

Appendix 1. Material used in experiment

Target word	Distractor type			
	Semantically related	Semantically unrelated	Phonologically related	Phonologically unrelated
Dusche (shower)	Badewanne (bathtub)	Frisbee (frisbee)	Duell (duel)	Banjo (banjo)
Knochen (bone)	Muskel (muscle)	Radar (radar)	Knospe (bud)	Salbe (ointment)
Leopard (leopard)	Tiger (tiger)	Kuchen (cake)	Lehm (clay)	Dimension (dimension)
Zwiebel (onion)	Knoblauch (garlic)	Stock (stick)	Zwiesel (zwiesel)	Antike (antiquity)
Mikroskop (microscope)	Fernglas (binoculars)	Strumpf (stocking)	Mikado (mikado)	Geschichte (story)
Spinne (spider)	Ameise (ant)	Duschgel (shower gel)	Spitzel (spy)	Duell (duel)
Kleeblatt (shamrock)	Schilf (reed)	Zange (pliers)	Klerus (clergy)	Hamster (hamster)
Bürste (brush)	Kamm (comb)	Rubin (ruby)	Bürde (burden)	Chaos (chaos)
Ellenbogen (elbow)	Knie (knee)	Postkarte (postcard)	Elfe (elf)	Feudalismus (feudalism)
Brief (letter)	Postkarte (postcard)	Wal (whale)	Brigade (brigade)	Taste (button)
Zeitung (newspaper)	Buch (book)	Herd (stove)	Zeichen (sign)	Trost (consolation)
Kerze (candle)	Fackel (torch)	Muskel (muscle)	Kerbe (notch)	Hafen (port)
Banane (banana)	Aprikose (apricot)	Streichholz (match)	Banjo (banjo)	Schwager (brother-in-law)
Diamant (diamond)	Rubin (ruby)	Mücke (mosquito)	Dialekt (dialect)	Kruste (crust)
Krücke (crutch)	Stock (stick)	Ameise (ant)	Kruste (crust)	Panther (panther)
Mond (moon)	Sonne (sun)	Huhn (chicken)	Monitor (monitor)	Biene (bee)
Koffer (suitcase)	Tasche (bag)	Stift (pen)	Koffein (caffeine)	Adel (nobility)
Hirsch (deer)	Elch (moose)	Säge (saw)	Hirn (brain)	Akt (act)
Kiwi (kiwi)	Zitrone (lemon)	Tasche (bag)	Kino (movie theater)	Armee (army)
Ratte (rat)	Maus (mouse)	Füller (pen)	Raster (grid)	Pickel (pimple)
Kühlschrank (refrigerator)	Herd (stove)	Saxophon (saxophone)	Kübel (bucket)	Zwiesel (zwiesel)
Geist (ghost)	Zombie (zombie)	Floß (raft)	Geier (vulture)	Konsum (consumption)
Olive (olive)	Bohne (bean)	Lineal (ruler)	Olympia (olympics)	Zirkus (circus)
Domino (domino)	Würfel (dice)	Papaya (papaya)	Dominanz (dominance)	Zeichen (sign)
Kokosnuss (coconut)	Papaya (papaya)	Deodorant (deodorant)	Kokain (cocaine)	Analyse (analysis)
Regen (rain)	Schnee (snow)	Mütze (cap)	Regel (rule)	Mikado (mikado)
Zirkel (divider)	Lineal (ruler)	Flasche (bottle)	Zirkus (circus)	Seide (silk)
Rock (skirt)	Hemd (shirt)	Gras (grass)	Rost (rust)	Hirn (brain)
Trompete (trumpet)	Saxophon (saxophone)	Schnee (snow)	Troll (troll)	Kokain (cocaine)
Kappe (cap)	Mütze (cap)	Würfel (dice)	Kapitän (captain)	Troll (troll)
Drucker (printer)	Scanner (scanner)	Zombie (zombie)	Druide (druid)	Hotel (hotel)
Bumerang (boomerang)	Frisbee (frisbee)	Aprikose (apricot)	Bulle (bull)	Druide (druid)

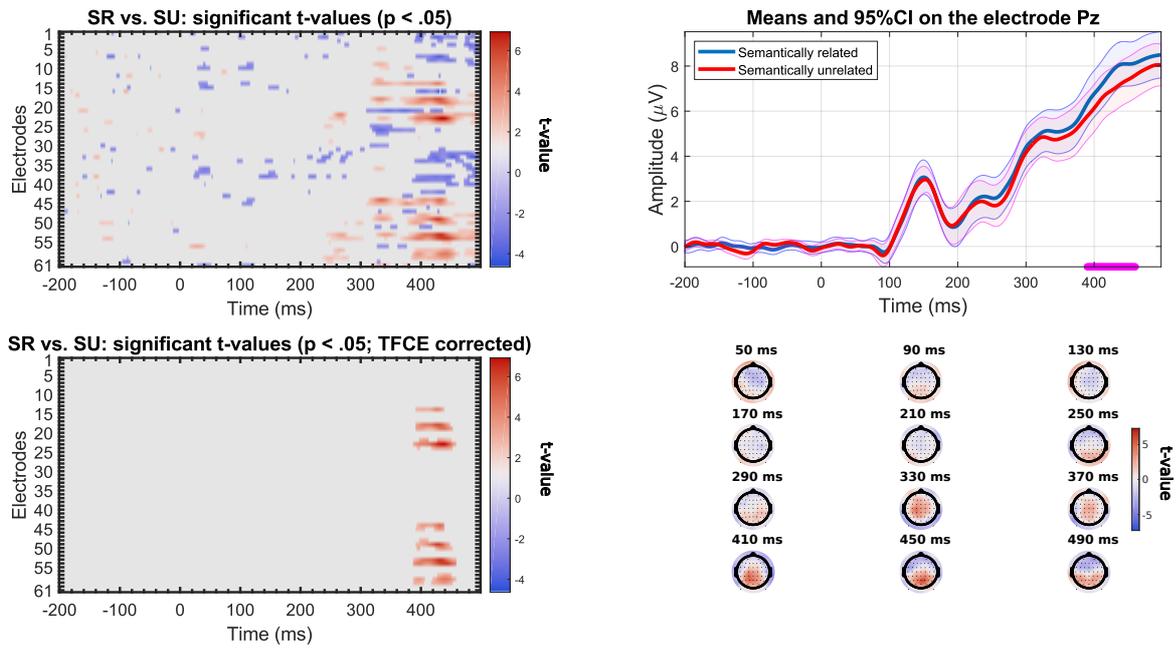
Hammer (hammer)	Zange (Pliers)	Traube (grape)	Hamster (hamster)	Bulle (bull)
Schnuller (pacifier)	Flasche (bottle)	Sessel (armchair)	Schnur (line)	Marine (navy)
Pinsel (brush)	Füller (pen)	Jacuzzi (jacuzzi)	Pickel (pimple)	Bote (messenger)
Bier (beer)	Wein (wine)	Kamm (comb)	Biene (bee)	Tante (aunt)
Salzstreuer (salt shaker)	Pfeffermühle (pepper grinder)	Pistole (pistol)	Salbe (ointment)	Pudel (poodle)
Schaufel (shovel)	Hacke (pickaxe)	Ziege (goat)	Schau (show)	Kerbe (notch)
Baguette (baguette)	Schrippe (bread roll)	Fuß (foot)	Bagger (excavator)	Hain (grove)
Hase (rabbit)	Wiesel (weasel)	Schilf (reed)	Hafen (port)	Rost (rust)
Bett (bed)	Sofa (sofa)	Granate (grenade)	Berg (mountain)	Tuba (tuba)
Chamäleon (chameleon)	Eidechse (lizard)	Pfeffermühle (pepper grinder)	Chaos (chaos)	Olympia (olympics)
Karotte (carrot)	Gurke (cucumber)	Eidechse (lizard)	Kardinal (cardinal)	Monitor (monitor)
Tunnel (tunnel)	Höhle (cave)	Harfe (harp)	Tuba (tuba)	Kanister (canister)
Kompass (compass)	Uhr (clock)	Melone (melon)	Konsum (consumption)	Beere (berry)
Dinosaurier (dinosaurs)	Mammut (mammoth)	Badewanne (bathtub)	Dimension (dimension)	Mediation (mediation)
Strauß (ostrich)	Huhn (chicken)	Knie (knee)	Strauch (shrub)	Kübel (bucket)
Faden (thread)	Wolle (wool)	Gurke (cucumber)	Fahne (banner)	Kirche (church)
Blume (flower)	Gras (grass)	Trophäe (trophy)	Bluse (blouse)	Pixel (pixel)
Parfüm (perfume)	Deodorant (deodorant)	Höhle (cave)	Park (park)	Brigade (brigade)
Kuh (cow)	Ziege (goat)	Dose (can)	Kuli (pen)	Fahne (banner)
Geschenk (gift)	Paket (package)	Sofa (sofa)	Geschichte (story)	Spitzel (spy)
Schmetterling (butterfly)	Libelle (dragonfly)	Marmelade (jam)	Schmerz (pain)	Dominanz (dominance)
Gitarre (guitar)	Harfe (harp)	Libelle (dragonfly)	Giraffe (giraffe)	Kreis (circle)
Tanne (fir)	Fichte (spruce)	Messer (knife)	Tante (aunt)	Regel (rule)
Pool (pool)	Jacuzzi (jacuzzi)	Gans (goose)	Pudel (poodle)	Ehre (honor)
Bombe (bomb)	Granate (grenade)	Wiesel (weasel)	Borste (bristle)	Filz (felt)
Antenne (antenna)	Radar (radar)	Jalousie (louvre)	Antike (antiquity)	Kardinal (cardinal)
Finger (finger)	Zeh (toe)	Puppe (doll)	Filz (felt)	Elfe (elf)
Vorhang (curtain)	Jalousie (louvre)	Mammut (mammoth)	Vorort (suburb)	Kredit (credit)
Thron (throne)	Sessel (armchair)	Hemd (shirt)	Trost (consolation)	Raster (grid)
Axt (axe)	Säge (saw)	Jeep (jeep)	Akt (act)	Lehm (clay)
Krebs (crab)	Hummer (lobster)	Uhr (clock)	Kredit (credit)	Schau (show)
Kanone (cannon)	Pistole (pistol)	Tablette (tablet)	Kanister (canister)	Vorort (suburb)
Ananas (pineapple)	Melone (melon)	Fernglas (binoculars)	Analyse (analysis)	Bluse (blouse)
Fliege (fly)	Mücke (mosquito)	Scanner (scanner)	Fliese (tile)	Dialekt (dialect)
Arm (arm)	Fuß (foot)	Wein (wine)	Armee (army)	Fliese (tile)
Rose (rose)	Tulpe (tulip)	Falke (falcon)	Rosine (raisin)	Fund (discovery)
Boot (boat)	Floß (raft)	Maus (mouse)	Bote (messenger)	Schnur (line)
Pizza (pizza)	Kuchen (cake)	Hacke (pickaxe)	Pixel (pixel)	Hantel (dumbbell)
Tasse (cup)	Dose (can)	Elch (moose)	Taste (button)	Schmerz (pain)
Fuchs (fox)	Wolf (wolf)	Zeh (toe)	Fund (discovery)	Gabe (gift)

Schwan (swan)	Gans (goose)	Zitrone (lemon)	Schwager (brother-in-law)	Borste (bristle)
Hai (shark)	Wal (whale)	Buch (book)	Hain (grove)	Berg (mountain)
Marionette (puppet)	Puppe (doll)	Knoblauch (garlic)	Marine (navy)	Koffein (caffeine)
Pille (pill)	Tablette (tablet)	Wolf (wolf)	Pilot (pilot)	Strauch (shrub)
Feuerzeug (lighter)	Streichholz (match)	Hummer (lobster)	Feudalismus (feudalism)	Kapitän (captain)
Handschuh (glove)	Strumpf (stocking)	Fichte (spruce)	Hantel (dumbbell)	Rosine (raisin)
Besen (broom)	Harke (rake)	Mandel (almond)	Beere (berry)	Geier (vulture)
Honig (honey)	Marmelade (jam)	Speer (spear)	Hotel (hotel)	Park (park)
Seife (soap)	Duschgel (shower gel)	Fackel (torch)	Seide (silk)	Klerus (clergy)
Panzer (tank)	Jeep (jeep)	Sonne (sun)	Panther (panther)	Boden (ground)
Kreide (chalk)	Stift (pen)	Tulpe (tulip)	Kreis (circle)	Mantra (mantra)
Mantel (coat)	Anorak (jacket)	Bohne (bean)	Mantra (mantra)	Bürde (burden)
Medaille (medal)	Trophäe (trophy)	Anorak (jacket)	Mediation (mediation)	Kuli (pen)
Gabel (fork)	Messer (knife)	Tiger (tiger)	Gabe (gift)	Knospe (bud)
Bogen (bow)	Speer (spear)	Wolle (wool)	Boden (ground)	Giraffe (giraffe)
Erdnuß (peanut)	Mandel (almond)	Harke (rake)	Ehre (honor)	Pilot (pilot)
Kirsche (cherry)	Traube (grape)	Paket (package)	Kirche (church)	Bagger (excavator)
Adler (eagle)	Falke (falcon)	Schrippe (bread roll)	Adel (nobility)	Kino (movie theater)
Aquarium (aquarium)	Käfig (cage)	Reis (rice)	Aquarell (watercolor)	Liste (list)
Drachen (kite)	Ballon (balloon)	Kabel (electric wire)	Draht (wire)	Kehle (throat)
Kartoffel (potato)	Reis (rice)	Augenbinde (blindfold)	Karton (carton)	Schlaufe (loop)
Kegel (pin)	Dart (darts)	Auge (eye)	Kehle (throat)	Mast (mast)
Lippen (lips)	Auge (eye)	Käfig (cage)	Liste (list)	Draht (wire)
Maske (mask)	Augenbinde (blindfold)	Kralle (claw)	Mast (mast)	Schnaps (schnapps)
Schlauch (hose)	Kabel (electric wire)	Dart (darts)	Schlaufe (loop)	Karton (carton)
Schnabel (beak)	Kralle (claw)	Ballon (balloon)	Schnaps (schnapps)	Aquarell (watercolor)

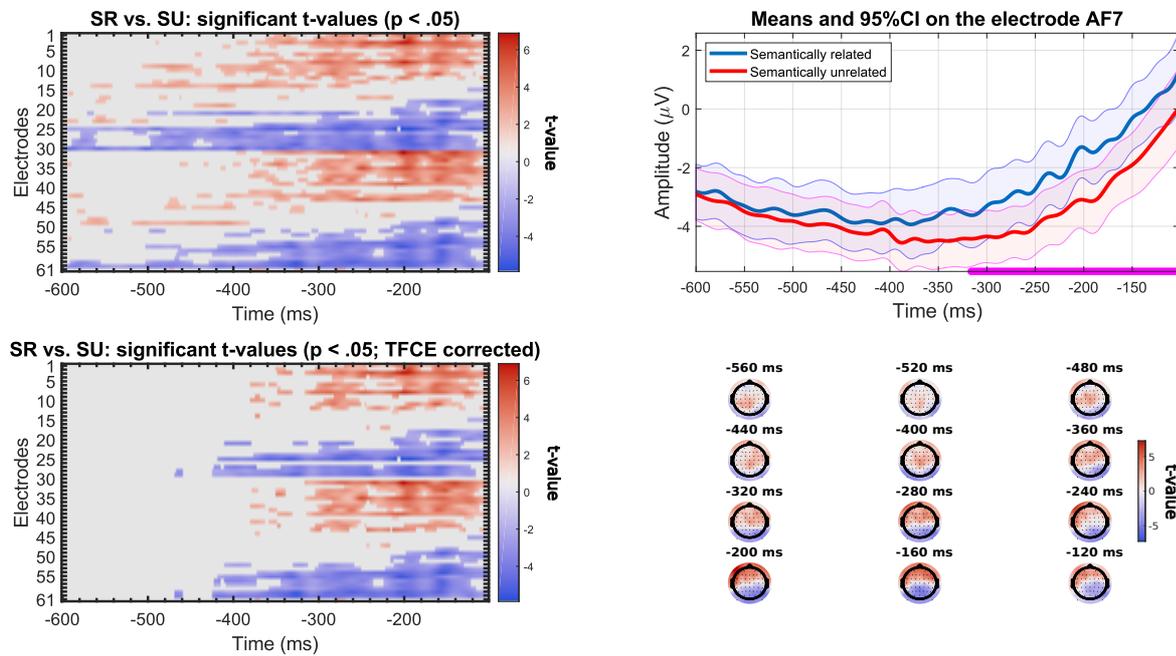
*Appendix 2. Correspondence between electrode numbers on graphs and electrode names*

Electrode	Number	Electrode	Number
Fp1	1	AF3	32
Fp2	2	AF4	33
F7	3	AF8	34
F3	4	F5	35
Fz	5	F1	36
F4	6	F2	37
F8	7	F6	38
FC5	8	FT7	39
FC1	9	FC3	40
FC2	10	FC4	41
FC6	11	FT8	42
T7	12	C5	43
C3	13	C1	44
Cz	14	C2	45
C4	15	C6	46
T8	16	TP7	47
CP5	17	CP3	48
CP1	18	CPz	49
CP2	19	CP4	50
CP6	20	TP8	51
P7	21	P5	52
P3	22	P1	53
Pz	23	P2	54
P4	24	P6	55
P8	25	PO7	56
PO9	26	PO3	57
O1	27	POz	58
Oz	28	PO4	59
O2	29	PO8	60
PO10	30	FCz	61
AF7	31		

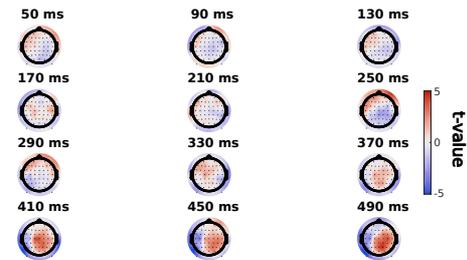
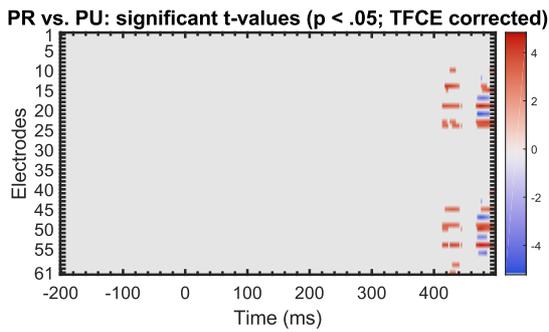
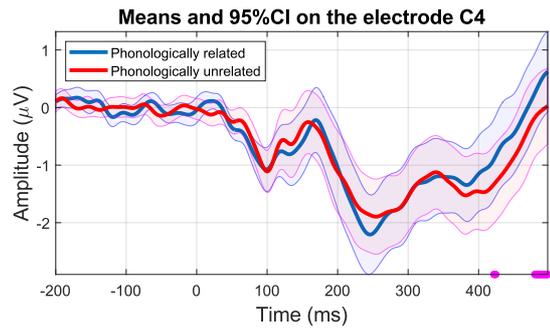
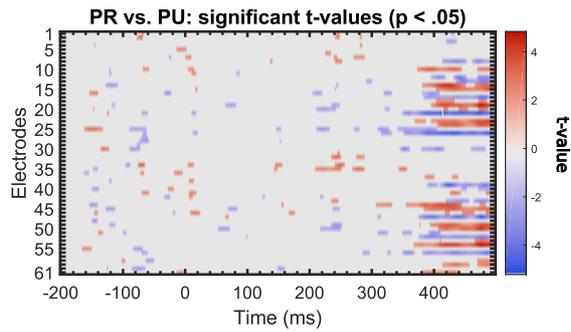
Appendix 3. ERP group results of semantic and phonological contrasts



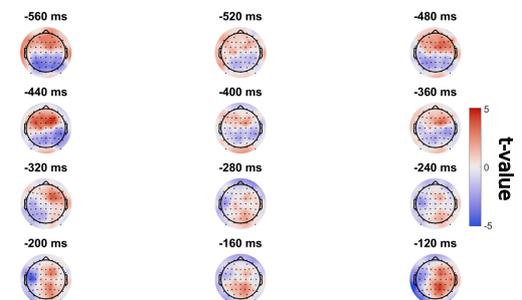
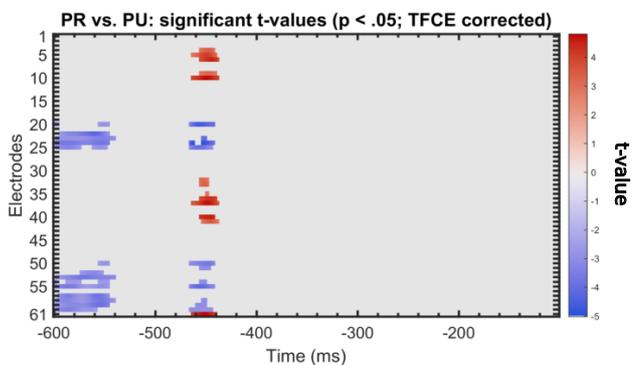
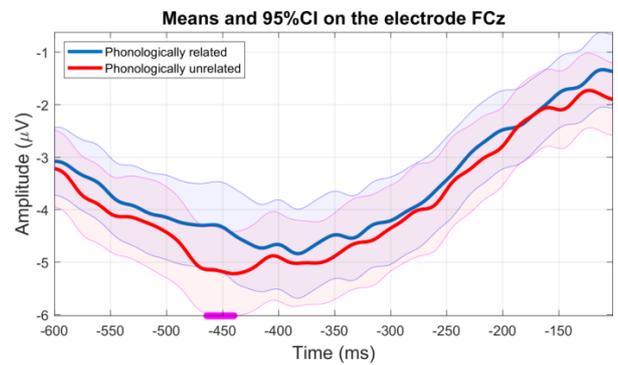
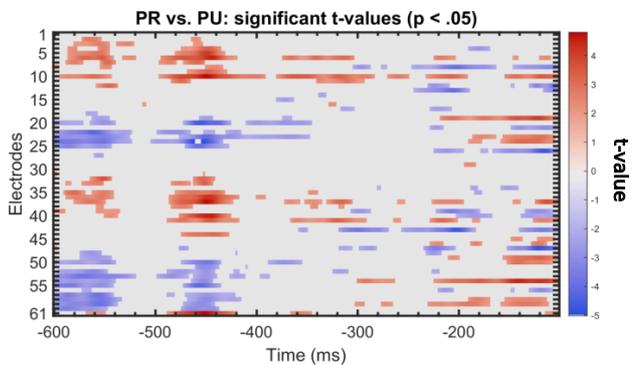
Appendix 3, Figure 1. Results of the mass univariate analysis for the comparison between semantically related (SR) and semantically unrelated (SU) trials for the stimulus-locked ERPs, with significant t-values before correction (top left); significant t-values after correction with TFCE (bottom left); mean amplitude at electrode Pz (electrode where the t-value is maximal) for semantically related and unrelated conditions, significant time points (after TFCE correction) underlined in purple (top right); Topographic map of t-values before correction (bottom right).



Appendix 3, Figure 2. Results of mass univariate analysis for the comparison between semantically related (SR) and semantically unrelated (SU) trials for the response-locked ERPs, with significant t-values before correction (top left); significant t-values after correction with TFCE (bottom left); mean amplitude at electrode AF7 (electrode where t-value is maximal) for semantically related and unrelated conditions, significant time points (after TFCE correction) underlined in purple (top right); Topographic map of t-values before correction (bottom right).



Appendix 3, Figure 3. Results of mass univariate analysis for the comparison between phonologically related (PR) and phonologically unrelated (PU) trials for the stimulus-locked ERPs, with significant t-values before correction (top left); significant t-values after correction with TFCE (bottom left); mean amplitude at electrode C4 (electrode where t-value is maximal) for phonologically related and unrelated conditions, significant time points (after TFCE correction) underlined in purple (top right); Topographic map of t-values before correction (bottom right).



Appendix 3, Figure 4. Results of mass univariate analysis for the comparison between phonologically related (PR) and phonologically unrelated (PU) trials for the response-locked ERPs, with significant t-values before correction (top left); significant t-values after correction with TFCE (bottom left); mean amplitude at electrode FCz (electrode where t-value is maximal) for semantically related and unrelated conditions, significant time points (after TFCE correction) underlined in purple (top right); Topographic map of t-values before correction (bottom right).