

Supplementary Materials

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1. Definitions of emotion words expressing envy and related emotions

We conducted a detailed analysis of 16 emotion words expressing envy, jealousy, resentment, and admiration. Definitions of 14 emotion words from the 7th edition of *Kojien* (Shinmura, 2018), a comprehensive Japanese dictionary, are presented in Table S1. Author-generated definitions of the remaining two words (*iina*, *netaminikumu*) were also provided in Table S1 because these words are not listed in *Kojien*.

Table S1

Definitions of emotion words expressing envy and related emotions

Emotion words	Explanations and definitions
urayamashii (羨ましい)	<i>ura</i> means the mind, and <i>yamashi</i> conveys the sense of being unwell. 1) a feeling of wanting to be like others after seeing how they are, 2) an envious feeling after observing someone else's circumstances or qualities as being better than one's own
senbo (羨望)	to feel envious
sonemi (嫉み)	to begrudge; envy; ill will; jealousy
sonemu (嫉む)	begrudge and bear ill will toward someone because they are superior to oneself; be jealous
toshin (妬心)	envy; jealousy
netami (妬み)	to be envious; jealousy
netamu (妬む)	1) feeling inferior because of others' superiority, or be envious and bear ill will toward someone because they are superior to oneself; begrudge; be jealous, 2) get on one's nerves; be frustrated or disappointed
higami (僻み)	to be jealous; to become twisted
higamu (僻む)	1) become twisted; become warped; especially, interpret things not straightforwardly but in a distorted way, regarding them as disadvantageous to oneself, 2) to make something twisted; to bend; to interpret in a distorted way
shitto (嫉妬)	1) feel envy and begrudge those who are superior to oneself, 2) to have a grudge and bear ill will when a loved one's affection is directed toward someone else; also, the affection itself; jealousy
fungai (憤慨)	to resent and lament; to be extremely angry
akogareru (憧れる)	1) wonder away, 2) to be captivated by something, 3) to worry, 4) to yearn for something; long for something as an ideal
sonkei (尊敬)	to respect and admire another person's character, conduct, or other qualities; respect
akogare (あこがれ)	yearning; longing
iina (いいなあ)	The word literally translates as "How nice" or "That's nice," however, depending on the context, it may also express envy or longing, similar to "I wish I had that," "I wish that were me," or "I'm envious." Previous research on the usage of emotion words in picture books reported that more than half of the sentences including the word <i>iina</i> expressed the character's envy (Nakai, 2026).
netaminikumu (妬み憎む)	The word is a combination of the words <i>netami</i> , described above, and <i>nikumu</i> . The definition of the word <i>nikumu</i> is shown below. A feeling of discomfort or resistance toward things that hurt one's feelings or rub one the wrong way. 1) bear ill will; hate, 2) express discomfort or resistance; criticize; to speak ill of someone

Note. The original Japanese terms are shown in parentheses.

2. The daily life usage of emotion words expressing envy and related emotions

To examine the daily life usage of the 16 emotion words that express envy and related emotions, we conducted a morphological analysis of the Balanced Corpus of Contemporary Written Japanese (BCCWJ; Maekawa et al., 2014) and the Corpus of Everyday Japanese Conversation (CEJC; Koiso et al., 2022). We used the short-unit words defined in UniDic, the Japanese dictionary included in both corpora, for the analysis. The BCCWJ covers a wide range of text registers. We used the publication subcorpus (general books, magazines, and newspapers), the library subcorpus (books registered in public libraries), and school textbooks for elementary, junior-high, and high school students. The CEJC contains a wide variety of everyday conversations. Tables S2 and S3 present the frequency of envy and related words. To provide a reference point for interpreting the frequency of envy and related words, we also reported the frequency of four words representing basic emotions. The words *ureshii* and *nikoniko* express happiness, and the words *ikari* and *hara ga tatsu* express anger.

Table S2

The frequency of emotion words in the BCCWJ

Emotion words	The publication subcorpus			The library subcorpus			School textbooks		
	Frequency	Data files		Frequency	Data files		Frequency	Data files	
Envy and related emotions									
urayamashii (羨ましい)	348	242	(1.78%)	328	219	(2.08%)	1	1	(0.24%)
iina (いいなあ)	176	121	(0.89%)	153	93	(0.88%)	3	2	(0.49%)
senbo (羨望)	89	62	(0.46%)	80	68	(0.64%)	0	0	(0.00%)
sonemi (嫉み)	11	9	(0.07%)	21	17	(0.16%)	0	0	(0.00%)
sonemu (嫉む)	12	8	(0.06%)	18	11	(0.10%)	0	0	(0.00%)
toshin (妬心)	11	7	(0.05%)	3	3	(0.03%)	0	0	(0.00%)
netami (妬み)	51	36	(0.26%)	49	41	(0.39%)	0	0	(0.00%)
netaminikumu (妬み憎む)	0	0	(0.00%)	0	0	(0.00%)	0	0	(0.00%)
netamu (妬む)	54	39	(0.29%)	44	36	(0.34%)	2	1	(0.24%)
higami (僻み)	22	18	(0.13%)	33	26	(0.25%)	0	0	(0.00%)
higamu (僻む)	31	23	(0.17%)	27	21	(0.20%)	0	0	(0.00%)
shitto (嫉妬)	459	217	(1.60%)	474	258	(2.45%)	0	0	(0.00%)
fungai (憤慨)	105	94	(0.69%)	148	130	(1.23%)	1	1	(0.24%)
akogareru (憧れる)	328	245	(1.80%)	293	223	(2.11%)	4	4	(0.97%)
sonkei (尊敬)	623	404	(2.97%)	730	463	(4.39%)	13	10	(2.43%)
akogare (あこがれ)	214	150	(1.10%)	183	142	(1.35%)	8	7	(1.70%)
Examples for basic emotions									
ureshii (嬉しい)	3226	1738	(12.79%)	2800	1586	(15.03%)	36	21	(5.10%)
nikoniko (にこにこ)	232	189	(1.39%)	329	243	(2.30%)	5	3	(0.73%)
ikari (怒り)	1573	906	(6.67%)	1812	996	(9.44%)	22	11	(2.67%)
hara ga tatsu (腹が立つ)	236	188	(1.38%)	365	245	(2.32%)	3	2	(0.49%)

Note. The publication subcorpus, the library subcorpus, and school textbooks in the BCCWJ consist of 10,117, 10,551, and 412 data files, respectively.

Frequency: the number of appearances of the word, Data files: the number of data files in which these words are included.

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Table S3

The frequency of emotion words in the CEJC

Emotion words	Frequency	Data files
Envy and related emotions		
urayamashii (羨ましい)	51	34 (5.89%)
iina (いいなあ)	0	0 (0.00%)
senbo (羨望)	0	0 (0.00%)
sonemi (嫉み)	0	0 (0.00%)
sonemu (嫉む)	0	0 (0.00%)
toshin (妬心)	0	0 (0.00%)
netami (妬み)	0	0 (0.00%)
netaminikumu (妬み憎む)	0	0 (0.00%)
netamu (妬む)	0	0 (0.00%)
higami (僻み)	1	1 (0.17%)
higamu (僻む)	0	0 (0.00%)
shitto (嫉妬)	2	2 (0.35%)
fungai (憤慨)	1	1 (0.17%)
akogareru (憧れる)	12	12 (2.08%)
sonkei (尊敬)	18	6 (1.04%)
akogare (あこがれ)	0	0 (0.00%)
Examples for basic emotions		
ureshii (嬉しい)	241	127 (22.01%)
nikoniko (ニコニコ)	11	8 (1.39%)
ikari (怒り)	19	10 (1.73%)
hara ga tatsu (腹が立つ)	13	8 (1.39%)

Note. The CEJC consists of 577 data files.

Frequency: the number of appearances of the word, Data files: the number of data files in which these words are included.

3. The procedures and results of the intensity and familiarity of emotion words

In addition to the valence and emotion category, participants evaluated each emotion word for its intensity and familiarity. For the intensity rating, they rated each word on a 7-point scale (1 = *very weak* to 7 = *very strong*). Ratings for all 16 words were significantly higher than the theoretical median (4.0), $t_s > 5.71$, $p_s < .001$ (Table S4).

For the familiarity rating, participants indicated whether they did not know that word, had seen or heard it, or understood its meaning and could use it in a sentence. With the exception of *toshin*, 15 out of 16 words were understood by at least 60%. More than 90% of respondents understood the meanings of *urayamashii*, *shitto*, *sonkei*, *akogareru*, and *akogare* (Table S5). *Toshin* was unfamiliar to many people, with 32.7% of respondents not knowing this word and only 27.1% understanding its meaning.

Table S4

Descriptive statistics of emotion intensity ratings of words referring to envy and related emotions.

	<i>M</i>	(<i>SD</i>)	<i>t</i>		<i>d</i>
urayamashii (羨ましい)	4.65	(1.05)	6.86	***	0.62 [0.43, 0.82]
iina (いいなあ)	4.59	(1.08)	5.72	***	0.55 [0.35, 0.75]
senbo (羨望)	5.12	(1.10)	10.34	***	1.01 [0.78, 1.25]
sonemi (嫉み)	5.38	(1.05)	13.31	***	1.30 [1.04, 1.56]
sonemu (嫉む)	5.32	(1.04)	12.97	***	1.27 [1.01, 1.53]
toshin (妬心)	4.89	(0.94)	9.72	***	0.94 [0.71, 1.17]
netami (妬み)	5.45	(1.15)	13.21	***	1.26 [1.01, 1.51]
netaminikumu (妬み憎む)	5.77	(0.98)	18.66	***	1.81 [1.50, 2.12]
netamu (妬む)	5.47	(0.96)	15.81	***	1.54 [1.25, 1.82]
higami (僻み)	5.24	(1.05)	12.29	***	1.18 [0.93, 1.43]
higamu (僻む)	5.20	(1.00)	12.64	***	1.20 [0.95, 1.44]
shitto (嫉妬)	5.50	(1.06)	15.48	***	1.41 [1.16, 1.67]
fungai (憤慨)	6.05	(1.15)	19.24	***	1.79 [1.49, 2.08]
akogareru (憧れる)	5.01	(0.98)	11.68	***	1.03 [0.81, 1.24]
sonkei (尊敬)	5.22	(1.01)	13.16	***	1.21 [0.97, 1.44]
akogare (あこがれ)	5.27	(1.03)	12.82	***	1.23 [0.98, 1.48]

Participants rated the emotional intensity of each word on a 7-point scale, with higher scores indicating greater intensity. Ratings were compared to the scale midpoint (4.0) using one-sample *t*-tests. Cohen's *d* is reported as an effect size, with 95% confidence intervals in brackets. *** $p < .001$.

Table S5

Percentage of familiarity ratings for words referring to envy and related emotions.

	do not know	have seen and heard	understand the meaning
urayamashii (羨ましい)	0.00	7.44	92.56
iina (いいなあ)	1.85	13.89	84.26
senbo (羨望)	9.62	15.38	75.00
sonemi (嫉み)	1.92	22.12	75.96
sonemu (嫉む)	5.77	33.65	60.58
toshin (妬心)	32.71	40.19	27.10
netami (妬み)	0.00	15.45	84.55
netaminikumu (妬み憎む)	0.00	16.98	83.02
netamu (妬む)	0.94	10.38	88.68
higami (僻み)	0.93	16.67	82.41
higamu (僻む)	1.80	13.51	84.68
shitto (嫉妬)	0.83	3.33	95.83
fungai (憤慨)	0.86	12.07	87.07
akogareru (憧れる)	0.00	7.75	92.25
sonkei (尊敬)	0.84	6.72	92.44
akogare (あこがれ)	0.93	8.33	90.74

Participants indicated whether (a) they did not know the word, (b) had seen and heard the word, or (c) understood the meaning of a word and could use it in a sentence. Values represent the percentage of participants selecting each option.

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