

Therapeutic assessment and the art of feedback: A model for integrating evidence-based assessment and therapy techniques in neurological rehabilitation

Brigid Waldron-Perrine^{a,*}, Jaspreet K. Rai^b and Dominique Chao^a

^a*Department of Physical Medicine and Rehabilitation, Rehabilitation Psychology and Neuropsychology, University of Michigan, Ann Arbor, MI, USA*

^b*Precision Neuropsychological Assessments, Edmonton, AB, Canada*

Abstract.

BACKGROUND: Therapeutic assessment involves the integration of evidence-based approaches and humanistic principles, and there is empirical support for the use of this approach in the context of neuropsychological assessment broadly.

OBJECTIVE: We propose that therapeutic assessment (TA) and collaborative therapeutic neuropsychological assessment (CTNA) principles are appropriate and effective for application within a neurological rehabilitation population specifically.

METHODS: We review TA and CTNA principles and propose a model for their application to a neurological rehabilitation population, with an emphasis on describing the strengths of the collaborative approach, guidelines and principles for maximizing the efficacy of feedback, and transitioning the patient into psychotherapy services to further address their personal goals. A case example of a neurologically injured individual engaged in CTNA and subsequent intervention is shared to highlight the principles discussed.

RESULTS AND CONCLUSION: The proposed model and case study demonstrate the clinical utility of TA and CTNA principles with a neurological rehabilitation population.

Keywords: Therapeutic assessment, feedback, collaborative care, patient-centered practice

1. Introduction

Neuropsychologists and rehabilitation psychologists have long-held important roles in the context of neurological rehabilitation. With advancements in neuroimaging, the role of neuropsychological assessment has shifted from determining the neu-

roanatomical location of neuropathological change to characterizing cognitive, emotional, and behavioral sequelae of neurological events (Bennett, 2001). As members of a rehabilitation team, however, neuropsychologists and rehabilitation psychologists must not only measure brain-based changes in functioning psychometrically, but also be able to interpret the likely meaning of those changes with regard to the patient's daily activities and future goals. In neurorehabilitation, an emphasis on empirical understanding of neurological disease processes must be coupled with an emphasis on the human side of disability and the individual phenomenological experience of

*Address for correspondence: Brigid Waldron-Perrine, Department of Physical Medicine and Rehabilitation, Rehabilitation Psychology and Neuropsychology, University of Michigan; 325 East Eisenhower Parkway, Ann Arbor, MI 48108, USA. Tel.: +1 734 763 6496; Fax: +1 734 936 7048; E-mail: brigid@med.umich.edu.

neurological injury and associated sequelae (Dunn & Elliott, 2005).

2. Integrating intervention and assessment: Therapeutic assessment

Therapeutic assessment is an assessment approach that merges psychological testing methods with existential and humanistic principles to promote and facilitate the process of self-discovery (for review of the history of the approach, see Finn & Martin, 2013). In this approach, the evaluator not only gathers information for the purpose of answering the referral questions but, in the process, also aims to create a positive assessment experience by collaborating with the patient and (as appropriate) their family to inspire personally meaningful positive change and ultimately improve their lives (Finn, 2007).

Finn (2007) proposed several basic assumptions of the therapeutic assessment approach. The first assumption is that the patient, a support person, or provider/referral source has noticed a change in the behavioral and/or cognitive functioning of the patient and would like further information with regard to whether this change is supported by objective data, the magnitude and etiology of the change, and the implications of the change for the future. The second assumption is that the patient or support person is distressed because of the change, and that in order to manage their distress, they would like to know about appropriate strategies to maximize patient function across life domains. Finally, the approach assumes that although patients seek direction and guidance from the psychologist provider, they also desire their own questions and hypotheses to be respected, and should be empowered as participants in treatment and decision-making processes.

Therapeutic assessment emphasizes collaboration between the evaluator, patient, and support persons, and engaging the patient as an active participant in the process. Specifically, the evaluator elicits the patient's perspective with respect to the reasons for the assessment, their own test responses and behaviors, the significance of those responses and behaviors, and identifying appropriate next steps with regard to intervention or other recommendations. Eliciting the patient's participation in the assessment process is not only likely to enhance the quality of the assessment but also increase its utility to the referring provider, the patient, and the patient's support network. Collaboration allows patients to feel empowered and

encouraged, often resulting in greater depth and accuracy of information shared, a deeper understanding of the sociocultural factors at play, increased engagement, and improved follow-through with treatment recommendations (e.g., Brown & Morey, 2016). Patients are also more likely to be invested in the assessment process when they feel that the results will address personally meaningful concerns and goals (Lequerica & Kortte, 2010).

The first formal case study involving therapeutic assessment was published by Finn (2003). In the study, the author describes the collaborative assessment process and highlights how the assessment data were utilized to reconceptualize the treatment plan. A meta-analysis of psychological assessment as a therapeutic intervention (Poston & Hanson, 2010) revealed a robust overall effect size reflecting that two thirds of the treatment group means fell above the comparison group means. The authors concluded that psychological assessment procedures, when applied in a personalized and collaborative way, utilizing test feedback, can positively influence the treatment process in a clinically meaningful manner.

There is clear evidence in the scientific literature that therapeutic assessment is an effective clinical tool as generally applied. It is our conjecture that as a model applied to neurorehabilitation, therapeutic assessment fluidly merges the expertise of neuropsychologists in psychometric assessment, and rehabilitation psychologists in person-centered approaches and interventions. Given that many providers of neuropsychological assessment and intervention in neurorehabilitation practice dual specialization in these two related but separate disciplines, this model may provide a useful framework for a best-practice and evidence-guided approach.

3. Therapeutic assessment in neuropsychology: Collaborative therapeutic neuropsychological assessment

The utility of therapeutic assessment principles in the context of neurological rehabilitation is supported by their alignment with the basic tenets of rehabilitation psychology (Wright, 1983; Dunn & Elliott, 2005), which emphasize exploring the implications of neurological change in a person's day to day life with regard to their interactions with others, as well as medical and social systems, and the person-centered approach that is increasingly recognized as best prac-

tice in rehabilitation (Jesus, Bright, Kayes, & Cott, 2016).

Individuals referred for neuropsychological assessments in the context of neurological rehabilitation often have cognitive, emotional, and/or behavioral issues that require adjustment and adaptation on the part of the patient, and often support persons (e.g., spouses, family members) as well. In these cases, a therapeutic assessment approach can help patients and support persons better understand the patient's symptoms and limitations and to set and achieve personally meaningful goals, for a better quality of life overall.

Interestingly, despite the apparent utility of therapeutic assessment practices in neuropsychological assessment, there is very little literature delineating or supporting this approach in the area of neuropsychology. For example, a PubMed search of the terms "therapeutic assessment in neuropsychology"; "therapeutic neuropsychological assessment"; "therapeutic neuropsychology"; "therapeutic assessment personality testing" produced only three articles, two of which were irrelevant. In fact, the only substantial work in this area has been done by Smith and Gorske (2008) through their description of an approach entitled Collaborative Therapeutic Neuropsychological Assessment (CTNA). These authors discuss the evidence base supporting the view of the rehabilitation context as holistic, and emphasize the importance of a collaborative and stable working alliance (between the patient and clinician), a person-centered interaction style, and open sharing of diagnostic and other clinical information, in order to maximize patient empowerment in the context of neuropsychological assessment. They outline three specific goals of CTNA, which include (1) responding to the referral questions of both the referring professional and the individual patient, (2) maximizing the patient's experience of feeling heard and understood, and (3) providing the patient with an experience that influences their personal narrative, ultimately leading to increased growth and acceptance in ways that are congruent with a positive sense of self.

3.1. *The interview*

The focus of the initial interview in this model is on gathering different types of information in order to better understand the patient's functioning within their biopsychosocial context as well as their goals and wishes for the assessment. In

addition to gathering objective information about health facts, the patient's subjective experience of a problem, and collateral report of function, the clinician is encouraged to explore the dynamics within patient caregiver dyads, as well as belief systems surrounding health management. Additionally, assessment of factors related to emotional and behavioral resilience, character strengths, personally-held values and positive coping resources (including social support networks) not only adds depth to the clinician's conceptualization of the patient but may in fact alter the patient's ultimate rehabilitation trajectory. Indeed, there is evidence that infusion of aspects of resilience and strength into communication of the impact of neurological injury on neuropsychological functioning and expectation for recovery likely positively influences patients' ultimate rehabilitation trajectories (White, Driver & Warren, 2008; Neils-Strunias, Paul, Clark, Mudar, Duff, et al., 2017).

The interview represents the first opportunity to begin the process of helping the patient change. It may be useful to begin making specific behavioral recommendations that are already clearly indicated, such as efforts towards modification of health behaviors (e.g., follow-up care, sleep hygiene, nutrition, hydration, medication use, exercise, substance use, etc.). On the basis of what we know about general principles of learning, the possibility of behavior change is increased when a patient has multiple opportunities to process recommendations and consider potential ways to implement them.

3.2. *Test selection*

In the context of a therapeutic assessment, test selection is not only based on the presenting condition but also considers the patient's reported symptoms and the importance of gathering data to investigate their hypotheses about their cognitive functioning as relevant to their individual life contexts. This may include investigating psychological domains that are not often assessed (e.g., anger, anxiety, personality functioning) or deviating from standard test administration procedures i.e., utilizing informal methods or testing of limits of standardized measures to elucidate aspects of the patient's experience that are difficult to capture through standardized approaches. Exploring a patient's thought patterns directly (e.g., by way of a sentence completion test or other measure of written thought expression) may also be useful in developing the overall case conceptualization and later providing

meaningful feedback reflective of the patient's own experiences.

3.3. Feedback

Neuropsychological assessments typically involve a feedback session with the patient and support persons (Smith, Wiggins, & Gorske, 2007) to review test findings, behavioral observations, and the relationships between test results and the patient's real-world problems. In the context of neurological rehabilitation, neuropsychological test feedback has been shown to help patients and their families cope with the consequences of neurological injury (Gass & Brown, 1992; Rosado et al., 2018). In this model, the patient and support persons are enlisted as co-interpreters of the test findings and empowered to generate ideas about treatment and make decisions about what behaviors to pursue.

The scientific literature emphasizes the importance of describing the purpose of the testing and interpreting the results in language that is accessible to the patient, with considerations made for health literacy (Hahn et al., 2020). The test results should be described as examples of functioning and behavior that might contribute understanding of the patient's function in other life areas, while at the same time acknowledgement is made of test limitations, particularly with regard to ecological validity (Spooner & Pachana, 2006; Marcotte, Scott, Kamat & Heaton, 2010). Where possible, the provider is encouraged to make connections between test performances and everyday functioning on the basis of empirical evidence and theoretical underpinnings (e.g., utility of the Trail Making Test and Digit Vigilance Test with respect to driving ability), to help the patient understand implications of test results for day-to-day functioning. Throughout the process, providers are encouraged to engage the patient by eliciting patient reactions and reflections, and address any questions they may have.

It may also be useful for the clinician to inquire about the patient's experience in taking a particular test. Inviting patients to share their subjective experience, while presenting them with objective test data, can help build the patient's awareness of any differences, such as those seen in anosagnosia (i.e., the patient believes they are functioning normally but their test results reveal impairments; Prigatano, 2009), or "cogniform" condition (i.e., a tendency towards over-report of cognitive difficulties; Delis & Wetter, 2007). Elucidating discrepancies between the

patient's experience and the provider's explanation during the feedback session provides an opportunity for the discrepancies to be processed *in vivo* (Carone, 2017), ultimately setting the stage for behavioral change.

3.3.1. Proposed role of MI in feedback

Many principles of motivational interviewing (MI) are particularly relevant within the context of CTNA feedback in neurorehabilitation, given their alignment with the principles of rehabilitation psychology (Wright, 1983) and a general humanistic approach to treatment (Rollnick et al., 2010). In a neurorehabilitation context, patient may be experiencing functional disability for the first time in their life, and may have difficulty for myriad reasons understanding the nature and extent of their challenges, and appropriate rehabilitation approaches for management. When used in the context of giving challenging feedback as related to functional or cognitive challenges, empathy and perspective taking are likely to help lower the patient's resistance to hearing difficult or discrepant information, as is normalizing assumptions, negative thought patterns, and distressing experiences in a neurorehabilitation context. Global support and displays of warmth and caring towards the patient further self-efficacy, whereas emphasizing the belief that positive changes are possible sets the stage for an overall positive and resilience-building feedback experience. During the feedback session, the provider is encouraged to utilize the acronym "RULE": resist telling the patient what to do; understand their needs, values, motivations and barriers; listen with empathy; and empower the patient to set achievable goals and navigate challenges (Beauvais, 2019). These principles help optimize patient empowerment and self-management, a clear emphasis throughout neurological rehabilitation research (Hahn, 2020).

Another goal in the provision of neuropsychological assessment feedback is, as stated previously, to help the patient engage in incremental meaningful behavioral change. Thus, consideration for the patient's current stage of change should be made with regard to individual desired behaviors (Norcross, Krebs & Porchaska, 2011). In the neurological rehabilitation context, these may include maximizing engagement in skilled rehabilitation or home exercise programs, modification of health behaviors (e.g., substance use, medication adherence), and compliance with other medical recommendations (CPAP, BP, or GLU testing, sleep hygiene, etc.). Patients may cycle through the stages of pre-contemplation, con-

templation, determination, action, maintenance, and recurrence throughout their rehabilitation trajectory. Exploring the patient's reasons for and against change and reflecting resistance are likely to positively influence the trajectory of change (Rollnick, Butler, Kinnersley, Gregory & Mash, 2010). Exploring a patient's stage of change with regard to individual behavioral goals should be considered a component of the assessment, whereas the therapeutic assessment intervention should aim to function as a catalyst for movement between stages. Although likely relevant to the rehabilitation team as a whole, the extent to which readiness for change data is shared with the patient should depend on the readiness and ability of the patient to integrate this information into their understanding of themselves in the context of the assessment.

3.3.2. *Managing patient resistance*

The ultimate goal of a therapeutic assessment and feedback in a neurorehabilitation context is to develop a plan for the patient to continue rehabilitation and optimize their cognitive, behavioral and emotional functioning. It is not uncommon for providers to experience some degree of patient resistance to interpretations and recommendations during the feedback session, particularly when the findings of the evaluation and the provider's interpretation are discrepant from the patient's subjective narrative relating to the impact of their neurological event on their cognitive, behavioral and emotional functioning. In such situations, having a well-established rapport and setting a tone of openness to interpretation of meaning of the data will be helpful (Goerske & Smith, 2008). From this framework, the provider may be able to offer a cognitive reframe or alternate interpretation of the information interpreted in a negative manner by the patient. Throughout the feedback, the provider is encouraged to emphasize aspects of personal choice and control on the part of the patient, and to emphasize findings of cognitive and emotional strengths to help maintain motivation to move forward in the most positive way possible.

In the spirit of emphasizing the integration of assessment feedback and initiation of therapeutic change within this model of care, the provider should elicit the patient's thoughts and ideas on ways in which they might be able to use the information discussed in feedback, and to gently guide them in identifying specific targets for behavior change and making decisions about implementing appropriate supports. Throughout the assessment and

feedback process, the provider should use commitment language and change talk while exploring the patient's desire, ability, perceived reasons, and need for change. The stage for treatment can be set by reflecting out loud the patient's self-acknowledged thoughts, beliefs and values, and treatment recommendations can be made within this context, thus increasing the likelihood of follow-through.

4. **Giving feedback on failed PVTs or elevated SVTs in a rehabilitation context**

There is a strong consensus within the field that evidence-based neuropsychological practice should universally include consideration of validity issues and use of performance validity tests (PVTs) and symptom validity tests (SVTs; e.g., Bush et al., 2005; Heilbronner et al., 2009; Sweet et al., 2021). Although numerous factors have been posited to account for suboptimal PVT and SVT scores, the only psychometrically valid conclusion that can be made by clinicians in the context of such scores is that additional neuropsychological test data is reflective of at least the patient's lowest level of functioning (that is, performances average or better indicate intact abilities regardless of engagement), and is otherwise invalid for meaningful interpretation (Green & Merten, 2013).

In explaining symptom and performance invalidity to patients, providers are encouraged to state that the patient appeared to have difficulty fully engaging in the tasks asked of them and, to reduce resistance, explore with the patient the reasons for this (Carone, Iverson and Busy, 2010). The provider can describe the validity concerns as "noise" in the information generated, akin to "motion artifact" on an x-ray or MRI (Postal & Armstrong, 2013). The neuropsychologist may also serve the patient well by highlighting any intact abilities demonstrated by the patient in the context of the neuropsychological evaluation. Highlighting patients' strengths can be reassuring to them, serving to correct erroneous beliefs about themselves, particularly if these cognitive strengths occur within domains that are sensitive to a patient's neurological injury.

With regard to SVTs, elevations can be discussed as distress "spotlights" in particular areas, and the patient's desire to communicate the intensity of their subjective experience can be reflected. Again, it is important for the clinician to remember that in the context of elevated SVTs, other scales within the

same measure should not be interpreted as clinically meaningful but rather reflective of the patient's engagement in impression management with regard to symptomatology. Interpretation of other measures should cautiously occur from the framework of tendency towards symptom over-endorsement or amplification.

In responding to PVT and SVT data in feedback to the patient, the patient's need to feel heard with regard to their interpretations and experiences should be noted, along with a gentle effort to guide them towards changing how they approach their own thoughts, feelings and behaviors. Explaining symptoms in terms of empirically-established cognitive and behavioral theory (i.e., ACT, as described below) may help the patient see an opportunity for meaningful change with evidence-based intervention, potentially resulting in improvement of function.

Of note, the neuropsychological literature is clear that primary and secondary gain factors often influence performance on PVTs and SVTs and should be considered in the differential in all conceptualizations (Millis, 2008). Where there is evidence to suggest considerable influence of such factors, therapeutic change may prove extraordinarily challenging and therapeutic efforts should be appropriately conserved.

5. Initiating psychological intervention in a neurological rehabilitation context

Acceptance and commitment therapy (ACT) is often referred to as a third wave cognitive behavioral intervention, and has been described as "existential humanistic cognitive behavioral therapy" (Hayes, Luoma, Bond, Masuda & Lillis, 2006; Harris, 2011). The goal of ACT is to help individuals take effective action in their lives that is guided by their individual values, using willingness and mindfulness to stay present and engaged, while experiencing unpleasant and unwanted physical, cognitive and emotional experiences that cannot be avoided. In other words, by accepting thoughts and feelings as they are, we can redirect any energy that would be spent struggling with those experiences toward meaningful behaviors.

The ACT framework can be particularly useful when delivering neuropsychological feedback in the context of neurological rehabilitation. Not surprisingly, acceptance can be a challenging concept for

persons who have experienced neurological injury and illness. There is a considerable literature indicating the importance of the construct of acceptance and acceptance-based interventions, including ACT specifically, in neurological injury and associated sequelae (Kangas & McDonald, 2011; Soo, Tate & Lane-Brown, 2011; Whiting, Deane, Simpson, McLeod & Ciarrochi, 2017; Graham, Gouick, Krahe, & Gillanders, 2016). It is important in the neurorehabilitation context to highlight for patients that acceptance as discussed in ACT is intended as a moment-to-moment decision, not a decision that is future focused or associated with giving up hope for improvement in one's condition or ability to function. In feedback, the concept of acceptance of the present moment experience can be gently introduced as an alternative to struggling against powerful thoughts and feelings. Taking the opportunity in feedback to set this stage can be immensely useful to the therapeutic process.

A patient's internal experience of worry and catastrophizing thoughts can be normalized through the ACT lens, which emphasizes the role of language in the human experience of suffering. The nature of thoughts versus self (i.e., in ACT language, self-as-context, or observer self) can be explored via use of metaphor including "I am the sky, not the clouds", or "Passengers on the bus" (Stoddard & Afari, 2014). Patients can often quickly grasp the concept of cognitive defusion (i.e., separating oneself from one's thoughts) through the use of metaphors, although consistent application universally requires considerable practice. Similarly, the concept of emotional acceptance and the importance of willingness can be communicated via metaphor including "chemotherapy for cancer" or "tug of war" (Stoddard & Afari, 2014).

By describing the basic tenets of ACT in feedback, using metaphors that incorporate examples of the patient's own reported values, thoughts, and emotional experiences, the clinician can help the patient understand how psychotherapeutic intervention and skill building with regard to mindfulness, emotional expansion, cognitive defusion, and committed action may help them move forward in their lives in the most positive way possible. ACT's emphases on behavioral activation via exploration of values and committed action, and the general principles of exposure to reduce distress are consistent with general engagement and person-centered principles known to be effective across rehabilitation contexts (Dunn & Elliott, 2005).

6. A brief case study

Mr. Doe is a 31-year-old left handed Latin-American male credited with 16 years of education. Mr. Doe requested a repeat neuropsychological evaluation after sustaining an anoxic brain injury eight years ago.

Mr. Doe is the oldest of two siblings, and has one younger sister. His birth was complicated by a prolonged labor and respiratory complications. In childhood, Mr. Doe had difficulties with asthma and persistent ear infections as well as associated mildly delayed communication and difficulties with concentration and attention. Mr. Doe reported that he grew up in a conflictual home in which his parents argued. The patient described that he was often labelled “aggressive” and “angry” both prior to and after his brain injury because he sometimes exhibited outbursts that were thought to be out of proportion to the incidents in question. For example, he reported being inconsolable for 10 minutes after dropping a plate of food, and punching a wall after accidentally knocking over a stack of books in his bedroom.

At the start of his freshman year of college, Mr. Doe began to engage in polysubstance experimentation, resulting in poor class attendance and a referral to the school’s health center where he was diagnosed with generalized anxiety disorder. He described efforts towards obtaining prescription medications and noted that he used alcohol, nicotine and marijuana as well as multiple prescription medications including stimulants and benzodiazepines to varying degrees during that time period. Mr. Doe’s parents withdrew him from school during his sophomore year to attend substance use rehabilitation programs. Mr. Doe reported that he left or was kicked out of four different inpatient programs.

Eight years prior to the evaluation, Mr. Doe became very ill in the context of chronic cigarette, e-cigarette, marijuana, and alcohol use, as well as poor nutrition and sleep. Mr. Doe reported that he felt very ill for 2 weeks but refused to seek medical care as he believed he could take care of himself. His girlfriend eventually found him lying unconscious and called an ambulance. He was diagnosed with severe pneumonia, sepsis, total system failure, and encephalitis, which resulted in global anoxic encephalopathy. His hospital stay included seven days in acute care, three weeks in neurological ICU, four months of subacute care, six weeks of inpatient rehabilitation, and three years of consistent outpatient rehabilita-

tion up until the time of this evaluation. In that time, Mr. Doe also returned to school and successfully completed his bachelor degree with the aid of accommodations.

Mr. Doe had completed two prior neuropsychological evaluations at the time this assessment was requested, the most recent of which was five years prior (three years post injury). Although the second assessment would have likely captured most of the spontaneous recovery of cognitive functioning following his anoxic encephalopathy, Mr. Doe had since completed his college degree, and he and his father suggested that his cognitive function may have improved further since the previous assessment.

6.1. *Current functioning*

At the time of the evaluation, Mr. Doe resided with his parents and younger sister, and his parents were in the midst of a divorce. His sister had recently completed higher education and was working to determine her next career step. Mr. Doe utilized a wheelchair secondary to ongoing bilateral ataxia of the upper and lower extremities. He was described as modified independent for toileting and eating but required assistance for all other activities of daily living.

Mr. Doe denied overt distress during the clinical interview. He described no difficulty in maintaining abstinence from substances since his brain injury, and reported coping in adaptive and positive ways generally. Mr. Doe expressed interest in exploring the possibilities of returning to driving or moving forward with regard to school or a specific occupation. He described his family as a significant source of support, but also noted a challenging familial dynamic. He reported a particularly conflictual relationship with his father who was highly involved in his care. Mr. Doe expressed a strong interest in learning to better understand and manage his experiences, especially why he was such an “angry person”.

Therapeutic questions: Both Mr. Doe and his father were present for his intake evaluation. Working collaboratively with the provider, they identified the following questions to be addressed as part of the assessment:

- What has been my neuropsychological recovery since my last evaluation?

Table 1
Neuropsychological test battery utilized with Mr. Doe

Test name
Cognitive and validity tests
ACS Word Choice
California Verbal Learning Test-3 (CVLT-3) ^c
Delis-Kaplan Executive Function System (D-KEFS) ^b : Color-Word Interference, Verbal Fluency
Grooved Pegboard Test ^a
Medical Symptom Validity Test (MSVT)
Neuropsychological Assessment Battery (NAB) ^d : Judgment, Naming
Rey Complex Figure Test (RCFT) ^c
Test of Premorbid Functioning (TOPF) ^d
Trail Making Test A & B (TMT) ^a
Wechsler Adult Intelligence Scale-4 (WAIS-IV) ^a
Wechsler Individual Achievement Test (WIAT-III) ^a : Essay
Wechsler Memory Scales-4 (WMS-IV)-Logical Memory I,II+Recognition ^a
Wisconsin Card Sorting Test (WCST) ^b
Self-report measures
Behavioral Rating Inventory of Executive Function (BRIEF): Self
Minnesota Multiphasic Personality Inventory-2-Restructured Form (MMPI-2-RF)
Rotter Incomplete Sentences
State-Trait Anger Expression Inventory (STAXI)

^aAge, education, and gender corrected norms utilized. ^bAge and education corrected norms utilized. ^cAge and gender corrected norms utilized. ^dAge corrected norms utilized.

- What are appropriate educational and occupational pursuits for me?
- What types of treatment do I need to address current cognitive, behavioral, and emotional needs at this time?
- Why am I such an angry person?

6.2. Feedback and therapy course

Upon completion of testing (see Table 1 and 2 for testing details), a formal feedback session was held with Mr. Doe and his father, and followed by subsequent individual therapy appointments with Mr. Doe. Given the amount of data and the patient's cognitive limitations, a collaborative ongoing feedback approach was utilized, which emphasized revisiting neuropsychological data with Mr. Doe throughout his therapy appointments. This process included:

1. Eliciting reflections from Mr. Doe about his self-perceived performance on various testing measures, as well as any emotional responses particular measures elicited.
2. Reviewing Mr. Doe's testing results with built in opportunities for him and his father to ask questions or share their thoughts about specific findings.
3. Showing Mr. Doe visual representations of his performance whenever possible, i.e. the WAIS-IV and CVLT-II graphical representations of

data and his Rey Complex Figure as compared to the exemplar.

4. Collaboratively discussing the findings with regard to the assessment questions posed by the patient.
5. Exploring disagreements with regard to findings of impairment despite feelings of capability in particular areas (i.e., driving capability).
6. Exploring ambivalence surrounding acceptance of findings of limitations, and acknowledging potential consequences of engaging impulsively in activities outside of the scope of ability without support.

The therapy appointments following the feedback allowed for more in-depth discussion of the findings related to his initial questions.

6.2.1. What has been my neuropsychological recovery since my last evaluation?

During the feedback session, the provider reviewed Mr. Doe's neuropsychological test results with Mr. Doe and his father. The provider explained that Mr. Doe's neuropsychological profile revealed stable psychometric functioning as compared to five years prior, as would be expected at this time point post event. Strengths were noted in the areas of language and memory functioning, as well as some aspects of executive functioning including safety awareness, mental speed, and inhibitory control. Notable areas of sig-

Table 2
Summary of results

Neuropsychological test results summary for Mr. Doe

- Estimated baseline functioning fell in the high average range
 - Overall functioning was similar to previous evaluation.
 - Average performances were obtained on tasks within the domain of verbal comprehension, below average performances obtained on tasks within the domain of working memory, and exceptionally low scores obtained on tasks within the domains of perceptual reasoning and visual processing speed.
 - Strengths were seen in the domains of language and auditory and visual (recognition) memory, and he demonstrated adequate knowledge of safety concerns and good safety judgments.
 - Performance on a task requiring inhibition of a pre-potent response was average.
 - Performance was in the above average range for speed of word generation.
 - Considerable difficulty was seen with tasks requiring visual processing or higher-order cognitive abilities/executive functions including slowed speed when required to integrate visual and motor functioning.
 - Mr. Doe's performance revealed that he was unable to engage in flexibility in thinking on tasks requiring set switching, sequencing, and pattern identification.
 - His ability to copy a complex figure produced an exceptionally low score secondary to speed, poor overall perception of gestalt, and difficulty planning and organizing integration of detail.
 - Performance on an essay writing task was notable for significant slowness and paucity of content. Organization was somewhat elementary and included a bulleted format and little expansive detail.
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nificant weakness included visual spatial integration and synthesis and speed of visual processing, as well as flexibility in thinking and ability to maintain particular response sets over time. Mr. Doe and his father appeared to be distrustful of the veracity of the findings, and disappointed that greater gains were not detected. The provider expressed empathy and acceptance of the patient/family perspective, while staying grounded in knowledge of neuropsychological patterns of recovery and functioning, and the reliability and validity of the test data. The provider also engaged Mr. Doe and his father in a discussion of the relative importance of changes in neuropsychological test scores versus achievement of functional gains that promote independence in activities of daily living and enable an individual to take action towards valued behaviors. The patient's resilience and drive to develop independence and overcome his deficits was highlighted, leading to greater buy-in from both Mr. Doe and his father.

Qualitatively, the provider showed Mr. Doe his Rey Complex Figure Copy and highlighted his focus on the details in one corner of the figure. This focus on specific detail was to the detriment of the overall Gestalt of the image. Mr. Doe expressed some ambivalence towards this idea. Provider utilized motivational interviewing and cognitive therapy approaches, via exploration of his ambivalence and subsequent reframing of his perspective surrounding this information, ultimately empowering him to use

this new information and perspective to support his desire for independence. This theme of "missing the forest for the trees" (focusing on the smaller details and missing the wider picture) was one that was revisited throughout therapy. Provider would often ask the patient to "step back" and consider "what else might [he] be missing?".

At his first post-assessment therapy appointment, Mr. Doe reported having been overwhelmed and disappointed by the information that his cognition had not changed psychometrically during the initial feedback session. He reported having been unable to absorb any other information that was presented after this initial summary. This allowed the provider to engage Mr. Doe in a discussion about how he felt his completion of his bachelor's degree and current level of functioning was discrepant with his cognitive testing. Through discussion, the provider helped the patient to reframe how the discrepancy was actually a tribute to Mr. Doe's adaptability, resilience, tenacity and perseverance towards his goals.

6.2.2. *What are appropriate educational and occupational pursuits for me?*

Mr. Doe reported that since completing his bachelor's degree, he had been considering pursuing graduate education. In light of cognitive testing results, the provider cautioned the patient that graduate school would represent a very challenging pursuit. Mr. Doe presented with some resistance, and chal-

lenged the provider with the argument that he was told the same thing about college but was able to obtain his bachelors degree. The provider reflected his perseverance and gently shifted the discussion to values identification to help both parties understand the values that drove him towards his fields of interest. Through discussion, Mr. Doe identified that he wanted to work directly with people, that he wanted to influence change or be a “voice” for others, and that he valued his independence. Both parties eventually agreed that Mr. Doe should take more time to think about his future educational and occupational options, now that he better understood his cognitive capabilities and the values most important to him.

The combination of neuropsychological understanding of his current abilities and values identification allowed Mr. Doe to set realistic action-oriented goals that would allow him exposure to various fields of interest.

Shortly after the assessment and initial therapy sessions, he began work for a non-profit organization focused on empowering black youth. He has found this work to be rewarding as it aligned with his identified values.

6.2.3. *What types of treatment do I need to address current cognitive, behavioral, and emotional needs at this time?*

In terms of cognitive rehabilitation, Mr. Doe was informed that he was largely already engaging in the appropriate treatments (SLP interventions) and had already established strong organizational systems through the use of his phone calendar and reminders applications.

Behaviorally, Mr. Doe had identified a value of independence and worked with the therapy provider to set specific weekly goals that were driven by this value.

Consistent with neuropsychological test findings, other observation and test-based data revealed Mr. Doe’s tendency toward concrete and rigid thinking, as well as a tendency to engage in “all or nothing” thought and emotion patterns. For example, on the Rotter Incomplete Sentences test, wherein he was given the beginning of a sentence and asked to complete it, Mr. Doe’s responses demonstrated his denial of suffering and negative emotionality, as well as inflexible ideas about broad concepts. When asked to complete the sentence, “I suffer . . .” he responded “I don’t”. When given “what pains me . . .”, he responded “nothing”. When given the prompt, “marriage”, he responded “not worth it.” In the context

of ongoing collaborative feedback, Mr. Doe was engaged in an exploration of the pitfalls of his highly logical approach to life, his concrete answers, the absence of emotion words in his responses, and his denial of negative emotions. The provider and patient discussed the relative contribution of each of these factors to his initial illness (denial of suffering), not seeking medical care (concrete thinking of “I can take care of myself”), and his apparent non-response to his parents’ divorce (denial of negative emotionality). The roots and advantages of his thinking patterns were also discussed as they related to his tenacity and perseverance for engaging in prescribed exercises regardless of his level of pain or distress. Mr. Doe was engaged in some basic aspects of cognitive therapy to address problematic thinking patterns and practice metacognition surrounding his thoughts.

6.2.4. *Why am I such an angry person?*

Mr. Doe’s responses on self-reported measures of personality and psychopathology (MMPI-2-RF) yielded no elevations of concern with regard to validity. He endorsed an above average level of positive emotional experiences as well as general cynicism. He endorsed concern with regard to neurological complaints but no other aspects of distress. His responses indicated extremely low levels of passivity, social avoidance and shyness as well as a general tendency towards extraversion and an unconstrained personality style. More revealingly, on the STAXI-2, his responses revealed very low state and trait based anger, in contrast to his previously stated beliefs about his experience of anger. His scores indicated that as opposed to overly expressing anger, he actually had a tendency to internalize anger and negative feelings, placing him at greater risk for depression, social withdrawal, and uncontrollable outbursts.

Mr. Doe was resistant to the finding that he is not, by definition, an “angry person”. He initially cited multiple examples of his “anger” as pointed out to him by family members. Through discussion, Mr. Doe revealed that he had consistently received the message from his family that he was an “angry” person. He eventually acknowledged that he may have internalized this message to such an extent that he identified any negative emotional experience as anger. A therapeutic goal was developed to help him begin to recognize nuance of negative emotion, and to label those feelings with words other than anger. The provider also drew from his previously identified con-

crete thought patterns and how they may have been playing into his resistance. This topic was revisited later in therapy during a conversation surrounding his parents' divorce. Mr. Doe reported in the latter session that his mood had been lower recently but was unsure why. When he recalled his week, he described multiple instances of being in the same room as the interpersonal conflict of others. In line with therapeutic goals of utilizing more emotion based words, he identified that these instances made him "upset, annoyed, and disappointed". He also revealed that he had not shared recent family challenges with friends. The provider utilized this opportunity to revisit the STAXI-2 findings, suggesting that his suppression of negative emotions had led to feelings of depression and social withdrawal without him even realizing this had occurred. This represented a key revelation for Mr. Doe and allowed him to further engage in behavioral action to establish boundaries with others and express his emotions to others in ways consistent with his values.

7. Conclusion

It is quite common in neurological rehabilitation populations for a patient's clinical presentation to be determined by a complex interplay of neurological, psychological, and psychosocial factors. Patients with limited coping resources, complex psychosocial situations, psychiatric histories, and interpersonally challenging personality characteristics may present after neurological injury in ways that challenge rehabilitation providers and the system of care.

Therapeutic assessment, specifically collaborative therapeutic neuropsychological assessment (Gorske & Smith, 2008), has not been explored in the neuropsychological literature as a formal approach, although there is empirical support for individual components such as therapeutic assessment (Poston & Hanson, 2010), and feedback sessions that emphasize motivational interviewing (Norcross, Krebs & Prochaska, 2011; Beauvais, 2019) and humanistic approaches (Fallows & Hilsabeck, 2013; Postal & Armstrong, 2013; Carone, 2017). Therapeutic assessment involves collaboratively engaging the patient and any support persons as active participants in the assessment process from the time of the initial interview. Asking patients to generate their own questions about their functioning, and to develop hypotheses about their current and future functioning maximizes

engagement in the process. Such exploration also provides the examiner with important information about the patient's unique perspective based on their life experiences, ultimately resulting in cognitive and behavioral patterns that, when reflected back to the patient as such, can promote insight and opportunity for growth and change.

CTNA presents an opportunity for characterization of myriad psychosocial and medical influences on cognitive, behavioral and emotional presentation across both the controlled testing environment and in everyday life. The patient's culture and other unique aspects of their experience in living should be thoroughly explored in the context of a therapeutic assessment to ensure not only that such factors are acknowledged, but that they are incorporated into the understanding of the patient within a larger complex psychosocial system. In provision of feedback, regardless of the etiology of the patient's day-to-day challenges, the emphasis on moving forward is universally on a balance of functional restoration and compensation for difficulties.

Understanding both neurological and psychological contributions to the patient's subjective experience enables the provider to recommend patient-centered coping resources and interventions including cognitive compensatory strategies and cognitive and behavioral emotional regulation tools. Regardless of the amount of variance in cognitive test performance accounted for by neurological versus non-neurological factors, an ongoing goal of the therapeutic assessment is to ultimately begin to help the patient minimize engagement with dysfunctional thoughts that contribute to health and existential anxiety. A task of the provider may be to help positively influence the patient's attitude about their experience of neuropsychological sequelae, emphasizing the utility of an acceptance-based approach.

Communication of the complex interplay of factors contributing to the patient's experience to the patients themselves may be aided via use of metaphors as well as reflection of the patient's own words as evidence of their thought patterns. Although not previously considered a component of CTNA, integration of elements of ACT, an empirically-supported cognitive behavioral intervention into the CTNA approach in a neurological rehabilitation context may also be useful. The conceptual underpinnings of ACT align extremely well with the principles of rehabilitation psychology with emphasis on emotional acceptance and behavior change, and there is an emerging literature on the use of ACT across

neurorehabilitation populations. Application of the ACT framework to neuropsychological assessment in neurorehabilitation may help the provider translate neuropsychological test data including behavioral and psychometric evidence of cognitive and emotional functioning into a meaningful plan for behavior change on the part of the patient (Hayes et al., 2006; Harris, 2011).

Given that neurological rehabilitation often takes place in an interdisciplinary setting, those practicing CTNA in this context would be remiss to not involve the patient's care team in identifying goals and challenges relevant to the patient's success, and ensuring an integrated and holistic approach to care. The neuropsychologist's engagement with the team in communication about the patient's behaviors and progress likely reduces the risk of overlooking or missing factors that may influence rehabilitation outcomes (Sarajuuri et al., 2005; Strasser et al., 2008). Such engagement also provides context for interpreting the neuropsychological test results, enabling the practitioner to draw directly on examples from the patient's rehabilitation therapies to illustrate how specific cognitive, psychological, or behavioral difficulties impact their participation in rehabilitation and their day-to-day functioning overall. In integrated team treatment environments, the neuropsychologist provider may share information about TA, MI, and ACT principles with other members of the rehabilitation team as general tools for goal facilitation, so as to also promote consistent messaging to the patient and support persons.

Despite representing useful approaches for use with neurologically injured individuals, CTNA, MI, and ACT are not without limitations. These approaches may be more difficult to use with patients and support persons who, for example, might be in denial of the presence or extent of cognitive, psychological, and behavioral challenges, as well as those with unrealistic expectations of a full recovery. Although the full treatment models of these interventions may not always be appropriate in neurological rehabilitation contexts given patient cognitive or behavioral limitations, emphasis on the basic tenets of TA, MI and ACT is universally appropriate for the task of assisting patients with neurological injury and their families as they adjust, adapt and move forward after a significant life event. Further research demonstrating the specific utility of CTNA in a neurological rehabilitation population is necessary. In particular, efforts to establish which general principles are most influential in maximizing patient outcomes would be

helpful in deciding which to emphasize and facilitate not just in the context of neuropsychology and rehabilitation psychology, but throughout interdisciplinary neurological rehabilitation practice.

Conflict of interest

None of the authors have any conflicts of interest to declare.

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