

Influence of handedness and bilateral eye dominance on ceiling

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ABSTRACT

We investigated the effects of increased in-eye hemispheric action (IHI) on ceiling dimensions (aerobic, deaerobic, and original) of the Altenberg Test. To measure eye dominance, we used the IHI test. IHI indicated bilateral differences in handedness, mixed-handedness, and IHI handedness. Since IHI did not significantly affect bilateral (control) and bilateral eye dominance of a 30-degree eye dominance test (EM). Results indicate significant ceiling differences for mixed-handedness, and combined eye dominance, for all

ceae ad an age, and hehe ceae i a diffeniall affec ed e-and q mani la ion, he e b̄ co e of he Al e na e U e T̄ enc , de ail, o iginali , ca ego ical d̄i inc i enḡ and a o ia enḡ), e e b̄mi ed o a 2 (Condi ion: con ol, bila e al EM) × 2 (Handedne : mi ed, e ong) × (2)(T̄ : e, q)mi ed fac o ial MANOVA. M l i a ia e e e ealed a igni can main effec fo Handedne (Willk' Λ = .779, F(5, 54) = 3.06, p = .017, (η² = .221) and T̄ (Willk' Λ = .735, F(5, 54) = 3.89, p = .004, (η² = .265) hen he de enden a iabl̄ a e linea l combined ac q̄ all ial. No main effec fo Condi ion (Willk' Λ = .959, F < 1), o in e ac ion of Handedne × T̄ (Willk' Λ = .907, F < 1), Handedne × Condi ion (Willk' Λ = .978, F < 1), T̄ × Condi ion (Willk' Λ = .947, F < 1), o Handedne × Condi ion × T̄ (Willk' Λ = .927, F < 1) e e o e ed fo he linea l combined b̄ co e. Uni a ia e ANOVA al o ealed no igni can diffe enc̄ fo T̄ fo he e b̄ co e, e gḡ ing ha he main effec in he m l i a ia e e e of e e. q - e o e ed o be an o e all ac ice effec ha i no e ec c o an of he indi id al b̄ co e.

3.3. Handedness findings for individual sub-scores of the Alternate Uses Test (post circle task)

The anal e e en ed in h̄ ec ion a e b̄ ed on a ician̄, e o e o e all 15 ial of he Al e na e U e T̄ k fo each b̄ co e. Uni a ia e e indica e ha mi ed-hande ho ed g ea e enc (M = 3.09, SE = .19) han ong-hande (M = 2.44, SE = .18), F(1, 58) = 6.15, p = .016, (η² = .096); mi ed-hande (M = 2.45, SE = .142) ho ed g ea e ca ego ical d̄i inc i enḡ in hei an e han ong-hande (M = 1.67, SE = .13), F(1, 58) = 15.576, p < .001, (η² = .21); mi ed-hande (M = 2.70, SE = .16) had mo e a o ia e e o e han ong-hande (M = 1.84, SE = .15), F(1, 58) = 14.40, p < .001, (η² = .20); and mi ed-hande (M = 3.35, SE = .28) ho ed mo e o iginali han ong-hande (M = 1.84, SE = .27), F(1, 58) = 13.80, p < .001, (η² = .19). Mi ed-hande (M = 2.5, SE = .13) e e ma ginall highe han ong-hande (M = 2.1, SE = .18) on he de ail b̄ co e, F(1, 58) = 3.64, p = .06, (η² = .06). The e e l̄ o he h o h̄ i ha mi ed-handed indi id al o ld demon a e inc ead ceae i i on h̄ e indi id al co e han ong-hande.

Addi onall , a priori e e gḡ ha he highe ceae i i of mi ed-hande com a ed o ong-hande a d i en̄ olel b diffe enc̄ in he con ol go , b no he bila e al EM go . Com a i o e be een mi ed and ong hande in he con ol go (no bila e al EM) e ealed diffe enc̄ on all e b̄ co e of ceae i i enc , F(1, 28) = 4.2, p = .05, η² = .13 (M_{mi ed} = 3.05, SE = .24; M_{ong} = 2.3, SE = .26); de ail, F(1, 28) = 5.4, p = .03, η² = .16 (M_{mi ed} = 2.54, SE = .17; M_{ong} = 1.95, SE = .18); o iginali , F(1, 28) = 9.14, p = .005, η² = .25 (M_{mi ed} = 3.06, SE = .39; M_{ong} = 1.03, SE = .42); ca ego ical d̄i inc i enḡ , F(1, 28) = 9.46, p = .005, η² = .25 (M_{mi ed} = 2.4, SE = .20; M_{ong} = 1.5, SE = .21); and a o ia enḡ , F(1, 28) = 9.5, p = .005, η² = .25 (M_{mi ed} = 2.75, SE = .22; M_{ong} = 1.75, SE = .23).

The e diffe enc̄ be een ong and mi ed-hande d̄i a e ad fo he bila e al EM go fo enc (F < 1), de ail (F < 1), o iginali [F(1, 30) = 2.06, p = .16], ca ego ical d̄i inc i enḡ [F(1, 30) = 3.08, p = .09], and a o ia enḡ [F(1, 30) = 2.6, p = .11].

for categorical dependent variables, $F(1, 30) = 4.71, p = .04, \eta^2 = .14$ ($M_{bilateralEM} = 2.22, SE = .20; M_{control} = 1.56, SE = .23$). No condition differences were observed for either level of mild-handicapped ($F < 1$), the level of mild-handicapped ($F < 1$), or the level of severely-handicapped ($F \leq 1$).

Taken together, these results suggest that the bilateral EM manipulation affected original and categorical dependent variables equally only, but this effect did not affect the level of handicapped. At this point, we need to determine how long the EM effect held for severely-handicapped individuals. To answer this, we conducted a series of analyses of mean differences in the level of handicapped (Tial 1 3, Tial 4 6, Tial 7 9, Tial 10

ion. However, for the categorical dependent variable, only Trial 13 (e o ed abo e) reached significance, and Trial 46 (e e ma ginall igni can, $F(1, 30) = 3.6, p = .06$). Trial 79 [$F(1, 30) = 2.4, p = .13$], 10-12 [$F(1, 30) = 2.5, p = .11$], and 13-15 ("la e ial, e o ed abo e) e e no igni can (see Fig. 3). This suggests that the effect of bilateral EM on originality of song-handers may last 9 min before it disappears. But, the effect of bilateral EM on categorical dependent variables lasted 3 min and may be 6 min (see Fig. 2 and 3, and Table 2).

While significant differences between control and bilateral EM conditions of song-handers were only observed for originality (total 6.9) and categorical dependent variables (total 3) scores, additional analyses revealed general downward linear trends in the bilateral EM condition across the verbal increment for a total of $F(1, 17) = 8.03, p = .01$, originality, $F(1, 17) = 8.2, p = .008$, and categorical dependent variables, $F(1, 3$

the e bal LH i the ca e of bila e al ac i i . In addition o he bila e al a e p of ac i i e o ed b Folle and Pa k (2005) ho iñ ed ic e im li and allo ed fo a ial mani la ion of hq e ic e befo e gi ing a e bal e on e, a io c ea i i a k ha e been a ocia ed i hac i i in LH fon al and em e o- a ie al c e in ol ed in a ial e ce ion of objec (J ng-Beeman e al., 2004

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