Neuroticism and handedness: risky combinations for psychopathology

Ion N. Beratis[1 2], Andreas Rabavilas[2], George N. Papadimitriou[1], Charalabos Papageorgiou[1 2]
[1]Eginition University Hospital, 1st Department of Psychiatry, Medical School, National University of Athens, Greece;
[2]University Mental Health Research Institute (UMHRI), Athens, Greece

Background

➢Eysenck's theory of personality argues that the phenotypic behavior reflects the underlying traits of three dimensions that have a biological origin, namely neuroticism, extraversion, and psychoticism (Eysenck, 1967, 1981; Eysenck & Eysenck, 1975, 1991).

➢The scores attained on the Eysenck Personality Questionnaire (EPQ) (Eysenck & Eysenck, 1975) are considered to reflect the above personality traits. Moreover, EPQ includes a lie scale destined to measure social innocence and the tendency to "fake-good".

➢Previous studies have observed alterations between right- and left-handers in brain architecture linked to emotion processing (Perry et al., 2001; Royet et al., 2003; Szabo et al., 2001). Notably, Szabo et al. (2001) observed differences in the amygdale structure of right- and left- handers, with right-handers' amygdala volume being significantly greater on the right-hemisphere, whereas left-handers' amygdalas were symmetrical, similar in size to the right amygdala of right-handers

➢Evidence indicates a link between the amygdala's structural patterns and personality traits, such as neuroticism and extraversion (Omura et al., 2005).

Aim of the study

. The present study investigates the commonalities and differences between right- and left-handers in reference to the association between the Eysenck Personality Questionnaire (EPQ) scores and psychopathology status in a non-clinical sample of young adults.

Materials and methods

➢The number of individuals included in the analysis was 84, 43 left-handers (20 males) and 41 right-handers (21 males). The mean Edinburgh Handedness Inventory (EHI) score in the left-handers was -82.1 ± 26.2 (-18 to -100), and in right-handers 99.1 ± 3.9 (79–100).

➢For admission in the initial right- or left-handed group, a left or right-hand preference in hand-writing, hand-throwing andhand-holding a knife without a fork was needed. In addition, for right-handers a positive answer in the question of strong right-handedness was required.

➢For further fractionation of handedness the EHI was applied. Left-handers should have an EHI score < 0. In right-handers, right-hand use should be selected for all actions, and there should be no more than two actions of indifferent hand preference.

➢To measure Eysenck's personality traits, the Greek standardization (Dimitriou, 1986) of the EPQ (Eysenck & Eysenck, 1975) was applied. The dimensions evaluated with their internal consistency coefficients (Cronbach's a) are extraversion (EPQ-E, a = 0.81), neuroticism (EPQ-N, a = 0.86), psychoticism (EPQ-P, a = 0.60), and lie (EPQ-L, a = 0.79).

➢Psychiatric symptomatology was assessed with the application of the Symptom Checklist 90 (SCL-90) (Derogatis et al., 1973). SCL-90 is a 90-item self-rating instrument. Each item of the SCL-90 is rated by the subject evaluated on a five-point scale of distress from zero (none) to four (very high)

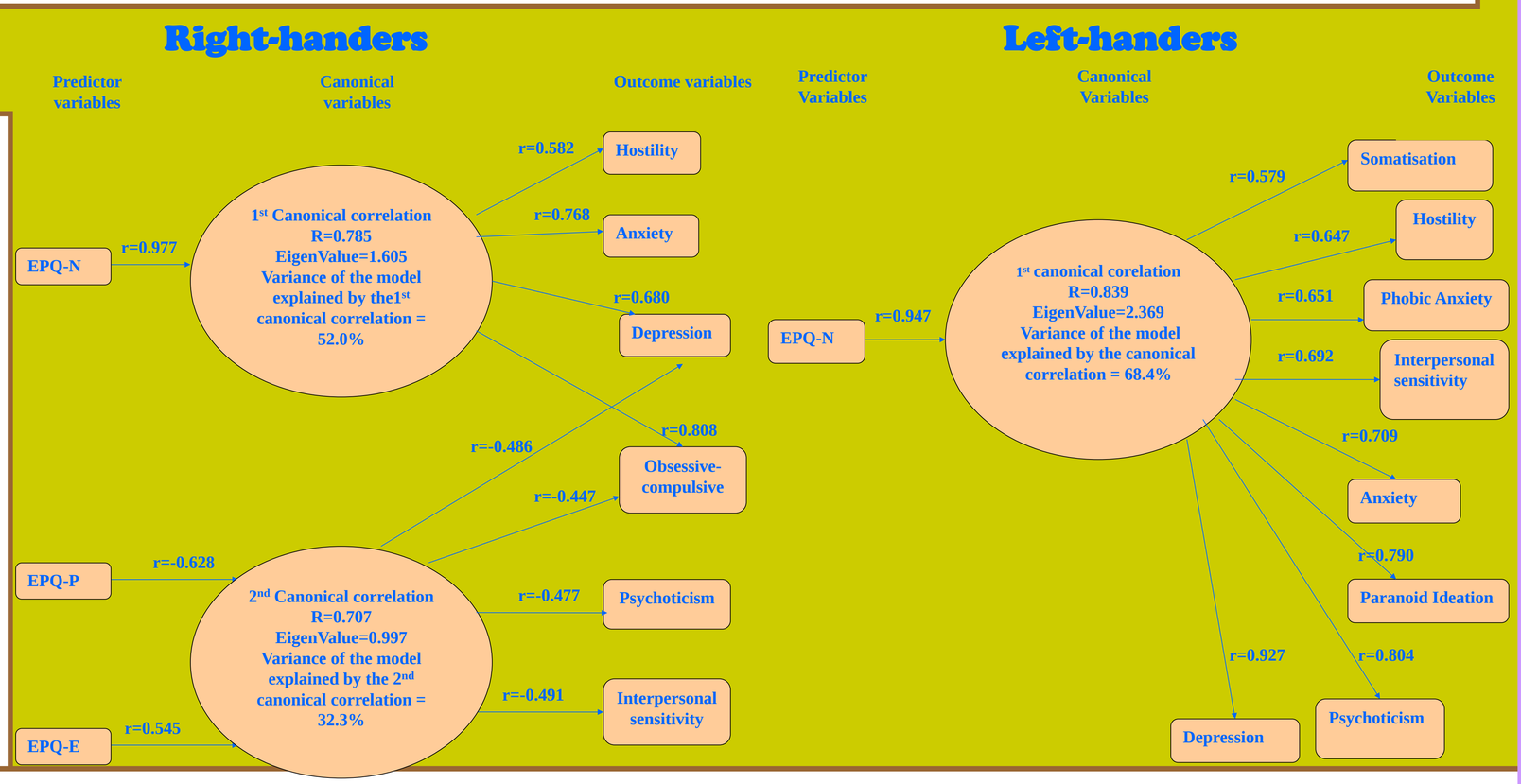
➢The nine SCL-90 subscales with their internal consistency coefficients are depression (a =0.88), hostility (a = 0.85), anxiety (a = 0.79), phobic-anxiety (a = 0.66), obsessive–compulsive (a = 0.84), interpersonal sensitivity (a = 0.80), somatisation (a = 0.82), paranoid ideation (a = 0.72), and psychoticism (a = 0.70).

Results

➢In the group of right-handers, the canonical correlation analysis with predictor variables the EPQ dimensions and outcome variables the SCL-90 scale scores revealed a statistically significant model [Pillais Trace = 1.494, F(36, 124) = 2.053, p = 0.002] with two significant canonical correlations that explained as a total the 43.6% of the variance of the outcome variables; the first canonical correlation explained 32.2% and the second 11.4%

➢In left-handers the canonical correlation analysis, with predictor variables the EPQ dimensions and outcome variables the nine SCL-90 scale scores, revealed a statistically significant model [Pillais Trace = 1.403, F(36, 128) = 1.921, p = 0.004), with one significant canonical correlation that explained 49.3% of the variance of the outcome variables

➢The canonical models both for right- and left-handers were not significantly influenced by the effect of gender



Conclusions

❖ The results indicate that Eysenck's model of personality has applicability as an explanatory framework of the inter-individual differences observed in the symptom fields assessed by the SCL-90. Nonetheless, the models of right- and left-handers do not share the same patterns as they utilize distinct predictor and outcome variables

❖ In left-handers neuroticism was positively associated with eight out of the nine SCL-90 symptom scales, whereas in right-handers neuroticism was positively associated with four SCL-90 scales. Moreover, in right-handers the strongest association of neuroticism was with obsessive–compulsive behavior, whereas in left-handers this symptom-scale was the only one that did not load by increasing neuroticism scores

❖These observations could have a clinical applicability in identifying subjects with an increased risk to develop specific patterns of psychiatricsymptomatology and provide timely individualized interventions.

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