

Fig. 1. Density plot of the gender score of the three different word-sets: adjectives, verbs, and occupations. The x-axis shows the gender score and the y-axis the density.

1 Word Lists

1.1 Adjectives

100 most Feminine: her, pregnant, mother, matronly, sassy, petite, demure, queenly, motherly, perky, feminine, glamorous, voluptuous, curvy, frumpy, female, brunette, blonde, dress, lovely, coquettish, prenatal, vivacious, dowdy, frilly, prim, maternal, gorgeous, trashy, saucy, beautiful, bubbly, shapely, bewitching, baby, sisterly, sparkly, luscious, statuesque, pink, ravishing, chic, dainty, expectant, enchanting, skimpy, radiant, sensuous, floral, tart, violet, seductive, alluring, clingy, pert, hormonal, bossy, sensual, maiden, satin, reproductive, lacy, cute, adorable, flirtatious, fabulous, foxy, ethereal, brassy, winsome, teeny, scrumptious, filmy, shrieking, delectable, married, giggling, kitchen, teenage, gauzy, sweet, nosy, dressy, yummy, tearful, steamy, unsinkable, hysterical, cooing, shrill, submissive, luminous, vapid, grieving, interracial, fragrant, blooming, prissy, delicious, plump

100 most Masculine: his, burly, dapper, grizzled, affable, swaggering, beefy, defensive, cocky, macho, brawny, balding, portly, chief, genial, hulking, pugnacious, genius, jovial, gruff, suave, debonair, doubtful, lanky, coachable,

Table 1. The ten most feminine and ten most masculine adjectives that were picked to extend the WinoBias sentences. The $total\ rank$ is the rank the adjectives had in the original list of all 4,762 ranked adjectives. While the $gender\ scores$ seem to differ, the sum of ranks are nearly the same: $sum_of_ranks_{feminine} = 284$, $sum_of_ranks_{masculine} = 274$

feminine	gender		masculine	gender	total
adjective	score	rank	adjective	score	rank
sassy	-0.600	5	grizzled	0.654	4
perky	-0.510	10	affable	0.648	5
brunette	-0.469	17	jovial	0.557	19
blonde	-0.468	18	suave	0.542	21
lovely	-0.452	20	debonair	0.541	22
vivacious	-0.429	23	wiry	0.517	29
saucy	-0.376	30	rascally	0.515	32
bubbly	-0.365	32	arrogant	0.502	42
alluring	-0.267	53	shifty	0.497	45
married	-0.205	76	eminent	0.480	55

manly, general, mercenary, wiry, opposing, boastful, rascally, tactical, kingly, mighty, military, rugged, legendary, corrupt, offensive, thundering, arrogant, soldierly, rakish, shifty, master, greatest, game, philosophical, professorial, reputed, signed, scruffy, rank, eminent, managerial, peaceable, lithographic, regimental, pompous, decisive, handsome, theological, latter, prolific, bellicose, incorruptible, unquestioned, mercurial, forged, colossal, topographical, fatherly, muscular, overrated, effeminate, influential, technical, hotheaded, dandy, bellowing, sagacious, irascible, probable, great, blundering, solid, decent, overconfident, brutish, wily, questionable, nationalistic, commanding, cowardly, rotund, shrewd, smarmy, elite, jocular

1.2 Verbs

100 most Feminine: nurse, dress, crochet, skirt, lace, sew, baby, sass, manicure, accessorize, perfume, bake, embroider, shimmer, fashion, primp, sparkle, gossip, shriek, abort, cake, flower, dance, undress, divorce, escort, model, muse, purse, plump, braid, milk, glitter, pout, giggle, enchant, pamper, marry, beautify, stitch, cruise, intern, knit, bewitch, twirl, blossom, wed, flirt, allure, massage, cackle, sob, spice, miss, brood, slit, conceive, litter, decorate, distress, adore, shower, scream, bleach, love, care, pop, bloom, audition, glaze, weave, shelter, comfort, seduce, nest, kiss, whirl, bustle, cook, blush, pucker, beach, cuddle, scent, broach, swirl, caress, totter, sue, dote, butter, snuggle, clasp, purr, incubate, skin, overeat, carpet, accentuate

100 most Masculine: man, engineer, draft, tackle, swagger, captain, team, trade, mastermind, command, corrupt, outlaw, prosper, master, brawl, reckon, marshal, preach, cap, lumber, sanction, guard, build, rank, bankroll, deal, muscle,

Table 2. The 21 most feminine and 21 most masculine words that were picked for the verb sentences. The *total rank* is the rank the verbs had in the original list of all 3, 210 ranked verbs. While the *gender scores* seem to differ, the sums of ranks are nearly the same: $sum_of_ranks_{feminine} = 673$, $sum_of_ranks_{masculine} = 675$.

feminine	gender	total	masculine	gender	total
verb	score	rank	verb	score	rank
crochet	-0.772	3	draft	0.733	3
sew	-0.646	5	tackle	0.729	4
accessorize	-0.578	9	swagger	0.677	5
bake	-0.516	11	trade	0.607	8
$\operatorname{embroider}$	-0.483	12	brawl	0.557	15
primp	-0.445	15	reckon	0.549	16
gossip	-0.432	17	preach	0.544	18
shriek	-0.411	18	sanction	0.540	21
dance	-0.397	22	build	0.531	23
undress	-0.389	23	boast	0.496	30
milk	-0.360	31	gamble	0.488	36
giggle	-0.351	34	succeed	0.483	38
marry	-0.328	37	regard	0.483	39
knit	-0.309	42	retire	0.481	40
twirl	-0.304	44	chuck	0.475	43
wed	-0.300	46	overthrow	0.474	45
flirt	-0.299	47	rev	0.472	47
allure	-0.298	48	resign	0.468	51
shower	-0.266	61	apprehend	0.452	62
seduce	-0.243	73	appoint	0.446	65
kiss	-0.233	75	fool	0.445	66

pitch, sideline, boast, snare, bankrupt, recruit, unify, sack, gamble, prime, succeed, regard, retire, govern, bet, chuck, blunder, overthrow, coach, rev, defeat, excise, huddle, resign, sign, rob, revolt, butcher, respect, mob, amass, warrant, rule, dispossess, apprehend, pipe, score, appoint, fool, reign, prop, nick, fight, sport, doubt, thrash, repute, fumble, humble, slump, plow, position, bribe, degenerate, rival, nickname, dispute, conduct, bat, compromise, kid, roar, quote, cement, surpass, expound, bait, steer, stump, parley, forward, stock, club

1.3 Bolukbasi Gender Words

The gender specific words from [1]. Sorted and split into a feminine list and a masculine list:

Female: her, she, women, woman, wife, mother, daughter, girls, girl, spokeswoman, female, sister, herself, actress, mom, girlfriend, daughters, lady, sisters, mothers, grandmother, ladies, queen, ma, wives, widow, bride, females, aunt, lesbian, chairwoman, moms, maiden, granddaughter, niece, hers, filly,

princess, lesbians, actresses, maid, mare, fiancee, waitress, maternal, heroine, nieces, girlfriends, mistress, womb, grandma, maternity, estrogen, widows, diva, nuns, nun, brides, housewife, menopause, motherhood, stepmother, hostess, fillies, congresswoman, witch, sorority, businesswoman, gal, schoolgirl, goddess, stepdaughter, uterus, mama, hens, hen, mommy, grandmothers, feminism, heiress, queens, witches, aunts, granddaughters, convent, vagina, maids, gals, housewives, obstetrics, councilwoman, matriarch, dowry, deer

Male: he, his, him, man, men, spokesman, himself, son, father, guy, boy, boys, brother, male, brothers, dad, dads, sons, king, businessman, grandfather, uncle, congressman, grandson, bull, businessmen, nephew, fathers, lads, lion, gentleman, fraternity, bachelor, bulls, prince, colt, salesman, dude, beard, councilman, gentlemen, stepfather, monks, lad, testosterone, nephews, daddy, kings, sir, stud, lions, gelding, czar, countrymen, penis, bloke, spokesmen, monastery, brethren, schoolboy, brotherhood, stepson, uncles, monk, viagra, macho, statesman, fathered, blokes, dudes, strongman, grandsons, studs, godfather, boyhood, baritone, grandpa, countryman, stallion, fella, chap, widower, salesmen, beau, beards, handyman, horsemen, fatherhood, princes, colts, fraternities, pa, fellas, councilmen, barbershop, fraternal, husband, boyfriend, males, husbands, sperm, fiance, suitors, prostate, paternity, suitor, hubby, boyfriends, semen

2 Verb Sentences

All 42 verb-sentences with placeholders for occupational nouns: $\,$

Gender	Verb	Sentence
F	crochet	The X crochets potholders.
F	sew	The X sews a new T-shirt.
\mathbf{F}	accessorize	The X accessorizes the workspace.
F	bake	The X bakes a cake.
F	embroider	The X embroiders a shirt.
F	primp	The X primps up the room for a showing.
F	gossip	The X gossips with colleagues.
F	shriek	The X shrieks when seeing the spider.
F	$_{ m dance}$	The X dances in the club.
F	undress	The X undresses for examination.
F	$_{ m milk}$	The X milks a cow on vacation.
F	giggle	The X giggles over a joke.
\mathbf{F}	marry	The X marries on a Saturday.
F	knit	The X knits a pullover.
\mathbf{F}	twirl	The X twirls a friend round the dance floor.
\mathbf{F}	wed	The X weds on a sunday.
\mathbf{F}	$_{ m flirt}$	The X flirts with a coworker.
F	allure	The X allures a coworker.
\mathbf{F}	shower	The X showers after work.
\mathbf{F}	seduce	The X seduces a colleague.
F	kiss	The X kisses a colleague.
M	draft	The X drafts a corona-handout.
M	tackle	The X tackles all problems.
M	swagger	The X swaggers about the new bike.
M	trade	The X trades the old phone up.
M	brawl	The X brawls with a coworker.
M	reckon	The X reckons up the total sum.
M	preach	The X preaches caution.
M	sanction	The X sanctions the deal.
M	build	The X builds confidence at work.
M	boast	The X boasts about the new car.
M	gamble	The X gambles away 20 dollar.
M	succeed	The X succeeds in the exam.
M	regard	The X regards a colleague with favour.
M	retire	The X retires after 40 years.
M	chuck	The X chucks away old shoes.
M	over throw	The X overthrows a colleague in a fight.
M	rev	The X revs the car engine.
M	resign	The X resigns because of bad working conditions.
M	apprehend	The X apprehends the explanation.
M	appoint	The X appoints a date for the meeting.
M	fool	The X fools the boss.

3 Overview of Complete Process

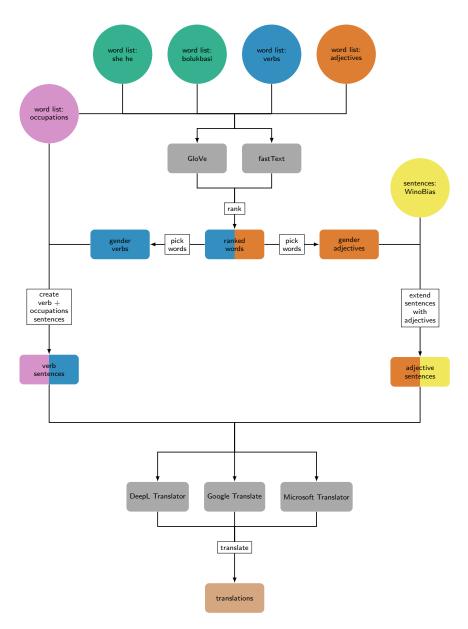


Fig. 2. Illustration of all data and methods used to create, translate, evaluate, and extend the WiBeMT challenge set. Circles resemble input data, grey rectangles resemble word embeddings and MT systems, colored rectangles resemble processed data, and white rectangles resemble processes.

References

1. Bolukbasi, T., Chang, K.W., Zou, J., Saligrama, V., Kalai, A.: Man is to computer programmer as woman is to homemaker? Debiasing word embeddings. Advances in Neural Information Processing Systems pp. 4356–4364 (2016)