

How “warm” and “cold” changed impressions

Study 1 · Methods and findings

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Science of People Labs studied how one word in a description changes the traits people attribute to someone. This report presents the methods, results and comparison with Asch’s 1946 Experiment I.

Replicating Asch (1946) Experiment I: the warm–cold impression study

Science of People Labs · analyzed 3 September 2026 · N = 369 (178 warm / 191 cold)

Short de-identified excerpts from written sketches are included as illustrations.

Main finding

When asked to choose between “generous” and “ungenerous,” 91.6% of participants who read “warm” chose “generous,” compared with 14.1% of those who read “cold.” The other six adjectives were identical. All nine warmth-related trait pairs differed in the same direction as Asch’s original results.

Across those nine pairs, participants chose the warmth-related option an average of 85.9% of the time in the warm group and 22.1% in the cold group. Four of the other nine pairs also differed after adjustment for multiple tests. The analysis includes 369 valid completions.

In tables that show two percentages in one cell, the warm group is listed first. “Percentage points” describes the difference between two percentages.

The central composite is each participant’s average across the nine warmth-related choices. The peripheral composite is the average across the other nine. Cohen’s d expresses a difference between group means in standard-deviation units; Cohen’s h expresses a difference between proportions. CI means confidence interval and pp means percentage points.

	Asch 1946, Exp. I	SOP Labs 2026
People	166 (90 warm, 76 cold)	369 (178 warm, 191 cold)
Generous	91% / 8%	91.6% / 14.1%
Central traits (mean of 9)	81.0% / 23.7%	85.9% / 22.1%
Peripheral traits (mean of 8 matching Asch)	91.5% / 92.6%	92.3% / 89.5%
Chose the warmth-related option on all 9 pairs	—	44.9% / 2.6%
Chose the warmth-related option on none of the 9 pairs	—	0.6% / 29.3%

Generous: $\chi^2(1) = 221.2$, $p < .0001$, Cohen’s $h = 1.78$ (Asch $h \approx 1.96$).

Central composite: Welch $t(355) = 29.26$, $p < .0001$, $d = 3.02$, 95% CI [2.72, 3.32].

Peripheral composite (all 9, including our substitute item): $d = 0.16$, $p = .13$.

Peripheral, Asch's 8 items: $d = 0.23$, $p = .025$.

Holm-corrected across 18 tests: **9/9 central** significant; **4/9 peripheral** significant (good-looking, honest, reliable, restrained).

In an exploratory analysis of the written descriptions, warmth language appeared in 57.9% of warm-group responses and 15.2% of cold-group responses. Social-distance language appeared in 6.2% and 33.0%, respectively. The coding method is described under Written descriptions. Selected excerpts follow.

Warm

- *"an all around genuine, kind-hearted person who would step up to give a hand to anyone in need... Kind but not a fool."*
- *"I've known people like this before, and they are the best people you could ever meet. Aside from being dependable, they can also have a side that is FUN while also being understanding and accepting of human nature."*
- *"A caring, considerate person who thinks things through and who is loyal and trustworthy."*

Cold

- *"Results drivven [sic], money driven, ego driven."*
- *"Someone who loves data more than people. Someone who could be powerful but unlikeable."*
- *"A leader type person who is successful but at the cost of other people. Not very friendly... Throws people away when they no longer need them."*
- *"A scientist or some sort of logic worker who is great with numbers or ideas but not people."*

Stimulus and procedure

Asch read a list of seven adjectives aloud twice. We presented the adjectives in a written sentence:

Warm: A certain person is known to be intelligent, skillful, industrious, warm, determined, practical, and cautious.

Cold: A certain person is known to be intelligent, skillful, industrious, cold, determined, practical, and cautious.

Participants completed these tasks in order:

1. Comprehension check: "Which of the following words appeared in the description of the person?" Options: Friendly, Warm, Cold, Kind. The correct answer was the word shown in that participant's description.
2. Eighteen forced-choice trait pairs, pair order shuffled within the block.
3. Written response: "Briefly describe the kind of person you think this is. What are they like?"

Asch collected the written description before the trait choices. Our study collected it afterward. Both groups saw Friendly, Warm, Cold and Kind as options in the comprehension check.

Planned hypothesis: Replacing "warm" with "cold," with the other adjectives held constant, would change choices on the nine warmth-related trait pairs while the other nine pairs would remain largely unaffected. This summarizes the hypothesis in the locked protocol.

Sample

Participants were unpaid volunteers with Science of People accounts who took part through labs.scienceofpeople.com.

Participants completed platform consent and study consent.

Step	n
Randomly assigned	405 (203 warm / 202 cold)
Started without a recorded completion	35 (24 warm / 11 cold; all April–June; treated as abandoned)
Excluded for completing too quickly	1 (warm; < 40 s; one-third of the two-minute estimate)
Valid completions — this report	369 (178 warm / 191 cold)
Of those, missed the comprehension check	21 (18 warm / 3 cold)

Planned targets and sample characteristics (N = 369)

Characteristic	Planned target	Observed
Women	50%	69% (254); 95 men, 20 unstated
Age 18–24	20%	8% (28)
United States	unspecified	65% (239)

Dropout from assignment: 11.8% warm vs 5.4% cold never finished (Yates $\chi^2 = 4.44$, $p = .035$).

The primary analysis includes all 369 valid completions, including 21 participants who missed the comprehension check. A separate analysis includes only the 348 who passed (160 warm / 188 cold).

Among valid completions, 10.1% of the warm group and 1.6% of the cold group missed the check. Of the 18 warm-group misses, 17 selected Friendly or Kind and one selected Cold. Restricting the analysis to participants who passed would remove 21.2% of the original warm assignments and 6.9% of the cold assignments ($\chi^2 = 17.0$, $p < .0001$).

Median completion time was 3.1 minutes. The middle half of completion times ranged from 2.4 to 4.5 minutes.

Trait choices

Each participant chose one trait from each of 18 pairs. The protocol grouped nine pairs as **central**, meaning warmth-related, and the other nine as **peripheral**. These labels identify the planned groups of items.

The nine central pairs run from generous/ungenerous to imaginative/hard-headed in the table. Our study replaced Asch's self-centered/altruistic pair with self-assured/submissive and included the replacement in the peripheral group. Seventeen pairs can be compared with Asch's results.

Within-person (central rate – peripheral rate): –6.2 pp warm vs –68.2 pp cold, $t = 27.15$, $d = 2.82$.

All 18 pairs (N = 369)

The table shows the percentage choosing the **first trait** in each pair. Gaps are warm minus cold, in percentage points, calculated before rounding. “p Holm” is the p-value adjusted across all 18 tests; “n.s.” means it did not meet the .05 threshold after adjustment. Cohen's h measures the difference between two proportions.

Asch's percentages are from Experiment I, Table 2 (90 warm / 76 cold). Some participants skipped individual pairs. Effect sizes and reconstructed intervals for Asch use those full group sizes and are approximate.

Pair	Family	Warm %	Cold %	Gap	p Holm	h	Asch
Generous / Ungenerous	central	91.6	14.1	+77.4	< .0001	1.78	91 / 8
Wise / Shrewd	central	88.8	41.4	+47.4	< .0001	1.06	65 / 25
Happy / Unhappy	central	90.4	31.4	+59.0	< .0001	1.32	90 / 34
Good-natured / Irritable	central	96.1	15.7	+80.4	< .0001	1.93	94 / 17
Humorous / Humorless	central	73.0	8.9	+64.1	< .0001	1.44	77 / 13
Sociable / Unsociable	central	85.4	15.7	+69.7	< .0001	1.54	91 / 38
Popular / Unpopular	central	88.2	29.3	+58.9	< .0001	1.30	84 / 28
Humane / Ruthless	central	91.6	23.6	+68.0	< .0001	1.54	86 / 31
Imaginative / Hard-headed	central	68.0	18.8	+49.1	< .0001	1.04	51 / 19
Reliable / Unreliable	peripheral	99.4	91.1	+8.3	.001	0.46	94 / 99
Important / Insignificant	peripheral	95.5	93.7	+1.8	n.s.	0.08	88 / 99
Good-looking / Unattractive	peripheral	91.6	65.4	+26.1	< .0001	0.67	77 / 69
Persistent / Unstable	peripheral	96.6	97.4	-0.8	n.s.	-0.04	100 / 97
Serious / Frivolous	peripheral	96.1	99.0	-2.9	n.s.	-0.19	100 / 99
Restrained / Talkative	peripheral	61.2	93.7	-32.5	< .0001	-0.84	77 / 89
Self-assured / Submissive	peripheral	91.0	96.9	-5.8	n.s.	-0.25	<i>ours</i>
Honest / Dishonest	peripheral	99.4	79.1	+20.4	< .0001	0.80	98 / 94
Strong / Weak	peripheral	98.3	96.9	+1.5	n.s.	0.10	98 / 95

Participants in the cold group selected “restrained” more often than those in the warm group. This difference had the same direction as Asch’s result: -32.5 percentage points here, compared with -12 in 1946.

Four peripheral pairs differed after Holm adjustment: good-looking/unattractive, honest/dishonest, reliable/unreliable and restrained/talkative. For reliable, both groups were above 90% (99.4% warm / 91.1% cold). The replacement item, self-assured/submissive, had an unadjusted p-value of .018 and an adjusted p-value of .089.

Thirty-four participants chose the first option on all 18 pairs (31 warm / 3 cold). Excluding these responses left 335 participants and a central-trait gap of 62 percentage points ($d = 3.05$). For the eight peripheral items shared with Asch, d changed from 0.23 ($p = .025$) to 0.11 ($p = .32$). For all nine peripheral items after this exclusion, $d = 0.02$ ($p = .82$).

Written descriptions

Participants described the person in their own words after completing the trait choices.

We used an exploratory dictionary-based analysis of the descriptions. The dictionary was developed from Asch’s examples, warmth and drive vocabulary, and 24 responses viewed with their group labels visible (12

warm / 12 cold). We then fixed the dictionary and applied it to all 369 responses. This analysis was developed after data collection.

The coding accounts for negation: words such as “not,” “never” and “without” reverse the coding of matching words within the next three tokens. A response counts toward a language category when its positive matches outnumber its negated matches. The random sample used seed 1.

The dictionary includes words participants had already seen in the description, comprehension check or trait choices. The warmth category includes warm, generous, happy, sociable, humane and good-natured. The social-distance category includes cold, ruthless and unsociable. The second row below excludes the word “warm” from the warmth count.

Code	Warm	Cold	Test	p
Net warmth language	57.9% (103/178)	15.2% (29/191)	$\chi^2 = 73.1$	< .0001
Net warmth language, excluding the token <i>warm</i>	53.9% (96/178)	14.7% (28/191)	$\chi^2 = 63.7$	< .0001
Net competence / agency	46.6% (83/178)	61.8% (118/191)	$\chi^2 = 8.5$	.003
Social distance	6.2% (11/178)	33.0% (63/191)	$\chi^2 = 41.3$	< .0001
Would affiliate	3.4% (6/178)	0.0% (0/191)	Fisher exact	.012
Would avoid	0.0% (0/178)	3.7% (7/191)	Fisher exact	.015
Word <i>warm</i>	16.9% (30/178)	1.6% (3/191)	$\chi^2 = 26.4$	< .0001
Word <i>cold</i>	0.6% (1/178)	15.2% (29/191)	$\chi^2 = 26.4$	< .0001
Word <i>intelligent</i>	8.4% (15/178)	13.1% (25/191)	$\chi^2 = 2.1$	.150

Average net word counts were 0.97 versus 0.08 for warmth ($d = 1.03$), 0.61 versus 0.96 for competence ($d = -0.38$), and 0.08 versus 0.46 for social distance ($d = -0.60$). Average response length was 25.9 versus 26.1 tokens ($p = .94$).

“Would affiliate” and “Would avoid” record phrases about approaching or avoiding the person. These responses were rare and each comparison includes a group with zero matches, so the table uses Fisher’s exact test for those two rows.

Comparison with earlier research

	Asch gap	Our gap (N = 369)
Central 9-trait mean	+57 pp	+64 pp
Generous	+83 pp	+77 pp
Mean Cohen’s h , 9 central	1.28	1.44 (112%)
Peripheral 8 matching items	−1 pp	+3 pp

The nine warmth-related trait pairs showed the same direction of difference as Asch’s results, using a written description and an online volunteer sample.

Three peripheral traits showed larger gaps in the same direction as Asch: restrained (−12 percentage points in 1946 / −32.5 here), good-looking (+8 / +26.1) and honest (+4 / +20.4).

Nauts and colleagues (2014) studied 1,023 participants across seven conditions in an online replication of Asch’s Studies I, III and IV. They found that the importance of warmth depended on the surrounding traits, with

competence at least as important in forming impressions. Their measures included trait rankings and written descriptions. Our study compares choices on trait pairs and reports an exploratory analysis of written descriptions. [Nauts et al., 2014](#).

The mean Cohen’s *h* across the nine central traits was 1.44, or 112% of the value calculated from Asch’s percentages (1.28). All nine estimates exceeded 0.237, our estimate of an effect detectable with 33% power at Asch’s sample size, following Simonsohn (2015). This is a descriptive comparison of effect estimates with that threshold.

Across the 17 comparable pairs, mean Newcombe 95% confidence-interval widths were 13.0 percentage points here and 20.1 points when reconstructed from Asch’s group sizes.

The 95% confidence interval for the generous difference was 69.9 to 82.8 percentage points. Asch’s reported gap was 83 points. Seven of the 17 comparable-pair intervals contained Asch’s reported difference.

Sensitivity analyses

Analysis sample	n	Central gap	d
All valid completions (this report)	369	+64 pp	3.02
Also passed the comprehension check	348	+66 pp	3.29
Exclude 34 participants who chose every first option	335	+62 pp	3.05

Among participants who passed the comprehension check, 91% of the warm group and 13% of the cold group selected generous (*h* = 1.81).

How to cite

Science of People Labs. (2026). *How “warm” and “cold” changed impressions: Study 1 methods and findings*. Version 1.1, published 11 September 2026. Analysis dated 3 September 2026. [Download this report](#).

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Reproducibility

The study protocol was locked on 12 April 2026, before the first participant on 13 April. The analysis uses completions through 2 September 2026.