Cognitive Assessment Interview

(CAI)

Version 2

INTERVIEWER'S MANUAL:
Definitions and Rating Guidelines

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Cognitive Assessment Interview (CAI): RATIONALE AND OVERVIEW

The CAI is designed to offer clinicians a method for assessing cognitive functioning in their patients with schizophrenia, independent of formal psychometric testing. Recent research has shown that cognitive deficits are often severe and pervasive in schizophrenia, and that these deficits may be more strongly related to problems with independent functioning than are the traditionally rated psychiatric symptoms of the disorder. New treatments are being evaluated to determine whether these may improve cognitive functioning in schizophrenia, making it increasingly important for clinicians to assess cognitive function in their patients. Unfortunately, it may not always be feasible to obtain formal neurocognitive testing. Moreover, the clinical impression of cognitive functions may consider broad issues not addressed fully by more specific neurocognitive tests. The CAI is designed for use by skilled clinicians, to yield assessments of severity and change in cognitive deficits, and how these may impact activities of daily living. The CAI might become a useful adjunct for clinicians to evaluate the efficacy and effectiveness of treatments that may ameliorate cognitive dysfunction in schizophrenia and related disorders.

Background

The CAI is a semi-structured interview that was developed from the CGI-CogS (Bilder et al., 2003) and the SCoRS (Keefe et al., 2006) using classical Test Theory methods and statistical approaches such as Item Response Theory (IRT), bifactor analysis, and Computer Adaptive Testing simulation (CAT). All 10 CAI items are from the CGI-CogS which was based, in part, on the Alzheimer's Disease Collaborative Study (ADCS) Clinical Global Impression of Change (CGIC) instrument and subsequent modifications of that scale found in the Clinician Interview Based Impression of Severity (CIBIS) and the Clinician Interview Based Impression of Change (CIBIC), with caregiver input (CIBIC+). There are multiple differences in the CAI from the CIBIS/CIBIC+, however, including changes in format and specific content. Some of the important differences include:

1. In order to provide the most complete information for evaluating cognitive function, and since reliable assessment of change benefits from having similar information at all time-points, it was felt important to include both patient and informant input at both baseline and follow-up assessments (the CIBIS includes only patient interviews at baseline). Whether patient information alone will yield sufficiently reliable and valid ratings of cognitive function in schizophrenia remains an open empirical question. We hope that research using this and similar instruments may shed light on this issue.
2. The CIBIS/CIBIC+ includes a category for "Behavior" that involves rating thought content, delusions/hallucinations, and mood. Since the CAI is specifically designed to elicit ratings of cognitive status independent of these behaviors, and since there are other rating scales specifically designed to rate these behaviors in schizophrenia (e.g., PANSS, BPRS, SAPS, SANS), this category was deleted. Indeed, it is important for raters using the CAI to separate as much as possible their evaluation of cognitive deficits from their evaluation of the positive, negative, and conceptual disorganization symptoms of the syndrome. Research has shown only modest correlations between cognitive deficits and these other symptoms. Instructions for rating the CAI Neurocognitive State items (see below) are designed to help interviewers make these ratings independently from other observed symptoms.
3. Refinement of existing items and probes, and addition of new items and probes,

considered material in various other scales, including: the Independent Living Scale (Ashley, Persel, and Clark 2001); the Quality of Life Scale (Heinrichs 1984); the Global Assessment of Functioning (GAF) Scale of DSM-IV (APA, 1994); and the Schizophrenia Cognition Rating Scale (Richard S.E. Keefe, Duke University Medical Center, 2001). Additional influences on item/probe contents came from reviews of current research on cognitive functioning in schizophrenia, effects of treatment on cognition in schizophrenia, relations of cognitive deficits to deficits in independent living, and the role of social cognition in mediating outcomes. Finally, a pilot study of patients and informants, using a previous version of this instrument, yielded multiple changes in neurocognitive state item content, item sequence, and probe content.

4. The CIBIS/CIBIC+ has 6 domains within the category “Mental/Cognitive State.” These domains include several (Orientation, Language/Speech, and Praxis) that may be more important in studies of dementia than schizophrenia. The CAI specifies six neurocognitive domains using the structure identified in the “MATRICS” project (an NIMH contract initiative to help develop consensus on methods for treatment of cognitive indications in schizophrenia; see www.matrics.ucla.edu). The selection of neurocognitive state items and probes within domains further considered the cognitive demands of specific psychometric tests being considered in MATRICS as measures of these domain constructs. In contrast to the focus on psychometric definitions of these constructs, however, the CAI emphasizes plausible clinical (observable) manifestations of deficits in the constructs.

The final ratings on the CAI are intended to provide a skilled clinician’s view of cognitive function in individuals with schizophrenia, as manifested in daily living. The overall structure of the CAI was designed to enable skilled clinicians to gather information, from interviewing a patient with schizophrenia and his/her informant, and to develop reliable global impressions about the patient’s severity of cognitive impairment and changes from that level of cognitive functioning that may occur over time or with treatment.

CAI STRUCTURE AND INTERVIEWER INSTRUCTIONS

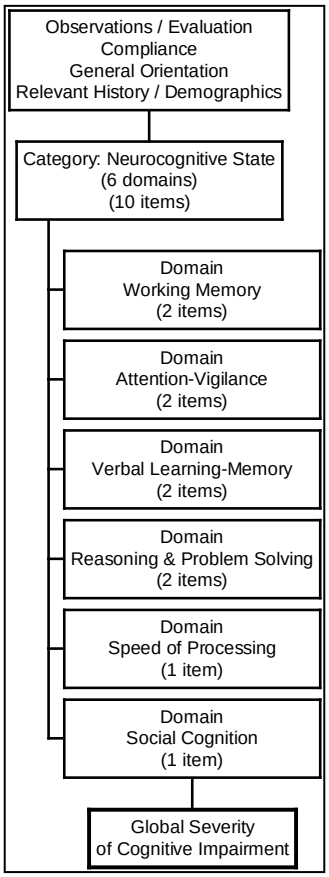
The CAI uses all sources of information and is rated according on the patient’s neurocognitive state and how neurocognition affects daily functioning. This differs from traditional rating scales which focus on areas including coherence of speech, type of thought content, hallucinations and delusions, mood and affect, and sleep/appetite. While these are important in schizophrenia, such symptoms are already rated well by other rating scales, and may be distracting to the clinician’s independent evaluation of cognitive functioning. For CAI ratings, it is specifically important that the interviewer try to make ratings based on impressions about the patient’s cognitive functioning without undue influence from severity/change of other symptoms of the disorder. Multiple studies have shown low correlations between the characteristic symptoms of schizophrenia, and the actual level of cognitive function and other real-world outcomes. CAI ratings are based as much as possible on cognitive and adaptive functioning alone.

The “General” category is unique in that the interviewer records information about background that is not specifically rated, but which may modify or help explain ratings in other categories or domains. If interview reveals that a patient has had a transient systemic illness that disrupted his or her functioning, it would be important for the interviewer to consider that when making ratings in other domains. Since the goal of the CAI is to enable global ratings of cognitive

impairment, and changes in cognition that may be due to treatment, the influence of transient situational factors should be explicitly discounted[1]. The "General" part of the interview is designed to elicit from the patient and an informant a clearer sense of the circumstances associated with instances of the patient's uncharacteristic behavior, and to help the interviewer generate questions that will yield examples more characteristic of the patient's behavior over the time frame of the assessment (see further discussion about the time frame below).

The CAI neurocognitive state ratings are based on six domains of cognitive functioning. These are six of the seven domains of neurocognitive functioning defined by consensus among experts as being important for clinical trials of pro-cognitive agents in schizophrenia (MATRICS Project; see http://www.matrics.ucla.edu/). The overall structure of the CAI item level ratings in each domain and the global ratings is illustrated in the schematic (see Figure 1).

Figure 1. CAI Global Category, Domains, and Item Structure



Each cognitive domain contains one or two neurocognitive state items relevant to that domain, and each item includes suggested probes. The Interviewer is encouraged to modify these probes and/or include his or her own, as needed, to enhance the flow of and scope of the interview. The interviewer should recognize that the probes are provided to facilitate the interview process that is designed to orient the interviewer to the target topic areas for further inquiry. The final ratings for each neurocognitive state item and global rating depend on the interviewer's own queries and impressions gained from his or her interview. The instructions for rating each CAI item and the global rating are provided in a subsequent section. The amount of time required for this Interview might vary. It is estimated that about 15 minutes may be necessary for each interview of the patient and 15 minutes for their informant. Initial training interviews may take longer.

Selection of the informant for interviews is guided by certain principles. It is generally advised to interview an individual who has the greatest familiarity with the patient's functioning over an extended period. Family members who are in regular contact with the patient, Board and Care facility staff, nursing, or other clinical staff who routinely interact with the patient in outpatient or inpatient settings may all be appropriate interview candidates. The General section requests information about the nature of the relationship and an estimate of the total time spent by the informant each week with the patient or considering/discussing the patient with others. For example, a family member might spend only one hour each week directly with the patient, but spend an additional hour discussing the patient with family members who also visit periodically, an

[1] For example, consider a patient who has already had a baseline assessment, and then is interviewed again 3 months later for follow-up. Suppose that this patient had made some significant gains in cognitive function, but two weeks prior to the follow-up interview, had a bout of influenza that incapacitated him for several days, with lingering malaise during the rest of that week; after that the patient returned to pre-influenza levels that still reflect an improvement from baseline. In these circumstances, the interviewer should consider the overall pattern of cognitive performance, discounting transient deficits that may have occurred during the influenza-influenced period.

additional hour discussing the patient with board and care staff, and another hour discussing the patient with clinicians. This would be considered four total hours/week.

The CAI involves making separate ratings based on the Patient interview, the Informant interview, and the Global Severity of Cognitive Impairment. The Patient ratings should reflect your expert judgment based on the Patient interview alone, the Informant interview should reflect your expert judgment based on the Informant interview alone, and the Composite impression should reflect your expert judgment based on all available sources of information, combining everything you have learned from Patient and Informant, and when available, other sources (e.g., chart, or other knowledge of the patient). You should record what sources of information are available to you in the Notes section of the Interviewer's Rating Booklet.

Instructions for Assessing Severity at Baseline and Follow-up

Each neurocognitive item rating and global rating should be completed using 7-point rating scales (with ratings from 1 to 7) with higher scores reflecting more impairment. It is also possible to make a rating of "N/A" for "not applicable" or "not available," but our experience suggests few circumstances in which the rating of N/A would be necessary (e.g., if the participant terminated the interview prematurely, or if little or no information were available, then it would be appropriate to make such ratings).

Anchors for Cognitive Domains

The anchors for the Neurocognitive State items focus on the degree of impairment and the degree to which the deficits impair day-to-day functioning. Please consider the degree to which the Neurocognitive State deficits prevent a patient from achieving a certain level of expected functioning at work, school, or in their social milieu. Remember to compare the patient to his or her age- and education-related peers. Since many patients live and work in settings that reflect deterioration with respect to expectations based on age and education, it is important that ratings reflect the deficits with respect to the "normal" level rather than to an individual's functioning in a restricted or supportive environment[2]. It might argued that an individual who lives in a supported environment would always merit a rating of "6" because deficits "jeopardize independent living." Raters should exercise their expert judgment, however, in determining the extent to which the specific cognitive deficit being rated contributes to the patient's current living and employment situations, and acknowledge that an individual patient's placement in a specific setting may be related to other factors (including the lack of alternative settings).

Anchors for Neurocognitive State Items: All Cognitive Domains
For each item in the Neurocognitive State domains, consider the following anchors in your evaluation, and consider the numeric scores for the final Neurocognitive State domain rating across all items within that domain:
N/A = Rating not applicable, or insufficient information
1. Normal, not at all impaired
2. Minimal cognitive deficits but functioning is generally effective
3. Mild cognitive deficits with some consistent effect on functioning
4. Moderate cognitive deficits with clear and consistent effects on functioning
5. Serious cognitive deficits that interfere with day-to-day functioning, including activities of daily living
6. Severe cognitive deficits that jeopardize independent living
7. Cognitive deficits are so severe as to present danger to self/others

[2] For example, a 42 year old man with two years of college may function well in a supportive workshop, but cognitive deficits may prevent this individual from obtaining competitive employment that would be expected were it not for these deficits.

Since the anchors change across domains, the correct anchors to apply for each domain are provided at the bottom of each page of the rating booklet.

Neurocognitive State Item and Global Ratings

The CAI involves separate ratings at the Neurocognitive state item and global severity level. The Global Severity ratings are made at the end of each complete interview.

Interviewers should not compute the average from individual Items to make Domain ratings, nor average Domain ratings to make Category ratings, nor average Category ratings to make their Global ratings. Each item rating or global level rating should be based on the rater's expert opinion about that cognitive domain considering all information obtained at that level.

The Patient and Informant ratings should be made immediately following each interview. The Composite ratings should be completed following both interviews (in practice, these Composite ratings can be made simultaneously during the second interview, whether that was the patient or informant). The composite ratings are designed to reflect the rater's best estimate of the patient's true functional capacity/limitations based on all available information. The composite should not necessarily reflect an 'average' of patient and informant ratings, but instead should reflect the rater's overall estimation based on both interviews and any additional information you have about the patient's functioning, from chart review, or other available sources. These sources should be recorded on the Background Information section of the Interviewer's Rating Booklet. Please note it is also important to record the order of interviews in the Background Information Section.

There are several points to consider in making severity ratings at each level of the CAI:

The ratings aim to consider specifically the impact of cognitive deficits on functional limitations, so interviewers must do their best to rule-out non-cognitive sources of limitation.

The lowest scores (ratings of "1") are referenced to healthy individuals of similar age and education, not to other people with schizophrenia or other mental illnesses, or who are receiving psychotropic medication.

The middle ratings ("2", "3", "4", and "5") are graded in terms of the magnitude of deficits, how obvious these are, and how pervasive is their impact on day-to-day functioning.

Minimal scores (ratings of "2") seldom interfere (only a few concrete examples can be elicited) and generally, no effects on functioning will be seen;

Mild scores (ratings of "3") have a regular daily impact on functioning, but people might not even notice these without inquiry;

Moderate scores (ratings of "4") can clearly be seen on a day-to-day basis; most people would notice a problem;

Serious scores (ratings of "5") are apparent to most people who encounter the patient and have an obvious impact on functioning.

The most severe ratings ("6" or "7") apply to individuals who have such severe cognitive deficits that these are universally apparent.

Since many patients with schizophrenia have difficulties with independent living (i.e., live in supported housing), a rating of "6" is reserved for application in cases where 'basic living skills' such as feeding, self care, and orientation are compromised due to cognitive deficits.

The final category (7) is meant to apply to cases where cognitive deficit is so profound, and self-care activities so compromised, that risks to survival are clear.

This instrument adds an additional global rating of cognitive function using the Global Assessment of Functioning - Cognition in Schizophrenia (GAF-CogS), which is rated on a 100-point scale. The GAF-CogS is intended to supplement the CAI Global Severity rating, and parallels the DSM-IV GAF scale. The anchors listed above for rating correspond roughly to the GAF-CogS scores, with severity ratings 1 to 7 relating systematically to GAF-CogS scores from 100 to 1. We recommend that this rating be provided based on information from both patient and informant interviews, using all possible information about the patient's cognitive function.

Anchors for Assessment of Cognitive Deficit Severity on 7-Point Scale, and Relations to GAF-CogS (Global Assessment of Functioning – Cognition in Schizophrenia)		
CAI Global Severity Rating	GAF-CogS	Description (see also GAF-CogS Descriptions)
NA	NA	Rating not applicable, or insufficient information
1	100-88	Normal, not at all impaired
2	87-74	Minimal cognitive deficits but functioning is generally effective
3	73-59	Mild cognitive deficits with some consistent effect on functioning
4	58-43	Moderate cognitive deficits with clear effects on functioning
5	42-28	Serious cognitive deficits which interfere with day-to-day functioning
6	27-14	Severe cognitive deficits that jeopardize basic living skills
7	13-1	Cognitive deficits are so severe as to present danger to self/others

Domains do not need to be evaluated in any particular order. However, it is essential that each Domain be examined and that observations be recorded in sufficient detail to facilitate assessment of change after a period of 1-6 months (the actual interval will depend on the clinic or study within which the CAI is being applied).

Spaces are provided to make brief notes highlighting observations that support the assessment of functioning within each domain. It is important to document separately the contributions of the patient and his/her informant, since separate ratings must be made for each. It is recognized that it may be difficult to separate the information obtained from the patient and their informant, particularly during the second interview, after one has already received information from one party or the other. The rater is encouraged to use his or her expert judgment of the correct rating based on the information obtained from that interviewee, even if it is influenced by information obtained from the other interviewee (e.g., if one interviewee has provided information about limitations in a particular task or ability, you may use that information in your interview with the other interviewee).

The time frame for assessment is one month, unless indicated otherwise for protocol-specific purposes. This means that the interviewer should specifically attempt to elicit information about how the patient has been functioning over the one month immediately preceding assessment. Examples of deficits may come from earlier periods, but it is the interviewer's job to determine whether such examples are representative of that patient's abilities continuing over the month

preceding the interview date.

Instructions for Assessing Cognitive Function at Follow-Up

The overall structure of the interview at follow-up is very similar to that at baseline. However, in the General category, the emphasis is to record events that may have occurred since the time of the prior interview. All other aspects of the individual ratings within each domain should continue to focus on the severity of deficit in these domains using the same anchoring as was used in the baseline assessment.

These ratings are to be completed separately following the patient and informant interviews, based on information from the respective interviews. The composite assessment of change is to be completed based on all available information from both patient and informant interviews.

Guidelines for Neurocognitive State Item Ratings

The goal of CAI assessment is to provide expert ratings at the neurocognitive state item and Global levels, based on interviews of the patient and his or her informant. Suggested probes are offered to help orient interviewers, but it is up to the rater to tailor these queries to the specific patient and informant being interviewed. It should also be noted that the probes are stated in a form most appropriate to the patient interview, and the rater needs to rephrase these probes as needed to gain information from the informant about their impression of the patient's functioning and abilities in each area. To obtain Informant ratings for "direct observation" items (e.g., in the Processing Speed domain, some ratings are based on the interviewer's impressions about the patient's speed of speech and movement), the Informant can be asked directly about their observations of the patient.

The following guidelines are provided to help clarify the distinctions between domains and neurocogntive state items. Some distinctions may appear arbitrary, and some are based on theory that can be difficult to translate into objective observations in every case. Given the challenges, it is particularly important that raters carefully review these guidelines and attempt to resolve questions during rater training.

Domain: Working Memory

The essential elements of this domain are the abilities to maintain information briefly in mind, for a period of up to about 20 seconds, and to "do something" (i.e., "manipulate" or perform some mental operations) with that information. It is important to distinguish this ability from the Verbal Learning and Memory domain, which focuses on the ability to learn and remember material over longer periods, and particularly after some intervening activity. For example, the ability to recall a telephone number immediately after hearing it, long enough to write it down or dial it, would be seen as Working Memory. In contrast, the ability to remember one's own telephone number, after repetition and rehearsal, would be Verbal Learning and Memory. The two items focus on two capacities:

Item 1. "Difficulty maintaining newly learned verbal information in mind for brief periods (long enough to use)?"

The focus here is on maintenance, that is, the ability to retain the information in mind,

regardless of whether something needs to be or is actually done with that information.

Item 2. "Difficulty performing 'on the spot' mental manipulations or computations?"

The focus here is on manipulations of material that can be held in mind, of which mental calculations are a prime example.

The probes identified for these items focus only on verbal working memory, primarily because everyday life examples of spatial working memory are difficult to elicit. The examiner should consider, however, other information obtained as possibly relevant to these two items, in any situation where it becomes clear that working memory is a problem. For example, while at a ticket counter a patient might look at a list of bus departures or movie titles but not retain this information long enough to inform the clerk of their selection; or see a sign indicating directions but fail to keep this information in mind long enough to take appropriate action (scored for WM item 1). Other kinds of mental manipulations, involving material that needs to be kept in mind should be scored in WM item 2. For example, in an assembly task a patient might not be able to translate information from an instruction diagram to the task. While this might appear to reflect a primary problem in visuospatial ability, this might involve keeping the involve keeping the information in visual working memory. The interviewer's task is to determine whether such an example may best reflect a problem in:

a) Mental manipulation (which would be rated as a 'working memory' problem);
b) A problem with visual learning and memory (which would be rated in verbal learning and memory if the knowledge needed to be applied after a longer interval);
c) A difficulty with Reasoning and Problem Solving (which would be rated in that domain if the difficulty seemed to be part of a more general deficit in applying existing knowledge to new problems); or
d) Some other problem not rated on the CAI

Domain: Attention/Vigilance

The essential elements of this domain are the capacities to concentrate effectively, select out of complex environments those elements that require attention, and to screen out myriad distracting stimuli that may disrupt processing of everyday cognitive tasks. This is one of the most challenging areas for rating individual items, because these involve fine distinctions and may be inter-related. We have divided "attention/vigilance" into 3 broad items; theoretically reflecting <u>sustained</u> attention, <u>selective</u> attention, and <u>freedom from distractibility</u>.

Item 3. "Problems sustaining concentration over time (without distraction)?"

This item focuses on 'vigilance', so the emphasis is on eliciting information about the duration for which the patient can maintain an attentional focus in a particular activity. The probes may include general queries (e.g., "Do you have trouble concentrating" which often elicit relevant responses), and more specific queries (e.g., while reading, is attention sustained long enough to finish a chapter?). There is no absolute time limit during which an individual should be able to maintain an attentional focus, rather the goal is to determine whether this ability is functionally useful. If the capacity to sustain attention were limited only in the presence of distraction, then this limitation would be considered under this item.

Item 4. "Difficulty focusing on select information (if there is not obvious distraction)?"

This item addresses the ability to select out and focus on specific details in complex environments. In virtually every activity there is a requirement for individuals to focus on selected relevant aspects and details of a situation and to ignore others, or to determine and attend to the 'figure' while suppressing consideration of the 'ground'. The suggested probes offer examples from everyday life situations in which it can be challenging to narrow one's attentional focus to the task-relevant elements that are embedded in a more complex setting.

Domain: Verbal Learning and Memory

The essential features of this domain are the capacities to learn and recall new information that is received verbally, whether that is from listening or reading. Problems with learning and memory are among the most frequent complaints of patients who come for neuropsychological evaluation, and deficits in this domain have been considered the most severe of cognitive in multiple research studies. The greatest challenges in rating deficits in learning and memory are to disentangle the possible effects of other deficits that impact the learning process. Thus, for example, problems with attention may make it difficult to acquire any new information, problems with working memory may make it difficult for material to be held in mind long enough to encode it for the longer-term, and problems with reasoning and problem solving may underlie problems with acquiring new skills. Raters are not expected to provide an accurate dissection of the role that other functions play in limiting new learning and memory, but efforts should be made to elicit examples of learning/memory for material that has been attended to and/or repeated. As highlighted below, the distinction from Working Memory is facilitated by determining the interval between the learning opportunity and the attempt to recall the information. If this interval is less than a minute, the example is probably best considered under Working Memory. If the interval is longer than a few minutes, particularly if there has been some intervening activity, then the example is probably best considered under Verbal Learning and Memory.

Item 5. Trouble learning and remembering verbal material?

This item emphasizes the new learning of and memory for verbal material that has been either heard or read. It is important to distinguish this from Working Memory, which is the ability to remember material just long enough to use it (usually for a period of up to ~20 seconds). In contrast, this item emphasizes the ability to learn from reading or listening, and remember the newly learned information after a period of time during which there have been intervening tasks or activities. For example, remembering someone's name *immediately* after hearing it (long enough to use it in your immediate reply) would most likely be rated under the working memory domain, but difficulty remembering someone's name 20 minutes later, after hearing it and using it in a conversation, and then talking with someone else, would be rated.

Item 6. Difficulty recalling recent events?

This item focuses on the ability to recall specific events (i.e., episodic memory) that occurred in the individual's own personal experience, and their awareness of current events over the last month or so. Ratings about knowledge of 'current events' should consider the individual's level of exposure to media and other people who may share information about current events.

Domain: Reasoning and Problem Solving

The essential features of this domain are the capacities to develop and initiate plans for action, particularly when a routine is interrupted, and to execute these plans despite obstacles and conflicting priorities. This domain is similar to what is sometimes referred to as the "executive" functions, but is somewhat broader in scope. This is one of the most complex and all-encompassing domains of functioning, often calling upon many abilities, and is among those considered most severely impaired in people with schizophrenia. An attempt has been made to divide this domain into 2 key areas, comprising: flexibility and judgment in novel situations.

Item 7. Lack of flexibility in generating alternate plans when needed?

This item focuses on the patient's capacity to generate alternate solutions when the patient's routine is interrupted. The suggested probes focus on several daily activities that may be subject to change requiring flexibility (e.g., transportation, shopping) and background interview information regarding daily living may suggest alternate probes. Efforts should be made to distinguish ratings on this item from those that focus more on general initiative in problem solving rather than flexibility.

Item 8. Problems in situations requiring judgment?

This item emphasizes patient's capacity to use good judgment in decision-making, particularly when there is not an obvious and direct solution. The suggested probes offer several examples of everyday problems, if a patient responds with a direct and sensible solution, the interviewer may follow-up by complicating the situation further (e.g., if asked "What would you do if your power went out?" and the patient responds "I'd call the superintendent of my building…" the interviewer could follow-up by asking: "Well, let's say the super was not available, then what would you do?"). The rater's goal is to judge the patient's problem-solving responses in terms of relevance and appropriateness to task solution.

Domain: Speed of Processing

The essential features of this domain are the rates at which the patient performs tasks, speaks, and moves. Speed of Processing has emerged from multiple factor analytic studies of neurocognitive functioning as a key dimension of ability on which people with schizophrenia have deficits. While the basis of these deficits remains unclear, and there may be contributions from multiple affected systems, the overall slowing of performance on both simple motor and complex cognitive tasks is often clearly apparent. This item focuses on more completing tasks and might be influenced by rater's objective observations of speech and movement throughout the course of the interview. Regarding direct observation, no specific probes or additional inquiries would be needed.

Item 9. Performs tasks slowly?

This item aims to determine how slowly the patient performs relatively complex tasks requiring cognitive ability, such as cooking, or shopping. Raters should attempt to clarify whether overall time to complete complex tasks is more related to a generalized slowing, or is better explained by the contributions of other cognitive deficits, such as deficits in attention (e.g., distractibility may lead a patient to spend little time actually focusing on the task at hand) or reasoning and

problem solving (e.g., if a patient does not ever initiate an attempt to complete a task, then it will certainly not be completed rapidly).

Domain: Social Cognition

The essential features of this domain are the abilities to perceive social cues, appreciate the perspectives of others in social situations, and to participate effectively in social interactions. The MATRICS project has selected the Managing Emotions subtest from the Mayer-Salovey-Caruso Emotional Intelligence Test (MSCEIT) to evaluate of this domain. According to the publishers of these measures, "emotional intelligence involves the ability to perceive accurately, appraise, and express emotion; the ability to access and/or generate feelings when they facilitate thought; the ability to understand emotion and emotional knowledge; and the ability to regulate emotions to promote emotional and intellectual growth." The items selected for rating of this domain encompass areas such as perception of emotion, appreciating the intentions of others (also sometimes referred to as “theory of mind”), appreciation of subtle meanings, and some direct observations of social interaction during the interview.

10. Difficulty appreciating another person’s intentions/point of view?

This item focuses on the patient’s ability to take another person’s perspective, or to judge from non-obvious and indirect communications what another person is actually feeling, intending or desiring. The probes include both direct inquiry “Do you have trouble understanding other people’s point of view (if you disagree with them; even if they don’t say it outwardly)?” and an example that is more open-ended (“If you are talking and someone looks at their watch, what do you think they may be feeling?”) to help elicit information useful for this rating.

This version of the CAI (Version 2; January 18, 2008) was designed for use by the authors for reliability and validity studies. We anticipate that there might be modifications to the structure, item and probe contents, and to the anchors in subsequent versions of this scale. These ratings collected in this preliminary work will enable assessment of psychometric properties of items that might be dropped from later versions of the CAI. For clinical trials applications, there is one primary score anticipated to serve as an endpoint, which is the GLOBAL SEVERITY OF COGNITIVE IMPAIRMENT – RATER COMPOSITE IMPRESSION. The Global Assessment of Function – Cognition in Schizophrenia (GAF-CogS) might be used in statistical analysis to assess interactions of baseline functioning with change, or descriptively, e.g., “Treatment X was associated with significant improvement as reflected on the Global Impression of Change in Cognitive Function, but patients continued to show mild to moderate levels of cognitive dysfunction at the end of the trial, as reflected by the Global Assessment of Cognitive Function.” Empirical research will be needed to determine whether summed ratings on the neurocogntive state items vs. the global severity ratings may offer superior measures of the overall constructs that this instrument aims to measure.