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## Framing Ecological Validity in Occupational Therapy Practice

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## Framing Ecological Validity in Occupational Therapy Practice

### Keywords

ecological validity, assessment, measurement, validity, practice-scholar

### Cover Page Footnote

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### Credentials Display and Country

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Occupational therapy assessment tools are needed to create a profile of an individual's abilities and inabilities; plan a valid, meaningful intervention that can be generalized to everyday life; and measure outcomes from the intervention process. The "Occupational Therapy Practice Framework: Domain and Process" (American Occupational Therapy Association [AOTA], 2014) states that an analysis of occupational performance includes observing a client's performance during activities relevant to desired occupations. Analysis also includes selecting and administering assessments, as needed, to identify and measure more specifically the contexts or environments, activity demands, and client factors that influence performance skills and performance patterns. Key phrases, such as "relevant to desired occupations," and "measure more specifically the contexts or environments . . . that influence performance skills and performance patterns" (p. S14), beg the question: How can occupational therapy practitioners ensure that their evaluation approach meets this practice standard and contributes to enhancing or enabling participation in the roles, habits, and routines that are meaningful to and expected by clients in a variety of occupations?

Several other questions also arise related to intervention effectiveness, including:

- How precisely can findings from an assessment measure daily performance or occupational competence in an individual's lived environment?
- How accurately can the results from an assessment using a simulated activity or environment predict the same outcomes

when a person performs the task using familiar tools and surroundings?

- How can the validity of measurement findings during research support the generalization of outcomes to practice?

Measurement research in occupational therapy has reported on a limited number of studies of assessments used in simulated (i.e., clinical) versus natural environments. Each found a different profile of abilities and inabilities as a result of the assessment environment (Fisher & Jones, 2012; Park, Fisher, & Velozo, 1994; Toneman, Brayshaw, Lange, & Trimboli, 2010). These studies used the Assessment of Motor and Process Skills (AMPS; Fisher & Jones, 2012). However, since these findings with the AMPS, few researchers have reported data to support the valid use of occupational assessments to measure the real skills or abilities of clients or compare intervention settings and the lived environment. Bottari, Dutil, Dassa, and Rainville (2006) reviewed five studies that examined differences between home and clinical environments in activities of daily living (ADL) assessment performance. They found that performance in home environments was significantly better, but cautioned against relying on this finding due to the limited number of studies explored.

### **Ecological Validity: The Missing Measurement Construct**

Occupational therapy practitioners are invested in using reliable, valid assessments. Generalizing assessment results regarding the functional abilities needed for daily living in home and community is central to occupational therapy

practice. As a result, the rapidly emerging area called “ecological validity” in research and evaluation is clearly essential to validating occupational therapy’s practice philosophy.

Ecological validity is the degree to which an assessment of events, activities, participation, or environments reflects everyday life expectations or performance engagement. For occupational therapy practice, ecological validity is important when considering participation, occupational engagement, and environmental modifications that promote health, independence, quality of life, and well-being. Thus, clinical decision making related to discharge also must consider ecological validity.

The purpose of this paper is to stimulate dialogue about the role of ecological validity in the occupational therapy process as a best practice. Currently, ecological validity appears to be either assumed or ignored in evaluating the utility of assessment tools in specific situations. But failure to consider the concept of ecological validity is a serious omission in occupational therapists’ utilization of outcomes from assessments. It leaves therapists vulnerable to professional challenges and to serious questions about the valid measurement of abilities versus inabilities and the generalization of intervention outcomes among contexts or environments. Only with focused attention to ecological validity will occupational therapists be able to accountably and responsibly serve clients, groups, and populations through the practice framework and engage in research to enact unique a professional philosophy and theories.

### **Ecological Validity: What Does it Include?**

Essentially, ecological validity is the ability of an assessment to measure, collect, and/or record behaviors or occupational performance that would be observed or is required in a typical daily living context or environment (Crist, 2014a). It includes research measurement and intervention assessment. In research measurement, ecological validity relates to the generalizability of study findings to other similar events or activities in daily life (Crist, 2014a). Study methods, materials, and settings are all contributing factors. In intervention assessment, ecological validity refers to the assessment’s capacity to measure, collect, and record behaviors or performance that would be observed in a typical, daily living context for the individual being assessed (Asher & Jaffe, 2014; Crist, 2014a).

### **Research Measurement**

External validity is a central design consideration during research because it reflects how the findings from a study apply to other people or settings. The two types of external validity are: (a) population validity—the extent to which study results from a specific sample can be applied to larger similar groups, and (b) ecological validity—the extent to which an experimental design can be generalized to a set of environmental conditions or contexts (Brewer, 2000). Both are contributing factors that support the generalizability of research results to similar external conditions found in practice. If the ultimate goal of clinical research in occupational therapy is to apply an intervention to real-life roles, routines, and occupational functioning in natural contexts, then the

independent variable(s) must reflect ecological validity.

### **Intervention Assessment**

Ecological validity must be taken into consideration when selecting and administering assessments. It also must be considered when interpreting assessment scores or outcomes that target client goals and their future ability to function. Specifically, ecological validity is important when the evaluation process addresses the following:

- In what occupations do clients feel successful, and what barriers are affecting their success?
- What aspects of their environments or contexts do clients see as supporting engagement in desired occupations, and what aspects are inhibiting engagement?
- What are clients' priorities and desired targeted outcomes related to occupational performance, prevention, participation, role competence, health and wellness, quality of life, well-being, and occupational justice? (AOTA, 2014, p. S17)

### **Ecological Validity: What it is Not**

Ecological validity is not face validity, which is when a test appears to be related to the variables being tested or the stated purpose for an assessment, but no statistical validation of either is provided (Asher & Jaffe, 2014). Instead, ecological validity is the degree to which a measured behavior corresponds with the same behavior when it occurs in the natural environment (Asher & Jaffe, 2014).

Asher and Jaffe have described the Test of Grocery Shopping Skills (TOGSS) as an exemplar because this assessment maximizes the ecological validity of related skills and abilities as they are measured in the natural context of a grocery store (Brown, Rempfer, & Hamera, 2009). Certainly, the TOGSS authors are to be commended for standardizing a tool to assess occupational performance in the lived environment versus a clinical simulation or paper-and-pencil questionnaire. However, caution is needed to avoid confusion. For instance, the TOGSS (Brown et al., 2009) appears to have face validity for grocery shopping because the test occurs in a grocery store. Ecological validity would statistically provide answers to questions about how well the test measures a shopper's performance in a familiar store compared to the potentially unfamiliar store in which the TOGSS was used.

Ecological validity also is different than predictive validity. An assessment's predictive validity is popular in occupational therapy because it is the degree to which current assessment results agree with future results. One example is when prospective living environments are studied—considering if a score on a post-stroke function assessment today will indicate whether a patient should be discharged to home or a skilled nursing facility. One might erroneously see this as a form of assessment ecological validity, but it is not the same concept.

### **How is Ecological Validity Established?**

Ecological validity for an assessment tool is established by statistically determining its veridicality and verisimilitude (Spooner & Pachana,

2006). Both are forms of determining the functionality of an assessment tool as it relates to outcome measures that reflect real-life contexts and demands.

### **Verisimilitude**

Verisimilitude refers to the similarity between the task demands in the test and the actual demands imposed in the daily environment. Establishing verisimilitude requires that tests comprise everyday cognitive tasks so that inferences can easily be drawn from test results and the individual's likely ability to perform those tasks in daily life (Spooner & Pachana, 2006).

Occupational therapist need to take into account client factors, performance patterns, performance skills, occupational functioning, and environmental and contextual considerations.

To establish the verisimilitude of an assessment through research regarding ecological validity, tests attempt to simulate daily tasks as closely as possible (e.g., the TOGSS). Statistical techniques are employed to compare performance on traditional tests to measures of real-world functioning. However, no matter how similar the test condition is to the “real world,” some aspects will never be identical among assessments and natural contexts. Ultimately, this means the challenge in establishing ecological validity is not as simple as it sounds because of the myriad ways in which the complexity of an environment can be controlled and/or described.

### **Veridicality**

Veridicality refers to the extent to which results on an assessment instrument are related to

performance of real-world tasks (Spooner & Pachana, 2006). This type of ecological validity challenges one of the greatest unquestioned disparities occurring across much of practice: the “Occupational Therapy Practice Framework” area of preparatory methods and tasks (AOTA, 2014). For the most part, practitioners assume that preparatory methods enhance activities, especially occupational performance, without statistical validation of this premise. The Framework (AOTA, 2014) offers the following description:

**PREPARATORY METHODS AND TASKS**—Methods and tasks that prepare the client for occupational performance, used as *part of a treatment session* in preparation for or concurrently with occupations and activities or provided to a client as a home-based engagement to support daily occupational performance. (S29)

These methods are frequently de-contextualized. Many practitioners provide these services without statistical evidence that they will validly support occupational performance efficacy. Relying on an assumed correlation between preparatory skills and occupational performance abilities in daily life is no longer acceptable. To be effective, the provision of preparatory services must be shown to validly correlate with and predict patients' daily occupational performance abilities. Instituting studies of veridicality could provide an approach to reduce the disparity of assumed generalizations between preparatory methods and one's typical daily life skills. A lack of veridicality

leaves open too many questions regarding best practices.

### **Why is Ecological Validity Important?**

Ecological validity has the potential to ensure that our professional philosophy is realized in the daily lives of our clients, groups, and populations. Using ecologically valid assessments of occupational engagement in research and practice will substantiate our role in assessing the everyday performance of those with whom we work. Finally, we are ethically bound to not over- or underestimate findings from assessments using simulated tasks or environments without evidence that substantiates their degree of correlation with real-life performance.

### **Ecological Validity: Recommendations**

Ecological validity should be considered during practice and research in occupational therapy. Practitioners should always consider the ecological validity of the assessments underpinning their intervention planning and implementation. The limited studies of ecological validity that are available generally indicate that the relationship between current assessment tools and everyday functioning is inadequate.

Clearly, our unique professional perspective regarding occupational engagement already relates to ecological validity in our efforts to measure and support function, occupational engagement, quality of life, health, and well-being in real-life environments or contexts. Some guiding questions that warrant further consideration by the profession are:

- How can we elevate the importance of ecological validity in occupational

therapy assessments—particularly those that measure occupational engagement—to establish valid intervention goals and support the best generalizability of outcomes for clients?

- How can researchers design studies with careful attention to assessments that have the highest ecological validity once completed?

### **Practice Recommendations**

Practitioners should, at a minimum, incorporate the concept of ecological validity into their reflective clinical reasoning related to assessing and predicting occupational engagement. Examinations of the accuracy of information from assessments using simulated scenarios related to predicting performance should be increased. We need to understand if we are treating something that is not even an issue when clients are in their natural or lived environment, and if we are missing other factors that are critical to functioning and quality of life.

Practitioners who primarily use preparatory methods, and possibly tasks, should use and even work to discover evidence that unquestionably links the use of these intervention strategies to ecologically valid occupational engagement. Practice-scholars, specifically, are encouraged to engage in practice-based studies to build evidence of the link between preparatory methods and client performance competency, as well as satisfaction with services (Crist, 2010; 2014b).

Also, the influence of testing conditions must be critically considered. To assist with ecological validity, Bottari et al. (2006)

recommended that assessments be completed in a familiar home or community environment to measure performance accurately. These authors suggested that familiar contexts were typically more complex, but studies show that performance is more often reported as better in real-world contexts.

Finally, attention to ecological validity most likely will increase client satisfaction with occupational therapy services and/or ensure more efficient or better re-engagement in occupational functioning. Thus, using ecologically valid assessments and considerations during intervention increasingly will become a “win-win” for all.

### **Research Recommendations**

Future research should use assessments that consider the generalizability of assessment findings to occupational engagement demands in real-life environments (Bottari et al., 2006). Considerations of the complexity and distractions found in real-life environments will complicate ensuring ecological validity in any research measurement tool.

Applying Rasch analysis to assessment development measuring daily life activities in familiar contexts has great promise for developing ecologically valid assessment tools suitable for the environmental complexities in which occupational engagement is measured.

In this age of evidence-based accountability, ecological validity needs to be elevated as a

valuable consideration to ensure the generalizability of findings to different contexts or predict future performance based on the degree of familiarity with a specific context. The professional standard stating that “analysis of occupational performance involves . . . observing a clients’ performance during activities relevant to desired occupations” (AOTA, 2014, p. S14) can be verified by incorporating ecological validity.

Practice-scholar studies related to describing practice conditions and program outcomes need to consider how assessment selection influences the ecological validity or generalizability of findings to support practice considerations. Measurement scientists who are developing and refining measurement tools for occupational therapy should establish and report the veridicality and verisimilitude of their assessment whenever appropriate. Both groups should include a discussion of ecological validity in the application of their findings for practice. The importance of ecological validity to occupational performance and engagement calls upon all occupational therapy practitioners to elevate considerations of ecological validity in research and practice with clients or groups.



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