1 = 0.1 and Time 2 = 0.7, the occupational therapist first calculates the difference: $0.7 - 0.1 = 0.6$. Next, the occupational therapist uses Table 9-1 in Volume 2 of the AMPS manual and finds the SE for each measure. The SE for an ADL motor measure of 0.1 is 0.27 and the SE for an ADL motor measure of 0.7 is 0.24; their sum is 0.51 (when rounded, 0.5). Since the change between Time 1 and Time 2 (0.6) is more than the sum of their respective SEs (0.5), the occupational therapist concludes that the two ADL

motor measures likely differ significantly ($p \leq .15$). For more information about how to determine if two AMPS measures differ significantly ($p \leq .05$), refer to the AMPS manual.

Predicting Need for Assistance

Because the literature indicates that the results of an ADL assessment are one of the strongest predictors of global functioning within the community, occupational therapists commonly use the AMPS to support decisions regarding a person's need for assistance to live in the community. Since the AMPS was specifically designed to measure quality of ADL task performance, not community independence, the results of an AMPS observation should never be the sole criterion for predicting a person's need for assistance to live in the community. That is, the occupational therapist must use the results of the AMPS observation together with professional reasoning and/or additional assessment results to accurately determine a person's need for assistance to live in the community.

When the results of an AMPS observation are considered together with other available evidence, the following guidelines can be applied:

- If the person's ADL motor measure is above 1.5 logits and the person's ADL process measure is above 1.0 logit, the person likely (86% chance) is able to live independently in the community; this profile is the strongest indicator of independence in the community.
- If the person's ADL motor measure is below 1.5 logits and the person's ADL process measure is below 1.0 logit, the person likely (83% chance) needs assistance to live in the community.
- If the person's ADL motor measure is below 1.0 logit and the person's ADL process measure is below 0.7 logit, the person likely needs assistance to live in the community and may even need moderate to maximal support.