

Appendix A. Word and nonword materials used in this study. Note: the words with an asterisk were removed from the analyses due to high response error rate.

Words

Trimorphemic compound	English translation	Branching
後進国	developing country	LeftBranching
河川敷	dry riverbed	LeftBranching
家計簿	household account book	LeftBranching
避雷針	lightning rod	LeftBranching
大腸菌	Escherichia coli	LeftBranching
蛍光灯	fluorescent lamp	LeftBranching
選択肢	choices	LeftBranching
人間性	human nature	LeftBranching
護身術	art of self-defense	LeftBranching
野良犬	stray dog	LeftBranching
記念日	anniversary	LeftBranching
披露宴	wedding reception	LeftBranching
結婚式	wedding	LeftBranching
熱帯夜	sultry night	LeftBranching
工場長	factory director	LeftBranching
学生服	school uniform	LeftBranching
自慢話	brag	LeftBranching
最高潮	climax	LeftBranching
正念場	crucial point	LeftBranching
動物園	zoo	LeftBranching
先入観	prejudice	LeftBranching
大黒柱	breadwinner	LeftBranching
二枚舌	duplicity	LeftBranching
果実酒	fruit wine	LeftBranching
舞台裏	offstage	LeftBranching
仏頂面	sulky face	LeftBranching
黄金比	golden ratio	LeftBranching
文化祭	culture festival	LeftBranching
将棋盤	Shogi board	LeftBranching
成長株	growth stock	LeftBranching
責任感	sense of responsibility	LeftBranching
異端児	maverick	LeftBranching

看板娘	poster girl	LeftBranching
注意報	advisory	LeftBranching
美容院	beauty salon	LeftBranching
応援団	cheering group	LeftBranching
観光客	tourist	LeftBranching
体温計	thermometer	LeftBranching
後日談	a sequel to a story	LeftBranching
終身刑	life sentence	LeftBranching
心配事	anxiety	LeftBranching
高級品	luxury goods	LeftBranching
関西弁	Kansai dialect	LeftBranching
四角形	quadrilateral	LeftBranching
添加物	additives	LeftBranching
弁当箱	lunch box	LeftBranching
放送局	broadcaster	LeftBranching
義援金	monetary donation	LeftBranching
千羽鶴	thousand paper cranes	LeftBranching
魚介類	seafood	LeftBranching
少数派	minority group	LeftBranching
招待状	invitation card	LeftBranching
水墨画	ink painting	LeftBranching
商品券	gift coupon	LeftBranching
使用料	usage fee	LeftBranching
成績表	report card	LeftBranching
自立心	sense of independence	LeftBranching
司令塔	control tower	LeftBranching
暗号化	encryption	LeftBranching
落第生	unsuccessful candidate	LeftBranching
音楽家	musician	LeftBranching
漫才師	stand-up comedian	LeftBranching
公式戦	official game	LeftBranching
八重桜	double-flowering cherry-blossoms	LeftBranching
銀河系	galactic system	LeftBranching
歯科医	dentist	LeftBranching
円周率	circular constant	LeftBranching
運動靴	sports shoes	LeftBranching
司会者	chairperson	LeftBranching
電話帳	phone book	LeftBranching
休憩所	rest area	LeftBranching
便利屋	handyman	LeftBranching

一般論	common belief	LeftBranching
地獄絵	hellish picture	LeftBranching
解放区	liberated areas	LeftBranching
無人島	deserted island	LeftBranching
合格点	passing grade	LeftBranching
三面鏡	three-sided mirror	LeftBranching
殺人犯	killer	LeftBranching
計算機	calculator	LeftBranching
筋肉痛	muscle pain	LeftBranching
職業病	occupational disease	LeftBranching
実験室	laboratory	LeftBranching
睡眠薬	sleeping pills	LeftBranching
飲料水	drinking water	LeftBranching
入浴剤	bath salt	LeftBranching
産油国	oil-producing country	LeftBranching
傷害罪	bodily harm	LeftBranching
感想文	report	LeftBranching
時計台	clock tower	LeftBranching
時代劇	costume drama	LeftBranching
交通量	traffic volume	LeftBranching
大気圏	atmosphere	LeftBranching
肉食獣	carnivore	LeftBranching
地平線	horizon	LeftBranching
外来語	loanword	LeftBranching
飲食店	restaurant	LeftBranching
出生届	birth registration	LeftBranching
審判員	referee	LeftBranching
経済学	economics	LeftBranching
絵日記	picture diary	RightBranching
活火山	active volcano	RightBranching
犬小屋	doghouse	RightBranching
急降下	steep dive	RightBranching
核家族	nuclear family	RightBranching
実社会	real world	RightBranching
英会話	english conversation	RightBranching
和菓子	Japanese confectionery	RightBranching
悪循環	vicious circle	RightBranching
船大工	shipwright	RightBranching
新学期	new semester	RightBranching
卵料理	egg dishes	RightBranching

北半球	northern hemisphere	RightBranching
小冊子	booklet	RightBranching
高畫質	high image quality	RightBranching
打樂器	percussion	RightBranching
力仕事	manual labor	RightBranching
私生活	private life	RightBranching
低学年	lower grades	RightBranching
食中毒	food poisoning	RightBranching
絹織物	silk fabric	RightBranching
短期間	short period of time	RightBranching
超特急	superexpress	RightBranching
未成年	under age	RightBranching
要注意	caution needed	RightBranching
歌合戦	singing contest	RightBranching
上半期	first half of the year	RightBranching
宣教師	missionary	RightBranching
現時点	present time	RightBranching
次世代	next generation	RightBranching
非国民	unpatriotic	RightBranching
純文学	polite literature	RightBranching
角砂糖	sugar cube	RightBranching
脑梗塞	cerebral infarction	RightBranching
微生物	microorganism	RightBranching
準決勝	semifinal	RightBranching
名選手	name player	RightBranching
道案内	directions	RightBranching
厚化粧	heavy makeup	RightBranching
逆効果	opposite effect	RightBranching
遠距離	long distance	RightBranching
貴金属	precious metal	RightBranching
山火事	forest fire	RightBranching
花言葉	flower language	RightBranching
豆電球	miniature bulb	RightBranching
私小説	I-novel	RightBranching
安月給	low salary	RightBranching
双方向	both directions	RightBranching
手土産	present	RightBranching
長時間	long period of time	RightBranching
色鉛筆	colored pencil	RightBranching
草野球	sandlot baseball	RightBranching

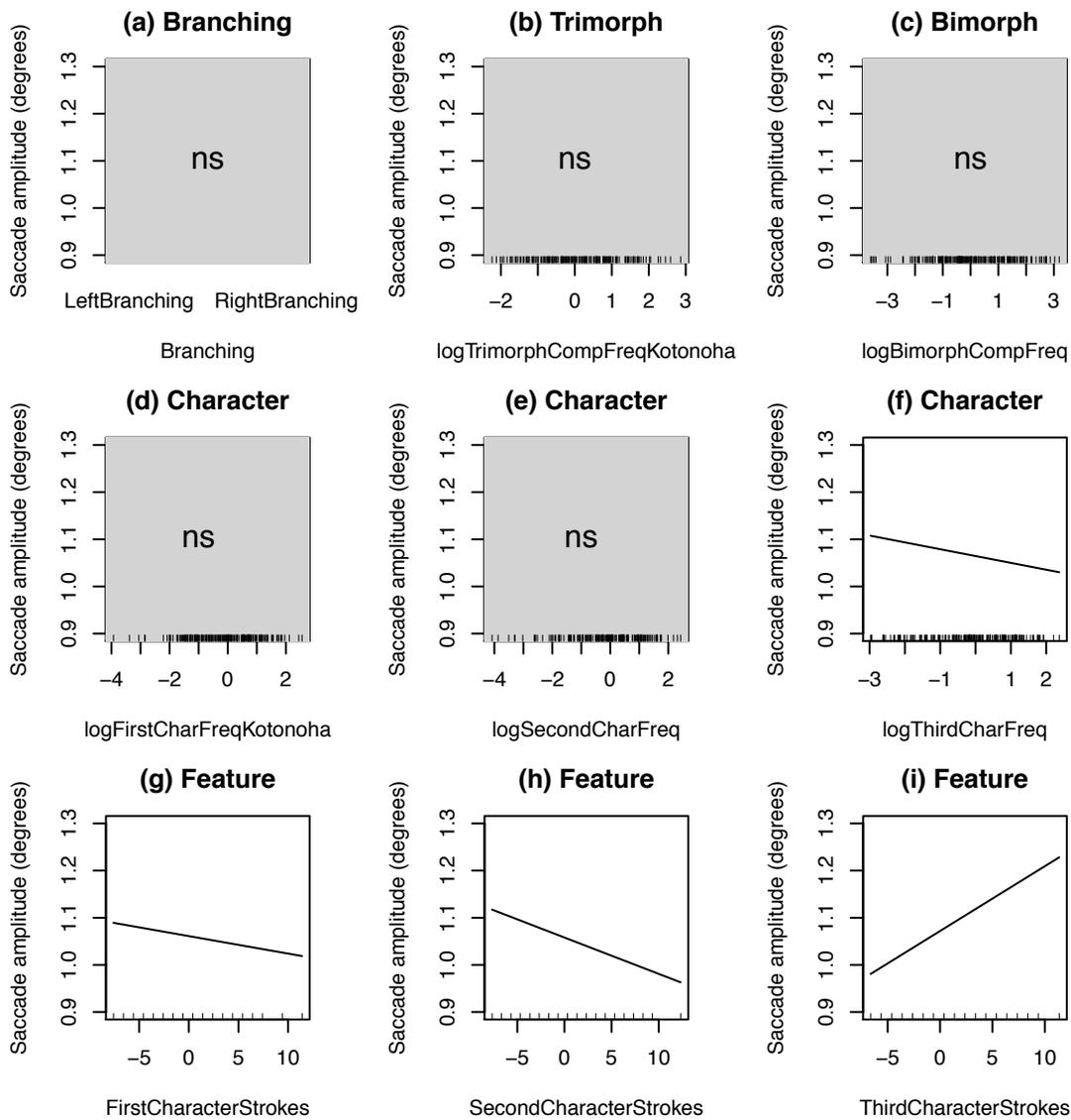
青少年	juvenile	RightBranching
合言葉	password	RightBranching
朝寝坊	late riser	RightBranching
腕時計	watch	RightBranching
紙芝居	picture-story show	RightBranching
居留守	pretending to be out	RightBranching
大震災	great earthquake	RightBranching
紅一点	only girl in the group	RightBranching
殺風景	bleakness	RightBranching
重労働	hard labor	RightBranching
一直線	straight line	RightBranching
能天気	carefree	RightBranching
客商売	service business	RightBranching
鉄格子	iron bars	RightBranching
身支度	dressing	RightBranching
相部屋	shared room	RightBranching
不景気	recession	RightBranching
乱気流	turbulence	RightBranching
湯豆腐	boiled tofu	RightBranching
無関係	unrelated	RightBranching
夢物語	fantasic story	RightBranching
全世界	the whole world	RightBranching
水鉄砲	water gun	RightBranching
敷布団	mattress	RightBranching
頭文字	initials	RightBranching
空模様	weather condition	RightBranching
子会社	subsidiary company	RightBranching
再認識	re-recognition	RightBranching
半透明	translucent	RightBranching
雪景色	snow scene	RightBranching
乳製品	dairy products	RightBranching
初対面	first meeting	RightBranching
桜吹雪	a flurry of falling cherry blossoms	RightBranching
旧体制	old regime	RightBranching
自意識	self-consciousness	RightBranching
近未来	near future	RightBranching
女学生	female student	RightBranching
赤信号	red light	RightBranching
総決算	final settlement of accounts	RightBranching
単細胞	single cell	RightBranching

美少女	beautiful girl	RightBranching
好景氣	booming economy	RightBranching
背番号	uniform number	RightBranching
本調子	normal condition	RightBranching
等間隔	equal interval	RightBranching
広範囲	broad range	RightBranching
視神經	optic nerve	RightBranching
乾電池	dry cell battery	RightBranching

Nonwords

功心夕	父生庄	厄昆用	災冰幼	下宣交	毛水朗
壺志礼	民仲卒	効年兄	兵斗枢	名峻月	后十街
甘由惱	婆支出	光不秘	各評与	化滅白	滯辺寸
近至刺	別成季	公声徒	戒医忒	肺泡冗	敢士老
必吏孫	忍都丹	陪仙灰	遲及抗	俊布享	防均長
箇少五	寔多油	朽侮祈	江正菜	翌写在	勢立双
帆北剩	渴尺昇	緒井処	扶侍雨	指周回	西流判
仰堤号	遇花今	曲恒枚	耳掛存	劣凶辱	孔肃明
但雪半	昔淑天	乘凡植	村忙彫	付衡三	非壮脂
抱央理	衣索莖	佻翁能	朱屋括	城匠单	平踏介
促斤閉	酒棺力	糸酢色	性隅牛	霜口令	妊夜班
迅夏恨	娘山飲	黑幸危	童会低	巡表訊	感床打
然益弓	泰沸局	如旨資	区刑撮	喜坑向	械皆囚
尽余墨	佳殿円	走時苗	他粗風	目狹曉	畜羽浮
冷疊否	触岬斥	便若津	未亜鳴	習涯升	王送債
子移善	尼粒振	共委絡	行真蚊	所葬舌	勅飢作
千看彰	転加倣	書叔泊	略丘張	倫頂旬	営台捕
憎扱男	妥定項	玄潔拔	倒幻絹	偏帳犯	庁飛稚
暖迭有	玉園面	的細洗	困烈敗	田湯紺	祭緩八
漠妃軌	要役葉	屯滋遂	卵盜浪	技尋衷	皇谷喪
紹析香	輝先抄	妙催肪	勇華追	停早逸	羅九徑
杉殖高	被尚紫	惡淡来	桑矛慢	針耐敏	棚怒粹
励贈文	附好幣	段放普	旧握御	滅娛叫	参漏言
召幕唯	芝塑容	組模史	祉落婦	妨悼道	犬耗篤
舗峽列	垣舶棧	牲腰東	渡社惜	慨批郡	縛枯市
洩室蚕	興何困	階我換	拓喚貨	者過脱	紛背越
念題末	柄州激	似養咲	抽架端	武痴消	固儒英
艇泣菊	虞灯蓄	誘坪原	即酪測	遺虐岩	則住薄
丈嚇揺	働究頒	馭棒形	雅傍京	匹詰縦	慮知将
秩脹終	溝徒除	骨寂詐	暇随果	芳乳韻	閑動旋
掃副暑	賜唱牧	級就鈴	炉謝映	訪跳員	歌岸飯
重戰番	鉉銃突	錢等帥	赤輩詳	勝撤並	欧伏躍
海駐培	硫怖橋	媒泥獸	伯遷寧	雲器畝	展芸讓
野菌獲	系弊礁				

Appendix B. Partial effects of lexical predictors co-determining saccade amplitudes. Note: The following model was fitted: Saccade amplitude \sim (1 | Subjects) + (1 | Items) + (0 + Trial | Subjects) + (0 + PreviousRT | Subjects) + (0 + FirstCharacterStrokes | Subjects) + Trial + invPreviousRT + FirstCharacterStrokes + SecondCharacterStrokes + ThirdCharacterStrokes + logThirdCharFreq.



Appendix C. The procedure to test the legitimacy of the constructed samples.

In this study, we opted for constructing a stimulus set, as opposed to sampling randomly from a large data base. Although stimulus construction is still a common procedure in experimental psychology, it is not the most optimal procedure: constructed samples may not properly represent the population and may induce an experimenter bias effect, particularly when a matching procedure is involved (Forster, 2000). This then leads to a potential source of false-positive errors and replication failures. For the set of sample used in this study, it was confirmed that the compound frequencies for our samples showed a log-normal distribution, instead of unexpectedly abnormal distributions (e.g., multimodal distributions). To further examine how much our samples deviated from randomly selected samples, trimorphemic compounds with larger than 13 frequencies were selected from the BCCWJ corpus (13,287 words) because 13 was the lowest frequency in the sample used in the experiment. These words were morphologically segmented by MeCab-0.996 (Kudo, 2006), and 8,681 left-branching and 2,933 right-branching words were identified. Finally, 200 words (100 left-branching and 100 right-branching words) were randomly sampled. Comparison of the tested materials and the randomly selected samples showed that log-transformed trimorphographic compound frequency of the former was higher than that of the latter, $t(381) = 14.3, p < .0001$ in a Welch two sample t-test, and less skewed (skewness of 3.26 vs. 9.16), indicating that our samples were biased towards compounds with higher frequency. Between the left-branching and right-branching compounds, log-transformed trimorphemic compound frequencies were deliberately matched in our samples, $t(198) = -0.26, p = 0.79$. Fortunately, this was the natural characteristics in the randomly selected samples as well, $t(198) = -0.07, p = 0.94$.