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Spacing techniques in second language vocabulary acquisition: Short-term gains vs. long-term memory

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What is This?

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100,000 d, g 2,500 d g e a de he a c ca e e ec_e e he□, ea g □ □ g, a 2,500 □d, □e □e e a · 80, e□e e he d eeda eac (ch ,2010). here e, hec e each ga ec d 🗆 🕒 g a g agea a c ege 🗇 e🗇 , he g a c d e ha , the decomposition of the de gahdeacc, hed he i eail eail d ghe aige a gage. H e e∏a, e_De eaodhe∏_De _□, , , □□□ g h ... e, de , _De e e_□a he ed a -ea \square e a gage \square g \square he c e ca a \square (, 2009). a he d ha had ee ead ed he e ale d e c . □ e, e. . . . a d'_ecce _d_e e ha , he a e _d ced e cha e□he a□e ece, a□ ed aga e e e cha e□ (ch ch d, 2012). add, , ea e , ad le ea g ld, a he _□d·c he a... a□c a□ ee ga, he ech e , aced e e. 'ha, ee , ed de e , . . , \square each g ca $a\square$ a $ea\square$ a he 1970, (e $e\square$ 1972), e e h gh he ech · e a . e eda he e · a ed e e e□e ce a he□ ha e, e□ e .H e e□a□ d he a e e, e, e□ e . e g e .□ e□ eoca, □ed cg e, ch g he □ ad a□, d ca e □ ada e□ad □ (1978) h had, de, □ □ e e e□ a e ace □ eau ged caud. he a e cad elege ea ed a cela del h d ac cad e ee, e g hee e \Box a, a, ed, ac g (\Box e ee each \Box e .), \Box , ac g (\Box eg a□ ta e ee each te e , □e a e d ac cad), a de a ded , ac g (clea, g lea e ee each le e , lea e d lac cald, 3

d ac cad, 5 d ac cad). he d ha he e a ded ched e ed h ghelle e la e ha d g a acce ed la g e de e hell d e c g e ch g (a a, D che, ege - alha, & edgell 2006, 2000 all e elle De ch, 2005 ga & a a, 2008) hadd c la h ele ...

ca ed $^{\prime}$ eg $g G \in \square$ a $^{\prime}$

eg g G e a .' Id cc III g he a e cha e ha e O e e ed e e ha hea gad ee g he Id h he e de
a he c ac he Id a c a had h a a c a c a c
c Id a hea e ed e

3 Procedure

__leach __ld a __e_l __ , de a c_lea ed , g he a e _ a d, a e ac g_l - d c _ _ _ a de . each, de he g , h _ a a _ _ e e ed . he e . de . he g Bee A g □ ec d'he G g □ a e · a e . Id a J Be e ed he □gh, de a da ea_ted _□6, ec d, h e he g h _□d_te a ed he c_tee . he Ge□ a c de, da, _le eche, a haea_le_le e c de, a _la _la a he⊓agage he g h d a lee ed d. hele ele lea d , e, a ea□ g e □ e he⊡e he a⊑ge a g age, ... Led a ... -, ed a , □ach. , each he heede a ed , . - e . , , . e h ac de, e_e,h he g,h _dadhad. _led heGelae..ae.. , h gheGe□a _dada, g _□he g , he _ae .H e e□ ac _e , □dcea Joda, ec dagage, haa ea □ e□, , a a ed daed he a, ... ha ea□e□ a... c ... ca e .ha a g ag e. a□c.a, e⊡ea ed.c.d heGe□a odhea a adheaod a ece ae□h, ad ea he had. □ed heGe□a od he e, ha ed, heac... □ g eeded. e, ac ced. ach e□ . a, □ e ed he a ... ee ... e. h, e, ... de $a \square c \cdot a \cdot g$... he ... he ca, □ a ha / A he e d ca, , a / a e□ a c ec ed he ⊡e ea och a, , a... a e, $_{\square}$ e, ha, a $_{\square}$ c, a., d., ec $_{\square}$ e, d. he $_{\square}$ d a h e, e, e \square e, e, g \square , e(ec , ead.) eda. \square , ac g ched e he e a h a hee e a ha , a h da 1,4,8 a d 11. dea ,a — ched e 100 e ce — — , — e a e a e□a.H e e□ he ca, ched e d d , e□ □ ha. G□ . hee a d in ed a e a ded, ac g ched e he en a, a $e \square$ e hee ($e \square$ da 1, 2, 4 a d 8) $e \square$ a . h $g \square$. a a dhead he d he e g e he e hee'de g ach e.he_de_ he_d a de_e geec, ha, he_de_ _d, _□ e he e _d. e, e \square e . . . he g ea \square . he \square g \square . (, ec. e) e ed he e da 1, 4, 8, 11 a d 15 he e a ded g \square (ec \square) _ e ed . da 1, 2, 4, 8 a d 15. h g□·/, a a d hea⊡ he _□ e□ e e ghe e □degadeach e he □de□ _d a d e_e .

4 Tests

hee, -e, elecamed a eleache, eleca, e heda a elhe a lac ce (e, 1), e lee a elhe a lac ce (e, 2), a d e 8 ee, a elhe a

, fac ce(e. 3). a .e., the g h for a g e a d a for a had. The d he Ge for a for a

5 Limitations

IV Results

A gaaea a gaaee a cassed he 39 d saccedo a ghe he da ce ga cassed he 39 d saccedo a ghe he da ce ga cassed he a gaaea he esa (-

I Experiment one

e 1 a ca⊞ed · eda a e□he a le e . he a eage c le · a□c · a . ·, g he e a ded e□a a h ghe□ha h e a□c a , , g he □□ e□ $a, a, h \cdot ghd \in Ce$ $e \cdot e$ $e \cdot e$ 2, he a eage c te ... de ... h g□ ... ete, a□ d ca g ha te e ... c he e a ded g \Box d \Box ed \Box e c a \Box ed he \Box g \Box (F(1,74) = 1.221, p .05). Let 3, $h g \Box \cdot c$ ed. $d \Box \cdot h e \Box a$ eage $c \Box e$, here a ded $g \Box \cdot a$. Let ha he $\Box g \Box \cdot c$, here de ghega e ee he aga d ele ce ele a ca g ca (F(1,74) = 1.000, p .05). hg he a dad de a ele alge, a ca ca g ca (F(1,74) = 1.000, p .05). he a elage c e, d ca g ha, e, de , dd , de e e la □ □ e□ e □d (a e1). a here, here g = g + c, defect energy g = cele, a , ca , g ca , (e, 1, F(1,37) = 3.573, p .05) / e, 2, F(1,37) = 3.058, p = .05) / e 3. F(1,37) = 2.965, p = .05). Let e = ... Let e =e a, \square e, 2, e, 3, e, e, a, \square c, e, a d, c, \square (a e2). a here a ded $g\square$, delete e ee c e a d c $=2.676 p \cdot .05$)/ e $3 \cdot F(1,37) = 2.068, p \cdot .05$). a electron g e ha declea e

0

2 Experiment two

he a go he a a go gh gh e go e a a go ha e go e he e he e a ded go had h ghe go e a e 1 (F(1,46) = 1.840, p).05) · . . he \Box g \Box · . . e . 3 (F(1,46) = 1.206, p .05). Let g , . . e . 2 . he a □ c · a · · · g · he e · a ded · e □ a · a ed h ghe □ ea · c □ e · ha · a □ c · a · · g he \Box e a (F(1,46) = 1.154, p .05). e e e e a ge d ca g ha here e_e g_ea · c · a , h he g□·, a had ee he ca e e, e□ e 1. c $a\Box$ e $e\Box$ e 1, c e a $e\Box$ h $e\Box$ h $e\Box$ h $e\Box$ Let he^{\uparrow} e. , deg a eecal, deg, $hg\Box \phi$, a gacc he a da⊡ de a he e□ e , ee ha ha g e ⊡e , ac ce a□ c a□ he ed de h e c□e cach . □he□ ⊡e, , h_⊡-g□ _@e e . ,, . de ., _□ g .h.he e /a ded .g□a _g@ea e . _@eca _d _le ea ee, e _le e e a he, c _le he, e, de , d□... ed he . e ed 8 ee a e□he a . ac ce(a e4). a hotele, he jogo, de ee cead coold ele a ca g ca (e. 1. F(1,37) = 5.605, p = .05) / e. 2. F(1,37) = 3.145,

.e. 1. .e. 2, a, e. a, \square .e. 2. .e. 3, e.e. a \square ac \square , c. e. a d · c. \mathbb{Z} (a \mathfrak{e} 5).

g ca ag_, e, (e, 1.F(1,37) = 5.915, p .05)/ e, 2.F(1,37) = 5.721, p .05)

Table 4.	4 -	. 2 -	. 1, 2, 3 × v	ALT. 4 .	 ٠

	,	/		/	ž	4
. I	17.43	7.05	21. 0	7.4	1. 40	.1 3
- 2	15. 7	6.	1 .01	6.70	1.206	.653
- 3	14.42	6.43	12.01	6.12	1.154	.2 6

	• • •	/	ž "· - .	/	ž	4 25.
I	22.16	7. 7	10.01	4.21	5.605	.022
~ 2	20.50	7.72	.14	3.57	3.145	.013
~ 3	1.3	7.15	7.77	4.56	3. 54	.00

Note. The second of the second

/ e $3 \cdot F(1,37) = 3.870, p$.05) A c e a c d d ca ed ha de g he e a ded e a ee ed ge h e e d c (a e6).

a le ea g le e e e de g he e a ded e a ha le ea g he he e e h e g he e a ded e a le ea de g he g he e a ded e a le ea g he g he e a ded e a le ea g he g he e a ded e a le ea g he g he e a ded e a le ea g he e a ded e a le ea g he e a ded e a le ea g he e a ded e a le ea g he e a ded e a le ea g he e a ded e a le ea g he e a ded e a le ea g he e a ded e a le ea g he e a ded e a le ea le ea g he e a ded e a le ea le ea le ea g he e a ded e a le ea le

_lega_d __lce g, he_le ______led he h . he ha ea_le_leca __le c e _d ha c _d a dha ed c e _eca g geadh gca _____ de_ a d g he h g ca (adde e, 1999, 2007 addee & H ch, 1974 Ga held e & A a, 2008), a c e d call le _Pa _e_ he_e e e a d ca he_e e e d c□ a ed g e _e e -, ec d^Qa g age ea⊡e∏. Ec ⊡ha gd c e ea⊡ g c ⊡d, "□each g . he de□ g ac □ ,□ce, ga □d, cha hed., e ee c .e.a d · c _d, _d, a_e,_e, e, ed .e. , _a g age, _aga, .he e _a g⊡a a ca ca eg □, he e ha a⊡e □ed c . . . □ce, c · d e a□ed h ch gh g. e, de, a e e⊟cha ce. ac - De _ D d he g-D , De ea g h , e . here \Box and here \Box and ded \Box \Box , \Box here \Box and ded \Box \Box ded \Box \Box . here \Box g□... g-e□ le e. , e, e g called 8 ee, a e□ he a, lac ce, d d h , a , ca , g ca , d elece, e he la h e gh he le d a led he -, d had cou∏ed e ea h a e□he a lac ce. e_□a e□he he_□ e gha ha he ea□^wgga he ac _□ ga he e _d. hega, ea□ _d c _de□ g a aca-, _□e a / e, he e / a ded _e□a gh ead , e / cce . he g a , daagage □a ge□ e□d e, a ga he□c □e he g ele g h c e elehed elece e ee c e ad c d. ., ee, ha c _d, a□ca□ae, ec ahghae _ge g, g

Declaration of conflicting interests

hea hadecate ha here c c etc. O

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h, the earth there ed the constant a and a and a age a the constant a and a are the constant a and a are the constant a and a are the constant a are the c

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, ch ch d, . (2012). _ de ch _ ca - a □ _ _ c _ de _ Dc _ _ de . D . · · , ha e a cha c e * The

Appendix I

Word list

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Part 1: Content words (nouns / verbs / adjectives): 24 total
del a, da Dach [ he ell he ell he a a, he elee l
de e e, de ede age [he e, he de ea _
den eg, de Ng [he a, he ne
Verbs:
 a e, \Box c e [a \land a \land a, a \not d \Box \bot
 ea ch ge, e dge [ ed, c ee
_ e e, e e [ eha , c□_
Tache, a e [ e, d = ]
Adjectives:
e e d, e c [ , ea e, ca _ _ h , ch [c , h d_ _ ]
Part 2: Function words (adverbs / conjunctions / prepositions): 15 total
Adverbs:
eech, ege ch, ch, __ ch, e, [, eha, , ac a , a tead . tea , __
Conjunctions:
 de, achde, de ha, de, h[·.,a.e.,h., eca, e,a.h.gh_
Prebositions:
, e, , , che, , ,, a, , e, e, , [, ce, e ee, , h, , e d_
Author biography
     . , a A , , ca e _□ e , _□ ec d a g ageA c - , . . Hec ce _a e
a Beal e ga g e , , , a a , , g □ a ech g ec dag age
 ea□ gadeach g,adaa, ge ca,□ce, g,□ □ e c e□
                                                      g-eੁ□ e _□
 he ac □ ga d, ea ga he□a gage.
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