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**INTERHEMISPHERICAL ASYMMETRY INDIVIDUAL PROFILE INDICES
APPLIED SIGNIFICANCE**

Canadian kinesiologists consider that young children display weak, inconsistent hand preference tendencies and have movements less velocity with both hands; performance varieties between hands are bigger for young children and the handedness consistency improves with age [1]. The Kuwaitian right-handed children possessed superior visuospatial abilities while their left-handed counterparts – better simple reaction times [2]. According to Iranian scientists modern data laterality had no effect on the higher-ordered sensory functions of elder people, both left- and right-handed, though laterality caused an influence on fine motor dexterity in the right-handers [3]. Since right hemisphere is considered to have more neurons than the left one and the first one is dominant in left-handed people they can have lower reaction time while choosing the auditory reaction in part the old Iranians [4]. Brain cortex left insulas gyri amount was significantly more in right-handers than in left-handers in Iranian population [5]. There are no connections between handedness and right-sided somatic complaints while there were significant relations between handedness and left-sided somatic complaints; additionally Iranian students suffering from depression, both right- and left-handed, had left-sided complaints and the doctors considered it as depression sign [6]. Manipulation training improved handedness in Iranian children, particularly the 7-14-year-old school students with autism spectrum disorders [7]. The 5-6-year-old left-handed Iranian children used their left hand more frequently in the ipsylateral hemispace though the right-handed children used their dominant right hand both in ipsylateral and in contralateral space mostly in all situations [8]. Iranian 14-17-



yeared girls were distinguished by bigger answer accuracy in acquisition phase comparatively to the right-handed ones [9]. While most left-handed Iranian boys and girls without valuable difference started counting their fingers with their left hand, the right-handed ones – with their right hand with no significant gender differences in fingers counting habits testifying to the fact that manual laterality contributes to finger counting directionality [10]. There was an experimental work which results demonstrated that very short (in 0,5 sec) and very long (in 3,5 sec) foreperiods will lead to the reaction time increase and that left-handers had shorter reaction times than their right-handed counterparts in Iranian population [11] though there is an another opposite point of view in other countries. Sometimes IQ is considered to be higher in left-handers because of their ability to process bigger information volume comparatively to the right-handers, other researches (for instance, of Iranian Health Research Center) demonstrated no relationship between academic achievement and handedness [12].

Also Iranian psychologists researches on laterality demonstrated following results: there exist only the valuable varieties between left- and right-handers in emotional reactivity subscale term, the left-handers from observed population possessed emotional reactivity higher levels; the valuable varieties are also present between left- and right-handers in anxiety rate term and right-handed people possessed significantly higher anxiety levels; no varieties were observed between right- and left-handers on stress and depression terms; there is a common conclusion about right hemisphere fundamental role in emotions expressing; the experimental results received on anxiety are found to be debatable because the psychologists from other countries consider it as the left-handers' feature while mentioning about its bigger distribution in left-handed people [13].

Left-handers possess better prosocial behavior and higher social intellect but they can have tendency to its disturbances rather than right-handers by the Iranian psychologists' data [14]. Paranormal beliefs in Tehranian males and females students



were characteristic for the left-handers [15]. Left-handedness high prevalence and thus abnormal cerebral asymmetry with no close relationship between handedness and lateralization was found in Iranian children particularly in boys [16]. Tehranian students with weak educational state were tended less to definite side preference in their hand and foot but not in ear and eye [17]. Left-handed Iranian children perceived emotional faces (especially the angry ones) much faster in the right visual field comparatively to the left visual field while right-handed children had no any lateralization effect on facial emotional processing [18]. Lateralization patterns on hand, foot, eye and ear dominance were found to be different in normal versus mentally retarded Iranian children [19]. Handedness, footedness, eyedness and eardness assessment was proposed to be included in differentiated rehabilitation plans and therapy for Iranian children's mental retardation [20]. Handedness and footedness were found to be contributed in Iranian children mental retardation regarding familial pattern [21]. Right hemisphere dysfunction was thought to be contributive in obsessive-compulsive disorders in the Iranian patients taking into account their age and sex [22].

Attention deficit/hyperactivity syndrome was considered to be associated with left-handedness but Iranian scientists found out its link not with handedness but footedness [23]. Left-footedness is considered to be contributed in male and female homosexuality: in men – due to callosal body peculiarities while in women – by Geschwind-Galaburda's theory [24]. Footedness was thought as potentially better indicator of lateralization than handedness.

Left-eyedness was found to be met more common at psychoses and depressions but less common at bipolar disorders in Iranian two sexed children and adolescents [25]. Left eye dominance but no differences in dominant hand and foot was determined in psychiatric inpatients (pre-university students, males and females) in Iranian capital [26]. Hand-eye dominance can be important in basketball (in part in the male one) by Iranian scientists data received in social welfare center of applied science [27].



We have been studying left-handed students physiological and psychological peculiarities at UMSA (Poltava) Physiology chair for years. We dedicated our works to left-handed foreign students' features assessment. Pedagogical approaches to their study were our scientific publications subject [28; 29; 30; 31], in part during remote learning [32]. We assessed personality cognitive style parameters in Iranian students dependently on their interhemispherical asymmetry individual profile [33], in the ones from Iraq [34]. Sinistrality study was performed in Sudanese students [35]. Also we dedicated our works to the face asymmetries studies in dexters and sinisters in the students from Egypt, Iraq [36], Turkmenistan [37] as well as in the patients with odontogenous phlegmons and mandibular angular fractures [38].

Thus, interhemispherical asymmetry individual profile indices study indeed is of great theoretical and applied significance and should be taken into account in physiology, psychology, pedagogy, clinical medicine. Their taking into account has predictive role concerning to psycho-physiological personal features (both of the adults and children), pedagogical approaches, diseases course and nozological units, their treatment and prevention under pathological conditions. We did not present the works from many countries in the article though interest to this subject is in the Earth various areas. The attitude to sinistrality varies in different countries. In part, 95-98% of the Americans and the Japanese are left-handers. Left-handers are hatred in African countries. It is forbidden to eat with left hand in moslemic countries that creates the conditions of forced right-handedness and increases the loading to such people and their subdominant brain hemisphere which becomes the dominant one under such unfavorable conditions. That is why the left-handers amount in Arabic countries is approximately 5% though not all lefties are taken in account by statistics because of mentioned situation.

Only 5% of all left-handers are real, born with both left-handed parents. Other 95% are either hidden (forced) when the person uses his/her left hand because of his right hand or left hemisphere injury or unreal when the person uses his right hand

because of left hand or right hemisphere injury. Such situations can lead to psychological discomfort. Another situation when the person develops both upper extremities and both hemispheres as a result of this while becoming ambidexter can increase his/her IQ or result to pathological conditions mentioned above.

There exists such a treatment method – lateral therapy [39]. It was and is applied at schizophrenia, maniacal-depressive disorders, epilepsy, neuroses. The patient can have damage of his dominant hemisphere (or even removal at epilepsy when the second hemisphere starts performing its own functions together with the ones of the removed hemisphere), can change his dominant hand for writing. Thus his personality features can get changed significantly but he will be healthy. Lateral light- and sound-therapy is successfully applied in children at neuroses.

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