1

The *Why*, *What*, and *How* of Neuropsychological Interviewing

Yana Suchy
Justin B. Miller

Clinical interviewing, along with behavioral observations and record review, represents a core aspect of diagnostic decision making. These information-gathering methods are shared by several disciplines, including clinical psychology, medicine, psychiatry, and other allied health care professions. Over the years, these methods have taken on a variety of forms, including formalized procedures, such as the mental status exam often preferred by neurology and psychiatry, to a variety of structured, semistructured, or fairly unstructured interview protocols often employed by psychologists. Regardless of the exact format, diagnostic determinations in all of these disciplines are based on physical or psychiatric findings that are placed in the context of a patient's history and current complaints, as well as appearance and overt behavior.

Although widely adopted by our sister disciplines, clinical interviewing was not embraced by early clinical neuropsychology. In fact, early neuropsychologists posited that a clinical interview might introduce undue bias and that test data alone (or information gathered via other standardized means, such as checklists) yielded more objective and hence more valid conclusions (Chelune & Moehle, 1986; Russell, Neuringer, & Goldstein, 1970). This thinking was particularly prevalent among clinicians subscribing to the fixed battery approach, which allowed collection of large amounts of actuarial data that were used as the basis for clinical decision making. Despite these early notions, clinical neuropsychology has since fully come into the fold of clinical psychology, currently adhering not only to the tried-and-true clinical practices of information gathering but also to the American Psychological Association (APA; 2017) code of ethics, which virtually mandates that no data be interpreted in the absence of a clinical interview and associated behavioral observations.

In the current era, students who aspire to become clinical neuropsychologists obtain training in foundational clinical skills, including the art of clinical interviewing and

behavioral observation. Such training entails learning how to build rapport, how to maintain control over the interview, how and when to ask follow-up questions that maximize the clinical utility of the patient's report, and what domains of information are needed for making diagnostic determinations. Additionally, this training involves identifying specific features of the patient's appearance and behavior that are clinically and diagnostically relevant, as well as some basic understanding of how to review patients' records. Yet, as students progress from their general clinical training to more specialized settings in clinical neuropsychology, they often find that their information-gathering knowledge and skills barely scratch the surface of the mountain of information needed in a neuropsychological evaluation. The sheer amount of information that contributes to neuropsychological decision making is further compounded by the fact that the specific content of a neuropsychological interview can vary dramatically based on the setting, referral question, population at hand, and specific diagnostic considerations. Despite these complexities, no formalized materials are currently available to facilitate mastery of the neuropsychological information-gathering process. This gap in neuropsychology reference materials served as the impetus for this book.

ABOUT THIS BOOK

This book is intended to serve as a resource for trainees and clinical supervisors, as well as for full-fledged clinicians at all levels of professional development. Designed to serve both as a quick reference and as an in-depth resource, much information throughout the book is presented in table format, and then further elaborated in text for those desiring more extensive coverage. Tables cover a variety of topics, including the distinguishing clinical features that contribute to a given differential diagnosis, sample interview questions, overviews of relevant behavioral observations, and even definitions of jargon terms or acronyms typically encountered in certain settings. To facilitate skimming at different levels of depth, many tables are organized in such a manner so as to provide an overview of overarching areas of inquiry (when desiring only a quick reminder of the general domains of information that need to be covered), as well as an overview of more specific, or more detailed, areas of inquiry.

Trainees with limited prior experience in neuropsychological assessment are advised to read this introductory chapter, followed by the chapters that focus on a given setting or a given patient population. Relatedly, clinical supervisors in specialized clinics may choose to routinely assign relevant chapters to all of their trainees at the beginning of their externship, internship, or postdoctoral fellowship rotation, and supervisors in generalist clinics may assign relevant chapters to their trainees as needed prior to seeing a particular patient. In addition, the book is designed to have utility for experienced clinicians, especially those in generalist settings where a considerable breadth of knowledge is required. For example, a clinician who typically sees referrals for suspected neurodegenerative disorders, acquired brain injury, and vague neurological issues with psychiatric overlay may on occasion also encounter a less typical referral, such as a patient presenting with cognitive sequelae of cancer treatment (see Chapter 11) or sequelae of hepatitis C (see Chapter 14). In such cases, even an experienced clinician may benefit from a quick skimming of tables within relevant chapters prior to seeing the patient, to ensure that all relevant information is gathered. Last, experienced clinicians sometimes transition to a new

setting altogether, and in such cases may benefit from reading the chapters that pertain to the new setting in their entirety.

Throughout this book, we assume that clinical interviewing is inherently coupled with behavioral observations, with the two processes informing and complementing each other. Additionally, we assume that the direction of a clinical interview is initially determined by the type of information made available beforehand, whether it be the wording of the referral question or a thorough review of the patient's available records. In line with these assumptions, the entire process of gathering information beyond test data (i.e., record review, clinical interview, behavioral observations) is covered in this book, with dedicated chapters for discrete patient populations and common clinical settings encountered by neuropsychologists. Each chapter begins with an overview of the setting, relevant referral sources, and disorders encountered by neuropsychologists in that setting. Next, each chapter reviews the goals of a neuropsychological evaluation in that setting (along with the types of information needed for accomplishing those goals), as well as how best to obtain such information via review of records, interview with a patient and/or a collateral source, and behavioral observations. Last, potential red flags or pitfalls encountered in a given setting are highlighted.

By design, there are several topics that are omitted from this book. First, this book focuses on adults. Given the growing specialization within clinical neuropsychology, the inclusion of chapters on both adult and pediatric settings in a single volume was thought to be unwieldy. Rather, a separate volume focusing purely on pediatric settings is preferred. Second, this book focuses on clinical issues and settings, purposely avoiding discussion of forensic issues. Much has been written about forensic neuropsychology, and a single chapter on forensic interviewing would not do justice to all of the complexities and nuances of forensic evaluations. Third, since this book focuses on clinical populations and clinical settings, it does not contain chapters on different *formats* or different *social contexts* of information gathering. Thus, for example, the book does not contain a chapter on remote assessment or tele-neuropsychology, the use of translators, rural outreach, or issues related to cultural (including racial and ethnic) considerations. That said, several chapters comment on cultural issues as relevant for a given clinical setting.

The remainder of this chapter reviews general principles of information gathering that are common to most adult-focused clinical settings, so as to allow subsequent chapters to focus purely on those aspects of information gathering that are unique to each setting or each population. Figure 1.1 provides an overview of information-gathering principles presented in the remainder of this chapter.

THE *WHY* OF CLINICAL INTERVIEWING

In this section, we provide a brief overview of *why* it is crucial for clinicians to meet with and interview their patient prior to initiating test administration.

Rapport Building

A clinical interview is an opportunity to build rapport with the patient and to reduce some of the ambiguity surrounding the evaluation process. Often, simply just offering an explanation of the clinical utility of the evaluation and how the test data will be used goes

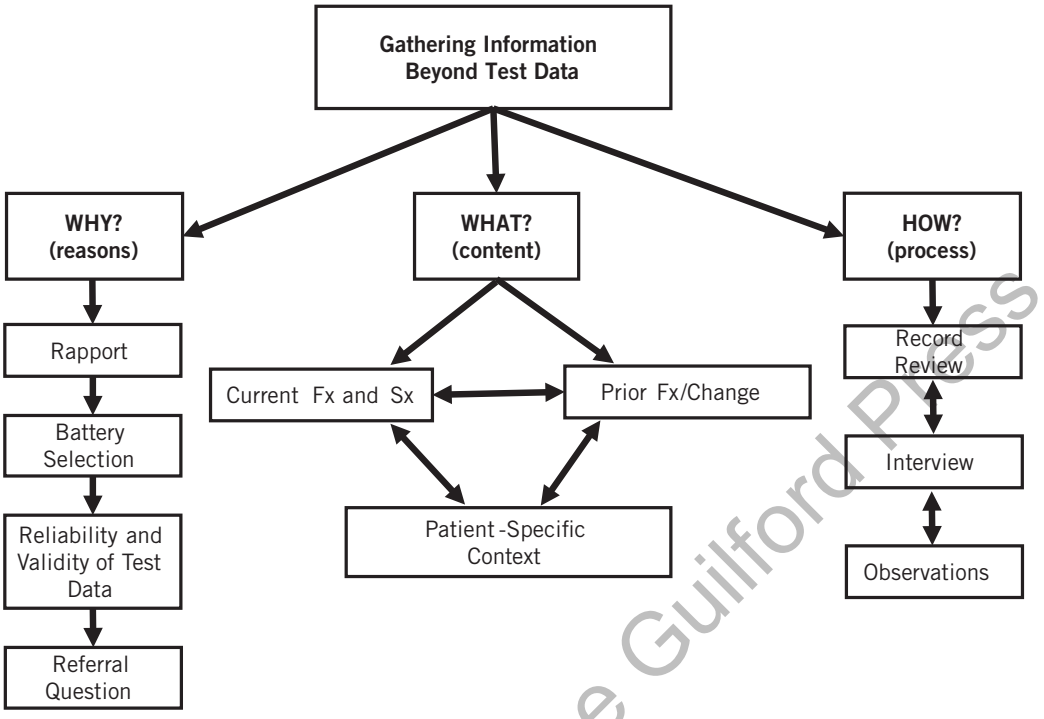

FIGURE 1.1. An overview of the main components of the *why*, the *what*, and the *how* of clinical information gathering. Fx, functioning; Sx, symptoms.

a long way toward putting an anxious patient at ease or ameliorating a skeptical patient's doubts. Additionally, a clinical interview is an opportunity to discuss the patient's hopes or goals for the assessment (or, in some cases, concerns), which in turn allows the clinician to more fully address the referral question and to provide specific recommendations that are most meaningful and most likely to benefit the patient.

A particularly important aspect of rapport building pertains to the patient's cultural or demographic context. Some patients may feel apprehensive about the evaluation because of a preconceived notion about how they might be perceived by the examiner due to their age, sex/gender, country of origin, or racial or ethnic background. Such preconceived notions can have a significant impact on test performance, as demonstrated by research on stereotype threat. A clinical interview is an opportunity to take steps toward dispelling such harmful preconceived notions by inquiring about the patient's expectations, fears, and concerns and engaging in an open, honest, and supportive conversation about the issues at hand. Importantly, a patient who has good rapport with the clinician is not only more likely to perform at their best during testing but is also more likely to take the time to return for in-person feedback and, in turn, to follow through with recommendations.

Battery Selection

As the fixed battery approach began to give way to a flexible battery (Sweet, Klipfel, Nelson, & Moberg, 2021), test selection has become an important step in the assessment process.

Aside from the primary referral question, the clinical interview, records review, and behavioral observations all play a critical role in determining the most appropriate assessment instruments. Of note, review of records alone is not sufficient and should never be used as a substitute for a one-on-one conversation with a patient. In fact, it is common for clinicians to make substantial adjustments to their battery once they meet their patient face-to-face. Issues such as motor, sensory, or speech limitations, English as a second language, fatigue, or behavioral problems may be unduly exaggerated or downplayed in the records, or may not be described with the type of detail and nuance that is needed for determining the patient's capacity to participate in all aspects of testing. For example, a note in the patient records of "hemiparesis in the right arm" cannot be interpreted until hand dominance is established. Similarly, a note that the patient is "legally blind" may fail to acknowledge that the blindness pertains to peripheral vision and the patient can normally perceive written material. In other words, the degree to which motor, sensory, cognitive, and behavioral limitations interfere with test performance can often only be gleaned from a face-to-face interaction.

Reliability and Validity[1] of Test Data

Another reason for collecting information beyond test data is to determine whether test data are meaningful. There is much to be learned in the context of a face-to-face interaction that simply cannot be gleaned from any other source. For example, it is important to note whether the patient is adequately aroused and alert, whether any sensory or motor issues might interfere with testing, or whether attitude toward the examiner might impact test performance. In other words, information about these aspects of the evaluation is bound to influence the clinical interpretation of test results. Furthermore, gross inconsistencies between apparent functional capacity and test results can also sometimes be gleaned from a face-to-face interaction. For example, a patient who is moderately impaired on memory measures may demonstrate an exquisite capacity for using compensatory strategies while answering interview questions.

Answering Referral Questions

Perhaps the most salient reason for collecting information beyond test data is that diagnostic and functional decisions can never be based on test scores alone. Even for diagnoses that are virtually defined by test scores, such as intellectual disability, it is necessary to ascertain the presence of a functional impairment in daily life before a diagnosis can be made. Additionally, while test data may indicate levels of cognitive impairment, they alone virtually never differentiate among specific diagnoses. Typically, to arrive at a differential diagnosis, additional information needs to be gathered from records, interview, and behavioral observation that is specific to a given disorder. Fluctuations in a patient's daily functioning, changes in sleeping or eating habits, a recent loss of a loved one, inappropriate behaviors, or an increase in falls are but a few examples of information beyond test data that may have important ramifications for a differential diagnosis. Importantly, even if

[1]The term *validity* in this context is intended to communicate general psychometric concepts of construct and criterion validity and is not intended to be limited to a performance validity issue secondary to purposeful feigning or exaggeration of deficits.

such information is noted in the patient's records, the clinical interview is an opportunity to clarify and confirm such information and to further refine initial clinical impressions.

THE *WHAT* OF CLINICAL INTERVIEWING

In this section, we briefly review *what* domains of information are routinely needed for neuropsychological decision making. Once again, such information is best gathered through a combination of a record review, face-to-face interview, and behavioral observations.

Current Functioning

Most diagnoses inherently require that a clinician integrate test data with information about the patient's functioning in daily life. For example, a formal diagnosis of dementia (or major neurocognitive disorder) stipulates that instrumental activities of daily living (IADLs) be compromised secondary to the cognitive impairment evident on objective testing. Additionally, despite the fact that the clinician collects test data to address current cognitive ability, it is important to place such data in the context of daily cognitive functioning as perceived by the patient (and perhaps also as perceived by collateral sources or as described in records). Such information provides a way of cross-validating test results and also allows the clinician to place test performance into a meaningful context in the clinical report or during a feedback session with the patient or family. As seen in Table 1.1, information about daily functioning should cover a variety of domains beyond cognition and IADLs. Although many interviews cover most or all of the functional domains listed in Table 1.1, the relative importance and degree of detail required in a given domain may vary across different populations and settings, which is highlighted as appropriate in subsequent chapters—for example, activities of daily living can be assumed to be intact in many high-functioning patients.

In addition to the importance of the patient's daily functioning for diagnostic purposes, it is important to note that many neuropsychological evaluations are conducted with patients whose diagnoses have already been established. In such cases, evaluations may be conducted purely for the purpose of characterizing the patient's current cognitive abilities and for making functional determinations, such as determinations about a patient's ability to continue to work or to live independently. The general type of information gathered for this purpose is virtually identical to that gathered for diagnostic purposes, although functional assessments require greater depth to facilitate nuanced and informed determinations about the patient's functional strengths and weaknesses, insight, and the ability or willingness to use compensatory strategies. Chapter 2 provides in-depth coverage of capacity and functional evaluations.

Historical and Premorbid Functioning

Most diagnoses require not only that a current level of functioning be characterized but also a determination of whether a current level of performance or functioning represents a *change* from a historical baseline. Although neuropsychologists have tests available to assist in estimating premorbid cognitive abilities (e.g., reading tests), such tests must be interpreted in the context of the patient's history. For example, a patient with an early

TABLE 1.1. Domains of Current Functioning

Functional domain	Domain components
Educational/occupational (if relevant)	• Employment (status, type, and performance) • School (status, type, and performance)
Cognitive	• Daily episodic memory • Prospective memory • Attention and working memory • Language (expressive and receptive) • Planning, organization, reasoning, and problem solving • Speed of processing • Spatial and nonverbal reasoning
Behavioral	• Impulse control • Initiation/motivation • Task completion/persistence • Social appropriateness • Social engagement • Personality
Sensory/motor	• Sensory (vision, hearing, smell, and taste) • Motor (gross and fine) • Falls
Instrumental activities of daily living[a]	• Shopping • Cooking/meal preparation • Cleaning/household chores/home maintenance • Finances • Communication/Internet use • Medication/medical regimen management • Schedule and appointments • Driving and transportation
Basic activities of daily living (if relevant)[b]	• Personal hygiene, dressing • Eating • Mobility
Psychological	• Mood • Anxiety • Stress and coping • Apathy/anhedonia • Delusions/hallucinations • Suicidal/homicidal ideation
Vegetative	• Sleep • Appetite (weight gain/weight loss) • Fatigue/alertness/arousal
Social	• Friends • Family • Romantic partners
Recreational	• Type and frequency of activities • Enjoyment of activities

(continued)

TABLE 1.1. *(continued)*

Functional domain	Domain components
Substance use	• Alcohol • Tobacco, marijuana, vaping • Prescription medications • Other legal or illegal substances
Current/recent stressors	• Socioeconomic status/financial distress • Job loss • Homelessness • Family distress (divorce, illness, family feud, etc.) • Grief (loss of a loved one, a pet, driving privileges, etc.) • Immigration status, discrimination
Current resources	• Current social support (friends, family, acquaintances, etc.) • Recreational outlets (hobbies, etc.) • Socioeconomic status/financial resources • Health insurance • Transportation

[a]See also Table 2.3. [b]See also Table 2.4.

history of a reading disorder may struggle with a reading test, which may result in an underestimate of the patient's overall premorbid capacity. The types of information that facilitate accurate estimates of premorbid functioning may include records of work and/or school performance, reports of interpersonal functioning, or information about the ability to manage IADLs. Job and school *performance* (i.e., not just the patient's formal job title or attained degree) should be explored, including issues such as the ease or difficulty in achieving those positions or degrees. Such information almost never comes from just one source—rather, interviews with the patient and collateral sources, as well as record review, may all contribute. See Table 1.2 for the most relevant aspects of premorbid functioning.

Specific Diagnostic Criteria

Many diagnoses require that some discrete pieces of information be gathered that are unique to a given diagnosis, which may be difficult or impossible to collect outside of an interview. For example, for a diagnosis of traumatic brain injury, the clinician must gather information about whether a realistic trauma to the head occurred, or about the immediate sequelae of such a trauma (e.g., the extent of retrograde and anterograde amnesia). Similarly, when evaluating a patient for a possible neurodegenerative disorder, behavioral changes that typify a behavioral variant of frontotemporal dementia are never captured by testing and must instead be assessed via records review, interview, and observations. Details about such setting- and diagnosis-specific information are presented in subsequent chapters.

Broader Patient-Specific Context and History

Last, a clinician needs to be mindful of potentially relevant contextual issues that an individual brings to the table that may bear on the interpretation of the information about

premorbid and current functioning or about the specific diagnostic criteria. Contextual information comes from a variety of sources, including psychosocial and developmental history, educational and occupational history, medical and psychiatric history, legal history, and substance use history. Additionally, contextual factors surrounding the current symptoms are important, such as stressors precipitating or exacerbating symptom onset. Thus, for example, if a middle-age patient presents with unexplained cognitive decline, substance use history could represent a potential culprit. Similarly, if a patient reports psychiatric difficulties following a mild concussion, the clinician needs to inquire about any pending civil litigations related to the patient's injury, or a history of psychiatric difficulties prior to the accident. And if an older patient experiences a sudden decline in functioning, it is important to understand whether such a change was precipitated by an unusual stressor, such as the death of a spouse or a serious medical illness. An overview of domains of contextual information that are typically assessed in a neuropsychological interview can be found in Table 1.3.

TABLE 1.2. Assessment of Historical/Premorbid Level of Functioning

Functional domains	Specific topics

Educational Hx	• Highest milestone completed
	  ○ Contextualized via educational opportunities
	• Objective academic performance across educational levels
	  ○ Grades
	  ○ Gifted program
	  ○ Academic accommodations/remediations
	  ○ Repeated or skipped grades
	  ○ Scaffolding/tutors
	  ○ Behavioral problems
	• Diagnoses of ADHD or learning disorder
	• Undiagnosed attentional/learning difficulties
	  ○ Subjective struggles or learning difficulties

Occupational Hx	• Job consistency • Reasons for job changes • Job title *and* job description (e.g., president of an international company vs. president of one's own small business)

Everyday planning, reasoning, and problem solving	• Prior experience with and ease versus difficulty with
	  ○ Planning/organizing events, parties, trips, etc.
	  ○ Solving unexpected problems, such as a broken pipe, plugged toilet, bills lost in the mail, etc.

Instrumental activities of daily living	• Prior experience/independence with
	  ○ Shopping
	  ○ Cooking/meal preparation
	  ○ Cleaning/household chores/home maintenance
	  ○ Finances
	  ○ Communication/Internet use
	  ○ Medication/medical regimen management
	  ○ Schedule and appointments
	  ○ Driving and transportation

Note. Hx, history; ADHD, attention-deficit/hyperactivity disorder.

TABLE 1.3. Domains of a Patient's History

Hx domain	Specific areas of inquiry
Psychosocial and developmental Hx	• Pre- and perinatal insults • Quality of home life when growing up • SES when growing up • Stressors and traumas when growing up
Educational and occupational Hx	• Highest level of education • Educational performance/accommodations • Employment
Medical Hx	• Neurological CNS disorders (seizures, multiple sclerosis, stroke, neurodegenerative disorders, brain tumor, etc.) • Non-neurological disorders with CNS ramifications (e.g., hypertension, diabetes, heart disease, cancers and cancer treatments, hormonal disorders, liver disease, kidney disease, COPD, infections affecting CNS) • Other major medical illnesses and hospitalizations • Major surgeries and adverse surgical events • Major injuries (including specific inquiries about ABIs)
Psychiatric Hx	• Disorders characterized by cognitive Sx (ADHD, ASD, learning disorders, intellectual disability, etc.) • Psychiatric diagnoses • Psychiatric symptoms, without diagnosis • Psychiatric hospitalizations • Suicidal ideation and/or attempts
Legal Hx	• Criminal arrests, charges, and convictions • Civil lawsuits
Substance use Hx	• Alcohol, tobacco, marijuana, and illegal substances • Prescription medications and other legal substances

Note. Hx, history; SES, socioeconomic status; CNS, central nervous system; COPD, chronic obstructive pulmonary disease; ABI, acquired brain injury; Sx, symptom(s); ADHD, attention-deficit/hyperactivity disorder; ASD, autism spectrum disorder.

THE *HOW* OF CLINICAL INTERVIEWING

In this section, we briefly review *how* a clinician goes about gathering information beyond test data, or how different types of information can be used to answer diagnostically and functionally relevant questions. Specifically, this section reviews the general *process* of reviewing records, gathering information in face-to-face[2] interviews with patients and collateral sources, and noting relevant behavioral observations.

Records Review

Ideally, a clinician would have the opportunity to review patient records prior to the patient arriving for the evaluation so as to begin formulating clinical hypotheses. For providers

[2]Typically, and preferred in most settings, interviews are conducted face-to-face with the patient, though telemedicine options are becoming more commonplace.

that work outside of an institutional setting, this typically requires some foresight, including working with patients to identify the custodian(s) of the most salient records and securing written permission to obtain such records. Additionally, since there is considerable variability in the ease versus difficulty of securing records from different sources, some practitioners may need to contact other health care providers several weeks prior to the appointment with their patient, due to a considerable lag many hospitals and clinics experience when responding to record requests. In contrast, some settings lend themselves to easy access to patients' records. For example, practitioners that work in institutional settings (e.g., Veterans Affairs hospitals, major medical centers) and see internally referred patients readily have access to the patient's shared electronic medical records, as long as the patient's other health care needs have been handled by the same institution. Although in many clinical situations only *medical* records are reviewed, in some cases records from a variety of sources are made available. Table 1.4 provides an overview of the common types of information that different record sources have to offer.

All types of records listed in Table 1.4 have the potential to contribute to answering questions about current and premorbid functioning, as well as specific diagnostic and contextual considerations. For example, school or work records, especially if spanning a number of years, offer information about the premorbid level of functioning, and a sudden change in school/work performance could potentially provide insight about the timing of the onset of functional difficulties. Similarly, legal records may help clarify whether criminal behavior can be attributed to a particular diagnosis, or whether it was present premorbidly. In the same vein, such records may help pinpoint the *onset* of functional changes, evidenced by a sudden late-life onset of shoplifting, car accidents, or sexual misconduct.

TABLE 1.4. Overview of Relevant Record Types for Determination of Premorbid and Current Functioning

School/work records	Legal records	Medical/psychiatric records

• School
  ○ Report cards/transcripts
  ○ Performance on standardized tests
  ○ Attendance
  ○ Incident reports
  ○ Remediation plans and outcomes
  ○ Termination/transfer if relevant
• Work
  ○ Application form, résumé, etc.
  ○ Test results
  ○ Regular/yearly evaluations of performance
  ○ Promotions/demotions/termination
  ○ Incident reports
  ○ Disciplinary actions/remediation plans
  ○ Exit interview summary
	• Law enforcement agencies (police, sheriff, highway patrol, etc.)
	  ○ Incident reports
	  ○ Traffic offenses
	  ○ Arrests
	  ○ Charges
	  ○ Investigations/interviews
	• Department of Corrections (jail/prison)
	  ○ Convictions/sentences
	  ○ Admission/processing/orientation
	  ○ Work records
	  ○ Conduct/incident reports
	  ○ Release/parole
	  ○ Attorney
	  ○ Depositions
	  ○ Evaluation reports from potential expert witnesses
		• Inpatient
		  ○ Admission and discharge summaries
		  ○ EMT/ED reports
		  ○ Physician notes
		  ○ Nursing (and other allied professions) notes
		  ○ Test results (neuroradiology, lab, etc.)
		  ○ Procedure (e.g., surgery) summaries
		• Outpatient
		  ○ Office visit summary
		  ○ Letters/reports to referring physicians
		  ○ Test results (e.g., neuroradiology, bloodwork)
		  ○ Outpatient procedure summaries (e.g., surgery)

Note. EMT, emergency medical technician; ED, emergency department.

Last, medical and psychiatric records often provide discrete diagnosis-specific information (e.g., neuroimaging, psychotic episode), but may also help pinpoint the onset of a functional change (e.g., a sudden increase in falls or accidents reported in the emergency department records), or may again help determine whether reported difficulties are linked to a suspected diagnosis or whether they may have been present premorbidly (e.g., chronic headaches, psychiatric hospitalizations).

Interview with a Patient

Typically, a neuropsychological interview begins with a thorough and detailed inquiry into the reason for the current evaluation, including a detailed history of the present illness or the cognitive/functional difficulties that prompted the evaluation. Additionally, a detailed inquiry into how, or whether, present functioning reflects a change from a historical or premorbid baseline takes place early on in the interview. These inquiries are then followed by gathering additional contextual information that allows the clinician to place the current symptoms and complaints into a broader context, allowing a more nuanced interpretation.

As is the case in any clinical interview (i.e., outside of clinical neuropsychology), skilled clinicians follow up a patient's responses with clarifying questions. For example, vague statements, such as "I don't drink too much" or "I did great in school," need to be followed up with questions that gather *specific* information about, say, the actual number of drinks consumed per day or the actual grades the patient earned in school. Similarly, abstract statements, such as "I am depressed" or "I have an anxiety disorder," need to be followed up with questions about specific symptoms, as patients often come with preconceived (and often inaccurate) notions about what their symptoms signify. It is also important to remain mindful of the patient's cognitive status and their ability to comprehend verbal communication. Asking complex, multipart questions may need to give way to simple questions with concrete answers in order to elicit information effectively.

In the course of their general clinical training, clinical neuropsychologists typically become skilled in how and when to ask such follow-up questions, especially in relation to a patient's psychosocial history or current psychological functioning. However, in the context of a *neuropsychological* evaluation, additional less obvious clarifications need to be obtained. In particular, it is common for patients to make observations about their cognition using lay terminology that does not necessarily map onto neurocognitive domains. For example, it is quite common for patients to refer to a variety of cognitive difficulties as "memory problems," whereas in neuropsychological parlance the patient may actually be describing an expressive language problem, such as word-finding difficulties, an attentional problem such as common losses of mental set, or a lack of motivation. Alternatively, it is common for patients to state that their "memory is great" because they remember things as far back as their childhood, though when asked about recent events from earlier in the day, they may have little recollection. Thus, clinicians must clarify statements pertaining to cognition, rather than accept them at face value. Because memory complaints are quite common in a variety of both clinical and healthy populations (Begum et al., 2014; Kareken et al., 1992; Schmidt et al., 2016), and because memory complaints can reflect difficulties in other cognitive domains (e.g., executive functioning, word retrieval, processing speed; Baker, Gibson, Georgiou-Karistianis, & Giummarra, 2018; Minett, Da Silva, Ortiz, & Bertolucci, 2008; Torrens-Burton, Basoudan, Bayer, & Tales, 2017), Table 1.5 provides a list of sample clarifying questions as they pertain to typical memory complaints.

TABLE 1.5. Clarifying the Nature of Cognitive Complaints: Sample Questions

Cognitive domain	Clinician's clarification of complaint
Memory versus prospective memory	• "When you say you forget things, do you mean you have difficulty recalling what you had for dinner the night before, or is it that you forget to do things you intended to do? For example, do you forget to pick up the laundry or stop at the post office even though you intended to do so, but then when reminded of your intentions, you immediately recall your original plan?"
Memory retention versus memory retrieval	• "When you say you forget things, do you mean you actually don't remember things even if reminded of them, or do you mean that you cannot retrieve information but recognize it if someone reminds you?" • "Do you find yourself misplacing things and then not being able to retrace your steps?"
Memory versus attention	• "When you say you don't remember what you read in a book or what you saw in a movie, do you mean you don't recall things no matter how hard you pay attention to them, or is it that your mind wanders and so you never quite process what you read in a book or saw on TV?"
Memory versus word finding	• "When you say you can't remember anyone's name, do you mean you have trouble learning names of people you just met, or do you mean you have trouble recalling names of people you know well but the names spontaneously come to you at a later time?" • "Is it only people's names, or do you also have trouble remembering the names of objects and places?"
Memory versus spatial difficulties	• "When you say you get lost, do you mean you cannot envision a route you want to take, or is it that you don't recall where you intended to go?" • "Do you have trouble remembering how to get to familiar places that you've been to before, or is it only new places that you have trouble with?"
Memory versus executive	• "When you say you forgot how to cook, do you mean you literally cannot recall a recipe, or do you mean you get overwhelmed by all the steps and can't execute them all in the correct order?"

Interview with a Collateral Source

Interviewing a collateral source can be highly informative in most populations, but especially when working with populations where reduced insight or memory limitations can hinder accurate self-report, such as older adults suffering from a neurodegenerative disorder and survivors of brain injury or stroke (especially in acute and postacute inpatient settings). Additionally, some patients may at times purposely choose not to be forthcoming about day-to-day challenges (e.g., those worried about losing their independence or driving privileges, or fitness for duty evaluations). Conversely, some patients may be prone to overpathologizing normal cognitive lapses (e.g., the "worried well"; cogniform or somatization disorders), and others may intentionally overreport or embellish symptoms (e.g., individuals with potential for secondary gain). In all of these cases, collateral information may shed light on actual functionality or factual historical events. Last, in inpatient settings, relevant hospital staff can provide invaluable information about functional fluctuations (which themselves can be diagnostic), such as discrete periods of alertness

alternating with an acute confusional state, behavioral problems emerging during family visits, or periods of agitation emerging when fatigued (e.g., after lunch or after a physical therapy session). It is important to note that the accuracy of collateral informants must not be taken for granted. For example, relatives of older patients may at times minimize the patients' cognitive difficulties, and other times exaggerate them for a variety of psychological or even secondary-gain reasons.

Behavioral Observations

During a neuropsychological evaluation, one needs to be vigilant about all the same behavioral observations that are important during a general clinical intake. Additionally, there are certain behavioral observations that are unique to neuropsychology (see Table 1.6). For example, while a general clinical psychologist might describe language as "word salad," a clinical neuropsychologist may need to be more discriminating, noting specifically whether a patient was exhibiting literal versus semantic paraphasias, whether the patient's speech was fluent or halting, and the degree to which a patient understood grammar versus nouns and verbs. Similarly, while a general clinical psychologist might simply state that the patient had a tremor, a clinical neuropsychologist may need to describe the type of tremor (e.g., resting, action, or intention), as such specificity can often be important for a differential diagnosis. Pathognomonic signs (i.e., behavioral signs that represent clear signals of a particular type of neuropathology) span several domains of behavioral observations, including language, motor behavior, social inappropriateness, extreme impulsivity, arousal and arousal fluctuations, thought processes, and observable memory issues, many of which can be readily apparent over the course of the interview. When relevant, such signs are detailed further in subsequent chapters.

SUMMARY AND CONCLUSIONS

Consistent with the APA code of ethics, gathering information beyond test data represents a key aspect of a neuropsychological evaluation. The methods for information gathering include record review, clinical interviewing, and behavioral observations. This chapter reviewed some of the general principles of information gathering in a number of neuropsychological contexts. See Figure 1.1 for an overview. Methods unique to different populations, settings, or referral questions are presented in subsequent chapters.

REFERENCES

American Psychological Association. (2017). *Ethical principles for psychologists and code of conduct*. www.apa.org/ethics/code

Baker, K. S., Gibson, S. J., Georgiou-Karistianis, N., & Giummarra, M. J. (2018). Relationship between self-reported cognitive difficulties, objective neuropsychological test performance and psychological distress in chronic pain. *European Journal of Pain, 22*(3), 601–613.

Begum, A., Dewey, M., Hassiotis, A., Prince, M., Wessely, S., & Stewart, R. (2014). Subjective cognitive complaints across the adult life span: A 14-year analysis of trends and associations using the 1993, 2000 and 2007 English Psychiatric Morbidity Surveys. *Psychological Medicine, 44*(9), 1977–1987.

TABLE 1.6. Behavioral Domains and Observations of Interest during the Clinical Interview

Domain	Observations and signs of interest	Neuropsychology-specific implications

Arrival	• On time?
	• Accompanied?
		• Consider possible deficits in
		  ○ Memory
		  ○ Prospective memory
		  ○ Executive functions

Physical appearance	• Weight, height, gender, age
	• Attire
	• Grooming/hygiene
	• Unusual physical characteristics (e.g., major scars, major facial tattoos and piercings, deformities, evidence of self-harm)
		• Consider implications for
		  ○ Psychiatric disorders
		  ○ General physical health

Motor functioning	• Ambulation and mobility aids
	• Hemiparesis
	• Gait and posture
	• Arm swing
	• Gross motor functioning
	• Fine motor functioning
	• Involuntary movements (e.g., tremor, chorea, tics)
	• Weakness
		• Consider ramifications for test selection and test performance
		• Consider implications for recommendations
		• Consider implications of gait/posture and involuntary movements for:
		  ○ Movement disorders (Chapter 7)
		  ○ Stroke (Chapter 8)
		• Consider weakness as a possible Sx of multiple sclerosis (Chapter 9)

Sensory functioning and aids	• Hearing
	• Vision
	• Sensory aids
	• Hallucinations (visual, auditory, olfactory)
		• Consider ramifications for test selection and test performance
		• Consider hallucinations as possible Sx of:
		  ○ Psychotic disorder (Chapter 16)
		  ○ Dementia (Chapter 5)
		  ○ Seizure disorder (Chapter 10)
		• Consider sensory changes as possible Sx of multiple sclerosis (Chapter 9)

Arousal	• Level of arousal • Level and stability of alertness • Level and stability of attentiveness	• Consider ramifications for test performance • Consider fluctuating alertness as possible Sx of delirium/encephalopathy or dementia with Lewy bodies (Chapter 5)

Orientation	• Person
	• Place
	• Time
	• Situation
		• Consider possible deficits in:
		  ○ Memory
		  ○ Reasoning
		• Consider possible delirium

Speech	• Rate, fluency • Tone, pitch • Volume • Prosody	• Consider pressured speech as possible Sx of psychiatric disorders (Chapter 16) • Consider poor prosody as possible Sx of stroke (Chapter 8) • Consider low volume as possible Sx of Parkinson's disease (Chapter 7)

(continued)

TABLE 1.6. *(continued)*

Domain	Observations and signs of interest	Neuropsychology-specific implications
Language	• Word finding • Semantic paraphasic errors • Phonemic paraphasic errors • Circumlocution • Poor paragraph-level structure • Agrammatism, telegraphic speech • Auditory comprehension • Written comprehension	• Consider possibility of: ◦ Focal insults (stroke, tumor; Chapters 8 and 11, respectively) ◦ Neurodevelopmental disorders (Chapter 12) ◦ Neurodegenerative conditions (Alzheimer's disease, primary progressive aphasia; Chapters 5 and 6, respectively)
Thought processes and content	• Logic, linearity • Perseverations • Coherence • Concreteness • Delusions	• Consider implications for thought disorder (Chapter 16) • Consider implications for executive functioning
Mood	• Depressed (psychomotor retardation, slouched posture, depressed affect, tears, verbalizations) • Manic (psychomotor agitation, pressured speech, verbalizations)	• Consider implications for mood disorder • Consider implications for performance of highly effortful tests (executive functioning, memory retrieval) • Consider implications for processing speed
Affect	• Range • Quality • Congruency with mood • Appropriateness to situation • Unprovoked, uncontrolled laughter or crying	Consider implications for: ◦ Mood disorder ◦ Parkinsonism (Chapter 7) ◦ bvFTD (Chapter 5) • Note unprovoked laughter as a possible gelastic seizure (Chapter 10) • Consider unprovoked, uncontrolled laughter or crying as possible pseudobulbar affect (Chapter 8)
Participation	• Initiative • Persistence • Approach/response style	• Consider implications for: ◦ Test performance and validity of test scores ◦ Treatment recommendations
Insight	• Awareness of mistakes • Awareness of behaviors and impact on others • Awareness of deficits	• Consider implications for: ◦ Veracity of self-report ◦ Treatment recommendations • Consider possible: ◦ Memory deficits ◦ Anosognosia ◦ Anosodiaphoria
Rapport	• Attitude toward examiner • Attitude toward testing • Easily established versus slow to warm up	• Consider implications for: ◦ Test performance ◦ Validity of test scores ◦ Treatment recommendations

Note. Sx, symptom(s); bvFTD, behavioral variant of frontotemporal-lobar dementia.

Chelune, G. J., & Moehle, K. A. (1986). Neuropsychological assessment and everyday functioning. In D. Wedding, A. M. Horton, & J. Webster (Eds.), *The neuropsychology handbook: Behavioral and clinical perspectives* (pp. 489–525). Springer.

Kareken, D. A., Williams, J. M., Mutchnick, M. G., Harter, G., Torres, I., & George, W. E., Jr. (1992). Self-report of cognitive function after cardiac surgery. *Neuropsychology, 6*(3), 197–209.

Minett, T. S. C., Da Silva, R. V., Ortiz, K. Z., & Bertolucci, P. H. F. (2008). Subjective memory complaints in an elderly sample: A cross-sectional study. *International Journal of Geriatric Psychiatry, 23*(1), 49–54.

Russell, E. W., Neuringer, C., & Goldstein, G. (1970). *Assessment of brain damage: A neuropsychological key approach*. Wiley-Interscience.

Schmidt, J. E., Beckjord, E., Bovbjerg, D. H., Low, C. A., Posluszny, D. M., Lowery, A. E., . . . Rechis, R. (2016). Prevalence of perceived cognitive dysfunction in survivors of a wide range of cancers: Results from the 2010 LIVESTRONG Survey. *Journal of Cancer Survivorship, 10*(2), 302–311.

Sweet, J. J., Klipfel, K. M., Nelson, N. W., & Moberg, P. J. (2021). Professional practices, beliefs, and incomes of U.S. neuropsychologists: The AACN, NAN, SCN 2020 practice and "salary survey." *The Clinical Neuropsychologist, 35*(1), 7–80.

Torrens-Burton, A., Basoudan, N., Bayer, A. J., & Tales, A. (2017). Perception and reality of cognitive function: Information processing speed, perceived memory function, and perceived task difficulty in older adults. *Journal of Alzheimer's Disease, 60*(4), 1601–1609.

Guilford Publications
370 Seventh Avenue
New York, NY 10001
212-431-9800
800-365-7006
www.guilford.com