Neuropsychological Feedback as a Therapeutic Intervention

The Effective Communication of Assessment Results to Maximize Patient Outcome

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KEYWORDS

• Neuropsychological feedback • Therapeutic assessment • Feedback that sticks
• Neuropsychological intervention • Models of feedback

KEY POINTS

- Neuropsychological feedback (NF) is a therapeutic intervention designed to maximize patient's outcome.
- NF is considered a core competency of neuropsychological training and practice.
- Neuropsychologists have published guidelines/models and strategies to maximize the impact of feedback, both generally and within specific patient populations.
- During NF neuropsychologists work collaboratively with patients. They emphasize active listening and carefully crafted feedback strategies to support a patient's ability to accept potentially life changing findings, understand their implications, foster hope and empower patients/family members as advocates to further support their quality of life.

INTRODUCTION

Neuropsychological assessments are designed to evaluate a patient's cognitive, emotional, and adaptive functioning in the context of their biopsychosocial history and current psychological and behavioral functioning. In some instances, evaluations are used to clarify a patient's diagnostic presentation, while in others the focus is on documenting neurocognitive strengths and weaknesses to further characterize

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contributing etiologic factors. Regardless of the reason for referral, the ultimate goal of the neuropsychological assessment is to generate treatment recommendations based on the patient's complex needs.

When patients are referred for neuropsychological evaluations to assist with diagnostic clarity, some neuropsychologists share their conclusions directly with the patient and/or family. Others work in multi-disciplinary clinics where diagnoses and/or summaries of their medical status are shared by a team physician. In either case, neuropsychologists typically meet with patients after the assessment for a neuropsychological feedback (NF). Notably, while performance and diagnostic profiles are commonly addressed during this conversation, NF is never "just" about sharing test scores or a diagnosis. Rather, NF is a therapeutic intervention designed to maximize the patient's outcome.[1]

During feedback sessions, neuropsychologists strive to translate complex psychometric, historical, and medical findings into language that is vivid, accessible, and meaningful to the patient and/or family. Information is delivered through patient-centered strategies designed to help patients shape their personal narrative and apply their new understanding to everyday experiences. When done successfully, these collaborative discussions can be used to reframe previous misconceptions, which in turn can help patients understand and accept challenging or unexpected findings. They also allow neuropsychologists to assess and mitigate potential barriers to treatment adherence so as to support medical compliance and patient engagement with their medical team.[2,3] Finally, neuropsychologists use NF to foster hope within the context of a patient's diagnosis or prognosis, while empowering patients/family members as advocates to further support their quality of life.

Neuropsychologists as Conveyors of Feedback

Neuropsychological training emphasizes several areas of study including: (1) neurodevelopmental, neuropsychiatric, and neurologic disorders/syndromes and their treatment, (2) psychopathology/psychiatric conditions and their treatment, (3) psychological theory and psychotherapeutic interventions, and (4) neuropsychological assessment, statistical analysis of test results, and psychometric properties of assessment measures. The combination of these skills supports neuropsychologists in their ability to not only interpret neurocognitive test results within a complex biopsychosocial context, but also to work therapeutically with patients to facilitate positive behavioral change. As such, the delivery of NF has been increasingly emphasized as an essential core competency,[4] that is also supported by a growing literature.

In fact, research on NF has expanded significantly over the past 30 years.[5] For example, contemporary publications have led to the development of guidelines/models for the general provision of feedback,[6–9] as well as NF models for specific patient populations including: older adults,[10] children,[11–14] and patients in neurologic rehabilitation settings,[15] to name a few. Frameworks have also been developed to support neuropsychologists in their ability to manage specific clinical situations such as failed effort testing with both adults and children,[12,16,17] as well as in cases where strongly held beliefs about impairment must be challenged/reframed in the setting of intact cognitive testing.[18] Finally, qualitative research has provided further guidance on the intentional and strategic selection of communication styles, stories, and "clinical pearls" to support effective and memorable feedback.[1]

Within this context, concomitant outcome-based research has documented high patient satisfaction for neuropsychological assessments and their associated feedback sessions.[2,3,13,19–22] Equally important, NF is increasingly associated with positive

clinical impact on patient outcomes across populations. For example, in patients with multiple sclerosis, NF was associated with significant improvement in perceived everyday cognitive functioning, self-efficacy, and mood at follow-up, even when patients were confronted with evidence of cognitive impairment.[2] Pediatric and adult populations have demonstrated reduced psychiatric symptoms up to 6 months after NF when using collaborative and therapeutic models.[13] Similarly, fewer psychiatric and cognitive symptoms were reported in an adult neuropsychiatric population 1 month after in-person NF.[21] Finally, in multidisciplinary settings, NF has been found to facilitate memory of assessment results,[20] and to support better understanding and acceptance of recommendations, ultimately leading to improved quality of life.[2,3]

With the growing understanding of how to convey NF and its contribution to improved outcomes, the incidence of NF has also increased. In 1994, Bennet Levy and colleagues[19] documented that only 68% of surveyed patients had received NF, and, of those who did receive feedback, 59% reported "wanting more" from the conversation. In contrast, more recent research has shown that 98% of neuropsychologists are now providing verbal feedback to the overwhelming majority of their patients (92%).[22]

THE ART AND SCIENCE OF NEUROPSYCHOLOGICAL FEEDBACK

While NFs occur at the end of an evaluation, neuropsychologists are thinking about "what" and "how" to communicate with patients throughout the assessment process (**Fig. 1**). From the initial point of contact, neuropsychologists work to create a therapeutic environment that maximizes the potential that patients will later understand and accept the findings. This process begins with building a therapeutic alliance and trust with the patients. Neuropsychologists typically explain the process and scope of the evaluation at the outset (with clear informed consent protocols), which can also help build credibility. For example, when working with patients who are already invested in a specific diagnostic outcome, the informed consent process may be used to establish boundaries and set expectations for results even when they defy preconceived notions, by briefly explaining test development (including performance validity testing) and how measures produce objective findings.[8,17] Simultaneously, neuropsychologists work to establish a "frame" of collaboration, openness, and curiosity throughout the entire evaluation. While the primary purpose of the clinical interview is used to collect relevant information about symptom history and biopsychosocial information, neuropsychologists also solicit and actively listen to patient goals, descriptions of their behavioral experiences, and life stories. These

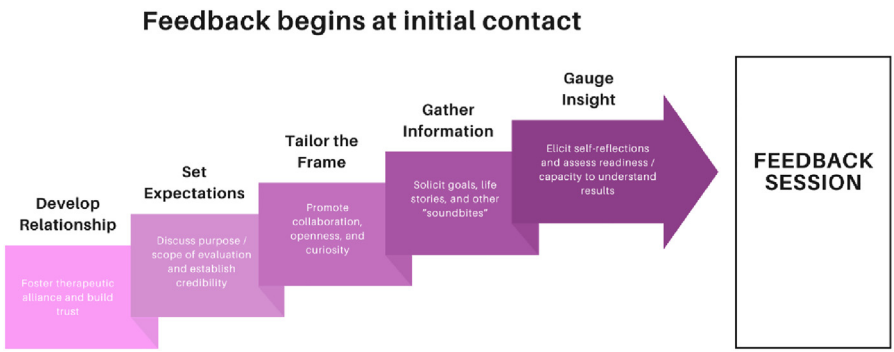

Fig. 1. Progression of the development of feedback.

"soundbites" are then used to strategize points of emphasis during NF, along with behavioral examples to make patients feel heard and understood.[1] The clinical interview also affords an initial opportunity for neuropsychologists to assess a patient's readiness/capacity to understand their upcoming diagnosis and related cognitive findings, as well as their likelihood of accepting these conclusions. Even the testing phase can be utilized strategically by collecting self-ratings of performance[17,18] or inviting patients to provide insights or self-reflections about their test experiences to increase collaboration, curiosity, and insight.[7] These additional data can then be utilized during the feedback to make specific points to deflect patient defenses and potentially facilitate acceptance of results. In short, during every interaction throughout the assessment, neuropsychologists are conscientiously and intentionally working to estimate the patient's level of insight and emotional acceptance,[6,18] verify comprehension of the patient/family members, and most importantly, develop a relationship that allows them to work with patients in an interactive and collaborative fashion.

Feedback as a Catalyst for Therapeutic Change

For most patients, receiving feedback following a neuropsychological assessment can be anxiety-provoking and life changing. While NF may occasionally confirm an insightful person's understanding of their situation, it more often conveys novel information about intellectual, cognitive, and psychological limitations that can be overwhelming to process and accept. Effective communication of these findings typically involves an emphasis on: (1) collaborative assessment therapeutic strategies[7,9] and (2) the use of metaphors, "pearls" and other strategies to share findings in a way that is easily metabolized.[1]

Assessment as a therapeutic intervention

Several psychological assessment models have been empirically developed to maximize therapeutic outcome. For example, the Therapeutic assessment (TA) model is founded on humanistic psychology theory and holds the premise that humans must create life narratives (ie, stories) that are continually shaped by new experiences.[23] These narratives are crucial in guiding perception/behavior and are self-reinforcing. With the onset of new medical, neurologic, or psychiatric conditions, or when a patient is trying to make sense of a newly recognized diagnosis, neuropsychologists use NF to help patients create new personal narratives about themselves. Neuropsychologists also help patients re-write narratives when once helpful coping mechanisms are no longer positively rewarding. In both cases, potent, long-standing shifts in a patient's understanding of themselves can only occur if NF is provided in such a way that can be heard and then applied to their personal narratives.

In a recent meta-analysis, the TA model has been shown to increase patient's perception of treatment utility and greater alliance with their provider, which in turn helps to reduce psychological symptoms and increase self-enhancement.[24] These positive narrative changes can also improve treatment outcomes, even when neuropsychological findings may initially create emotional distress and defensiveness. TA affects this change by employing a semi-structured framework to feedback that is: (1) organized by the patient's questions for the evaluation, and (2) ordered from "easy" to more "difficult" findings for the patient to receive.

More specifically, Finn's Levels of Findings Guideline helps to move patients from self-verification to an acceptance of alternate views of themselves.[7] Level 1 Findings are typically conveyed first. These results verify a patient's understanding of themselves and/or are ego-syntonic and, therefore, easily accepted (eg, telling a patient with a history of academic excellence that they have a high IQ). Level 2 Findings

modify or amplify a patient's usual way of thinking about themselves or understanding of their condition without threatening self-esteem or cherished narratives (eg, telling a patient they have high IQ despite their history of poor academic performance or explaining to a patient that they have tension headaches and not migraines as presumed). Level 3 Findings are typically anxiety-provoking and can lead to strong emotional reactions because they are so novel or discrepant from a patient's understanding or beliefs about themselves. These findings require advanced clinical skill to convey successfully, as they often lead patients to mobilize defenses that refute such messages. With forethought and understanding of the patient's personal narrative and coping styles learned throughout the assessment process, neuropsychologists attempt to relay this Level 3 information in a disarming and supportive manner, so as to help the patient make needed changes in their life. Ultimately, both ordering and conveying feedback judiciously can help patients better understand test results and motivate them to make use of treatment recommendations.

Providing feedback that "sticks"

TA and other feedback models provide neuropsychologists with frameworks and tools to optimize the greatest probability of success in facilitating new narratives and catalyzing change. However, often the most powerful interventions are made by sharing "pearls" of information that succinctly summarize and apply important concepts to neuropsychological findings. In 1988, when discussing satisfaction following medical consultations, Ley[25] demonstrated that the simple provision of information is not enough to raise satisfaction. Rather "such information must be both memorable and understandable." To that end, Postal and Armstrong[1] applied the work of Heath and Heath's[26] principles for making information "stick" to the provision of NF. In particular, they share an extensive collection of metaphors or "pearls" collected from seasoned neuropsychologists that tap into the core features of effective communication: credibility, simplicity, concreteness, unexpectedness, emotions, and personal stories. In doing so, they demonstrate how communication can most effectively resonate with patients.

For example, consider the challenging discussion of driving following a relatively recent stroke/brain injury. Postal and Armstrong[1] emphasize that rather than (1) focusing on dry, often difficult to understand neuropsychological findings regarding visual-spatial processing and executive function deficits, or (2) offering the authoritative statement "you cannot drive," neuropsychologists might consider offering the following reframe:

I know you think that driving may not be that complicated and that you have been driving for 30 years, but let's talk about what driving actually involves. "Think about all that goes into making a left-hand turn across traffic. You are judging your speed and your own reaction time. At the same time, you are judging the other car's speed. A lot goes into that."[1(104)]

This pearl can then be extended by adding something like, "That is what I am worried about here. I know you can still physically drive a car, but there have been some changes since your injury that may affect these abilities more than you realize. Let us talk about that." Similarly, for the patient who is considering whether to continue driving with less obvious but still limiting impairments, a neuropsychologist might consider sharing something like:

"As long as you feel safe with your grandchild in the back seat of that car, I would say that it is your choice. But if you have any concern about having your grandchild in the back seat, I would think twice about driving."[1(105)]

Clinical Vignette

Joe is an English-speaking, doctorate-level educated, white man in his late 70s with a history of major depression and attention deficit hyperactivity disorder (ADHD). He was referred for an evaluation by his psychiatrist due to cognitive changes over the past 2 years, including new difficulties with forgetfulness and initiation, as well as the worsening of longstanding inattention, disorganization, and hoarding. There were also reports of poor judgment, reduced self-care, and functional decline. These included, driving incidents (eg, he ran over a median island and drove miles with his car trunk open), and concerning inattentive mistakes with limited insight (eg, he left his stove on and his home doors open overnight). His wife was planning to move out of their home as a result of their increasingly frequent conflicts and his escalating hoarding conditions (eg, he had stacks of newspapers, plastic sacks, and empty boxes/bottles reducing walkability in the home as well as furniture, wooden planks, and other large items stored in the basement and across their yard).

On the day of the evaluation, Joe arrived alone by car. He appeared depressed and seemed to have limited insight with respect to his symptoms. He shared that he was unsure how a "psychological" assessment could be useful and unbiased and seemed especially concerned that his family and physician were colluding to limit his driving.

At the outset, Joe participated in a detailed discussion regarding informed consent. During this process, it was explained that the assessment was designed to provide him with information, that the procedures required his consent, and that results would not be shared with his family without his direct permission. Then, given his intellectual background, a brief review of the scientific basis for the assessment process/interpretation was described. This included an acknowledgment that the results could in fact lead to recommendations about driving; and explicit instruction that there were no guarantees that findings/recommendations would be in his favor on this topic, but also reassurance that the results would not be swayed by his family or subjective opinions of other professionals. Rather, objective data would be used to shed light on the subject from a third-party professional without bias or stake in the situation. It was explained that the examiner had worked with clients in similar circumstances, and test results had been used to support continued driving independence in some instances and to provide cautions against driving in others. After this discussion, Joe agreed to participate in the assessment and even granted permission for the examiner to speak with his family. He still remained somewhat skeptical, but expressed an understanding that providing full effort on the assessment could potentially support his desire to keep driving and that the examiner was impartial.

During the assessment, the examiner noted several performances that were obviously indicative of significant impairment. Following a few of these tests (as well as some measures on which he obviously performed quite well), Joe was asked to rate his own performance on a scale of 1 to 10. While he appropriately identified his performance on some tests as areas of strength and others as areas of weakness, he also endorsed several performances as strong despite severe impairments (consistent with poor insight). Results on neuropsychological testing ultimately revealed some areas of intact cognition alongside deficits in processing speed, initial learning of new verbal information, and executive skills. In conjunction with his functional decline, Joe's presentation was consistent with a diagnosis of possible major neurocognitive disorder.

Following the testing session, the examiner reached out to his wife and daughter by phone. The family members initially spoke quickly, clearly under the assumption

that they had a limited amount of time to report their concerns. The examiner encouraged them to take their time and review any notes they may have on the subject, then listened intently, followed up with questions, and expressed interest about their experiences. This put the family more at ease, and they began to more comfortably relate their concerns as they settled into a collaborative working alliance. During this conversation, there was a sense that they had previously not felt entirely heard—either by Joe or his providers. Allowing them this space and meeting them with supportive listening and validation seemed to foster a sense of confidence in the process.

Joe's family attended the NF session with him. Given his intellectual curiosity, test findings were provided in relatively more detail than is typical. First, to ease his anxiety, the conversation started with his cognitive strengths (ie, Level 1 findings, as superior intellect and cognitive abilities were well known to him). This elicited a positive response and an emerging sense of confidence and trust in the test findings. His cognitive deficits were then discussed broadly in relation to age-matched peers by using descriptive ranges (ie, below average, exceptionally low). Given his history of ADHD, the dysexecutive symptoms were no surprise (Level 1); however, discussing how such symptoms could influence his performance in other domains (eg, learning and memory) was a new, albeit non-threatening, concept to digest (Level 2).

Next, the exact percentiles of Joe's weakest performances were shared to emphasize the significance of his challenges. He was then reminded of his self-ratings, and shown that, while he was accurate in many cases, there were several areas where he failed to appreciate his significant impairments. This tactic, which may have been very technical and overwhelming for other patients, was utilized with Joe specifically in light of his educational background, as a way to convey a respectful appreciation of his intellect. It also helped to contextualize his performance in an objective manner, further substantiating the conclusions.

Information was shared at a slow pace with targeted repetition, knowing that test results had shown slowed processing and reduced initial learning. Even so, Joe would, at times, mix up findings or perseverate on unrelated topics. When a family member became frustrated by Joe's confusion, their reactions were validated and normalized, while the neuropsychologist also clarified the neurogenic origin of his difficulties in the following manner: "Joe is listening, his brain is just having a hard time taking in new things." By intentionally differentiating Joe from Joe's brain, the neuropsychologist emphasized to both him and his family that his difficulties are not volitional, which facilitated his ability to accept a Level 3 finding.

Safety concerns pertaining to reduced independence were discussed delicately, knowing that this was an area in which Joe had both reduced insight and heightened defensiveness (Level 3). He was determined to continue driving, even after having recently felt slighted by another provider's recommendation that he should stop (prompting him to want to switch doctors as a result). However, the test findings, as well as his recent driving behaviors and family's concerns, ultimately supported this conclusion. Considering what the neuropsychologist had learned about Joe throughout the assessment process, a somewhat intellectual, yet gentle, approach was adopted in order to maintain rapport and prevent disengagement. First, the cognitive domains integral to driving were discussed. Next, specific test data were used to illustrate how Joe's deficits could translate into "real world" mistakes on the road. For example, it was pointed out that Joe took nearly 10 minutes to complete a task of mental flexibility that typically took other individuals around his age just over 1 minute to finish. It was also pointed out that he rated his own performance on this task as very

strong, and hence had not realized how much slower his performance was compared to same-age peers. Joe was then reminded of the errors he made on this task, as they were further indicative of inattention and loss of set. It was explained that these types of errors are consistent with impairments that can cause a driver to suddenly lose their train of thought or forget where they were going, which could in turn, make them hesitate while turning in a busy intersection or abruptly swerve toward a nearly-missed exit.

The consequences of someone (not Joe) making such mistakes were then explored. Joe's engagement in this thought activity was facilitated through the initial use of third-party language, as to not immediately ascribe blame or penalty for such hypothetical scenarios. It was also important to first focus on damage to objects (eg, mailboxes, trash cans, other cars, and so forth) before entertaining the possibility of harming a living being. Eventually, Joe was encouraged to reflect on how he would feel having been in the driver's seat in such scenarios. Ample time was then provided to explore and work with Joe's reactions. He was particularly affected by the possibility of his unintentional mistake hurting a child or pet, vocalizing "I would never want to do that." He shared his disappointment and sadness about the loss of independence, which was earnestly validated. Alternate methods to get around town were discussed, and he was encouraged to pursue a driving evaluation, which allowed for a sense of modest empowerment and mitigated some of his acute sense of loss.

Overall, Joe and his family were engaged and receptive throughout the feedback. Joe expressed his appreciation at the end of the conversation, earnestly shaking the hand of the neuropsychologist prior to exiting the office. Since feedback, Joe has been reflecting on the evaluation's results with his psychotherapist as he awaits a consultation with neurology. His wife has reached out to the neuropsychologist for assistance a handful of times after encountering roadblocks to follow-up care. The neuropsychologist was able to coordinate care across disciplines so that these obstacles did not derail his workup/treatment moving forward.

DISCUSSION

Neuropsychological assessments serve a number of purposes in a patient's care, from clarifying a diagnosis to informing a treatment plan. While clinical providers and treatment teams certainly benefit from these assessments, the patients themselves, as well as their families/loved ones, are the most important stakeholders involved. Therefore, knowing how to communicate complex neuropsychological findings to patients effectively and with clinical impact is of profound importance. Conversations during NF go well beyond sharing test results with the end goal of helping patients embrace a new understanding of their own abilities—cognitively, emotionally, behaviorally, and socially. With this information, personal narratives can be updated to incorporate a renewed sense of self that enable patients to move forward with necessary adaptations to their lives, and/or embrace recommendations and treatment plans more readily.

With this goal in mind, there has been a growing emphasis in neuropsychology to improve NF communication skills, particularly given the complex and potentially distressing information that needs to be conveyed (eg, an unexpected/unwanted diagnosis and/or test findings that can negatively impact one's lifestyle or self-identity). Assessment findings often speak to challenging limitations in one form or another, wherein a patient's chance of 1 day performing on par with their peers is at best, not guaranteed, and at worst, out of the question. Thus, in preparation for delivering

all levels of Finn's findings during feedback sessions, neuropsychologists use every point of contact throughout the evaluation to cultivate a collaborative working alliance and develop tailored NF geared to: address the patient's goals for testing, manage the patient's potential defenses, and hopefully improve their ability to hear and accept the findings. Perhaps most importantly, by using therapeutic skills and strategic communication, neuropsychologists aim to translate test data into language that is practical, meaningful, and leaves patients with a sense of hope and empowerment.[27]

The field's increased focus on viewing NF as an intervention in its own right has led to the introduction of numerous specific models and strategies for distinct patient populations and clinical situations. Furthermore, the implementation of these interventions has been associated with promising clinical outcomes for patients, including improved cognitive and psychiatric symptoms[2,21] and better quality of life.[2,3] Beyond these clinical outcomes, the value of an impactful neuropsychological evaluation may have secondary financial benefits. From a health care resource perspective, it can easily be speculated that if patients and their caregivers have a greater understanding of their condition and abilities, they can use the medical system more effectively and efficiently, and thus potentially avoid unnecessary health care costs. For example, a patient with a recent cerebrovascular accident may have a confusing myriad of distressing, new onset cognitive and emotional symptoms, prompting them and their caregivers to make numerous visits or calls to their primary care provider, specialty providers, and the emergency room. Similarly, reduced cognition, behavioral changes, and increased mood symptoms may precipitate greater confusion, anxiety, and familial discord. The impact of these changes can be significantly reduced through well delivered, therapeutic, and educational NF that assuages patient/caregiver fears and concerns and mitigates distress by helping families anticipate new changes. Neuropsychologists also offer targeted treatment/behavioral plans during NF sessions (eg, appropriate safety precautions to reduce falls, seeking guardianship or health care proxies, information about patient and caregiver support groups), which can often further reduce unnecessary medical utilization.

Notably, neuropsychological evaluations can frequently reveal poor medication compliance or risk thereof due to worsening cognition. Non-adherence to medication is well-known to contribute to significant avoidable health care costs.[28,29] Fine-tuning treatment plans and careful feedback with patients so they can more fully appreciate their cognitive limitations can help them to become more medication compliant through acceptance of external assistance and/or implementation of memory aids. This aspect of NF can also be a relief for patients who are sometimes characterized by prescribing providers as being "difficult" or "treatment rejecting" when in fact, they have been limited by their cognitive impairments.

Finally, well executed NF may also help to limit iatrogenesis. For example, Miller and Mittenberg[30] demonstrated that providing targeted feedback to patients regarding the cognitive sequelae of mild traumatic brain injury can reduce misunderstanding regarding potential symptoms and outcomes that develop from diagnosis threat. By sharing this information and breaking through incorrect assumptions, lives may be transformed, and considerable financial health care costs may be saved.

While these are just a few examples, it is clear that the provision of NF in itself can have both immediate and far-reaching impact on patient lives and effective clinical care, as well as health care costs. These examples also highlight the importance of continuing to develop, improve, and study the impact and efficacy of therapeutic NF models.

CLINICS CARE POINTS

- Neuropsychological assessments serve a number of purposes in a patient's care from clarifying a diagnosis to informing a treatment plan. While clinical providers and treatment teams certainly benefit from these assessments, ultimately patients and their families are the most important stakeholders, making NF a critical component of the assessment process.
- While NFs occur at the end of an evaluation, neuropsychologists are thinking about "what" and "how" to communicate with patients throughout the assessment process. From the initial point of contact, neuropsychologists work to create a therapeutic environment that maximizes the potential that patients will later understand and accept the findings.
- NF is a specialized therapeutic intervention that incorporates several foundational feedback strategies. For example, neuropsychologists use: (1) collaborative therapeutic techniques (eg, Finn's Level of Finding Guidelines) to determine when and how to share increasingly sensitive conclusions; as well as (2) carefully crafted communication tools including metaphors, stories, and other clinical "pearls".
- When successful, these collaborative discussions can be used to reframe previous misconceptions to help patients understand and accept challenging or unexpected findings. They also allow neuropsychologists to assess and mitigate potential barriers to treatment adherence, encourage medical compliance, and increase patient engagement with their medical team. Finally, neuropsychologists use NF to foster hope within the context of a patient's diagnosis or prognosis, while empowering patients/family members as advocates to further support their quality of life.
- NF outcomes research is increasingly associated with positive clinical impact across diverse patient populations including: improved understanding of neuropsychological status and diagnoses; increased ability to accept and follow through on recommendations; higher engagement in medical care; and, in some instances, improved psychiatric presentation with symptom reduction.

DISCLOSURE

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