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## Determining the Initial Content Validity of the Clinical Competency Assessment Tool (CAT) for Occupational Therapists Treating Patients with Neurodegenerative Disease

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# Determining the Initial Content Validity of the Clinical Competency Assessment Tool (CAT) for Occupational Therapists Treating Patients with Neurodegenerative Disease

## Abstract

The provision of occupational therapy (OT) interventions for people with neurodegenerative disorder (NDD) requires advanced clinical competency; therefore, a means to evaluate that competency is needed. The Clinical Competency Assessment Tool for Occupational Therapists Treating Patients with Neurodegenerative Disease (CAT) was recently developed as a self-report assessment that aims to identify gaps in clinical competence and measure outcomes of professional development programs specific to occupational therapists treating patients with NDD. The purpose of this study is to explore preliminary content validity of the CAT. Classical test theory was used to test for content validity. A panel of 10 expert occupational therapists, who met specific inclusion criteria, rated the 24 items on the CAT. The number of participants who rated each item as essential was used to quantify each item's content validity using the content validity ratio (CVR). A CVR of .62 was sought for each item on the CAT, based on the size of the panel of expert occupational therapists. At least half of the expert clinicians rated 16 of the 24 items on the CAT as essential, resulting in a 0 or positive CVR. Six items met the researchers' criteria of a .62 CVR. Three items on the CAT were rated as essential by all members of the expert panel. This study demonstrates some degree of content validity that supports the CAT in its initial form and provides direction for further development as a tool to inform and measure outcomes of OT educational programs focused on increasing the clinical competence of occupational therapists who treat patients with NDD.

## Comments

The authors declare that they have no competing financial, professional, or personal interest that might have influenced the performance or presentation of the work described in this manuscript.

## Keywords

neurodegenerative diseases, occupational therapy competency, assessing competency, content validity, amyotrophic lateral sclerosis, multiple sclerosis, Parkinson's disease

## Credentials Display

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Millions of people worldwide are living with a neurodegenerative disease, with the most common diagnoses being Parkinson's disease and Alzheimer's disease (National Institute of Environmental Health Sciences, 2020). Other examples include multiple sclerosis (affecting 2.8 million people worldwide) and amyotrophic lateral sclerosis (diagnosed at the rate of 1–2 per 100,000) (Multiple Sclerosis International Federation, 2020; Redler & Dokholyan, 2012). These diseases are chronic, have no known cure, and are often fatal (Cruickshank et al., 2014; Radder et al., 2017; Redler & Dokholyan, 2012). A neurodegenerative disease (NDD) can cause a varying range and combination of emotional and personality changes along with sensorimotor and cognitive impairments that negatively impact engagement in activities of daily living and all aspects of life for patients, families, and caregivers (Phukan & Hardiman, 2009). Occupational therapists play a critical role, as part of an interdisciplinary team, in treating functional impairments resulting from diseases associated with NDD (Zinzi et al., 2007). Despite occupational therapists involvement in the care of patients with NDD, there is a lack of research on the effectiveness of interventions specific to occupational therapy (OT) for these populations (Arbesman & Sheard, 2014; Foster, 2014; Steultjens et al., 2005; Torjesen, 2016). The lack of evidence in the literature on the efficacy of OT interventions specific to functional impairments from NDD has created a disparity in the development of clinical competence for occupational therapists working with patients who have these conditions. These disparities in clinical competence, specific to occupational therapists working with patients with NDD, can contribute to unmet goals and negative outcomes for some patients in this population. For example, progressive loss of function in performing daily activities has been correlated with unplanned hospital readmissions, institutionalization, and a higher total cost of care for patients with NDD (McLennon et al., 2010; Patel et al., 2019). These negative outcomes can lead to unfavorable changes in insurance coverage and public policy that would restrict access to OT because of the perception that these services do not benefit patients with NDD.

Similar to medicine, which is divided into specialties and subspecialties (e.g., cardiology, orthopedics, neurology, oncology, geriatrics), the OT profession needs to ensure competence in individual specialties, as each patient population requires specific skills and knowledge in order to produce positive outcomes (i.e., higher level of occupational participation and performance). Because of the incidence of NDD, along with the associated impairments to physical, social, and cognitive functioning, there is a need to enhance educational and professional development programs for occupational therapists working with these patients. Equally important is the development of assessment tools that identify gaps in clinical competence of both novice and expert occupational therapists, for whom professional development can be focused. It is also crucial to measure outcomes of professional development programs for occupational therapists working with patients with NDD in order to ensure that education results in a change in practice behavior for therapists who participate in these programs.

Various tools have been developed to measure clinical competence in other areas of OT practice, including mental health, fall prevention, and reading participation (Bazyk et al., 2015; Grajo & Candler, 2017; Pighills et al., 2019). However, these tools do not measure the degree of skill specific to the treatment of patients with NDD. Currently, there are no valid assessment tools designed to measure clinical competence for occupational therapists treating this patient population (Myers et al., 2017).

The Clinical Competency Assessment Tool for Occupational Therapists Treating Patients with Neurodegenerative Disease (CAT) was recently developed by the researchers as a 24-item self-report assessment designed to measure the clinical competence of occupational therapists working with clients

who have NDD. The developers of the CAT are all occupational therapists who average 19 years of experience in diverse roles with clinical expertise in neurorehabilitation, instrument development and validation, clinical research, and publication experience. The CAT is intended to assess the competence of novice and expert occupational therapists working with patients who have any diagnoses that may be classified as NDD.

The CAT was developed as a modification of the Knowledge, Beliefs, and Actions Questionnaire (KBAQ) originally developed by Bazyk et al. (2015). The KBAQ surveyed occupational therapists' knowledge, energy, and confidence in their role in the maintenance of children's mental health after a 6-month building capacity process using a community of practice approach. Communities of practice are established social learning systems that contain the knowledge and competencies that make up that system through a sense of common purpose, mutual engagement of learners, and sharing of resources (Wenger, 2000).

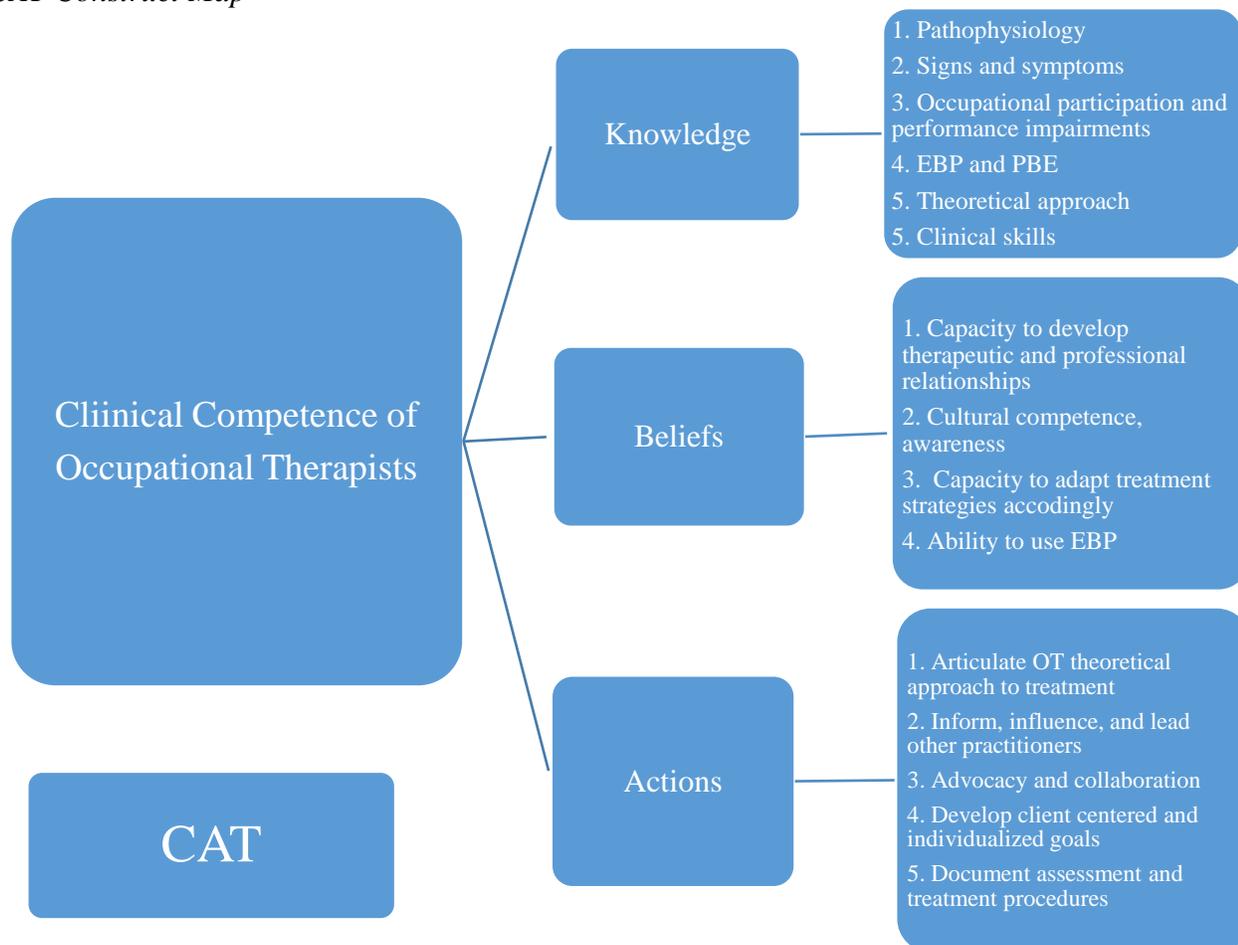
Grajo and Candler (2017) developed a modified version of the KBAQ for the Occupation and Participation Approach to Reading Intervention (OPARI) community of practice. The OPARI-KBAQ measured the competence of occupational therapists working with children who have reading difficulties by having participants rate their knowledge, beliefs, and actions regarding their role in supporting occupational impairment in reading for this population. Although Grajo and Candler (2017) did not validate the OPARI-KBAQ, the authors were able to demonstrate that a community of practice approach could positively impact the practice of occupational therapists working with children who have reading difficulties, as demonstrated by the pre and posttest results of this assessment tool. This finding suggests that it is possible to measure clinical competence in other areas of OT practice through modifications to the original KBAQ.

Similar to the original KBAQ and the OPARI-KBAQ, the CAT uses a 5-point Likert scale whereby occupational therapists will rate their knowledge (Items 1–8), beliefs (Items 9–16), and actions (Items 17–24) regarding their competence in treating patients with NDD. The 24 items that comprise the CAT were developed by the researchers based on a literature review of the essential elements of clinical competence. Figure 1, the CAT construct map, details the CAT and how the latent variable, clinical competence, is broken into the latent subconstructs of knowledge, beliefs, and actions. Knowledge is assessed based on the occupational therapist's response to eight statements regarding their awareness of and familiarity with the pathophysiology of NDDs, evidence-based practice and practice-based evidence, and theoretical approaches that can be used to guide occupational therapists when treating patients who have NDD. Beliefs are assessed based on the occupational therapist's response to eight statements regarding their confidence in developing patient-centered treatment strategies that optimize participation in patients with NDD as part of an interdisciplinary care model. Actions are assessed based on the occupational therapist's response to eight statements regarding their current practice of educating, leading, and influencing other occupational therapists and health care professionals on best practices for treating patients with NDD.

Measuring clinical competence through the latent subconstructs of knowledge, beliefs, and actions allows the CAT to be used both as a way to measure current knowledge and practice gaps, for which education and professional development can be focused (descriptive), and as an outcome measure for clinical competence after the completion of continuing education programs (evaluative). The CAT is meant to measure a range of competence from entry-level and newer clinicians to expert clinicians and not exclusively intended to be used with occupational therapists who are new to practice. This

preliminary content validity study is focused on how well each item of the CAT represents all facets of clinical competence for occupational therapists.

**Figure 1**  
*CAT Construct Map*



*Note.* EBP= Evidence-based practice and PBE = Practice-based evidence.

## Method

### Study Design

This study was approved by the Columbia University Irving Medical Center Institutional Review Board. Classical test theory was used to test for content validity. Classical test theory uses the classical or true score test model, which is a simple linear model linking the observable score on a test to the sum of the two unobservable variables, the true score and the error score (Hambleton & Jones, 1993). Classical test theory has been used as a measurement theory for well over a century and has been shown to perform comparably with other statistical test theories (e.g., item response theory) in terms of person statistics and item difficulty indexes (Fan, 1998).

Content validity relates to the extent to which a sample of items, taken together, constitute an adequate operational definition or measurement of a construct (Polit & Beck, 2006). Content validity is measured using a panel of knowledge experts to determine the extent of agreement as to how well a measurement tool relates to the construct being measured (Lawshe, 1975). In order to measure content

validity, the researchers recruited occupational therapists who are expert clinicians in the treatment of patients with NDD. The experts used in this study were a convenience sample, as this is a pilot study and preliminary information regarding content validity is the goal.

### **Participants**

For the purposes of this content validation study, the term expert clinician was defined as an occupational therapist who met one of the two following criteria: (a) must have at least 5 years of experience working with patients who have NDD, and the occupational therapist must have either an advanced degree (i.e., post professional doctorate in OT, research doctorate, advanced master's degree in OT, or other relevant master's degree) or advanced certification; and/or (b) must have at least 10 years of experience as an occupational therapist working with patients who have NDD, regardless of their degree level.

The panel of experts were recruited from various clinics, hospitals, health care facilities, and educational institutions in the United States and Australia. The experts were recruited by contacting the directors of various clinics specializing in the care of patients with NDD through email. The directors were asked to distribute information on the study as well as the researchers' contact information. The occupational therapists were asked to contact the researchers if they were interested in the study and met the criteria to participate. In addition, five occupational therapists were professionally connected with two of the researchers and were recruited through in-person meetings.

During the recruitment phase, all potential participants were asked to summarize their careers and describe how they met the criteria for being an expert occupational therapist, according to the definition used in this study. The applicants' eligibility to participate were reviewed by the researchers, and once it was determined that a therapist met the inclusion criteria, they were enrolled in the study and emailed information regarding the research along with a form to provide their consent for participating.

### **Instrument and Procedures**

Upon receiving consent to participate, each participant was electronically sent the instructions for rating the content validity of the CAT and a content validity rating form.

The participants were instructed to review each item on the CAT and then complete and electronically submit the CAT content validity rating form to the researchers within 4 weeks. A reminder email was sent to all of the participants who did not complete and submit their content validity form at the 2- and 3-week periods after receiving the instructions to participate in the study. The expert panel was asked to review and rate each of the 24 items on the CAT using a 3-point Likert scale of: (a) *essential*, (b) *useful but not essential*, and (c) *not necessary*. The greater number of experts who rated an item as essential, the greater the extent or degree of the item's content validity.

### **Data Analysis**

The content validity ratio (CVR) was calculated for each item on the CAT using an excel spreadsheet based on the total number of instances that a participant rated an item as essential. The CVR for each item on the CAT was calculated using the formula:

$$CVR = (N_e - N/2) / N/2$$

in which  $N_e$  is the number of participants who rated the item as essential and  $N$  is the total number of panelists. The CVR is a direct linear transformation from the percentage of items on an assessment perceived as being essential, with a negative CVR occurring when fewer than half of the experts grade an item as essential, and a CVR of zero resulting when half of the experts grade an item as essential (Lawshe, 1975). One of the 11 participants dropped out of the study, resulting in 10 participants. The

minimum value of the CVR is based on the number of experts used in a study, and for this study's purposes, 10 experts required a minimum CVR value of .62 (Lawshe, 1975).

In addition to the 3-point Likert scale, the participants were provided a free text area on the content validity form for comments. The participants were instructed to provide comments, as they felt necessary, to clarify or explain their ratings of each item on the CAT. The responses to these comments were analyzed to support decisions on revising or removing any test items from the CAT.

## Results

### Participants

Twelve occupational therapists indicated their interest in being a participant in this study. One of the applicants did not meet the criteria for being an expert clinician, leaving 11 occupational therapists as participants on the expert panel. This panel of 11 expert occupational therapists included the five therapists professionally connected with the two authors and six that were recruited through various health care clinics that specialize in treating patients with NDD.

Ten participants who provided consent to participate in the study completed and submitted their content validity forms. One therapist did not submit the form and did not respond to further inquiries from the researchers, leaving 10 participating occupational therapists. Of the 10 occupational therapists who participated in the study, six had an advanced degree (e.g., PhD, EdD, and or post professional OTD) and over 10 years of treating patients with NDD. The remaining four participants did not have an advanced degree but did have over 10 years of experience treating patients in this population. The 10 experts who participated in this study were geographically located in the United States and Australia. Of the 10 experts, five were from the Northeast United States, two were from the Midwest United States, two were from the Southern United States, and one was from Australia.

### Validity Scores

Table 1 displays the CVR scores for all 24 items of the CAT, divided into the knowledge (Items 1–8), beliefs (Items 9–16), and actions sections (Items 17–24). The top row of each knowledge, beliefs, and actions section displays the 10 participants (P1 through P10). Each X on the table represents a rating of essential by the participant for the corresponding item on the CAT. The far right column displays the CVR score for each item on the CAT, based on the number of essential ratings from each of the 10 participants. Items that scored a CVR at or above the .62 threshold sought by the researchers are identified with an asterisk.

Of the 24 items on the CAT, 16 items had a 0 or positive CVR, meaning at least five of the 10 experts considered the item as essential for measuring clinical competence. There were eight items with a negative CVR, meaning less than half of the experts considered the item as essential. Six of the items generated a CVR above the .62 threshold. Of the six items that were rated above the .62 CVR threshold, two were in the knowledge section (Items 1 and 3), three were in the beliefs section (Items 10, 12, and 14), and one was in the actions section (Item 20). Four items on the CAT scored a CVR of .60, just below the .62 threshold. Of the four items that scored a CVR of .60, three were in the knowledge section (Items 2, 4, and 5), and one was in the actions section (Item 22).

Three of the items on the CAT (one from each of the knowledge, beliefs, and actions section) scored a CVR of 1.0, meaning that all 10 participants rated these items as essential. The items with a CVR of 1.0 were: Item 1: Knowledge Section (I am knowledgeable about the pathophysiology, progression, sensorimotor signs, and cognitive behavioral signs of different neurodegenerative diseases), Item 12: Beliefs Section (I believe in my ability to adapt my treatment strategies to better meet the needs

of various cultures and lifestyles of patients with neurodegenerative diseases), and Item 20: Actions Section (I use a holistic and client centered approach in creating individualized and meaningful goals for patients with neurodegenerative diseases that are appropriate for restorative, maintenance, palliative, and hospice care).

Item 17: Actions Section scored a CVR of -1, meaning no participant provided a rating of essential. Item 17 is: I lead or facilitate educational events and workshops for other therapists, designed to improve their knowledge and use of evidence-based practice for the treatment of patients with neurodegenerative diseases.

**Table 1**  
*CVR Scores for all 24 Items on the CAT*

<b>KNOWLEDGE</b>											
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	<b>CVR</b>
<b>Item 1*</b>	X	X	X	X	X	X	X	X	X	X	<b>1</b>
<b>Item 2</b>	X	X	X	X	X	X		X		X	<b>0.6</b>
<b>Item 3*</b>	X	X	X	X	X	X	X	X		X	<b>0.8</b>
<b>Item 4</b>	X		X	X	X	X	X		X	X	<b>0.6</b>
<b>Item 5</b>	X		X	X	X	X	X		X	X	<b>0.6</b>
<b>Item 6</b>	X		X	X							<b>-0.4</b>
<b>Item 7</b>				X							<b>-0.8</b>
<b>Item 8</b>		X	X				X				<b>-0.4</b>
<b>BELIEFS</b>											
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	<b>CVR</b>
<b>Item 9</b>	X				X	X		X	X		<b>0</b>
<b>Item 10*</b>	X	X	X	X	X	X	X	X		X	<b>0.8</b>
<b>Item 11</b>		X	X	X					X	X	<b>0</b>
<b>Item 12*</b>	X	X	X	X	X	X	X	X	X	X	<b>1</b>
<b>Item 13</b>		X	X	X		X				x	<b>0</b>
<b>Item 14*</b>	X	X	X	X	X	X	X	X		X	<b>0.8</b>
<b>Item 15</b>	X		X	X		X		X		X	<b>0.2</b>
<b>Item 16</b>	X	X	X								<b>-0.4</b>
<b>ACTIONS</b>											
	P1	P2	P3	P4	P5	P6	P7	P8	P9	P10	<b>CVR</b>
<b>Item 17</b>											<b>-1</b>
<b>Item 18</b>		X		X					X		<b>-0.4</b>
<b>Item 19</b>			X	X	X				X		<b>-0.2</b>
<b>Item 20*</b>	X	X	X	X	X	X	X	X	X	X	<b>1</b>
<b>Item 21</b>	X	X	X	X	X	X		X			<b>0.4</b>
<b>Item 22</b>	X	X	X	X	X	X	X		X		<b>0.6</b>
<b>Item 23</b>	X	X	X			X					<b>-0.2</b>
<b>Item 24</b>		X	X	X	X	X		X			<b>0.2</b>

*Note.* Table 1 displays the CVR scores from the 10 participants for all 24 items on the CAT. Each “X” indicates a response of “essential” for the corresponding item on the CAT. \* = Items that scored a CVR above .62.

Table 2 displays the items on the CAT with the highest and lowest CVR scores along with the participants' comments that are associated with that item. The table is broken into two sections. The top portion lists the items with a CVR of .60 or above. Items with a CVR of .60 were included in this table as this score is just below the .62 CVR threshold sought by the researchers. The bottom portion of the graph lists the items with negative CVR scores. A negative CVR score results when less than half of the participants rated an item as essential.

### Analysis of Content Expert Comments

Comments from the participants regarding items with the highest CVR scores (.6 and above) and lowest CVR scores (negative) provide additional information as to why some items were considered more essential than others. The participants' comments regarding the highest scoring items (CVR of .6 and above) indicate that they believe the use of appropriate evidence-based OT assessments and interventions, for the NDD population, are essential for clinical competence. The participants' comments regarding the lowest scoring items (negative CVR scores) indicate that they do not believe that use of OT theory, interprofessional collaboration, leadership, and educating other clinicians are essential for measuring clinical competence.

**Table 2**

*Participant Comments Regarding the Highest and Lowest CVR Scores on the CAT*

<b>CVR .6 and Above</b>		
<b>Item</b>	<b>Above</b>	<b>Comments</b>
1 - Pathophysiology	1	This is imperative for proper treatment planning.
2 - Interventions	0.6	No comments were provided for Item 2.
3 - Scientific Literature	0.8	Evidence is changing rapidly; it is essential to remain current.
4 - Assessments	0.6	No comments were provided for Item 4.
5 - Assessments	0.6	These areas are necessary to address decline in performance abilities and maintain participation.
10 - Assessments Interventions	0.8	No comments were provided for Item 10.
12 - Interventions	1	This is important for caregiver and patient participation. Interventions must be meaningful.
14 - Therapeutic Relationship with Patients	0.8	This is important to establish attainable goals and expectations.
20 - Disease Progression and Goals of Care	1	The client needs to be the center of care.
22 - Scientific Literature	0.6	Sometimes research does not always fit into real life situations in practice, though knowledge of evidence-based practice is important.
<b>Negative CVR</b>		
<b>Item</b>	<b>Negative CVR</b>	<b>Comments</b>
6 - OT Theory	-0.4	Not many OT theories apply to this population. I cannot think of what OT theories would apply.
7 - Interdisciplinary Collaboration and Professional Relationships	-0.8	As long as the therapist is willing to learn, ask, look up, or query, it would be okay to learn this on the job. This depends on the setting and who else is on the treatment team.
8 - Evidence Based Practice and Practice Based Evidence	-0.4	This seems like a general issue for OT and not specific to neurodegeneration. This is an important but not essential distinction. Evidence-based clinicians use both practice wisdom and EBP in tandem. The difference between the two is not as important as the knowledge that the delicate integration between "best research, clinical expertise, and patient values" is the key to effective integration of evidence into real world practice. Practice based evidence may be just as important than evidence-based practice.

Item	Negative CVR	Comments
16 - Professional Behavior (Education)	-0.4	This is a different construct and not related to treatment competency. This seems more like an advanced competency. This speaks to the value of interdisciplinary practice. We lead in areas of strength and are led by others in their areas of strength. The CAT is an assessment of clinical competency and teaching/leading others would be beneficial but is not essential for clinical competence.
17 - Professional Behavior (Education)	-1	After the occupational therapist gains some experience, this would be essential. This is a different construct and not related to treatment competency. An occupational therapist could be competent in treatment without doing this. This is a choice based on the therapist's professional goals. The CAT is an assessment of clinical competency and teaching/leading others would be beneficial but it is not essential for clinical competence.
18 - Professional Behavior (Clinical Leadership)	-0.4	This is a different construct and not related to treatment competency. This depends on other occupational therapists' willingness to learn and change.
19 - Professional Behavior	-0.2	This is a different construct and not related to treatment competency.
23 - Use of Learning Theories and Teaching Methods	-0.2	No comments were provided for Item 23.

*Note.* Table 2 summarizes the comments from the 10 participants for the highest scoring items on the CAT (.6 CVR and above) and lowest scoring items on the CAT (negative CVR).

## Discussion

Despite OT's long-standing involvement with treating functional impairments resulting from NDD, there are currently no standardized assessments designed to evaluate the competence of occupational therapists working with this population. The purpose of this study was to explore the preliminary content validity of the CAT, a 24-item self-assessment tool that measures competence by having occupational therapists rate their knowledge, beliefs, and actions for treating patients with NDD. According to Lawshe (1975), CVR ratings greater than 0 (which would result if over half of the participants rate an item as essential), provide some assertion of content validity, though the authors of this study sought a higher CVR rating of .62 for all items on the CAT. The results of this preliminary content validity study demonstrated that 16 of 24 items on the CAT had a positive CVR, with six of the 24 items on the CAT earning a .62 CVR or higher (see Table 1).

The items that had the highest CVR scores (above the .62 threshold) shared similar qualities in that they measured the occupational therapists' perceptions of their knowledge of disease progression, knowledge of signs and symptoms, clinical judgement, clinical skills, and the ability to develop therapeutic relationships with patients. The participants were more likely to rate an item as essential when it measured these qualities. The comments from the participants regarding these items were positive and supported the higher CVR scores.

Items with the lowest CVR scores (negative CVR score) also shared similar qualities in that they measured the professional behavior of therapists, including their ability to use OT theory, advocate for and develop relationships with other professionals caring for their patient, use evidence-based practice, and influence and lead other clinicians in the use of best practice for patients with NDD. These professional behaviors are all associated with advanced competence and characteristics of expert clinicians (Salvatori et al., 2000; Unsworth, 2001). These items were included in the CAT, as this instrument intends to identify gaps in clinical competence for novice and advanced therapists. In this content validity study, the participants were less likely to rate an item as essential when it measured

perceptions of professional behaviors associated with advanced competency. The comments from the participants regarding these items indicated that they misunderstood the CAT to be a tool that measures basic competence for novice therapists in treating patients with NDD (see Table 2).

The participants' misinterpretation that the CAT's purpose is to measure the knowledge, beliefs, and actions associated with basic competence for novice therapists may have negatively affected the CVR for items intended to measure advanced competency. For example, Item 16 (I believe in my ability to educate and lead other health care professionals in utilizing evidence based evaluations and interventions for patients with neurodegenerative diseases) measures the therapist's belief in their ability to educate and lead other health care professionals, and 30% of the participants rated it as essential, resulting in a CVR of -0.4 (e.g., see Table 1). Comments from the participants regarding Item 16 were (see Table 2): (a) "This is a different construct and not related to treatment competency," (b) "This seems more like an advanced competency," and (c) "The CAT is an assessment of clinical competency and teaching/leading others would be beneficial but is not essential for clinical competence." The theme in the participants' comments regarding Item 16 indicated that they did not view clinical leadership as a component of competency and that the CAT is not meant to measure advanced competency.

Similarly, Item 17 (I lead or facilitate educational events and workshops for other therapists, designed to improve their knowledge and use of evidence-based practice for the treatment of patients with neurodegenerative diseases) measures the therapist's involvement in leading or facilitating educational events and workshops for other therapists, and 0% of the participants rated it as essential, resulting in a CVR of -1 (see Table 1). Comments from the participants regarding Item 17 were (see Table 2): (a) "After the occupational therapist gains some experience, this would be essential," (b) "This is a different construct and not related to treatment competency," (c) "An occupational therapist could be competent in treatment without doing this," (d) "This is a choice based on the therapist's professional goals," and (e) "The CAT is an assessment of clinical competency and teaching/leading others would be beneficial but it is not essential for clinical competence." The theme in the participants' comments regarding Item 17 indicated that the participants did not view the action of leading educational events and workshops as being a component of competency and that this action is too advanced and not applicable to the CAT.

There were multiple items on the CAT, including Items 16 and 17, that were incorporated into this self-assessment tool for the purpose of measuring higher levels of competence associated with expert clinicians. These items include knowledge, beliefs, and actions related to the therapists' ability to clearly present and articulate clinical reasoning and judgement with confidence, along with the ability to provide structured educational opportunities for students and novice therapists. Expert clinicians with advanced clinical competence believe in their abilities to lead other health care professionals in best practice and facilitate educational events with the goal of improving the knowledge and clinical practice of other occupational therapists. These professional behaviors are supported in the literature as being characteristics of expert clinicians with advanced clinical competence (Unsworth, 2001). Despite these items earning low CVR scores from the expert panel, these items will be maintained as part of the CAT for future validation studies, as they are relevant to advanced clinical competence (Salvatori et al., 2000; Unsworth, 2001). This includes Items 6, 7, 8, 16, 17, 18, 19, and 23.

### **Limitations**

A limitation of this study was that, in order to reduce bias, the participants were given limited information on the items of the CAT, how each item related to clinical competence, and how the items

were intended to measure a range of competence from novice to expert. The participants' lack of background knowledge on the CAT may have influenced the scoring of some items on the CAT, thus impacting the CVR.

An additional limitation of this study was that there are multiple methods of determining a tool's content validity. This study used the CVR approach, though there are other methods, including the content validity index (CVI). The CVI differs from the CVR in that it uses a 4-point Likert scale, as opposed to the 3-point Likert scale used in the CVR approach. This 4-point Likert scale ranges from 1 (*not relevant*) to 4 (*extremely relevant*). The CVI is calculated by counting the number of experts who rate an item as 3 or 4 and dividing that by the total number of experts. Both the CVR and CVI approaches are acceptable methods for quantifying content validity, though a limitation of the CVI method is a potential over inflation of agreement because of chance factors (Almanasreh et al., 2019).

### Future Research

Content validity is an important psychometric property to ensure that a measurement tool relates to the construct being measured, though it is not an indicator of whether the tool substantively measures its intended construct. A tool can have content validity but lack internal construct validity. Internal validity is a degree of confidence as to how well each item on a measurement tool fits within its intended construct (Grajo et al., 2016).

The results of this study will be used to inform modifications to the CAT; however, future research will study the internal validity of this tool. After revising and rewording items on the CAT, future research will be conducted using Rasch methods to analyze how well each item on the CAT fits within the construct of competence, how accurate the CAT is at measuring clinical competence, and the degree of internal validity of the tool. Rasch analysis is becoming a preferred method of examining measurement properties and has been used to establish substantive and structural validity of assessment tools (Brown & Unsworth, 2009; Grajo et al., 2016). Other future plans include dissemination of this research in professional fora that not only target clinicians practicing in this field but include OT educators as well. By creating avenues for discussion and doing further analysis on how clinical competence knowledge, beliefs, and actions in neurorehabilitation are addressed in courses in the entry-level OT curriculum, the gap in knowledge may be further bridged.

### Conclusion

In conclusion, this study has established some degree of content validity of the CAT in its initial form. Based on the results of this study, the researchers plan to use the CVR scores and comments to inform the revision and rewording of some items on the CAT. Though some items may undergo revisions, the researchers plan to keep the items related to the knowledge, beliefs, and actions of expert clinicians, as these items are important for measuring advanced clinical competence.

Future research will include the use of Rasch analysis to analyze the internal validity of the CAT. The CAT will benefit from continued research and development so that one day it may become a valid and reliable measurement tool that identifies gaps in clinical competence and measures outcomes of professional development programs for OT treatment of patients with NDD.

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