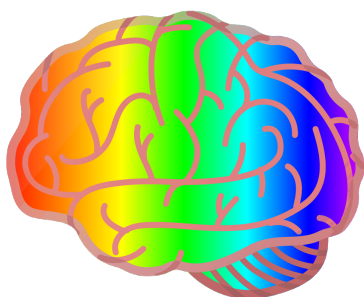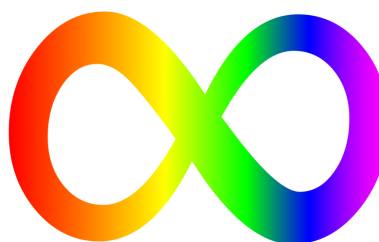# Proposal for NEURODIVERSITY Emojis

Alice Wonder

July 16, 2018

I am proposing two emojis for **NEURODIVERSITY**

Figure 1: Neurodiversity Emoji Concept Art

(a) Emoji A: Rainbow Brain

(b) Emoji B: Rainbow Infinity Loop

When used in a normal paragraph, the rainbow brain concept art renders as 🧠 and the rainbow infinity loop renders as ∞ giving some idea of how they would render when compared to the similar existing emojis **BRAIN** 🧠 and **INFINITY** ∞.

Autism (often referred to as Autism Spectrum Disorder) refers to a spectrum of characteristics that are the result of a neurologically atypical brain. Typical autistic characteristics include repetitive behaviors, differences in language processing, difficulty in social interactions, and differences in how emotions and empathy are expressed.

The center for disease control estimates that roughly 1 in 59 eight year olds is autistic[1]. Generally biological boys *(XY chromosome pair)* are more likely to be diagnosed as autistic than biological girls *(XX chromosome pair)*, though that may be due to differences in social constructs regarding the expected behavior of biological boys and

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[1] https://www.autism-society.org/news/2018-cdc-autism-incidence-rate-statement-from-the-autism-society/

biological girls resulting in a higher percentage of autistic biological girls going undiagnosed.

While autism is a form of neurodiversity, it is important to understand that neurodiversity it *not* just a synonym for autism. The term embraces dyslexia, cerebral palsy, ADHD, and other syndromes that involve a brain that works in a fundamentally different way than how the neurotypical brain works.

As online social networking makes it easier for neurodiverse individuals to find each other, our positive identity as a demographic rather than a negative identity as a disorder is starting to grow.

We believe emojis to express our neurodiverse identity, emojis chosen by our community, are both warranted and will help us continue to identify each other and grow as a community, enabling us to receive the important peer support we often lack from society at large.

Two emojis are proposed because there are two different pictographs currently in use by the community to represent neurodiversity that can not be adequately represented by existing emojis.

The primary difference between those who are neurodiverse and those who are not is in how our brain works. A rainbow represents the full spectrum of visible light.

Some of us see a rainbow brain as a logical represention of the neurodiverse spectrum that makes up our community. Others prefer a rainbow infinity loop.

Many members of the Neurodiverse community already identify with either the rainbow brain or the rainbow infinity loop shown in figure 1.

We respectfully request that one or preferably both emojis be added to the official Emoji list.

Conventions

This proposal is attempting to follow the proposal guidelines specified at https://unicode.org/emoji/proposals.html using the same section numbering scheme used in the form specification there.

Section Six, *'Other Information'* in the proposal form template, has been renamed to *'Selection Factors — Special Consideration'*.

Sometimes I over-explain thing. It is an autism trait often known as 'data dumping' and is often frowned upon by those who are neurotypical. I have tried very hard not to do it here, but I ask for an ounce of grace if and when I over-explain something.

Existing Emojis

Existing emojis used in this document will be referenced using upper case bold text for the CLDR short name followed by an image of the emoji.

Unfortunately TEXLive does not directly support color emoji fonts. I was forced to use a hack that inserts the emojis as images.

I apologize if that screws up automated software that generates emoji use statistics. LATEX is the only word processor I ever was able to figure out how to get it to do what I want. Well, um, until now when I wanted to insert emojis... ;)

Hyperlinks

Hyperlinks where the text of the hyperlink is not the URL will have the URL specified in a footnote.

Figures

With the exception of the concept art for the proposed emojis at the top of this document, all figures appear in Appendix A. This makes it easier to note that the images in the figures are used under the Fair Use doctrine so that it is very clear the copyright to those images does not belong to me. I like to be very clear when it comes to intellectual property.

Community Participation

I, Alice Wonder, am only a *member* of the Autistic / Neurodiverse community.

This document was created on a Public Github[2] where any member of the community is free to either create issues or submit pull requests.

Community participation has been sought at both Twitter and Facebook before submission of this proposal to the Unicode Consortium to make sure this proposal is congruent with the those the emoji is intended to represent.

Feedback from members of the community on both Twitter and Facebook has been positive. It is only a very small sampling of the larger community, but I did my best to contact as many members of the community as I could.

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[2] https://github.com/AliceWonderMiscreations/NeurodiversityEmoji

Contents

List of Figures

1. Identification

1.A. CLDR Short Name

The suggested CLDR short names: **Rainbow Brain** for 🧠 and **Rainbow Infinity Loop** for ∞ .

1.B. CLDR Keywords

The suggested CLDR keywords for the Rainbow Brain emoji: **Neurodiversity, Neurodiverse, Neurodivergent, Rainbow Brain, Autism, Autistic, ASD, Asperger, Aspie, Asperger's, Asperger's Syndrome**.

The suggested CLDR keywords for the Rainboe Infinit Loop emoji: **Neurodiversity, Neurodiverse, Neurodivergent, Rainbow Infinity, Rainbow Infinity Loop, Autism, Autistic, ASD, Asperger, Aspie, Asperger's, Asperger's Syndrome**.

2. Images

The Rainbow Brain concept art in this proposal is based on the Google® Noto Color Emoji[3] font. I am not a graphic artist, I had to start with something.

It does not matter if the emoji font artists use their existing **BRAIN** 🧠 glyph or create a fresh version from scratch, the purpose of the rainbow brain is sufficiently different from **BRAIN** 🧠 that it does not need to inherit the design of that glyph.

It is probably advantageous for monochrome emoji fonts to NOT base their glyph for this emoji on their glyph for **BRAIN** 🧠 just to provide visual distinction.

The Rainbow Infinity Loop concept in this proposal is directly taken from Wikimedia Commons[4] with only a canvas change to make the artwork square. Monochrome versions of the glyph should *probably* just use a monochrome infinity loop.

Monochrome concept art has not been created. I apologize, I am not a graphic artist so any concept art I create is just that, concept art. Please do not hold that against this proposal, font creators will do their own thing anyway.

2.A. Zip File

A zip file containing the concept art can be downloaded from: NeurodiversityEmojis.zip[5].

The zip archive contains both emoji concepts in the 72x72 size.

The Apache 2.0 license text for the Rainbow Brain emoji is included in the zip file.

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[3] https://www.google.com/get/noto/help/emoji/

[4] https://commons.wikimedia.org/wiki/File:Autism_spectrum_infinity_awareness_symbol.svg

[5] https://notrackers.com/NeurodiversityEmojis.zip

2.B. License

The Rainbow Brain concept artwork is a derivative of the Noto Emoji **BRAIN** 🧠 glyph which uses Apache License, version 2.0[6]. A copy of that license is included in the zip archive.

The Infinity Loop concept artwork is from `https://commons.wikimedia.org/wiki/File:Autism_spectrum_infinity_awareness_symbol.svg` where it is specified as belonging in the public domain.

2.C. Document

The form for Emoji Proposals specifies that images for the proposed emoji be included at the top of this document in both 18x18 and 72x72 pixels.

The zip archive contains the concept art in 72x72. An 18x18 sample is not included, that size does not make sense, especially when so many devices have a pixel density of 2:1 or greater. I did include the concept art scaled to the height of the text in the document abstract. I hope that is sufficient.

With all due respect, that part of the 'Form for Emoji Proposals' needs to be modified. I do not even really understand what it is after, and several example proposals I looked at did not adhere to the text of that guideline. See the **PERSON MEDITATING**[7] sample proposal. The images there do not include 18x18 pixel images.

Is it possible that 18 point and 72 point is what was intended? Those are common font sizes. However many (most?) emojis are not even remotely recognizable at 18 pixels by 18 pixels. At least not to my eyes.

3. Selection Factors — Inclusion

3.A. Compatibility

Not applicable.

3.B. Expected Usage Level

3.B.1. Frequency

A search on Twitter revealed several users using either the **BRAIN** 🧠 emoji in their name or tweets or a brain image in their avatar in the context of neurodiversity:

- Neurodivergent Rebel[8]
- Different Brains[9]
- Tweet by Aspie Joey Jay[10]

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[6] `https://github.com/googlei18n/noto-emoji/blob/master/LICENSE`

[7] `http://www.unicode.org/L2/L2016/16279-person-meditating.pdf`

[8] `https://twitter.com/NeuroRebel`

[9] `https://twitter.com/diffbrains`

[10] `https://twitter.com/AspieJoeyJay/status/1017393882160615424`

A search on Twitter for neurodivergent / autism related hashtags revealed several users with a rainbow infinity loop in their avatar:

- Autistic Priest[11]
- Chris Connor[12]
- Frances_Larina[13]
- Meow Carrie Meow[14]
- Proud Mumma[15]

A search on Twitter revealed several users using **JIGSAW** 🧩 in the context of autism.

- Adam Spong[16]
- News4JAX Tweet[17]
- Autistic Pride Day Tweet[18]

It is apparent that users of the Twitter platform do want iconography related to neurodiversity and autism.

Examples of the Rainbow Brain being used 'in the wild' in the context of neurodiversity can be seen in figure 2.

Example of the Rainbow Infinity Loop being used 'in the wild' in the context of neurodiversity can be seen in figure 3.

While my *personal* preference is the Rainbow Brain, it appears that the Rainbow Infinity Loop has wider usage in the wild. If only one emoji is to be approved, the Rainbow Infinity Loop does appear to have wider usage within the community.

3.B.2. Multiple Usages

There is at least one possible use for the color brain emoji beyond neurodiversity.

Brain scans and instructive artwork for brains often use colors to indicate different things, whether it is neurotypical or not, see figure 5. It would not be surprising if some people in the field of neuroscience used the rainbow brain outside of the context of neurodiversity.

3.B.3. Use in Sequences

I believe this is not applicable.

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[11] https://twitter.com/AutisticPriest
[12] https://twitter.com/ChiDeltaWithNOR
[13] https://twitter.com/Frances_Larina
[14] https://twitter.com/meowcarriemeow
[15] https://twitter.com/mimismumma
[16] https://twitter.com/adspong2015lego
[17] https://twitter.com/wjxt4/status/1015279222657617922
[18] https://twitter.com/EmiForLove/status/1008835449798975490

It may be possible to add these emojis by using a sequence to describe them, such as how **RAINBOW** 🌈 is used to as a sequence modifier to create the **RAINBOW FLAG** 🏳️‍🌈 emoji.

The technical details of whether to use sequences to add support for these emojis or define codepoints is beyond the scope of this proposal, that is a Unicode Consortium decision.

3.B.4. Breaking New Ground

These emojis *may* break some new ground.

There currently are not any emojis that exist for the purpose of identifying diversity inside a person. There are emojis for ethnic differences, gender differences, career differences, even hair style differences.

Nothing seems to exist for differences in people that are fundamentally internal yet are a huge part of who they are.

An argument could be made for the **NERD FACE** 🤓 and the **RAINBOW FLAG** 🏳️‍🌈 emojis having broken that ground already.

3.C. Image Distinctiveness

A rainbow is frequently used as a visual representation of a spectrum. A rainbow itself is created by diffraction of white light, allowing our eyes to interpret the individual wavelengths that make up the visible spectrum of light and see the beautiful diversity that actually exists within white light that we were unable to perceive without the diffraction of light.

With the proposed Rainbow Brain emoji, it should not be too difficult for people to figure out the rainbow is acting as a diversity adjective for the brain.

With the proposed Rainbow Infinity Loop emoji, it may require some context initially for people not already familiar with the Rainbow Infinity Loop to understand the meaning. The current use of that pictograph by many users already should allow many to know what it means right away.

A rainbow flag is often used as a symbol of pride by the LGBTQIA community and sometimes rainbow colors and patterns are used outside of the context of a flag to indicate LGBTQIA pride. However the **RAINBOW FLAG** 🏳️‍🌈 is more frequently used for LGBTQIA pride. I do not believe there will be much confusion though there could be some.

3.D. Completeness

In addition to the Rainbow Brain and the Rainbow Infinity Loop, I am aware of two other pictographs that are sometimes used to indicate neurodiversity in general and/or autism.

A gold heart is sometimes used to indicate Autistic Unity. I *believe* that falls under the categorization of 'furthering a cause', which is specified as an invalid reason to request an emoji, so a gold heart emoji created for the purpose of autism or neurodiversity would likely not be appropriate.

Furthermore, those who wish to use a gold heart also can already do so using **YELLOW HEART** 💛.

Sometimes a puzzle piece is used to indicate autism specifically. The source of this as a pictograph for autism is due to the organization 'Autism Speaks' using a puzzle piece as their logo, see figure 4.

Those who wish to use jigsaw puzzle piece to indicate autism can already do so using **JIGSAW** 🧩 though I would *personally* recommend against it, as it may result in trademark violation when the emoji font uses a blue puzzle piece for that codepoint.

It is quite possible that organization would object to something so close to their trademarks being used to express opinions and views related to autism they do not specifically endorse.

3.E. Frequency Request

Not Applicable, I do not have any data on how often such an emoji is requested either of the Unicode Consortium or a Unicode member company.

4. Selection Factors — Exclusion

4.F. Overly Specific

The emojis proposed here are suitable to indicate all forms of neurodiversity. They are not overly specific to any particular form of neurodiversity.

4.G. Open-ended

The two proposed emojis here are the most frequently used pictographs I have seen to indicate neurodiversity within the neurodiverse community.

Outside the neurodiverse community, and by some members of the autistic community, a jigsaw puzzle piece is sometimes used. However the puzzle piece is closely tied to a specific organization and is in fact a trademark of that organization, making it unsuitable for general use.

4.H. Already Representable

Some people are already using **BRAIN** 🧠 to represent neurodiversity. It works for the present but only indicates neurodiversity for those who already understand the context. Far more often, that emoji is used to indicate intelligence or thinking.

Some people are already using **JIGSAW** 🧩 to represent autism. When used in the context of autism it has trademark issues, and it excludes neurodiversity that is not autistic.

4.I. Logos, Brands, UI Icons, Specific People, Deities

To the best of my knowledge, the Rainbow Brain and Rainbow Infinity Loop are not exclusive to any specific brand or person.

I did find the infinity loop in use with some Tarot card decks, but without rainbow coloring.

The blue puzzle piece that Twitter uses for **JIGSAW** 🧩 however is very similar to a trademark owned by Autism Speaks. See figure 4. Encouraging the use of a rainbow colored brain or rainbow infinity loop for neurodiversity would help avoid trademark issues.

4.J. Transient

As awareness of autism and other neurodivergent traits increase, the neurodiversity community will continue to grow, especially online where our social awkwardness is less of an issue. I expect we will run out of IPv6 address space long before these emojis are no longer of value...

4.K. Faulty Comparison

I do not believe this is applicable.

4.L. Exact Images

An exact image is not needed for either of these proposed emojis. Emoji font creators have plenty of artistic license when creating the glyphs to represent them.

5. Sort Location

5.A. Category

Rainbow Brain

Within the existing category list, the Rainbow Brain emoji would be a best fit within the 'Body' category.

Rainbow Infinity Loop

Within the existing category list, the Rainbow Infinity Loop emoji would be a best fit within the 'Symbols::other-symbol' category.

5.B. Comes After

Rainbow Brain

Within the 'Body' category, the Rainbow Brain emoji would be a best fit after the **BRAIN** 🧠 emoji.

Rainbow Infinity Loop

Within the 'Symbols::other-symbol' category, the Rainbow Infinity Loop emoji would be a best fit after the **INFINITY** ♾️ emoji.

6. Selection Factors — Special Consideration

The emoji **JIGSAW** 🧩 was recently added to the Unicode Emoji list.

The organization Autism Speaks[19] uses a blue puzzle piece for their logo. Twitter uses a very similar blue puzzle piece for the **JIGSAW** 🧩 emoji, see figure 4.

The two are very similar and there is some considerable fear that people outside of the autism community will start to use that emoji when referencing autism.

Within the autism community (people who are actually autistic themselves) there is a lot of resentment towards that particular group as well as resentment towards using a puzzle piece to represent us.

For information on why many (though admittedly not all) within the autistic community dislike the Autism Speaks organization, see Why Autistic People Generally Dislike Autism Speaks[20].

For information on why many within the autistic community do not want to be represented by a puzzle piece, see The Problem with the Autism Puzzle Piece[21].

Whether or not that organization deserves that resentment from us though is not the issue. Regardless of those things, it is not a good idea for an emoji that is very close to the trademark of a specific autism related organization to be used for autism in the general sense.

The proposed neurodiversity emojis would give an alternative that will not be confused with the trademark of a specific autism related organization while at the same time giving our community emojis to use that we specifically chose to identify with.

The proposed neurodiversity emojis avoids the potential misuse of the **JIGSAW** 🧩 emoji in the autism context it was not intended for.

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[19] https://www.autismspeaks.org/

[20] https://neurodivergentrebel.com/2018/03/14/why-autistic-people-generally-dislike-autism-speaks/

[21] https://learnfromautistics.com/the-problem-with-the-autism-puzzle-piece/

A. Figures

Images used in these figures fall under the Fair Use doctrine of U.S. Copyright law.
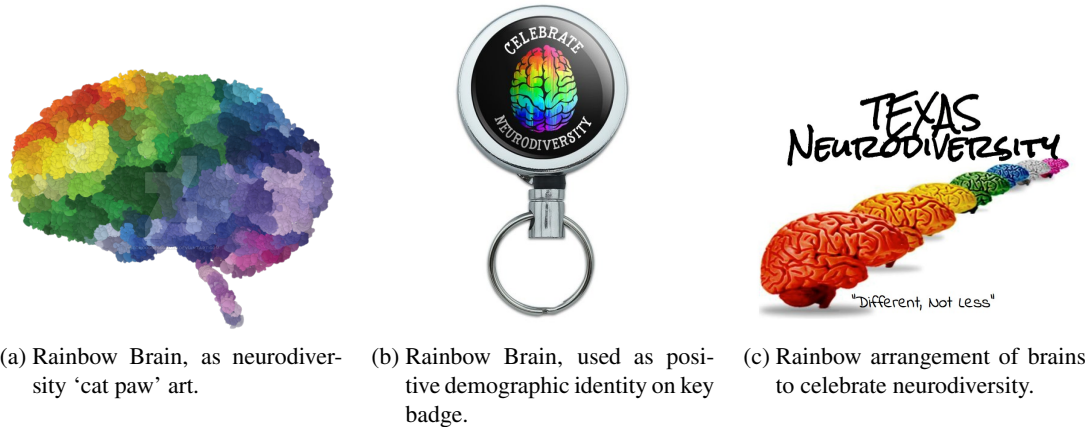
Figure 2: Rainbow Brain Usage

(a) Rainbow Brain, as neurodiversity 'cat paw' art.

(b) Rainbow Brain, used as positive demographic identity on key badge.

(c) Rainbow arrangement of brains to celebrate neurodiversity.

Figure 3: Rainbow Infinity Loop Usage

(a) Rainbow Infinity Loop, used to encourage neurodiversity inclusion.

(b) Rainbow Infinity Loop Tattoo, used to express demographic identity.

(c) Rainbow Infinity Loop, used as artwork for a Minecraft gaming platform mod.

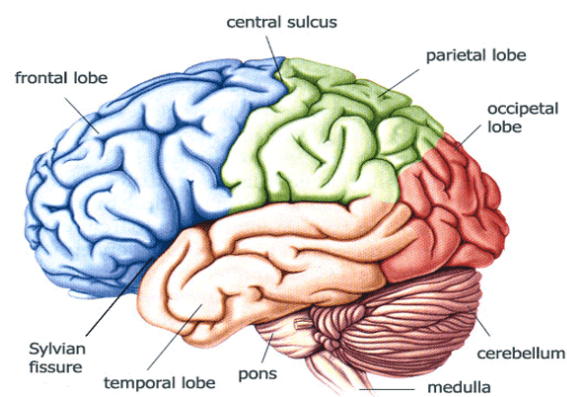Figure 4: Autism Speaks Logo vs Twitter Emoji

(a) Autism Speaks Logo

(b) Twitter   Jigsaw   Puzzle
Piece Emoji

Figure 5: Instructive Drawing of Brain using Multiple Colors

B. Acknowledgements

The following people either directly or indirectly contributed to the creation of this proposal. Those who I know are members of the neurodiversity community are listed first in alphabetical order. Those who I do not know are memberd of the neurodiversity community (though it is possible they are) are listed second in alphabetical order.

Autistic Priest Suggested the Rainbow Infinity Loop be added to the proposal, provided suggestions for improving the proposal.

Neurodivergent Rebel A very active member of the neurodiversity community. I *personally* never liked the puzzle piece I often saw used with autism. She was the first to make me aware there were others like me, and other alternatives in use for identity with autism and neurodiversity.

Brighton A dear friend who reminded me that many in the neurodiversity community do not identify with the biological sex often used to assign gender in our culture.

Doug Felt Goole Engineer, member of the Noto Emoji team and contributor to Noto Emoji. Made me aware of where to submit a new emoji proposal. I would like to specifically thank him for making me aware of this process.

C. Inline Emoji Glyphs

This document uses several existing emojis that are embedded as images.

Unfortunately due to technical aspects of using TEXLive to generate this proposal, the font these glyphs come from are not properly credited in the PDF metadata.

Someday I hope to be able to do something like `\usepackage[scaled=0.8]{notoemoji}` and have emoji support in `pdflatex` but that day does not seem to have yet come. So I cheated and embedded images of the needed glyphs.

The images used for the existing inline emojis were downloaded as PNG images from `https://emojipedia.org/`, a very useful resource for visually seeing how a particular emoji will render on different devices when the device or software native font is used to render it.

Emojipedia Glyphs

The following embedded emoji images are from the Emojipedia Emoji font:

- **BRAIN** 🧠
- **INFINITY** ♾️
- **JIGSAW** 🧩

Google Noto Emoji Glyphs

The following embedded emoji images are from the Google® Noto Color Emoji font:

- **RAINBOW** 🌈
- **RAINBOW FLAG** 🏳️‍🌈

Apple Emoji Glyphs

The following embedded emoji images are from the Apple® Emoji font:

- **NERD FACE** 🤓
- **YELLOW HEART** 💛