

CHC THEORY



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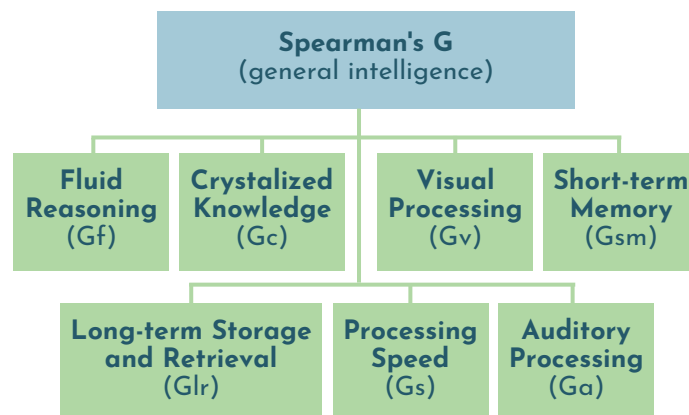
THE CATTELL-HORN-CARROLL (CHC) THEORY

The Cattell-Horn-Carroll (CHC) model is the empirically based, valid, and measurable construct for the analysis of learning abilities. The Cattell-Horn-Carroll (CHC) Theory classifies cognitive skills within seven clusters of abilities that demonstrate moderate to highly significant correlations to academic achievement skills.

THE SEVEN CHC AREAS:

Overall Cognitive Ability
(e.g. full scale IQ)

Broad CHC Abilities
(7 of relevance to academic achievement shown)



This guide can be used as a tool when consulting with special education teachers. This tool will help with explaining the CHC terms and helping educators connect psychoeducational assessment results to interventions and IEP recommendations.

If a student scores low in one of the seven CHC areas refer to the area in the guide for specific accommodations that can be applied in the educational setting and in the everyday sense.

CRYSTALLIZED KNOWLEDGE

Comprehension & Knowledge

WHAT IS IT?

THE ABILITY TO
COMPREHEND AND
COMMUNICATE
CULTURALLY VALUED
KNOWLEDGE.

ACCOMMODATIONS

RELATED TO INSTRUCTION

Model critical thinking questions

Check in for understanding

*Explicitly teach morphology to
enhance the meaning of
languages*

WHAT ARE RELATED ABILITIES?

Expression

Conceptualization

Language development

Lexical knowledge

Listening ability

Communication ability

General information

Grammatical sensitivity

ACCOMMODATIONS

RELATED TO VOCABULARY

*Associate new vocabulary words
with a personal story or memory*

*Use familiar vocabulary words
when introducing a new topic*

*Teach categorization for new
concepts using webs and
T-charts*

WHAT ARE RELATED DIFFICULTIES?

Learning new vocabulary

*Understanding spoken and written
language*

Answering factual questions

*Applying previous learning to new
learning*

ACCOMMODATIONS

TO USE IN DAILY LIFE

*Incorporate critical thinking
questions in daily life and
experiences*

Encourage reading for leisure

*Ask and think through how
experiences and concepts are
similar and different*

FLUID REASONING

Planning

WHAT IS IT?

THE ABILITY TO SOLVE
NOVEL PROBLEMS THAT
DO NOT REQUIRE
SPECIFIC LEARNED
SCHEMAS OR HABITS.

ACCOMMODATIONS

RELATED TO INSTRUCTION

*Teach categorization for new
concepts - Where does this fit?*

*Practice forming hypotheses and
drawing conclusions using
available information*

*Model & practice problem-solving
strategies*

WHAT ARE RELATED ABILITIES?

Conceptualization

Inductive reasoning

Quantitative reasoning

ACCOMMODATIONS

TO CONNECT THE DOTS

Provide concrete examples

*Use fact charts, manipulatives,
and calculators*

*Link new learning to prior
knowledge in an explicit way*

WHAT ARE RELATED DIFFICULTIES?

"Connecting the dots"

Generalizing learning to new experiences

*Thinking of new and different ways to
solve problems*

Developing themes in writing

*Recognizing relationships with numbers
and math reasoning*

ACCOMMODATIONS

TO USE IN DAILY LIFE

*Model and encourage cognitive
flexibility*

Embrace mistakes

*Make predictions and draw
conclusions in everyday life, and
reflect on why predictions were
(or were not) accurate*

PROCESSING SPEED

WHAT IS IT?

THE ABILITY TO CONTROL
ATTENTION IN ORDER TO
AUTOMATICALLY,
QUICKLY, AND FLUENTLY
PERFORM RELATIVELY
SIMPLE COGNITIVE TASKS.

ACCOMMODATIONS

RELATED TO INSTRUCTION

*Give extra time to process
directions and respond*

Reduce note-taking requirements

*Provide seating away from
distractions*

WHAT ARE RELATED ABILITIES?

Perceptual speed

Psychomotor speed

Reaction & decision speed

Number facility

Reading fluency

Writing fluency

Rate-of-test-taking

ACCOMMODATIONS

RELATED TO WORKLOAD

*Set a reasonable time to work on
assignments and homework and
discontinue after that time*

*Praise "think-time efforts" instead
of work completion*

*Chunk assignments into smaller
parts*

Give extra time to complete tasks

WHAT ARE RELATED DIFFICULTIES?

Taking information in quickly

Completing assignments quickly

Putting thoughts into words quickly

*Reading comprehension struggles
because of struggles in academic fluency*

ACCOMMODATIONS

TO USE IN DAILY LIFE

*Teach time-telling and use a visual
timer to support self-awareness*

Chunk projects into smaller pieces

*When you ask a question or
engage in conversation, wait
patiently for responses and
encourage thoughtful answers*

SHORT-TERM MEMORY

Working Memory/Sequential

WHAT IS IT?

THE BRAIN'S "MENTAL
SCRATCH PAD"

THE ABILITY TO HOLD
INFORMATION AND USE IT
WITHIN A FEW SECONDS.

ACCOMMODATIONS

RELATED TO INSTRUCTION

*Break steps into parts
first ... then ... after ... last*

Give verbal and visual instructions

Check for understanding

Repeat instructions and directions

WHAT ARE RELATED ABILITIES?

Auditory short-term storage

Attentional control

Visual short-term storage

Working memory capacity

ACCOMMODATIONS

TO SUPPORT REMEMBERING

*Use checklists during multi-part
assignments*

*Allow number lines and
multiplication charts*

*Introduce songs or mnemonics
(PEMDAS) to help remember
information*

WHAT ARE RELATED DIFFICULTIES?

*Remembering information long enough to
do something with it*

Remembering the sequence of information

Orally retelling what was read

Taking notes

Following oral directions

ACCOMMODATIONS

TO USE IN DAILY LIFE

*Give short directions and then
check for understanding*

*Encourage questions to clarify or
recall information*

Use visual reminders

*Provide opportunities for extra
practice*

LONG-TERM RETRIEVAL

Learning

WHAT IS IT?

THE ABILITY TO STORE
AND RETRIEVE
INFORMATION FROM THE
BRAIN'S LIBRARY IN
ORDER TO USE IT WHEN
APPLICABLE.

ACCOMMODATIONS

RELATED TO INSTRUCTION

*Make information meaningful
when you teach*

*Enrich lessons using multimodal
teaching*

*Review previously taught
information and gradually
introduce new concepts*

WHAT ARE RELATED ABILITIES?

Association

*Learning efficiency
Associative memory
Meaningful memory*

*Retrieval fluency
Ideational fluency
Expressional fluency
Associational fluency
Speed of lexical access
Naming facility
Word fluency
Figural fluency*

ACCOMMODATIONS

TO SUPPORT REMEMBERING

Provide hard copy of notes

*Review, rehearse, and practice to
"overlearn" skills and concepts*

*Provide multiple choice rather
than short answer / essay*

WHAT ARE RELATED DIFFICULTIES?

*Linking ideas and concepts together to
accurately store ideas categorically*

Recalling facts and procedures

*Interrupted thought processes in expressive
language*

*Making connections during oral
presentations*

ACCOMMODATIONS

TO USE IN DAILY LIFE

Model new ideas and concepts

*Verbally review what you have
already learned and practice
skills together*

*Talk about how you are grouping
information in your head - what
is the link?*

AUDITORY PROCESSING

WHAT IS IT?

THE ABILITY TO
DISCRIMINATE, REMEMBER,
REASON, AND WORK WITH
AUDITORY STIMULI.

-TONES
-ENVIRONMENTAL
SOUNDS -SPEECH UNITS

ACCOMMODATIONS RELATED TO INSTRUCTION

Speak clearly when teaching

*Ask the student what parts they
heard after giving instructions
and then clarify as needed*

*Preview vocabulary words and
point out words that sound alike*

*Explore sounds, words, language,
& rhythms*

WHAT ARE RELATED ABILITIES?

Speech-sound discrimination

*Figure-ground / Resistance to auditory
stimulus distortion*

Memory for sound patterns

Maintaining and judging rhythm

Sound localization

Absolute pitch

Listening ability

ACCOMMODATIONS FOR LISTENING & HEARING

*Seat away from loud, competing
noises*

*Provide access to
noise-dampening headphones*

*Read books aloud and
encourage students to follow
along*

WHAT ARE RELATED DIFFICULTIES?

Learning phonics skills

Sounding out words

Reading word problems

Spelling

*Maintaining attention and remembering
long oral directions*

Learning new vocabulary

ACCOMMODATIONS TO USE IN DAILY LIFE

Provide audiobooks

*Read together, especially books
that play with and manipulate
letter sounds*

*Speak clearly and check to
ensure understanding*

PHONOLOGICAL PROCESSING

WHAT IS IT?

THE ABILITY TO
DISTINCTLY HEAR
PHONEMES, ASSOCIATE
LANGUAGE TO PHONEMES,
BLEND SOUNDS INTO
WORDS, AND SEGMENT
WORDS INTO PARTS.

ACCOMMODATIONS RELATED TO INSTRUCTION

Provide phonics instruction

Practice sight-word reading

*Use songs & mnemonics to help
with sound-symbol awareness*

WHAT ARE RELATED ABILITIES?

Phonetic coding

Auditory short-term storage

Word fluency

ACCOMMODATIONS FOR READING

*Read books aloud and
encourage students to follow
along*

*Read books that play with
sounds and use rhyming*

*Read assignments and test
questions aloud when possible*

WHAT ARE RELATED DIFFICULTIES?

Learning phonics skills

*Sounding out words when reading and
spelling*

Reading slowly and methodically

ACCOMMODATIONS TO USE IN DAILY LIFE

Provide audio books

*Read together, especially books
that play with and manipulate
letter sounds*

*Listen to music and talk about
the sounds and rhythms you hear*

LONG-TERM RETRIEVAL

Visual-Spatial Processing / Simultaneous Processing

WHAT IS IT?

THE ABILITY TO MAKE USE
OF MENTAL IMAGERY TO
SOLVE PROBLEMS.

PERCEIVING,
DISCRIMINATING,
& MANIPULATING
VISUAL INFORMATION
IN YOUR MIND.

ACCOMMODATIONS RELATED TO INSTRUCTION

*Provide models and explain them
(such as number lines)*

Explain visuals

Teach organizational skills

*Review class schedule throughout
the day using visual and oral cues*

Teach handwriting

WHAT ARE RELATED ABILITIES?

Visualization

Speeded rotation

Imagery

Closure speed

Visual memory

Spatial scanning

Figure ground

Perceptual speed

ACCOMMODATIONS TO BETTER ACCESS VISUALS

*Highlight or underline important
information & overlay charts and
graphs with labels*

*Provide graph paper for math
calculations*

*Reduce amount of visual
information on a page
(more white space!)*

WHAT ARE RELATED DIFFICULTIES?

Interpreting maps, charts, and patterns

*Understanding spatial characteristics
(eg, height)*

Learning spatial orientation (eg, left vs. right)

*Orthographic coding (using visual features of
letters to decode)*

Aligning numbers during computation

*Handwriting, in size and spacing of letters, and
staying in margins and lines*

ACCOMMODATIONS TO USE IN DAILY LIFE

*Limit visual distractors in work
spaces*

Give oral directions

*Use language to help explain
visual information as you
encounter it in day-to-day life*

SENSORIMOTOR ABILITIES

Psychomotor Abilities

WHAT IS IT?

THE ABILITY TO PERFORM PHYSICAL BODY MOTOR MOVEMENTS WITH PRECISION, COORDINATION, FLUIDITY, & STRENGTH.

ACCOMMODATIONS

RELATED TO INSTRUCTION

Reduce copying and note-taking

Teach cursive

Teach webs, T-charts, and other graphic organizers to help get thoughts on paper

WHAT ARE RELATED ABILITIES?

Psychomotor speed

Reactions & decision speed

Manual dexterity

Static strength

Control precision

ACCOMMODATIONS FOR WRITING

Allow speech-to-text for assignments

Provide and allow wide-ruled paper

Allow gel ink pens instead of pencils if preferred

Allow pencil grip trainers

Try slant boards when writing

WHAT ARE RELATED DIFFICULTIES?

Integrating visual and auditory information

Writing information by hand

Completing fine motor tasks

ACCOMMODATIONS

TO USE IN DAILY LIFE

Assist with finemotor tasks such as cutting, tracing, & gluing

Encourage use of physical therapy ball or therapy putty after writing tasks

Reduce paper-and-pencil demands

ATTENTION

WHAT IS IT?

THE PROCESS OF
MAINTAINING ALERTNESS
TO INCOMING SENSORY
STIMULI IN ORDER TO
PROCESS IT.

ACCOMMODATIONS

RELATED TO INSTRUCTION

Direct attention to important information

Give short, simple directions

Provide reminders for tasks

Seat away from distractions as much as possible

WHAT ARE RELATED ABILITIES?

Focused attention

Sustained attention

Selective attention

Alternating / shifting attention

Divided attention

ACCOMMODATIONS

FOR ENVIRONMENT

Provide a quiet workplace

Use nonverbal signals to redirect attention

Minimize visual clutter on page (more white space)

Emphasize major points visually

WHAT ARE RELATED DIFFICULTIES?

Having thoughts seemingly unrelated to conversations and topics

Being sidetracked easily by things in the environment

Making careless mistakes in work

Showing inconsistent performance

Getting tired easily

ACCOMMODATIONS

TO USE IN DAILY LIFE

Use a timer for tasks

Use checklists and calendars

Provide structured routines

Build in frequent opportunities for physical movement