

Appendix 1. Material used in experiment

| | Distractor type | | | |
|----------------------------|-----------------------|------------------------|------------------------|---------------------------|
| Target word | 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) |

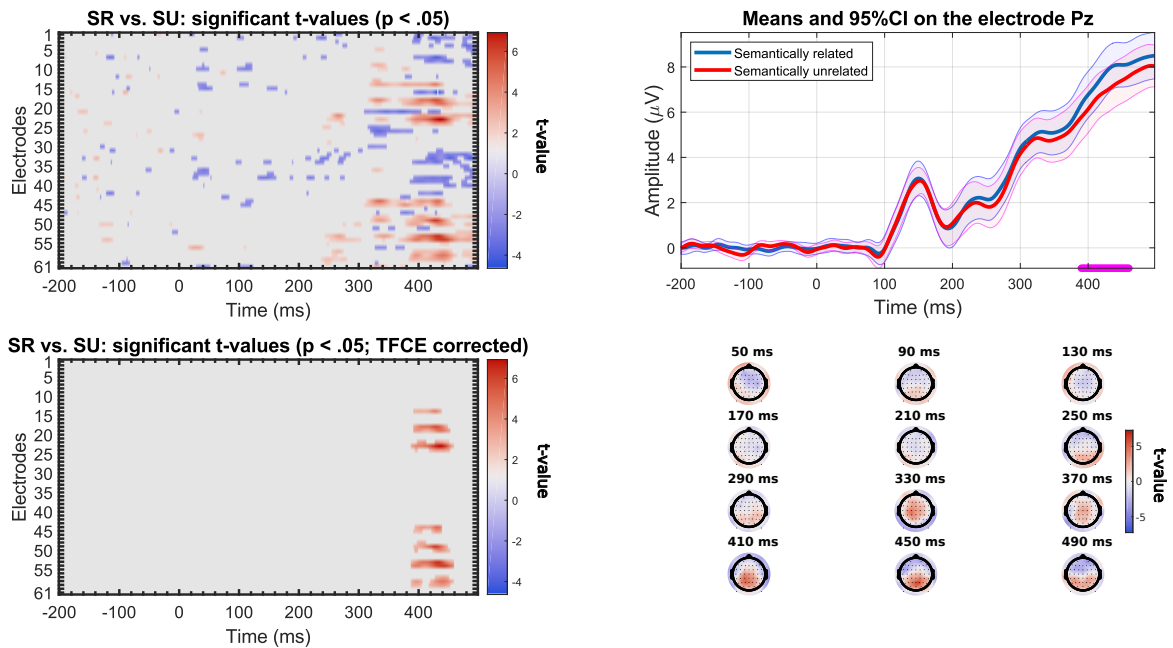
| | | | | |
|---------------------------|-------------------------------|-------------------------------|-----------------------|-----------------------|
| Hammer (hammer) | Zange (Pliers) | Traube (grape) | Hamster (hamster) | Bulle (bull) |
| Schnuller (pacifier) | Flasche (bottle) | Sessel (armchair) | Schnur (line) | Marine (navy) |
| Pinzel (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) |

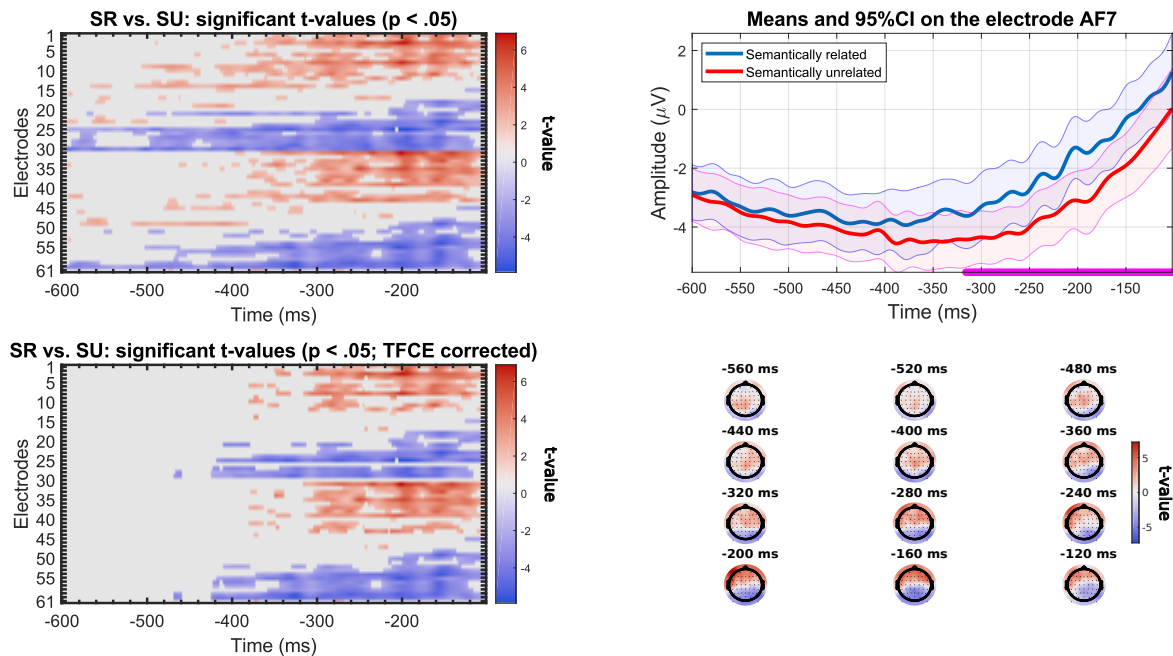
Appendix 2. Correspondence between electrode numbers on graphs and electrode names

| 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 | | |

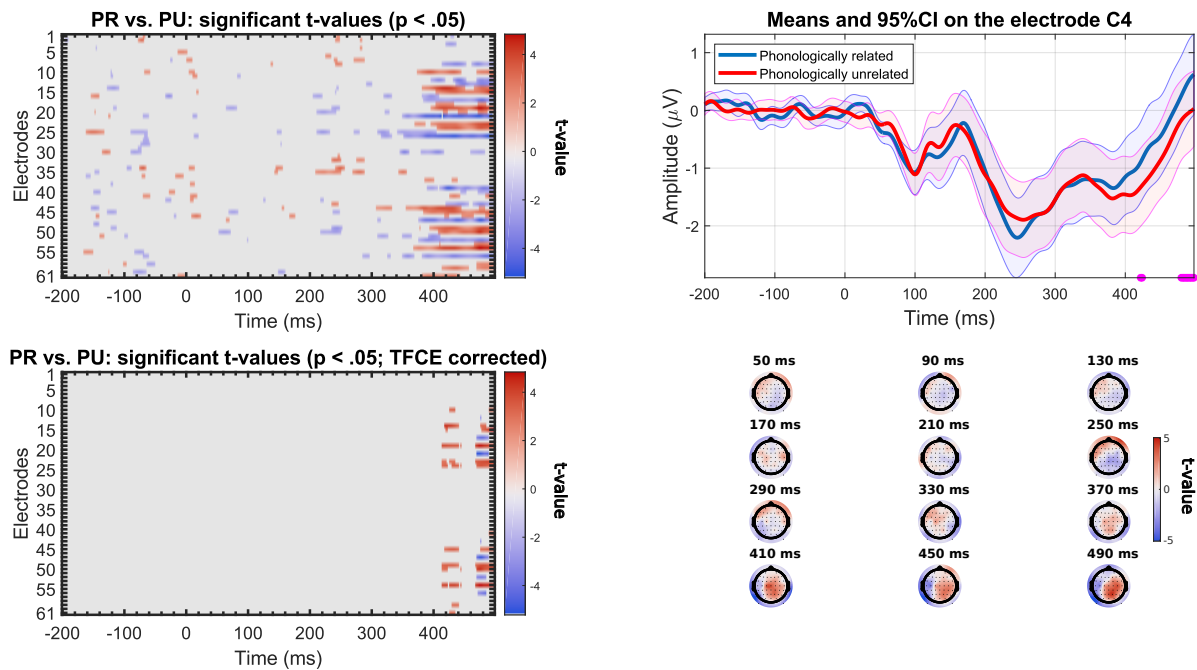
Appendix 3. ERP group results of semantic and phonological contrasts



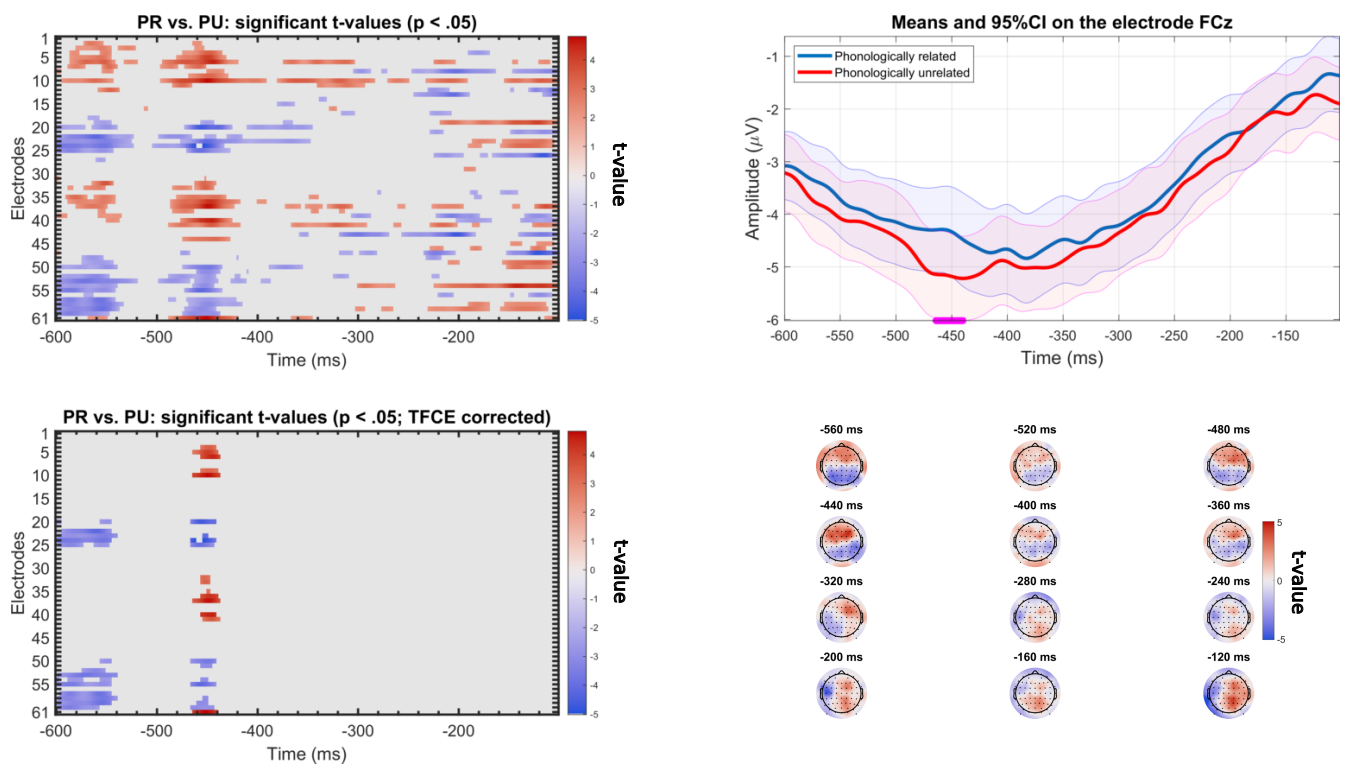
Appendix 3, Figure 1. Results of the mass univariate analysis for the comparison between semantically related (SR) and semantically unrelated (SU) trials for the stimulus-locked ERPs, with significant t-values before correction (top left); significant t-values after correction with TFCE (bottom left); 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).