

VA



U.S. Department
of Veterans Affairs

Cognitive Considerations

Accessibility Beyond Compliance (ABC)

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“For most people, technology makes things easier. But for people with disabilities, technology makes things possible.”

– Mary Pat Radabaugh

Schedule and upcoming sessions

1. 5-minutes — Chat, wait for stragglers
2. 5-minutes — Introduction
3. 20-minutes — Content
4. 20-minutes — Q&A
5. 10-minutes — Wiggle room, or free for a bio break before your next meeting

Upcoming Learning Sessions

February 21 Web Performance Impact on UX & Accessibility

Then, we'll evaluate how these learning sessions are going, to ensure this is a useful format.

[Previous ABC Learning Sessions](#) are available in our repo.

Subject Matter

We are going to touch on PTSD, mental injuries/illness, and other cognitive considerations. I aim for this to be a safe space where we may speak about these tough subjects, but acknowledge this may be hard.

It's okay to take a break if you need to.

Agenda and intro

- What are Cognitive Considerations?
- Design Considerations
- Technology Solutions
- “~~Just ask for help.~~”
- Accessibility Compliance

According to the World Health Organization (WHO), mental health is “a state of well-being in which the individual

- realizes [their] own abilities,
- can cope with the normal stresses of life,
- can work productively and fruitfully,
- and is able to make a contribution to [their] community”

In the United States

- 1 in 5 adults experience a mental illness in a given year.
- 1 in 25 adults live with a serious mental illness.
- 6.9 percent of adults live with major depression.
- 18.1 percent of adults live with an anxiety disorder.
- African Americans and Hispanic Americans use mental health services at ½ the rate of whites.
- Asian Americans at ⅓ the rate of whites.
- LGBTQ individuals are 2 or more times more likely as straight individuals to have a mental health condition.
- Depression and anxiety have a significant economic impact; the estimated cost to the global economy is US\$ 1 trillion per year in lost productivity.

Sources: <https://www.nami.org/NAMI/media/NAMI-Media/Infographics/GeneralMHFacts.pdf>
<https://www.nami.org/NAMI/media/NAMI-Media/Infographics/MulticulturalMHFacts10-23-15.pdf>
https://www.who.int/mental_health/in_the_workplace/en/

Nearly half (47.7 percent) of all Gulf War II veterans with a disability reported a cognitive difficulty.

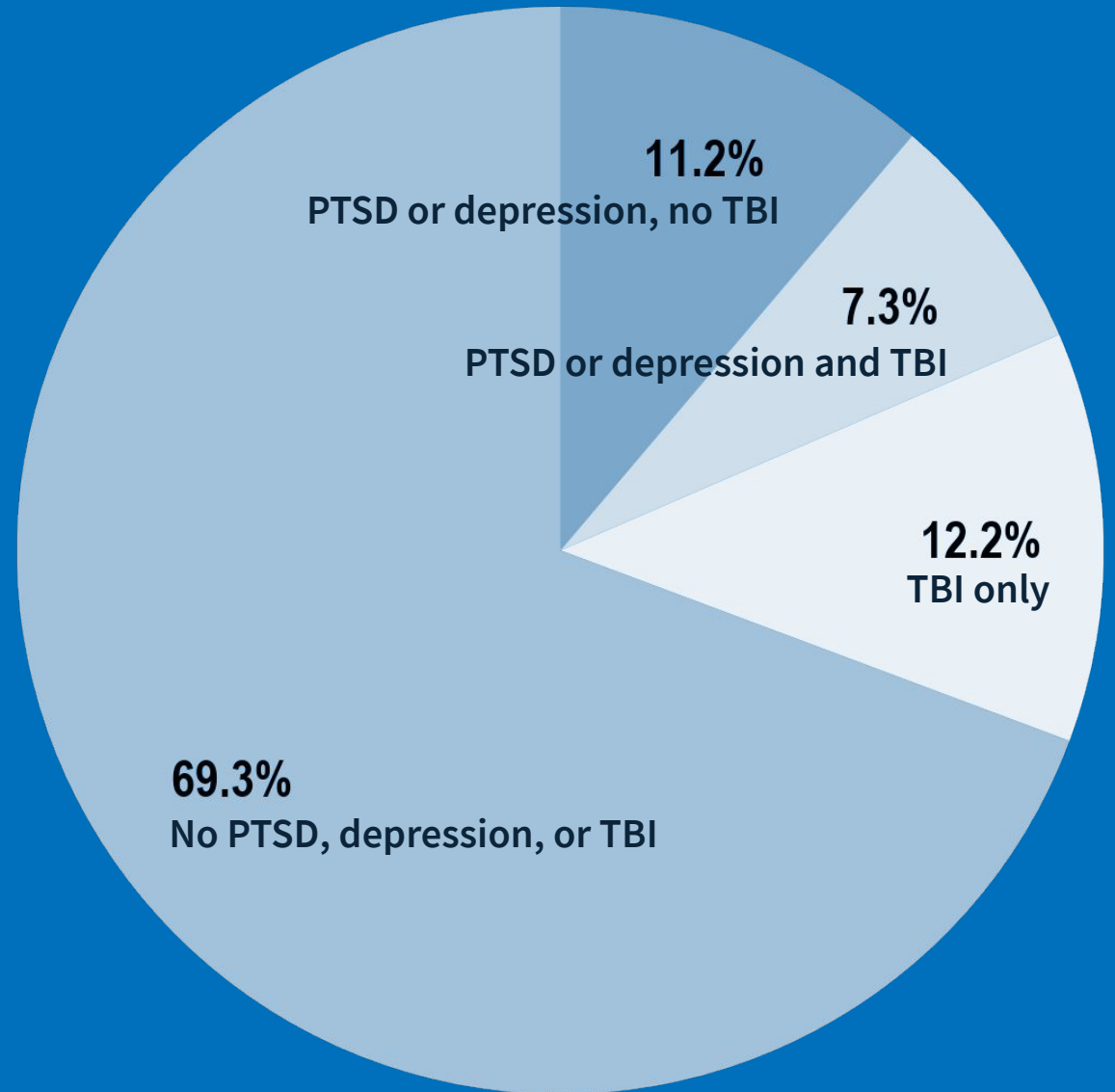
Source: <https://www.census.gov/content/dam/Census/library/working-papers/2016/demo/Holder-2016-01.pdf>

Since October 2001, approximately 1.64 million U.S. troops have deployed to support operations in Afghanistan and Iraq.

- A study conducted by the RAND corporation estimates approximately 300,000 veterans who have returned from Afghanistan and Iraq are currently suffering from PTSD or major depression, and about 320,000 may have experienced a traumatic brain injury (TBI) during deployment.
- Approximately 18.5 percent of U.S. service members who have returned from Afghanistan and Iraq currently have post-traumatic stress disorder or depression; and 19.5 percent report experiencing a traumatic brain injury during deployment.

Sources: <https://www.rand.org/pubs/monographs/MG720.html> and <https://www.rand.org/news/press/2008/04/17.html>

An estimated 31 percent of troops returning from Iraq and Afghanistan have a mental health condition or reported experiencing a TBI.



Source:

https://www.rand.org/pubs/research_briefs/RB9336.html

What do you think of these stats?

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What are Cognitive Considerations?

A disability is a condition that
limits a major life activity.

Accessibility helps more than just the blind

There are five disability types that are commonly considered in digital accessibility:

- seeing
- hearing
- speaking
- moving
- thinking

“Thinking” includes disabilities that impact emotions, problem-solving, memory, and other ways we use our brain.

“Thinking” disabilities

Cognitive disabilities are by far the most common type of disability and may arise as a result of:

- congenital conditions from birth
- developmental conditions from a young age
- traumatic injury, infections, chemical imbalances, or other conditions later in life

They may also be situational considerations attributed to fatigue, environmental stimulus, or being new to a situation.

Some types of cognitive disabilities

aphasia	Speaking (finding words), writing or understanding language
autism	May have difficulty understanding some communications or social interactions
attention deficit/ hyperactivity disorder	Focusing and keeping attention
dyslexia	Recognizing letters and words
dyscalculia	Recognizing numbers and symbols
intellectual	“Intellectual functioning (such as learning, problem-solving, judgment) and/or adaptive functioning (activities of daily life such as communication and independent living)”
memory loss	Difficult time remembering past events, new events, or both

These types of cognitive disabilities are just the beginning, there are many more.

Cognitive disability spectrum

- There are so many different kinds, and so many variations.
- An individual may experience a deficit in only one area, rather than all of them.
- Some trends or categories are worth listing, not because they apply to everyone, but because they are part of the cognitive disability spectrum.

Functional disabilities

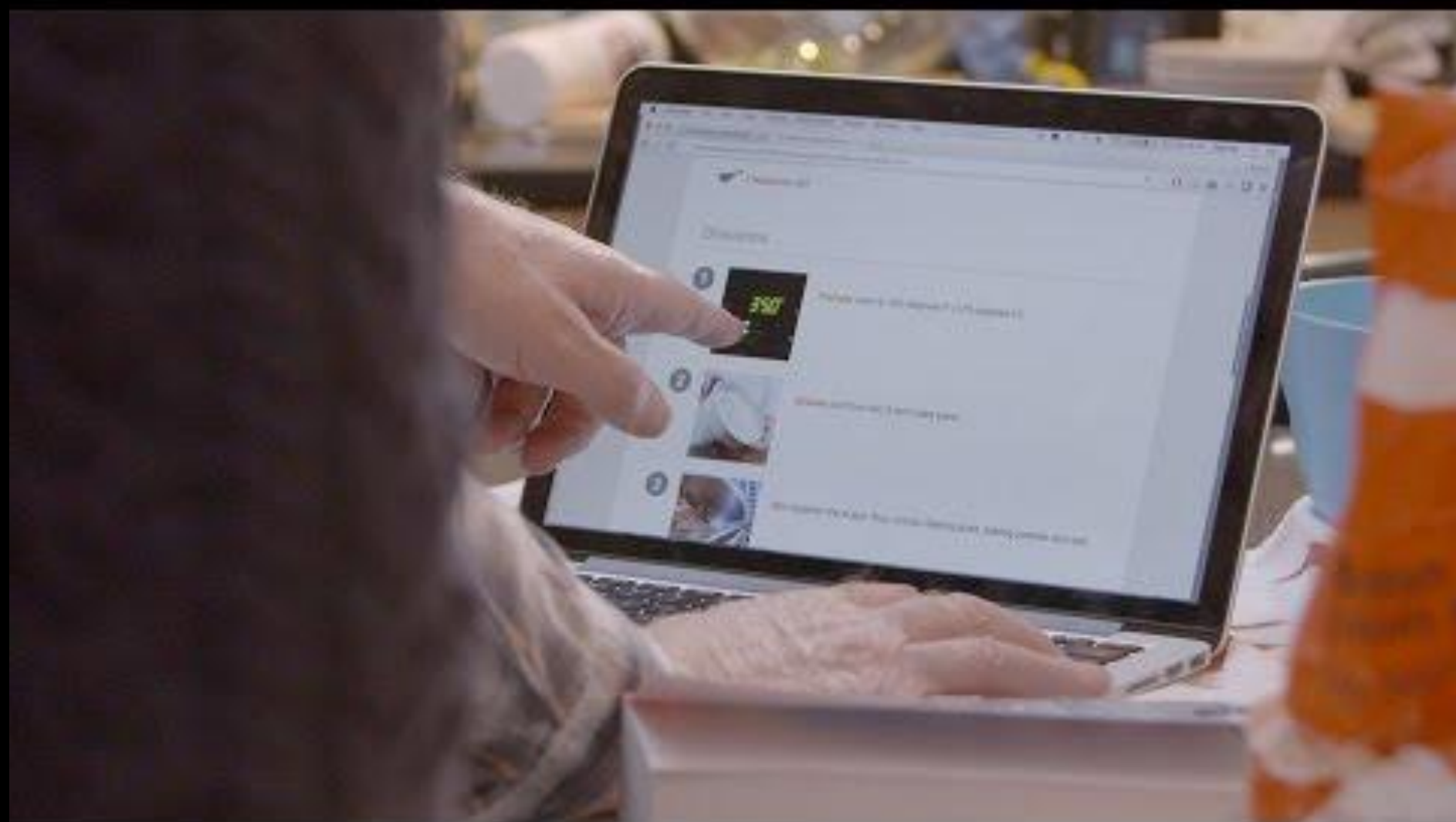
We consider cognitive disabilities by functional disability. Functional disabilities ignore the medical or behavioral causes of the disability and instead **focus on the resulting abilities and challenges**. Cognitive disabilities impact the capacity of an individual to:

- think
- concentrate
- react to emotions
- formulate ideas
- problem solve
- reason
- remember

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Design Considerations

How to incorporate this info into your day-to-day



Limited Comprehension

Most people with cognitive disabilities experience limited comprehension of one kind or another.

- They may not be able to understand complex ideas.
- They may have difficulty with metaphors or abstract language.
- They may not understand some kinds of slang or idiomatic expressions.
- Some people with cognitive disabilities have exceptionally high cognitive functions in one area — the ability to remember numbers or conversations — but low cognitive functions in other areas, such as social skills or emotional awareness.

Considerations for lower comprehension

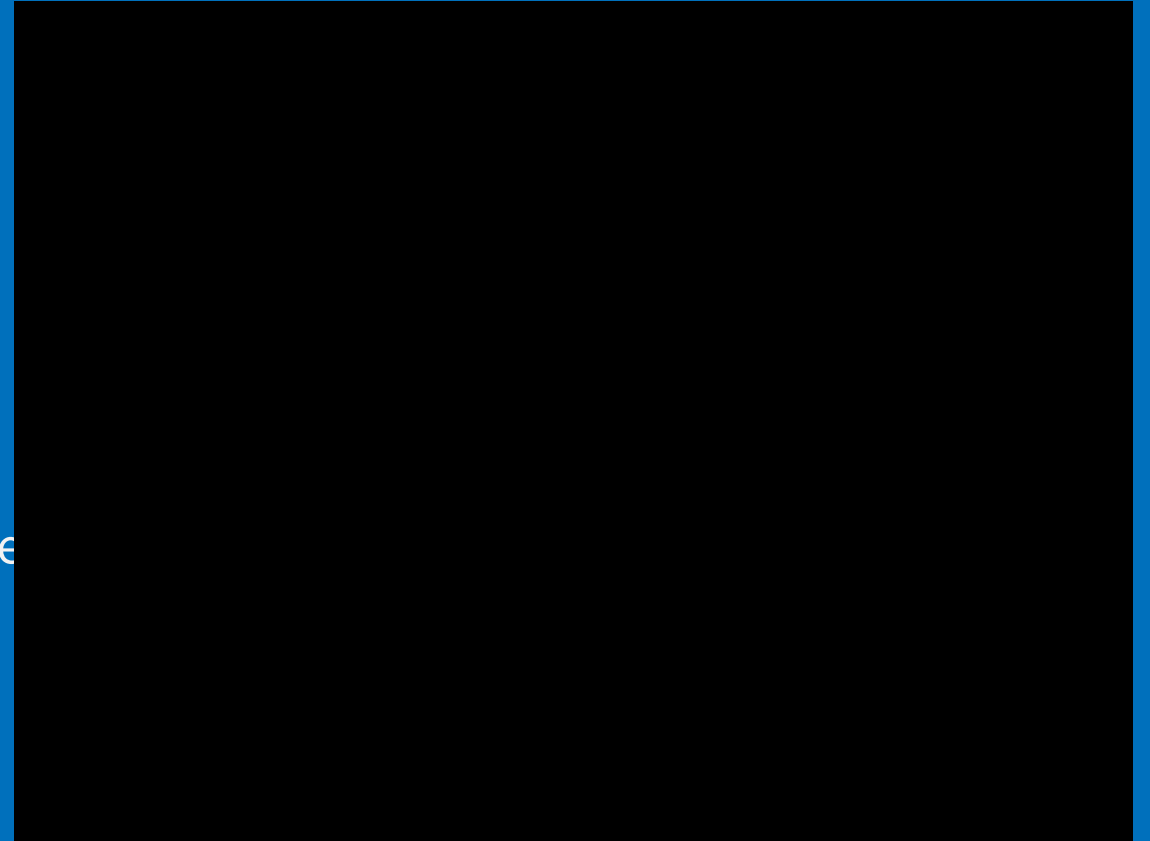
Users who have lower comprehension will have a better experience if the interface and content are easy to use and understand. Too many options and complex information may be difficult for them to process.

- Simplify the interface as much as possible (reduce content, provide structure).
- Simplify the content as much as possible (i.e., PlainLanguage.gov).
- Keep content to short sentences, bullets, good summarizing headings.
- Keep videos and audio as short as possible.
- Limit the number of choices on the screen.
- Provide help features, especially contextual help.
- Design for ease of use, anticipate possible errors.
- Test the usability of the interface with actual users, preferably including users with cognitive disabilities.

Short-Term Memory Loss

Some people with cognitive disabilities have a hard time remembering things from one moment to the next. Their brains don't allow them to focus on new information, so they don't retain it in the short term.

Long web processes — such as online purchasing procedures, account sign-up procedures, or setting preferences — can cause users to forget what they were doing, or to lose track of information that they may need to remember from one step to the next.



People with memory loss

A website that has predictability across all its pages (same navigation, same structure, etc.) will greatly benefit users with memory loss. Sites that are too complicated may fatigue users with memory loss. If users have difficulty interacting with the web page, help features can assist them with navigating the web page.

- Retain information across screens, and within a path.
- Provide help features, particularly contextual help.

1 of 3 Veteran/Service Member Personal Information

Complete the following information about the Veteran or Service member. You must fill in all fields, but we can review your application for you.

Veteran's first name **(*Required)**

Veteran's middle name

Veteran's last name **(*Required)**

2 of 3 Caregiver or Family Member Information

Complete the following information about the Caregiver or Family member. You can also include information about other Caregivers.

[Learn more about Primary Caregiver](#) ▼

[Learn more about Secondary Caregiver](#) ▼

Primary Caregiver's first name **(*Required)**

Primary Caregiver's middle name

Primary Caregiver's last name **(*Required)**

Attention Deficit

Some users experience attention deficits, making it hard for them to focus on the task at hand. They may

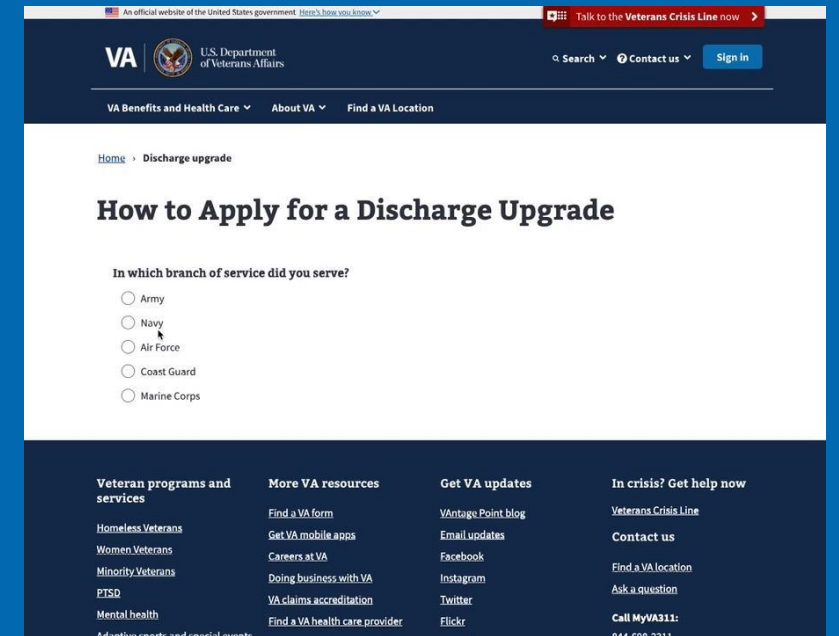
- get lost in their own thoughts...
- find online ads or long loading indicators distracting...
causing them to forget why they went to the website in the first place.

People with distractibility

Too many distractions on a web page may cause people with cognitive disabilities to miss important information being conveyed on a web page.

Distractions may cause them to lose focus or overwhelm them, and users may navigate from the web page.

- Reduce or eliminate distractions
- Be careful with motion, ads, carousels, intrusive audio, intrusive video, etc.
- Allow user to stop / control



Low Tolerance for Cognitive Overload

Some people with cognitive disabilities easily become frustrated or upset when they sense difficult situations, or when there are too many things in their environment happening at the same time. They cannot handle the complexity of the moment, may need to take a break. They need things to be simple and straightforward. Too many choices can cause them to freeze, and they may be emotionally unable to change their state of mind for a period of time.

« Back

Continue »

✓ Application has been saved. Last saved at Jan. 22, 2020 at 1:17 p.m.

[Finish this application later.](#)

Limited Problem-Solving Skills

When presented with a problem to solve, some people with cognitive disabilities may simply be unable to solve it, so they may not even attempt to solve it. If a website requires users to type text in a CAPTCHA, for instance, they may not be able to process what kind of action is required.

If they type an incorrect response and get an error message, they may not be able to figure out why they got the error message, or how to solve the problem.



Difficulty Reading

Many people with cognitive disabilities experience difficulty reading.

- Some read at a lower level than their peers of the same age, and some can't read at all. It can help to provide illustrations or audio to supplement text.
- Some people with dyslexia have high levels of cognitive function at a conceptual level, but visual encoding of text can be difficult, so they have a hard time spelling or reading words.
- Some with dyslexia read the 'shapes' rather than letters.

Dyslexia Bookmarklet

<https://data.qz.com/2016/dyslexia/>

Show on <https://www.va.gov/>

Designing for dyslexia

Although the number of people with dyslexia is far greater than the number of blind users, few building experiences know how to design for them.

Typography

- try to use a sans-serif font
- ‘hooks’ on serif letters may distort shapes
- if you must use a serif, reduce letter-spacing slightly
- explore typefaces developed for dyslexic users
- avoid using italics and underlines which can visually distort text
- bold is recommended for emphasis

Designing for dyslexia

Although the number of people with dyslexia is far greater than the number of blind users, few building experiences know how to design for them.

Layout

- aim for columns of no more than 80 characters per line
- narrower columns make reading easier
- use percentage widths for text areas
- set margins to “0 auto” via CSS so margins adjust proportionately
- white space is your friend, but must be consistent

Designing for dyslexia

Although the number of people with dyslexia is far greater than the number of blind users, few building experiences know how to design for them.

Tools

- offer readability tools, such as text-to-audio option via an automated tool
- ensure your markup activates functionality like iOS Reader Mode

Navigation



- keep navigation as logical as possible
- ensure Home page is accessible throughout your website or app, offering reassurance if people start feeling confused

Difficulty Understanding or Using Math

Some people experience math anxiety, which is an emotional or psychological fear that grips some people when confronted with math problems. This is less of an intellectual deficit than a psychological deficit. Other people truly cannot solve mathematical problems because their brains are not capable of that kind of thinking.

VA combined disability rating calculator

Enter each of your disability ratings separately below. You can also add a description of each for your notes, if you'd like. Then click **Calculate** to get your combined rating.

Disability rating	Optional description
<input type="text" value="20"/>	<input type="text" value="Tinnitus"/> 
<input type="text" value="40"/>	<input type="text" value="PTSD"/> 

[+ Add rating](#)

Calculate [Clear all](#)

Your VA disability rating

50%

Note: The actual combined value of your disability ratings is 52%.

We round this value to the nearest 10% to get your VA disability rating. We then use this VA disability rating to determine your monthly disability compensation payment.

If you have 2 or more disabilities that affect

Examples of user needs

For reference in documenting acceptance criteria and scenarios, here are three examples of types of user needs for people with cognitive disabilities:

- Easy to use and secure authentication
 - i.e. “I need a secure way to log in that is easy enough for me to use.”
- No distractions
 - i.e. “I need to be able to read content or complete a task without distractions.”
- Prevent errors
 - i.e. “I need help avoiding mistakes, and minimizing mistakes I might make.”

What are some examples of digital design that support cognitive considerations?

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Technology Solutions

Assistive Technology (Software/Hardware)

There are many solutions to help people with disabilities access content online.

Assistive technologies can help people with disabilities:

- Type or speak to their computer to help them write emails
- Search the internet
- Post to Facebook
- Keep records
- Make documents

For cognitive disabilities, there are also assistive technologies that can:

- Remember passwords
- Help a person organize their thoughts before writing a letter
- Keep track of where they are in a project

What are some tools that support
cognitive considerations?

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~~“Just ask for help.”~~

Often, if you cannot do something on your own, or encounter inaccessible experiences, the common response is “just ask for help.”

However, this is not an appropriate response to a person with a cognitive disability, as they should be able to access the web with the same independence as a person without a disability.

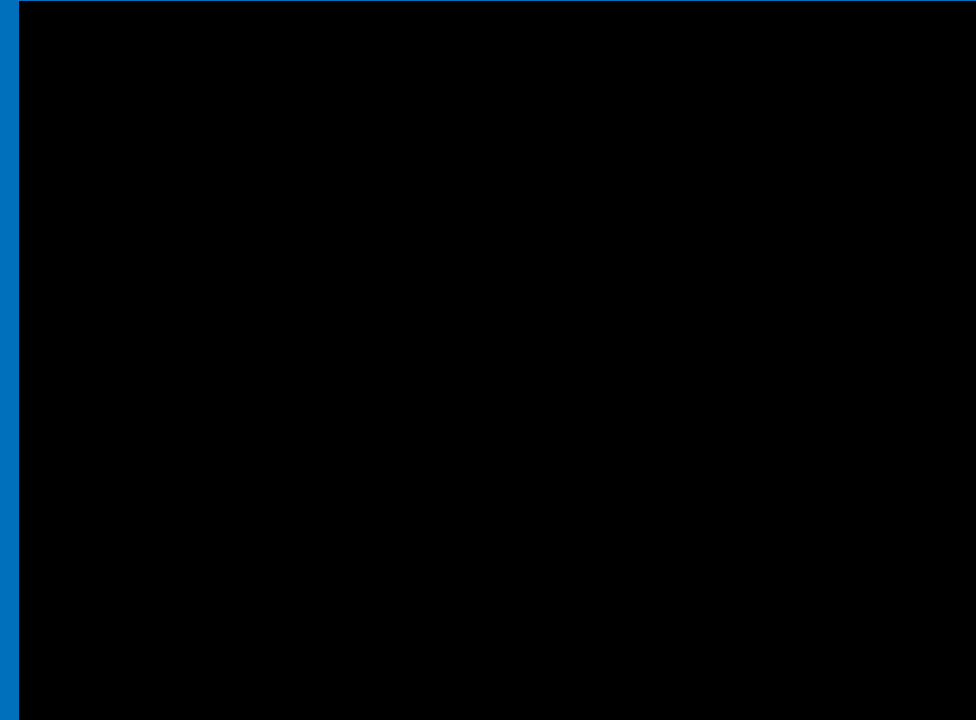
Keeping information private

Being able to access your information independently is a civil right. This is very important when the information about you is personal and something you want to keep private.

Asking for help means having to sacrifice not only independence, but may become vulnerable to sharing personal information, such as medical information in the following example. Potential accessibility blockers:

- The website does not work with your assistive technology.
- You can't remember your login and password, then have trouble resetting it because the steps are not easy to follow.
- Once you open the results, they are in a PDF that doesn't work with your assistive technology.

It may happen with password information on VA.gov, if the person encounters issues with login.



Deliver for the range of possibilities

Sometimes people just need information presented in a different way in order to retain their independence. How might that apply for someone who learns best from videos? Here are a few examples of accessibility blockers in a video that may exist for a person with a cognitive disability.

- **Difficult words** — The words and examples in the video script might be too difficult.
- **Complicated directions** — The video may not break things down so the steps are easy to follow. Do you ever get lost when the directions are too complicated?
- **No captions** — Many people use captions, including some people with cognitive disabilities. If the captions are not there, some people may not be able to follow along. They may not remember the information as well. Or they may not learn the new vocabulary.
- **Not able to turn captions off** — For other people the captions can be distracting. If unable to turn off the captions, they may have difficulty focusing on your content.
- **Can't play video** — What if you can't control the video player using your way of interacting with a computer (such as your voice)? You may not be able to use the video at all.

“Our job isn’t to tell them how to interact with what we create; our job is to create something that they can interact with in whatever way they choose to interact.”

– John Porter

How do you react when you have to ask
for help with something, and have to
reveal your SSN, for example?

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Accessibility Compliance

Is There Existing Web Accessibility Legislation?

- A group of people at the W3C created a rule called the Web Content Accessibility Guidelines (WCAG).
- This rule explains how to make the web work better for people with disabilities.
- Some countries have made this rule required for governments to follow. Examples are the United States, Canada, and Europe.

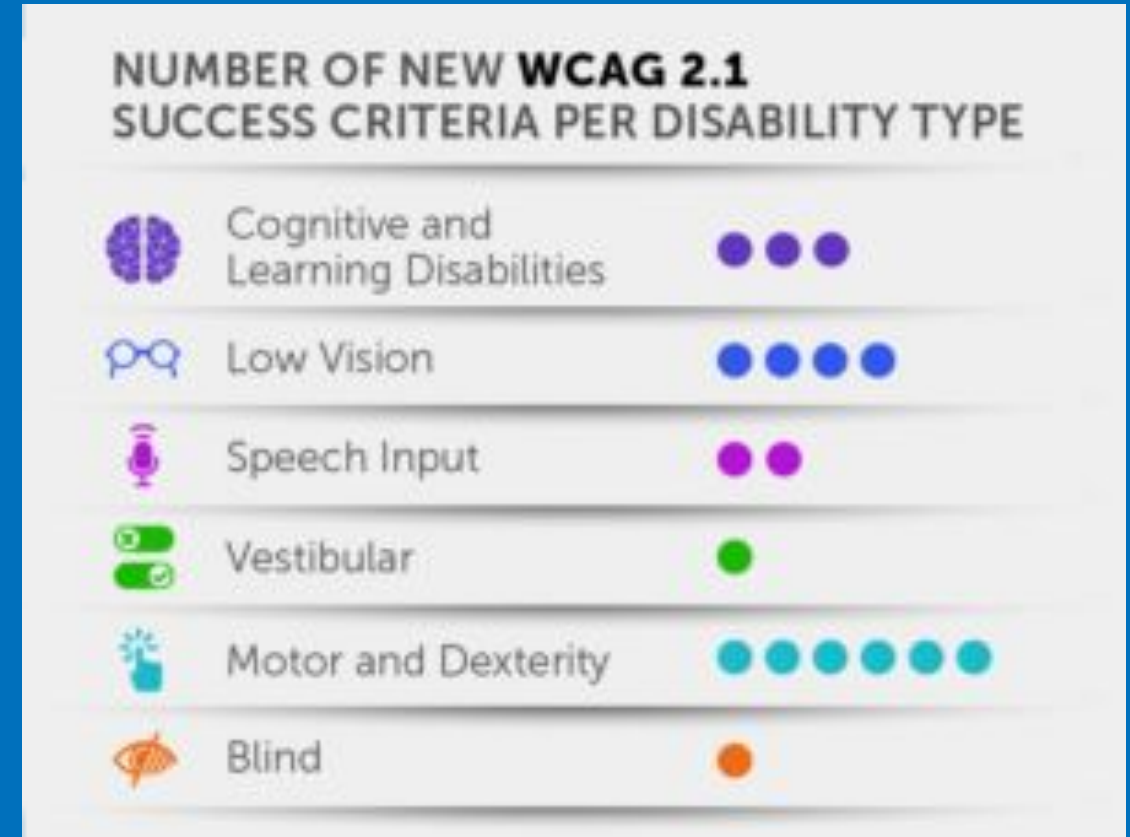
Do these rules apply for supporting people with cognitive disabilities?

The [Cognitive Accessibility Task Force](#) at the W3C is working on making the web more accessible for people with cognitive disabilities. They identify where user needs are not being met and are writing a guide for “[Making Content Usable for People with Cognitive and Learning Disabilities](#).”

- Their efforts informed [WCAG 2.1](#), which builds on and extends WCAG 2.0, but does not supersede or replace 2.0.
- WCAG 2.0 doesn’t explicitly list criteria for cognitive considerations. The WCAG 2.0 spec has sections for Perceivable (1) and Understandable (3) that hint at cognitive, but each release builds on the previous one and fills in gaps, adding more clarity and expectation to those seeking to follow that standard. WCAG 2.1 is the next release.
- The same criteria that ensure an accessible experience — semantic structure, sight and sound, interactivity and dynamic content, understandability — apply for cognitive considerations.

What's in WCAG 2.1?

WCAG 2.1 success criteria primarily address items related to mobile (small screens and touch screens) that accommodate users with motor and dexterity disabilities, users with low vision, and users with cognitive disabilities. In addition, there are success criteria that benefit users of voice input, users with vestibular disabilities, and users of screen readers.



Accessibility Beyond Compliance (ABC)

When thinking about web accessibility, a lot of focus is on ‘checking the boxes’ to meet Section 508 compliance. As Trevor Pierce says, this is a fear mindset: doing accessibility as a way of running away from pain for the company.

Accessibility beyond compliance acknowledges needing to meet those standards. But that’s not enough. It’s possible to meet the standards, and a screen reader user still not be able to navigate your site because your headings don’t make sense, your links are styled as buttons (or vice-versa), or you otherwise break expected patterns for how real people use real websites.

Accessibility beyond compliance isn’t about fear, it’s running *TO* an equitable, inclusive future, where end users are co-creators, where people building websites think about *HOW* an actual human being will interact with them. It’s about not resting on the laurels of a clean compliance scan, but embracing the work of welcoming your users in, learning how you can do better, and then doing it.

Planning towards the future...

Currently, 508 Compliance is based on the Web Content Accessibility Guidelines (WCAG) 2.0 standard. The new standard, WCAG 2.1, was released last year and includes new standards for mobile and cognitive considerations. So, we want to be sure we're prepared for when Section 508 is based on WCAG 2.1.

This isn't a burden. It's not a negative. It's a craftsmanship. For example, the curb cuts on a sidewalk, is now better for everyone — whether you have a stroller, wheelchair, or joint pain; the bumps are inclusive.

As you look at these user needs,
you may be thinking, everyone will
benefit from these improvements.
Correct!

But for a person with a cognitive
disability, these user needs are
crucial for them to equally access
content online.

Thank you! Any questions?

Contact your accessibility specialists in #vetsgov-accessibility channel in the DSVA Slack, or message Trevor Pierce (VSP) or Jennifer Strickland (VSA).

Takeaways

- ❑ Simplify the interface as much as possible
- ❑ Simplify and shorten the content as much as possible
- ❑ Keep videos and audio as short as possible
- ❑ Limit the number of choices on the screen
- ❑ Design for ease of use
- ❑ Test the usability of the interface with actual users, preferably including users with cognitive disabilities
- ❑ Retain information across screens, and within a path
- ❑ Provide help features, particularly contextual help
- ❑ Reduce or eliminate distractions (be careful with motion, ads, carousels, intrusive audio, intrusive video, etc.)
- ❑ Provide easy to use and secure authentication
- ❑ Prevent errors, and provide clear support for messages

Resources

- [Deque University's curriculum on cognitive disabilities](#) (requires subscription)
- [Assistive Technology for Individuals with Cognitive Impairments](#), 3.5MB PDF
- [An Introductory Guide to Understanding Cognitive Disabilities](#) Deque
- [Cognitive Accessibility](#) Mozilla Developer Network
- [WCAG 2.1, exploring the new success criteria](#) Level Access
- [Web Accessibility Perspectives Videos](#) W3C
- [How to Design for Dyslexia](#) Usabilla/UX Booth
- Dyslexia Bookmarklet <https://data.qz.com/2016/dyslexia/>
- Funkify, Disability Simulator <https://www.funkify.org>
- [How to enable Reader Mode on your site](#)