Reimagining Chinese Characters: Exploring Self-Perception Through Gendered Radical Interventions

MSc Media Technology Graduation Thesis

Huien Tan, June 24th 2025

Research Focus

- Can small linguistic interventions (radical or synonym changes) influence how people see themselves?
- Focus on female (女) radical in Chinese characters — often associated with negative stereotypes.
- Final output: a **feminist e-keyboard** prototype that lets users choose between original and modified forms.

Ji, the Chinese character that means [envy]

‘female’ radical

妨碍 [hinder]

嫒俗 [vulgar]

嫌弃 [hate]

贪婪 [greedy]

妄想 [delusional]

奸诈 [deceitful]

...

178 negative

955 in total

Because…

Language shapes perception

- Based on linguistic relativity, language isn’t neutral — it can shape how we see ourselves and others (Whorf, 1957; Sapir, 1929).

Why Chinese characters deserve attention?

Motivation & Gap

- Female (女) radical in Chinese characters is historically loaded with gendered meanings. (Zhao, 2003; Wang, 2016)
- Many other countries has language reform to be more gender-inclusive
  - they/them, étudiant·e, Latinx… (Saguy & Williams, 2021; Viennot, 2017)
- A lot of discussion happening, yet no usable tool to let people participate in feminist language reform.

Let’s modify the characters!
But how exactly?

- RQ1: How do different types of **linguistic intervention**—synonym replacement (M1), radical modification (M2), and positively gendered character creation (M3)—affect participants’ self-perception, compared to the original form (O)?

Linguistic Interventions

For orginally negative words with female radical

- O -> Original forms
- M1 -> replace the whole word with a gender-neutral synonym (e.g., 嫉妒[envy] → 眼红[really want sth.]).
- M2 -> replace the femlae(女) radical with a neutral one (e.g., 嫉妒[envy] → 候怙).

Linguistic Interventions

For orginally positive words

- O -> Original forms

- M3 -> add a female radical to the character (e.g., 强大[strong] → 嫐大).

RQ1: How do different types of linguistic interventionaffect participants' self-perception, compared to the original form (O)?

- Hypothesis 1
  - M1, M2, M3 will influence people significantly in a positive way, compared to their corresponding original from.
- Hypothesis 2
  - People who have stronger feminist beliefs will be more influenced by the modified characters, because these changes are directly related to gender representation in language.

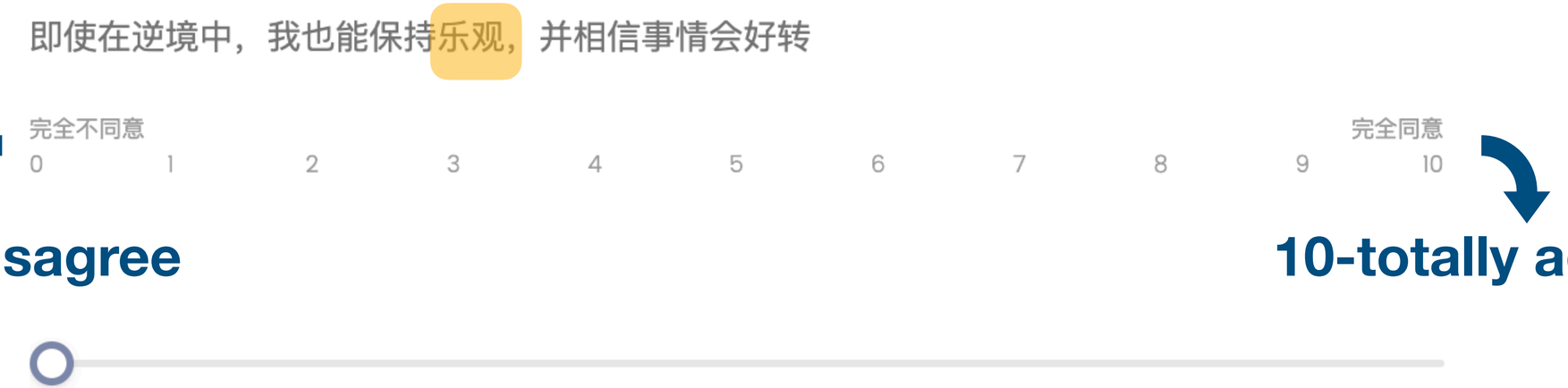
Methodology

Inspiration

- Vainapel et al. (2015) conducted an experiment in which the only difference in a survey was the pronoun format (“he” vs. “he or she”). The findings were striking – women exposed to the masculine-only form reported significantly lower task motivation and self-efficacy than those who saw gender-inclusive wording.

Methodology

“Even in difficult time, I can remain optimistic (O) and believe that things will get better.”



0-totally disagree

10-totally agree

Likert Scale

Methodology

Survey Structure

Week	Meaning A, negative	Meaning B, negative	Meaning C, negative	Meaning D, positive	…
1st	O	M1	M2	M3	
2nd	M2	O	M1	O	
3rd	M1	M2	O	-	

Scan to see Full Word List

Methodology

Phase 1

- **3** week survey
- **24** questions every week
- **14** negative meanings, each with 1 original form and 2 modified forms
- **15** positive meanings, each with 1 original form and 1 modified form
- **61** survey participants

Phase 2

- **3** interviewees

Findings

- **Results from data** → **Both hypotheses are not valid**
- **Discussion about reason**

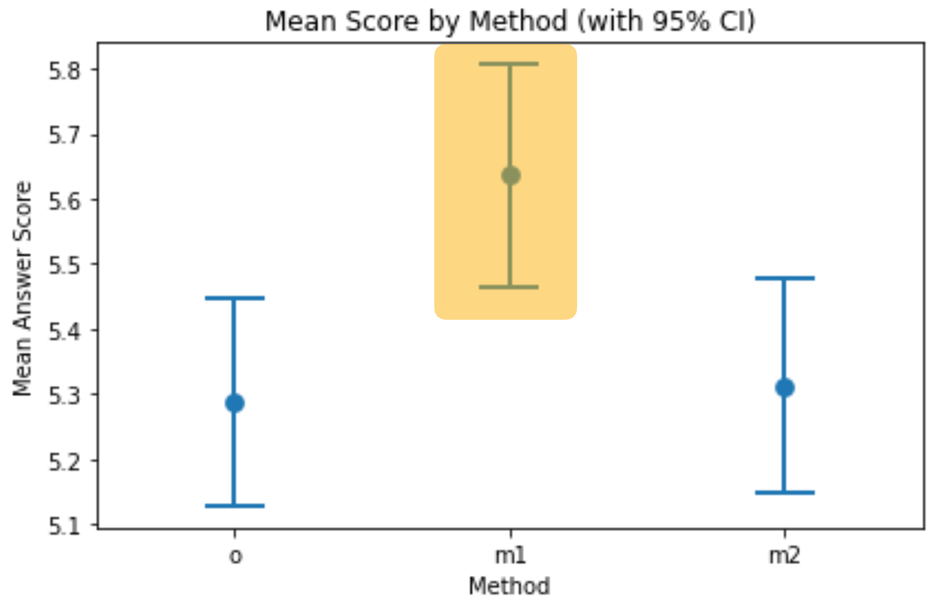
Finding 1 (M1)

Synonym replacements (M1, e.g. 嫉妒 → 眼红) significantly decrease self-evaluation score.

Mixed Linear Model Regression Results

Model:	MixedLM	Dependent Variable:	answer			
No. Observations:	2562	Method:	REML			
No. Groups:	61	Scale:	2.0394			
Min. group size:	42	Log-Likelihood:	-5364.6601			
Max. group size:	42	Converged:	Yes			
Mean group size:	42.0					

	Coef.	Std.Err.	z	P>|z|	[0.025	0.975]
Intercept	5.288	0.136	38.853	0.000	5.021	5.555
method[T.m1]	0.349	0.069	5.049	0.000	0.213	0.484
method[T.m2]	0.025	0.069	0.356	0.722	-0.111	0.160
Group Var	0.734	0.134				
meaning Var	3.498	0.178				



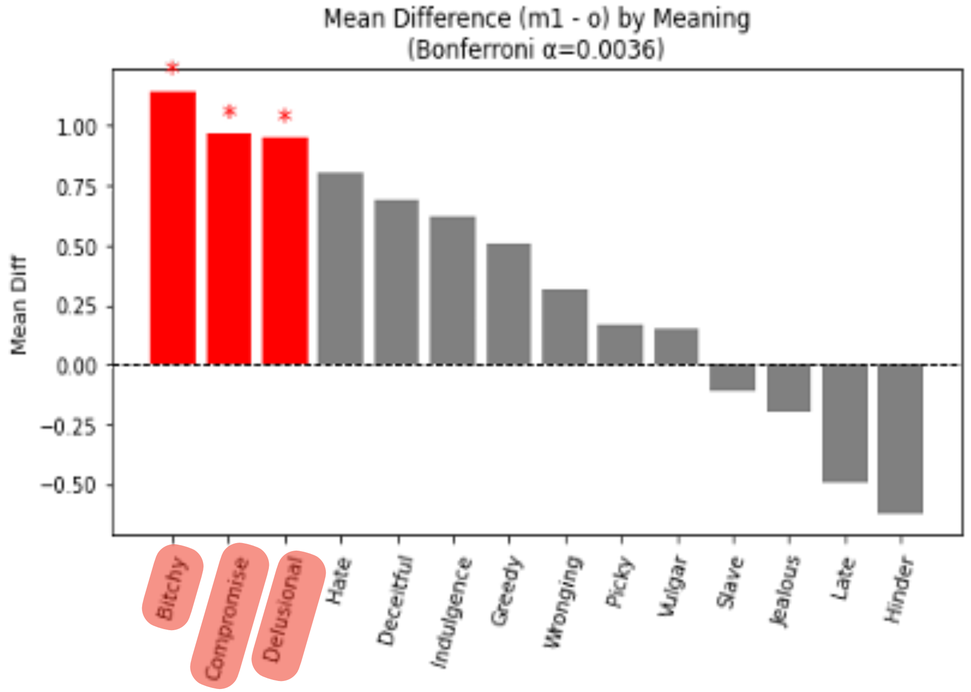
- Dependent variable: answer (subjective score)
- Fixed effect: method
- Random effects: participant_id & meaning

Why?

may be due to the embedded decrease in word intensity

Pair Index	O	Direct Translation of O	Valence	Intensity	M1	Direct Translation of M1	Valence	Intensity
1	婊里婊气	bitchy	2	9	矫揉造作	Airs and graces/affected	2	5↓
2	妥协	Compromise /trad-off	/	/	退让	Give in/yield	/	/
3	痴心妄想	Delusional/Dream on/wishful thinking	2	9	胡思乱想	let one's imagination go wild	2	1↓

Based on Chinese Emotional Lexicon Ontology (情感词汇本体库)



Meaning level paired t-test with Bonferroni correction for M3

Finding 2 (M1)

The negative impact of synonym replacements (M1) is significant among female participants, but not for other genders

Mixed Linear Model Regression Results

Model:	MixedLM	Dependent Variable:	answer
No. Observations:	2562	Method:	REML
No. Groups:	61	Scale:	2.0372
Min. group size:	42	Log-Likelihood:	-5364.2366
Max. group size:	42	Converged:	Yes
Mean group size:	42.0		

	Coef.	Std.Err.	z	P>|z|	[0.025	0.975]
Intercept	5.283	0.147	35.906	0.000	4.995	5.571
C(method)[T.m1]	0.384	0.074	5.183	0.000	0.239	0.529
C(method)[T.m2]	0.008	0.074	0.109	0.913	-0.137	0.153
C(gender)[T.男]	0.038	0.406	0.095	0.925	-0.758	0.835
C(method)[T.m1]:C(gender)[T.男]	-0.268	0.205	-1.310	0.190	-0.669	0.133
C(method)[T.m2]:C(gender)[T.男]	0.126	0.205	0.615	0.539	-0.275	0.527
Group Var	0.752	0.137				
meaning Var	3.498	0.178				

- Dependent variable: answer (subjective self-evaluation score)
- Fixed effects:
  - -method (treatment condition; reference level: O)
  - -gender (reference level: female)
  - -Interaction term: method × gender
- Random effects:
  - -participant_id
  - -meaning

Why?

When people from marginalized groups see words that insult their identity, their brains react more strongly.

Naranowicz, M., & Jankowiak, K. (2025). Positive mood enhances gender stereotype activation during semantic integration and re-analysis.

Finding 3 (M2)

In general, radical modified forms (M2, e.g. 嫉妒 → 傢忋) have no significant influence compared to original form

Mixed Linear Model Regression Results

Model:	MixedLM	Dependent Variable:	answer			
No. Observations:	2562	Method:	REML			
No. Groups:	61	Scale:	2.0394			
Min. group size:	42	Log-Likelihood:	-5364.6601			
Max. group size:	42	Converged:	Yes			
Mean group size:	42.0					

	Coef.	Std.Err.	z	P>|z|	[0.025	0.975]
Intercept	5.288	0.136	38.853	0.000	5.021	5.555
method[T.m1]	0.349	0.069	5.049	0.000	0.213	0.484
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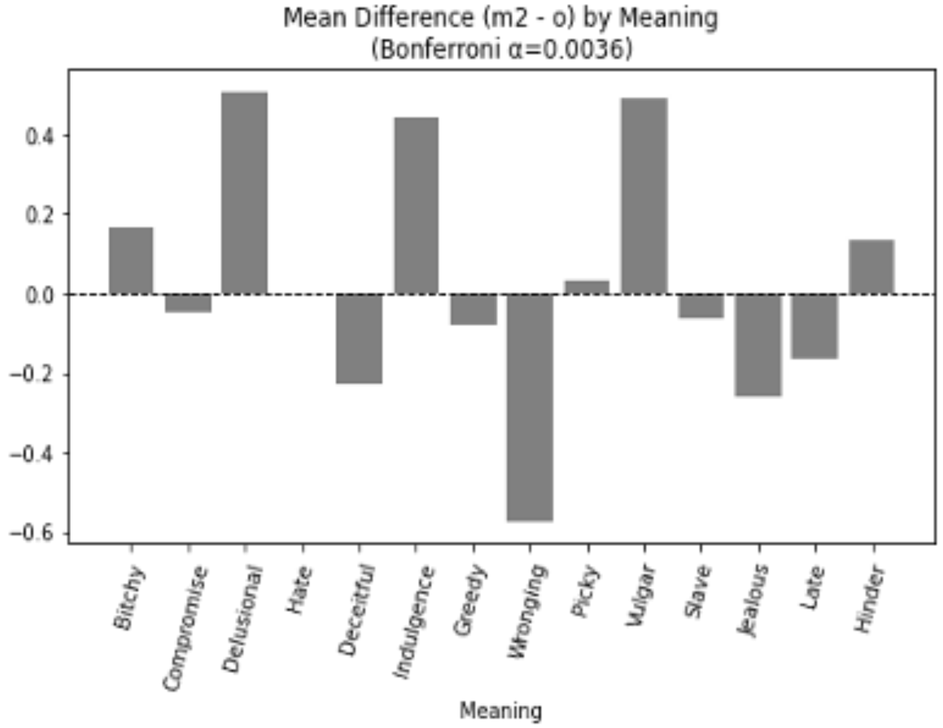
Group Var	0.734	0.134				
meaning Var	3.498	0.178				

- Dependent variable: answer (subjective score)
- Fixed effect: method
- Random effects: participant_id & meaning



Meaning level paired t-test with Bonferroni correction for M2, all grey means all meaning has no significant difference

Why?

“They (M2 & O) are not THAT different.”

- Meanings were still recognizable
  - *“It wasn’t to the extent that I couldn’t recognize the character. They (M2 & O) are not that different. ”*
- Participants made sense of the new characters
  - *‘Good enough’ comprehension strategy for language (Ferreira et al., 2002)*
- Participants had different atitude to the removal of the female radical
  - *“I don’t think the female radical is insulting in some words…for example 嫌弃(hateful)”*

Finding 4 (M3)

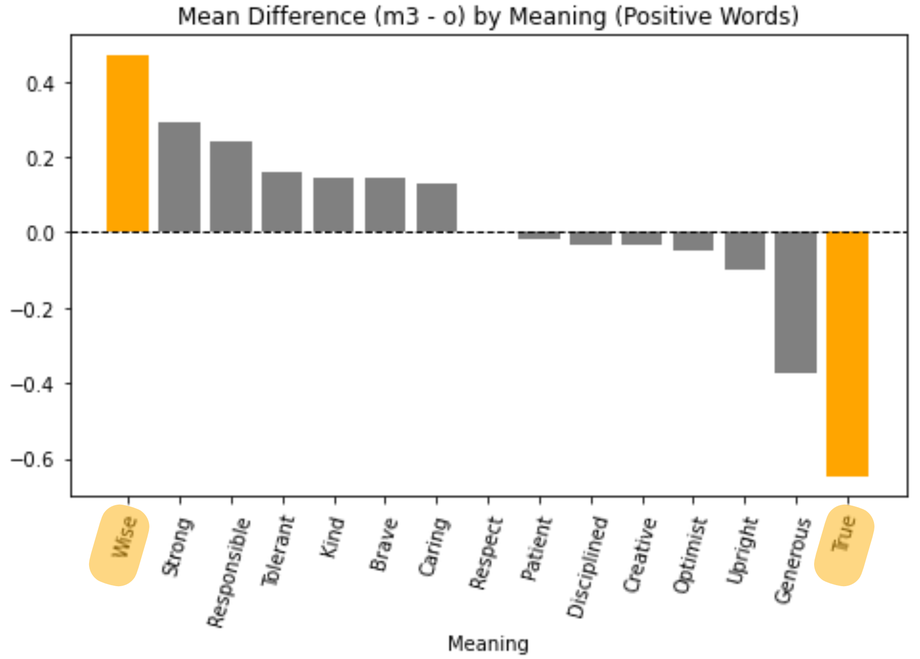
For positive traits, modification (M3, e.g. 强大→嫘大) **generally has no effect, except in rare cases like *True*** (真诚→真娀) **and *Wise*** (智慧→智嬿)**, though in different directions.**

Mixed Linear Model Regression Results

Model:	MixedLM	Dependent Variable:	answer			
No. Observations:	1860	Method:	REML			
No. Groups:	64	Scale:	1.5051			
Min. group size:	10	Log-Likelihood:	-3618.2968			
Max. group size:	30	Converged:	Yes			
Mean group size:	29.1					

	Coef.	Std.Err.	z	P>|z|	[0.025	0.975]
Intercept	6.474	0.148	43.864	0.000	6.185	6.763
method[T.m3]	0.023	0.057	0.397	0.691	-0.089	0.134
Group Var	1.173	0.202				
meaning Var	1.599	0.128				

LME regression results for originally positive words



Meaning level paired t-test with Bonferroni correction for M3

Why?

Participants feel differently for M3

- Some feel empowered, because now the positive trait are connected with them with the newly added female radical
- Some indicates that using female radical make the positive trait ‘less positive’ for them

In general, M1/M2/M3 does not influence people positively compared to original forms.

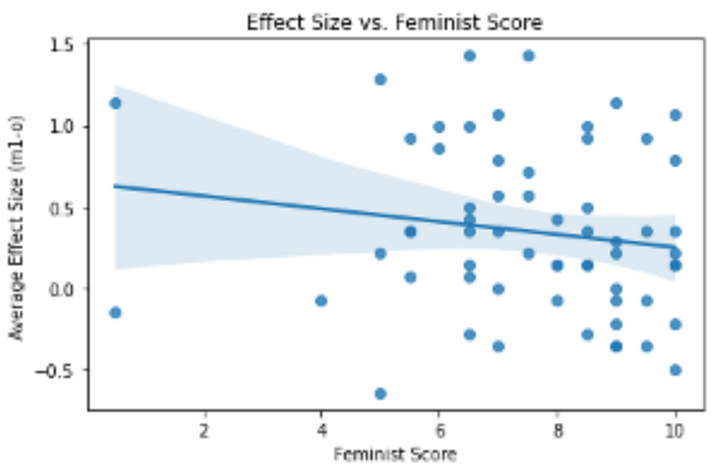
Hypothesis 1 for Research Question 1 is not supported.

Finding 5

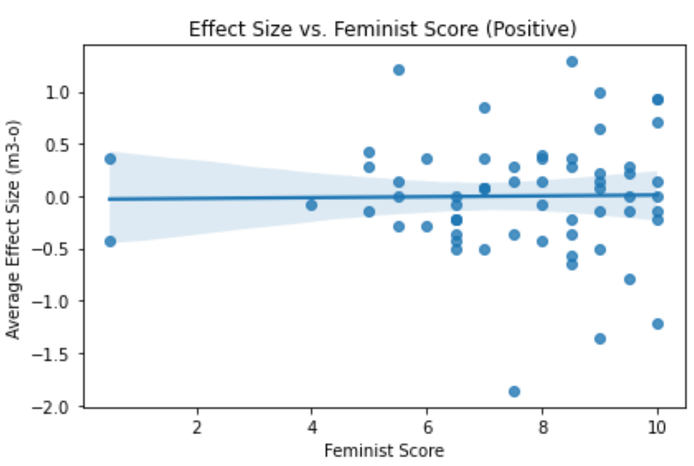
Participants' feminism score <u>does not</u> predict their response to language intervention.

M1 - O

M2 - O



M3 - O



Analysis flow:

- Model: univariate linear regression
- Effect Size: For each participant calculate the mean of m1-o score differences across all meanings (higher m1, bigger difference = stronger m1 effect)
- Use feminism score to predict this effect size

Why?

- Belief ≠ reaction
  - *responses are fast, habitual, not always reflective (Pickering & Garrod, 2004)*
- Original forms feels more natural due to frequent exposure in real life
  - *The more often people see or use a word, the more natural it feels (Bybee, 2010)*
- Context matters
  - *people express feminism more in emotional/public settings (Scharff, 2017)*
  - *The influence of digital interfaces can be context-based (Fogg, 2002)*

People with stronger feminist belief will not be influenced by modifications more strongly.

Hypothesis 2 for Research Question 1 is not supported.

Positive takeaways

- In general, the look of modified characters are understandable, and don’t make people feel worse about themselves
- The influence level of modified words are similar among all, instead of only feminist people are more influenced

During the interview, participants still show great interest in having a new e-keyboard that includes the modified expressions, so some add-on questions are asked to explore…

- RQ2: When presented through a feminist Chinese input method (e-keyboard), how do users choose between different types of interventions (M1/M2/M3), and in what contexts are they most willing to use them?

There is no fixed pattern.

- the baseline of acceptancy varies among individuals
  - O & even M4
  - M1
- the same person can change her choices on modified characters under different circumstances

→ **In the e-keyboard, it is important to provide various forms for user to choose from.**

The Feminist E-Keyboard!

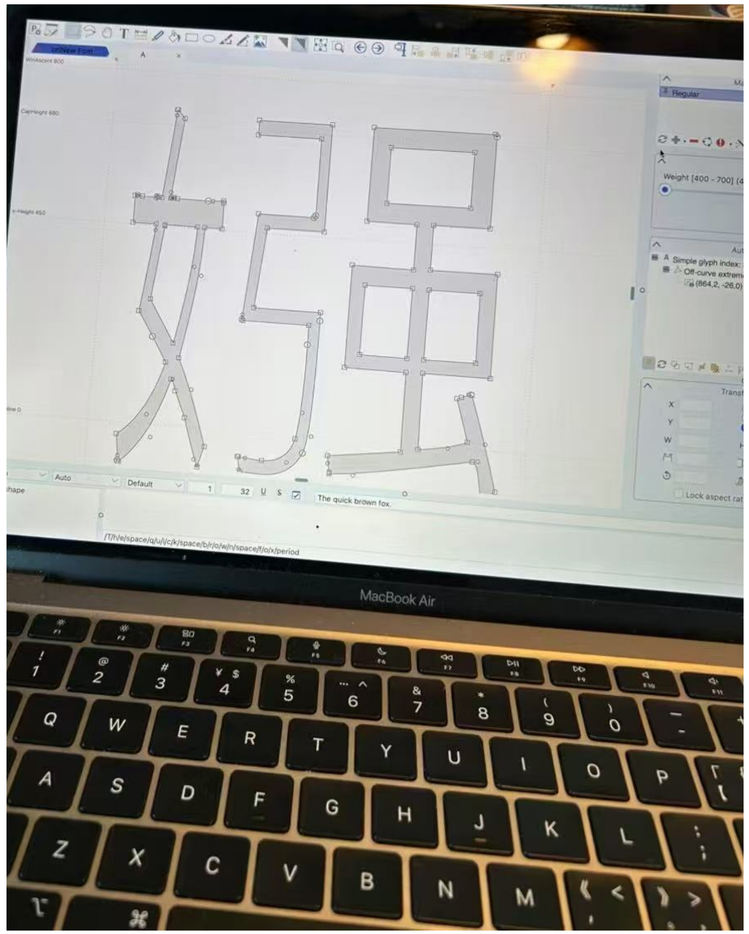
Typing [Vulgar]

Typing [Hinder]

Typing [Strong]

Typing [Responsible]

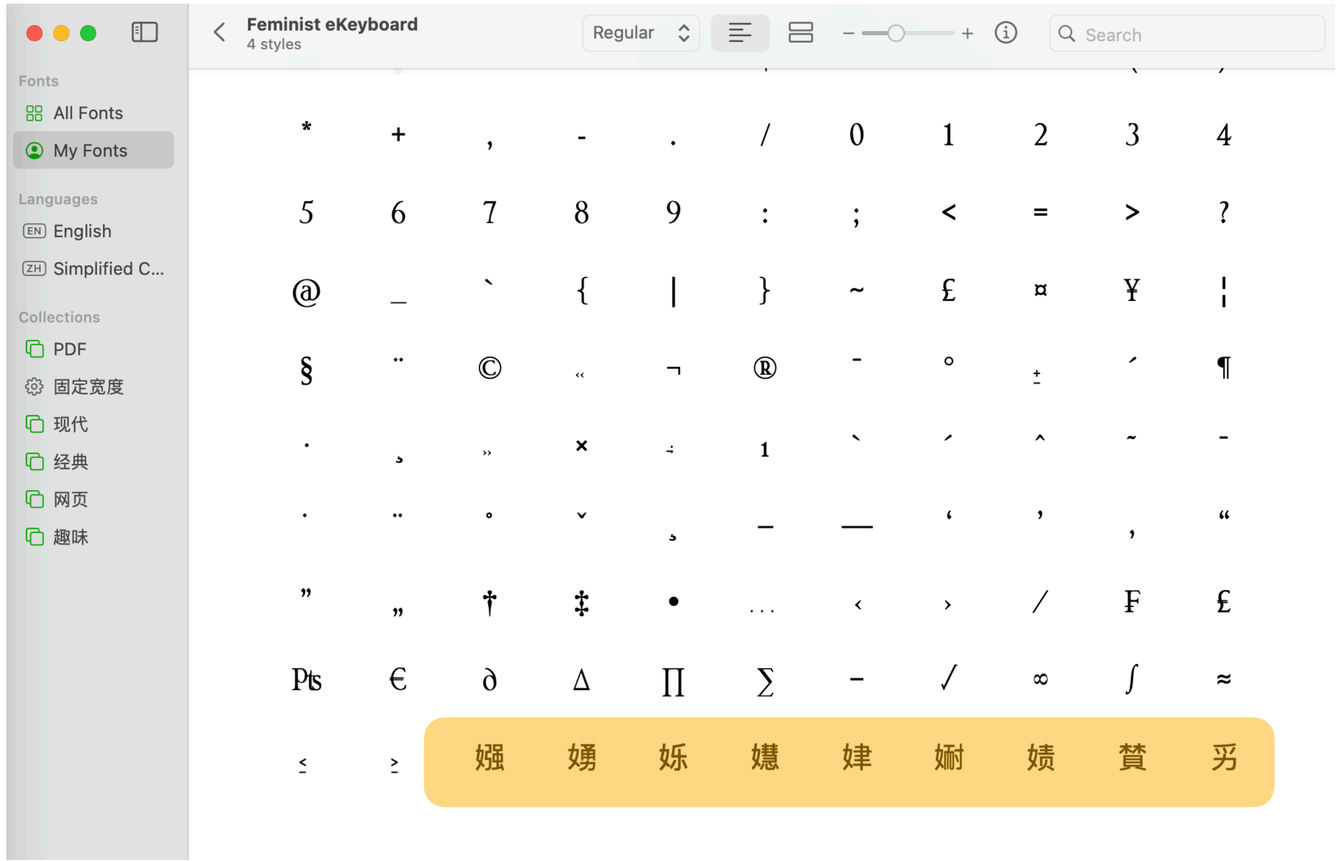
The Feminist E-Keyboard!



Font Creator

- .woff2 for online usage (e.g. survey)
- .ttf for local usage

The Feminist E-Keyboard!



Font Book

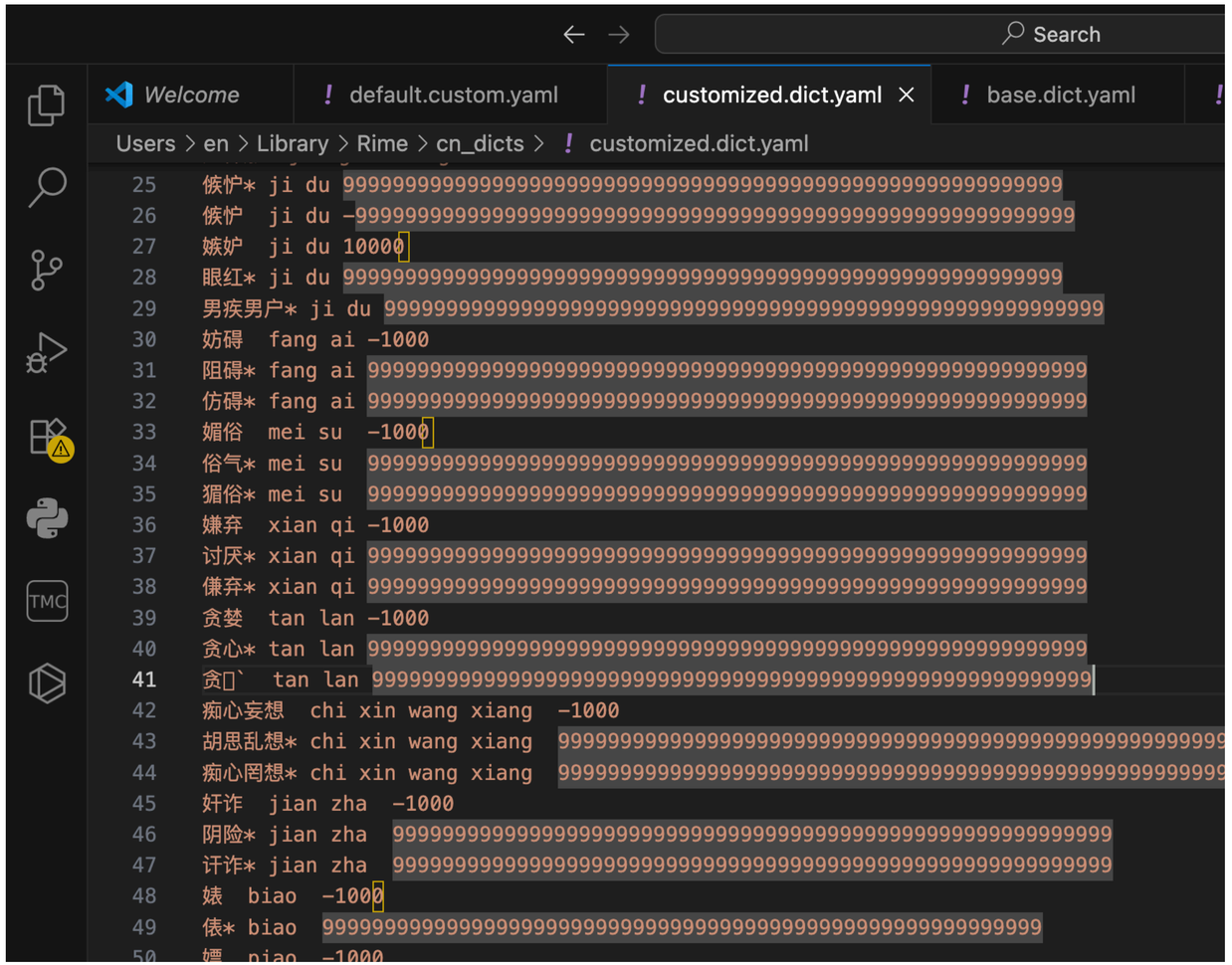
- To include font locally
- If want to render font online, use cloud service+CSS

The Feminist E-Keyboard!

RIME

Rime Input Method Engine

- New /Rime/cn_dicts/ customized.dict.yaml
- In /Rime/squirrel.yaml, change default font name



Limitations

- Unbalanced sample
- Neutral setting (Questionaire)

Future Work

- More balanced sample
- Real life experiment setting
- Refine the feminist e-keyboard before put it in to massive use
- Use more objective measures (e.g. EEG headsets)

References

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