Influence of Instrumental Activities of Daily Living Assessment Method on Judgments of Independence

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Objective: Occupational therapists frequently evaluate instrumental activities of daily living (IADL) performance with interviews and observation of simulated tasks. This study examined the congruence of judgments of independence when comparing task performance assessed by interview and simulation with task performance assessed by observation in the natural environment.

Method: Twenty persons with severe mental illness were selected through convenience sampling and evaluated on two IADL tasks (making a purchase in a store and using the bus). The participants were evaluated on each task with two methods of assessment: interview and simulation and observation in the natural environment.

Results. Results indicated inconsistent performance across assessment approaches and tasks and supported the importance of considering contextual features in understanding the complexity of performance in the natural environment. A trend toward false positives was found in which several participants were judged independent on the IADL assessment but could not perform the same tasks in the natural environment.

Conclusion. Occupational therapists should be cautious when making judgments of independence on the basis of interview and observation of simulated tasks. Evaluating IADL performance in the persons' natural environment may provide more accurate information.

Instrumental activities of daily living (IADL) were first described by Lawton and Brody (1969) as activities that are more complex than self-care tasks but are necessary for independent living. Examples of IADL tasks include housekeeping, handling finances, and using the telephone. Because IADL involve interactions with others and the environment, successful performance is influenced by the interface between the person and the context of the task.

Occupational therapists and therapy assistants evaluate IADL so that they can make decisions regarding living situations and intervention in collaboration with service recipients. Therapists typically administer IADL assessments in a clinical setting, using self-report interview, observation of simulated tasks, or both. Assessments conducted in artificial settings may not capture the complexity and relevance of performance in natural environments.

Background

The environment has been traditionally considered to be within occupational therapy's domain of concern (Mosey, 1981); however, the impact that the environment or context have on performance has reportedly not been fully ap-
preciated (Christiansen, 1991; Dunn, Brown, & McGuigan, 1994; Nelson, 1988; Schkade & Schulz, 1992). Indeed, the assessment of IADL with interview or simulation, rather than performance, in natural environments may exemplify this issue.

Persons perform IADL within a unique context. The Uniform Terminology for Occupational Therapy—Third Edition (American Occupational Therapy Association, 1994) specifies the components of context as the physical, social, cultural, and temporal environment. Each component has an effect on IADL. For example, consider the differences involved in doing laundry at home versus at the laundromat. Each of these settings has very different physical, social, cultural, and temporal requirements. For some persons, the laundromat may provide important opportunities for social contact. For others, it may present physical accessibility barriers. Evaluating the complex nature of context, as it relates to IADL performance, is difficult when using interview or simulation assessments (Law, 1993).

The standardized IADL assessments described in the occupational therapy literature rely primarily on interview, simulated observation, or both to determine level of independence. The Instrumental Activities of Daily Living Scale (Lawton & Brody, 1969), a brief, nine-item assessment, asks the person to rate his or her level of independence (e.g., Can you do your own laundry?). The Routine Task Inventory (Allen, Kehrberg, & Burns, 1992), the Milwaukee Evaluation of Daily Living Skills (Leonardelli, 1988), the Scorable Self Care Evaluation, and the Kohlman Evaluation of Living Skills (KELS) (Kohlman-Thomson, 1992; McGourty, 1979) use a combination of interview questions and simulated observation. In the Assessment of Motor and Process Skills (AMPS) (Fisher, 1993) the consumer chooses two or three IADL to perform in a familiar environment. While performing the tasks, motor (e.g., coordination, strength) and process (e.g., attention, organization) skills are evaluated.

Two studies that compared older adults' performance on the AMPS in clinical and home settings found discrepancies in performance across settings (Nygård, Bernspang, Fisher, & Winblad, 1994; Park, Fisher, & Velozo, 1994). The authors found that the participants performed better at home and concluded that IADL assessment should take place in the environment in which the activity will be performed (i.e., a familiar environment). Other than these two studies, there is very little empirical information available to ascertain whether IADL assessments in current use can predict performance in a person's actual environment.

Therefore, the current study compared ratings of performance of two IADL tasks: making a purchase in a store and using the bus. Assessment methods included a combination of interview questions and simulated tasks, with performance of the same tasks in the actual environment or community in which they are usually performed. Unlike the AMPS studies (Nygård et al., 1994; Park et al., 1994), we hypothesized that the participants in our study, persons with severe mental illness, would perform better on the interview and simulated tasks than in the natural environment because of the additional complexities presented by performance in context.

Method

Participants and Setting

A convenience sample of 20 consumers at a community support services program participated in the study. The community program delivers comprehensive rehabilitation services to adults with severe mental illness. Selection criteria were met by the program requirements, which include currently living in the community and a diagnosis of severe and persistent mental illness based on National Institute of Mental Health (1980) criteria.

The sample consisted of 11 men and 9 women, with 9 being Caucasian and 11 African-American. The mean age was 37 years. Six of the participants lived alone in their own apartment, 5 lived with a roommate, 8 lived with family, and 1 lived in a group home.

Instrument

The KELS (Kohlman-Thomson, 1992) was selected for this study because occupational therapists are familiar with it, it is applicable to persons with severe mental illness, and it has undergone some reliability and validity testing. These qualities promote confidence in the instrument.

The KELS assesses basic living skills with standardized interview questions and simulated observation tasks that indicate whether a person is independent or needs assistance in 17 skill areas (Kohlman-Thomson, 1992). Of the KELS's 17 subtests, 2 were used in this study: use of money in purchasing items (one of tasks used was purchasing a bar of soap) and basic knowledge of the transit system. These subtests were selected because one uses interview (basic knowledge of the transit system) and the other uses simulated observation (use of money in purchasing items) and because they could be readily observed in the participants' natural environment.

Studies have found interrater reliability of the KELS to range from 74% to 94% on subtests; its concurrent validity was supported by correlations with the Global Assessment Scale of .78 to .89 (Ilika & Hoffman, 1981,
as cited in McGourty, 1987) and the Bay Area Functional Performance Evaluation of .84 (Kaufman, 1982). The KELS was also found to discriminate with 90% accuracy among persons living in a sheltered setting and those living independently (Morrow, 1985) and predicted the discharge situation of patients on a geriatric unit with 72% accuracy (Tateichi, 1984). However, the validity of the KELS's interview and simulated observation procedures for predicting actual IADL performance in the natural environment has not been examined.

Procedure

Two research assistants were trained in the administration of the KELS subtests. Interrater reliability was achieved at 100% agreement on scoring of the two subtests.

Each participant was seen individually at the community support services program to obtain informed consent and administer the subtests. For the use of money in purchasing items subtest, the participants were asked to simulate the purchase of a bar of soap with actual bills and coins and to identify whether they were given the correct change. For the basic knowledge of the transit system subtest, the participants were asked to explain how they would determine which bus to take to a location where they had never been before. Performance on both subtests were scored as either independent or needs assistance on the basis of the criteria provided on the KELS.

Immediately after completion of the KELS subtests, the research assistants evaluated the participants' performance of the same two IADL in the natural environment. Participants were asked to purchase a bar of soap at a nearby store and to take the local bus to a location that was new to them. Participants were given the money needed to perform the tasks and were informed that they could obtain additional information or assistance in any manner other than asking the research assistants. A participant was scored as independent on the purchasing task if he or she found the soap, purchased it without assistance, and identified the correct amount of change. A participant was scored as independent on the transportation task if he or she found the bus stop, paid bus fare, got off at the expected location, and returned to the center without assistance. If it became clear at any point that participants were unable to complete the task, the research assistant scored them as needing assistance and aided them in completion of the task.

During these tasks, the research assistants took field notes regarding the environment's effect on the participants' performance, identifying environmental features that supported performance (e.g., clearly marked signs) as well as those that interfered with performance (e.g., difficulty seeing out of the front of the bus).

Results

To test the hypothesis that performance in the simulated (KELS subtests) and the natural environments were unrelated, a chi-square test of independence was used. The results of the analysis partially support the hypothesis. Participants' performance of IADL tasks on the KELS subtests differed from their performance in the natural environment. The results speak to the potential problem inherent in using standardized simulation measures of function as a surrogate to performance in real-life settings because simulation may not be sensitive to the influence of context on performance.

Analysis of participant performance for the use of money in purchasing items subtest was significantly related to performance in the natural environment ($\chi^2 = 5.96; p < .05$). Seventeen (85%) of the participants were found to be independent on this task for both simulated and natural environments. Two subjects were able to perform the simulation of this task independently but needed assistance in performing it in the natural environment. One participant needed assistance in both the simulation and the natural environment. The significant finding indicates that decisions regarding independence for both assessment approaches were in agreement.

On the KELS interview of the basic knowledge of the transit system subtest, 16 (80%) of the participants performed at an independent level. Alternately, only 10 (50%) could perform the task in the natural environment. Task performance in both settings was consistent for 12 (60%) of the participants. The test of the hypothesis that task performance would be unrelated across assessment modes (interview vs. natural environment) was supported by the chi-square analysis ($\chi^2 = 1.25; p > .05$). Nine participants were independent on this task in both the interview and the natural environment, and three needed assistance in both. Seven (35%) were independent in the interview and in need of assistance in the natural environment. One participant was able to perform the task in the natural environment but was classified as in need of assistance in the interview. As such, 6 (30%) of the participants were misclassified by the basic knowledge of the transit system subtest.

To determine whether the influence of prior exposure to the transit system was a confounding influence on simulation or natural environment performance, participants were asked whether they had used the bus during
the past month. Of the seven participants who were found to be independent on the transit system subtest and in need of assistance in the natural environment, only one had used the bus system previously. Conversely, of the nine participants who were found to be independent in both settings, three (33%) had not used the bus previously. Chi-square analysis indicated that having experience with the transit system was unrelated to simulation or natural environment task performance (for experience, $\chi^2 = 3.45; p > .05$; for no experience; $\chi^2 = 0.00; p > .05$). This result demonstrates that inexperience with the bus does not necessarily indicate dependence.

Qualitative data from the field notes indicated that participants who could not complete the tasks successfully in the natural environment were unable to take advantage of available cues (e.g., bus stop signs), did not ask others for help, or displayed anxiety or lack of confidence in their own ability. Difficulty sustaining attention became an issue for using the bus, particularly in identifying the correct stop for getting on and off. Some participants verbally expressed fear about getting on the wrong bus. Others became distressed and then less competent after making an error.

Participants who were most successful expressed confidence in their abilities, often on the basis of previous successful experiences. Additionally, these participants were more willing to ask and comfortable with asking for help. Although physical cues were available in both situations to assist with the task, participants relied heavily on assistance from others. For example, bus schedules and a large bulletin board with bus routes were easily accessible to all participants; however, only one participant used this method. Eight participants asked for information from bus drivers. The same was true for the task of purchasing soap; instead of using store signs, three participants asked store clerks to help locate the soap.

Two unexpected incidents transpired that may have affected the results in the natural environment by increasing the number of independent ratings. After becoming acquainted with the research assistants and the project, one of the bus drivers attempted to help the participants by announcing the predetermined stop. Afterwards, the research assistant asked that the bus driver not provide additional assistance if it had not been requested by the participant. It also became clear that participants who had completed the study were instructing their peers on how to use the bus (even though they were asked not to do so) in cases where they were selected for the study. After the researchers became aware of this issue, data collection was terminated. Although these incidents could have confounded the results of the study, they indicate the inherent availability of support systems that can assist persons with independent living. These incidents provide further support for the unpredictable nature of real-life settings.

**Discussion**

Kohlman-Thomson (1992) clearly identified the KELS as a "short basic living skills evaluation" (p. 50) and indicated that further evaluation is often necessary. In addition, Kohlman-Thomson explained that "some items of the KELS test knowledge rather than actual performance of the living skills. If the evaluator questions whether the client can actually perform a skill he or she has demonstrated knowledge of, additional performance-based testing should be done to supplement the KELS" (p. 49). The results of this study support that conclusion.

Our findings indicated that for the use of money for purchasing items task, decisions regarding independence in both the KELS simulation and assessment in the natural environment were in agreement. However, for the basic knowledge of the transit system task, decisions regarding independence were unrelated across assessments and in conflict for 8 (40%) of the participants.

The results suggest that occupational therapists should be cautious when making clinical judgments based on ratings that are not collected in the person's natural environment. We found that the greatest problem with the standardized assessment items was a trend toward false positives in that several participants who scored as independent on the KELS were not able to perform the same tasks without assistance in the natural environment. Given the assistance from the bus driver and peers, the number of false positives may be low. There was only one false negative, which was the participant who scored as needing assistance on the KELS and independent in the natural environment for the bus task. These results suggest that the real-life experience was more complex than portrayed by the KELS simulation and interview. The KELS simulation and interview appear to be a better predictor for those participants who were scored as needing assistance, suggesting that therapists might use the interview and simulation assessments as screening tools and further evaluate questionable items by observing performance of these tasks in the natural environment.

**Limitations**

The study results are limited by the size and specific characteristics of the sample and may not generalize to other populations. Additionally, only 2 of the 17 subtest on the KELS were investigated in this study. Further studies should investigate other areas of IADL function.
and other complete IADL assessments to determine whether similar patterns exist.

The difficulty of developing assessments and conducting research that approximate real life must be acknowledged. This study incorporated performance that occurred in the natural environment; however, the performance situations were contrived. For example, the participants did not have a real need to take the bus to a place where they had never been, which likely factored into motivation. Development of practical and cost-effective assessments and interventions that are true to each person’s context remains a challenge.

Implications for Occupational Therapy

Implications for occupational therapy intervention can be drawn from the field notes data of this study. Familiarity with the task and environment increases the person’s level of comfort and confidence. Training that occurs in the actual environment in which the skill will be performed has the greatest potential for success. The field notes also indicated that occupational therapists must be sensitive to the importance of social supports. The availability of social support was an important variable in determining the participants’ ability to engage in IADL. Interventions that provide education and training to members of the community who have regular contact with persons with mental illness (e.g., bus drivers) could facilitate the development of neighborhood support systems. The enhancement of peer support can serve as another method of intervention. After the support is available, persons must be able to have access to it. Training or cues in asking for assistance may be necessary for some persons.

Conclusion

The study results suggest that assessment of IADL performance differs in simulated and natural environments and that performance is best understood when the interaction of the person within the context is taken into account. Therapists should consider making judgments of independence based on observation of performance in the person’s natural environment.

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References


