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INTERRELATIONSHIP DIFFERENCES BETWEEN PERSONALITY TRAITS IN MEN AND WOMEN

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Excessive aggression is an urgent problem of modern society but the mechanisms of aggressiveness development are insufficiently studied. Aggression is more pronounced in males than in females, therefore the study of the aggressiveness development mechanisms is mainly carried out on males. Female aggression is considered to differ from male and findings from male samples cannot apply to females.

The purpose of work was the estimation of differences of interrelationships between personality traits in men and women.

Material and methods. The study involved 119 Ukrainian young people aged from 18 to 22 years (105 men and 14 women). The participants were proposed to answer questions of the Buss–Durkee Hostility Inventory, Spielberger State–Trait Anxiety Inventory and Eysenck Personality Questionnaire. The Buss–Durkee Hostility Inventory was used to study aggressiveness. The Spielberger State–Trait Anxiety Inventory was used to investigate the anxiety traits. The Eysenck Personality Questionnaire provided the estimation of extraversion–introversion ratio, neuroticism and the sincerity of answers. If the answers were not sincere, they were not taken into account. Statistical analysis of the results was carried out by methods of nonparametric statistics using the package “Statistica 6.0”.

Results and discussion. According to the results, women and men did not differ by extraversion, neuroticism and anxiety traits, but women had a statistically significant lower aggressiveness index. This was mainly due to lower physical aggressiveness in the absence of a difference in verbal and indirect aggressiveness. It is possible that differences in aggressiveness index and physical aggressiveness between men and women are provided by features of interrelationships between personality traits. Although both men and women had strong reliable positive interrelationships between neuroticism and anxiety traits, women had some differences in the correlation between some personality traits.

Conclusions. Women had a statistically significant lower aggressiveness index mainly due to lower physical aggressiveness. Both men and women had strong reliable positive interrelationships between neuroticism and anxiety traits. Moderate reliable negative correlation between extraversion and anxiety traits in men, and strong negative correlation between extraversion and neuroticism in women were found. Opposite character of correlations between neuroticism and aggressiveness index was revealed in women (strong negative correlation) and men (moderate positive correlation). Features of the relationships between personality traits in males and females are due to the determining role of sex hormones for the organization and modulation of neural networks related to behaviour. Thus, the study of differences between sex and stress hormones levels and their relationships with personality traits in men and women is necessary for understanding the aggressiveness development mechanisms.

Keywords: aggressiveness index, extraversion, neuroticism, anxiety traits, men, women.

Research relation to the plans, programs and department themes. Work was carried out within research topic of Kharkiv National Medical University “Biochemical mechanisms of dysmetabolic processes development under the influence of chemical factors of the environment” (state registration number 0115U000240).

Introduction. Excessive aggression is an urgent problem of modern society but the mechanisms of aggressiveness development are insufficiently studied. Aggression is more pronounced in males than in females [1], therefore the study of the aggressiveness development mechanisms is mainly carried out on males [2–4]. Studies in humans were limited to conducting psychological tests, blood tests and Magnetic Resonance Imaging of the brain [5–6]. The investigations of the mechanisms of aggressiveness development in women are practically absent. Female aggression is considered to differ from male and findings from male samples can not apply to females [7]. Few studies mainly concerned manifestations of aggressiveness in women at various pathological conditions [8] or in women prisoners [7].

The purpose of the study was the estimation of differences of interrelationships between personality traits in men and women.

Material and methods. The study involved 119 Ukrainian young people aged from 18 to 22 years (105 men and 14 women). All procedures performed in the study were in accordance with the ethical standards of the institutional research committee and with the 1964 Helsinki Declaration and later amendments. All participants gave their written informed consent. The participants were proposed to answer questions of the Buss–Durkee Hostility Inventory (BDHI), Spielberger State–Trait Anxiety Inventory (SSTAI) and Eysenck Personality Questionnaire (EPQ). The BDHI was used to study aggressiveness. The aggressiveness index, physical, verbal and indirect aggressiveness were estimated in a percentage of the maximum level. The SSTAI was used to investigate the anxiety traits. The EPQ provided the estimation of extraversion–introversion ratio and value of emotional stability–instability (neuroticism). The anxiety traits, extraversion, neuroticism were assessed in points. Eysenck Personality Questionnaire provides to estimate the sincerity of answers. If the answers have not been sincere, they were not taken into account.

Statistical analysis of the results was carried out by methods of nonparametric statistics using the package “Statistica 6.0”. Mann–Whitney test was used to compare groups in pairs. Correlation analysis according to Spearman was used to reveal the relationship between different variables of the same group.

Results and discussion. According to the results, women and men did not differ by extraversion, neuroticism and anxiety traits, but women had a statistically significant lower aggressiveness index (**Figure 1**).

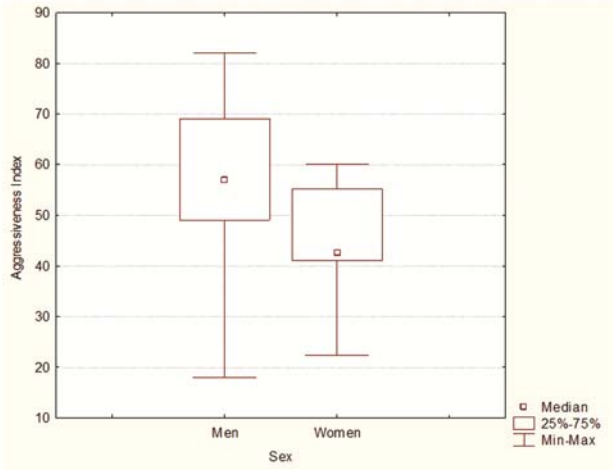

Figure 1. Aggressiveness index (in a percentage of the maximum level) men and women (Me [25%; 75%], min and max; p=0.003869)

This was mainly due to lower physical aggressiveness (**Figure 2**) in the absence of a difference in verbal (**Figure 3**) and indirect (**Figure 4**) aggressiveness.

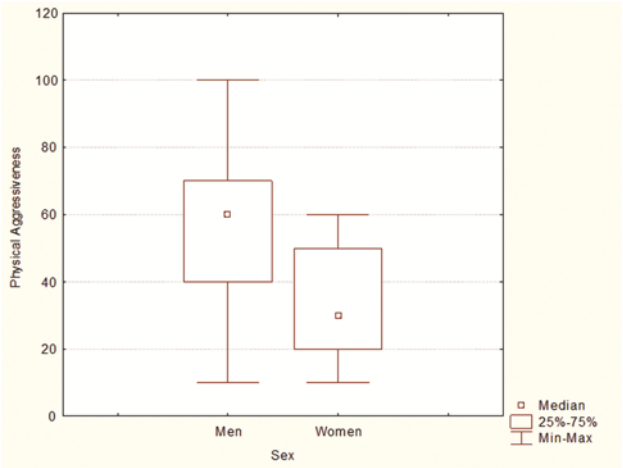

Figure 2. Physical aggressiveness (in a percentage of the maximum level) men and women (Me [25%; 75%], min and max; p=0.000402)

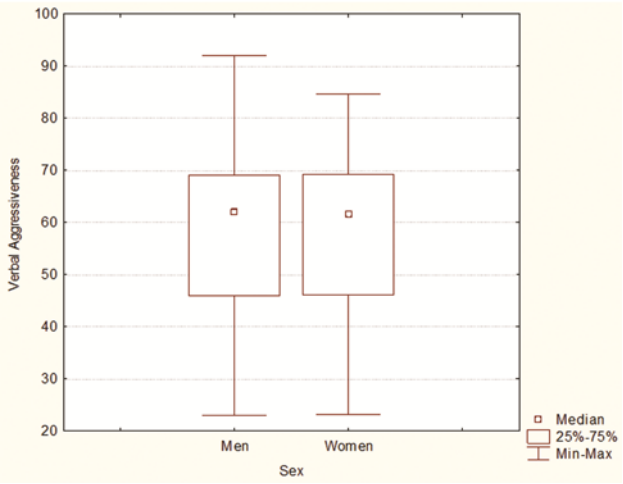

Figure 3. Verbal aggressiveness (in a percentage of the maximum level) men and women (Me [25%; 75%], min and max; p=0.415765)

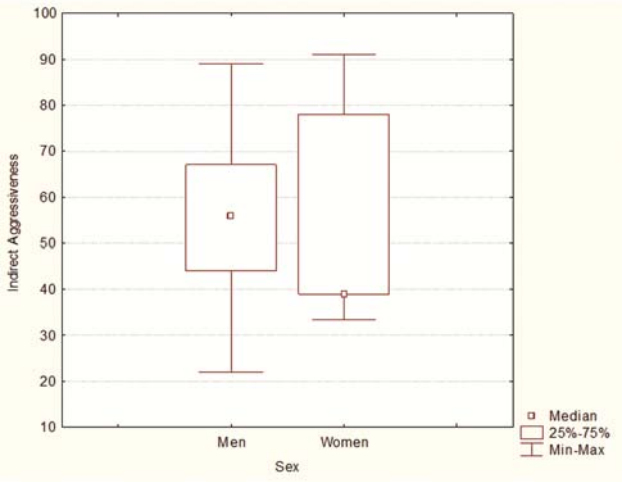

Figure 4. Indirect aggressiveness (in a percentage of the maximum level) men and women (Me [25%; 75%], min and max; p=0.362168)

According to some researchers, women mainly use indirect, relational aggression [7]. According our results, women didn't differ from men by indirect aggressiveness.

Our results support the opinion, that aggressiveness is more expressed in men than in women [1, 7].

It is possible that differences in aggressiveness index and physical aggressiveness between men and women are provided by features of interrelationships between personality traits.

Although both men and women had strong reliable positive interrelationships between neuroticism and anxiety traits, women had some differences in the correlation between some personality traits (**Table 1**).

Table 1 – Correlation coefficients between personality traits in men and women

	Extraversion	Anxiety traits	Neuroticism	Aggressiveness index
Men				
Extraversion	–	**–0.34***	–0.13	+0.22 (p=0.053)
Anxiety traits	**–0.34***	**–**	**+0.54***	–0.04
Neuroticism	–0.13	**+0.54***	–	**+0.37***
Aggressiveness index	+0.22 (p=0.053)	–0.04	**+0.37***	–
Women				
Extraversion	–	–0.40	**–0.68***	**+0.70***
Anxiety traits	–0.40	**–**	**+0.62***	–0.42
Neuroticism	**–0.68***	**+0.62***	–	**–0.70***
Aggressiveness index	**+0.70***	–0.42	**–0.70***	–

Note: * – Correlation coefficient is statistically significant, $p < 0.05$.

Thus, in particular, in men moderate reliable negative correlation between extraversion and anxiety traits was observed, and in women it was unreliable. On the contrary, in women a strong negative correlation between extraversion and neuroticism was shown, and it was absent in men.

In women there was a strong positive correlation between extraversion and an aggression index; in men it was weak, but almost reliable. Between neuroticism and the index of aggressiveness in men there was a moderate positive correlation and in women a strong negative correlation.

The strongest evidence points the involvement of front–limbic–striatal circuitry in aggression development: dorsolateral prefrontal cortex and anterior cingulate cortex are involved into impulse control, and orbitofrontal cortex participates in emotional regulation [9].

According to findings obtained by Yang Y. et al. (2017), lower lateral and medial frontal cortex volumes may contribute more strongly to proactive aggression, whereas increased left putamen may contribute more strongly to reactive aggression, and the positive correlation between higher aggression and increased left putamen volume was stronger in adolescent males than females [9]. In that study, they also found evidence that thinner anterior cingulate cortex is associated with aggression, particularly proactive aggression.

Neuroticism results from a lower threshold for activation in the limbic circuit [10]. Cerebellum is also related to neurotic personality trait. An inverse relation between total brain corrected cerebellar volumes and neurotic personality traits in adolescents and young adults was shown in research of Schutter DJLG et al. [11]. In males, higher endogenous testosterone levels were associated with lower scores on neuroticism and larger cerebellar gray matter volumes; no interrelation was observed in females [11]. According to results of Lu F. et al. (2014), neuroticism and extraversion were positively and negatively correlated with the gray matter volume of the medial frontal gyrus and subgenual anterior cingulate cortex in females, respectively [10].

These opposite interrelations of neuroticism and extraversion with a gray matter volume of structures involved in aggression control can explain the revealed by us negative correlations between extraversion and neuroticism, neuroticism and the aggressiveness index and positive correlation between extraversion and the aggressiveness index in women (**Table 1**). These peculiarities of interrelations between personality traits, first of all, are provided by sex hormones, which play a crucial role in the generation of sexually dimorphic aggression circuits during development and their maintenance during adulthood [1].

Conclusions

1. Women had a statistically significantly lower aggressiveness index mainly due to lower physical aggressiveness.
2. Both men and women had strong reliable positive interrelationships between neuroticism and anxiety traits.
3. Moderate reliable negative correlation between extraversion and anxiety traits in men, and strong negative correlation between extraversion and neuroticism in women were found.
4. Opposite character of correlations between neuroticism and aggressiveness index was revealed in women (strong negative correlation) and men (moderate positive correlation).
5. Features of the relationships between personality traits in males and females are due to the determining role of sex hormones for the organization and modulation of neural networks related to behavior. Thus, the study of differences between sex and stress hormones levels and their relationships with personality traits in men and women is necessary for understanding the aggressiveness development mechanisms.

The prospects for further research. The research of differences between blood serum levels of sex and stress hormones in men and women should be hold as a continuation of this study.

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ВІДМІННОСТІ У ВЗАЄМОЗВ'ЯЗКАХ МІЖ ОСОБИСТІСНИМИ РИСАМИ У ЧОЛОВІКІВ І ЖІНОК

Попова Л. Д., Васильєва І. М., Наконечна О. А.

Резюме. Надмірна агресія є актуальною проблемою сучасного суспільства, але механізми розвитку агресивності недостатньо вивчені. Агресія більш виражена у чоловіків, ніж у жінок, тому вивчення механізмів розвитку агресивності в основному проводиться на чоловіках.

Мета роботи полягала в оцінці відмінностей взаємозв'язків між рисами особистості у чоловіків і жінок.

У дослідженні брали участь 119 українських молодих людей у віці від 18 до 22 років (105 чоловіків та 14 жінок). Для вивчення агресивності використовували опитувальник Баса–Даркі, для дослідження ознак тривожності – шкалу тривожності Спілбергера. Виявлення екстраверсії/інтроверсії та емоційної стабільності/нестабільності (нейротизму) проводили за допомогою особистісного опитувальника Айзенка. Останній опитувальник передбачав оцінку щирості відповідей. Якщо відповіді не були щирими, їх не враховували. Виявлено достовірно нижчий індекс агресивності у жінок порівняно з чоловіками, головним чином, завдяки меншої фізичної агресивності. І чоловіки, і жінки мали сильні достовірні позитивні зв'язки між нейротизмом та тривожністю.

Виявлено помірну достовірну негативну кореляцію між екстраверсією та тривожністю у чоловіків та сильну негативну кореляцію між екстраверсією та нейротизмом у жінок. Виявлено протилежний характер кореляцій між нейротизмом та індексом агресивності у жінок (сильна негативна кореляція) та чоловіків (помірна позитивна кореляція). Обговорюється необхідність дослідження відмінностей вмісту статевих гормонів та гормонів стресу та їх взаємозв'язків з рисами особистості у чоловіків та жінок для розуміння механізмів розвитку агресивності.

Ключові слова: індекс агресивності, екстраверсія, нейротизм, тривожність, чоловіки, жінки.

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РАЗЛИЧИЯ ВО ВЗАИМОСВЯЗЯХ МЕЖДУ ЛИЧНОСТНЫМИ ЧЕРТАМИ У МУЖЧИН И ЖЕНЩИН

Попова Л. Д., Васильева И. М., Наконечная О. А.

Резюме. Чрезмерная агрессия является актуальной проблемой современного общества, но механизмы развития агрессивности недостаточно изучены. Агрессия более выражена у мужчин, чем у женщин, поэтому изучение механизмов развития агрессивности в основном проводится на мужчинах.

Целью работы была оценка различий взаимосвязей между личностными чертами у мужчин и женщин.

В исследовании приняли участие 119 украинских молодых людей в возрасте от 18 до 22 лет (105 мужчин и 14 женщин). Для изучения агрессивности использовали опросник Басса–Дарки, для исследования признаков тревожности – шкалу тревожности Спилбергера. Выявление экстраверсии/ интроверсии и эмоциональной стабильности/нестабильности (нейротизма) проводили с помощью личностного опросника Айзенка. Последний опросник предусматривал оценку искренности ответов. Если ответы не были искренними, их не учитывали. Выявлено достоверно более низкий индекс агрессивности у женщин по сравнению с мужчинами, главным образом, из–за более низкой физической агрессивности. И мужчины, и женщины имели сильные достоверные положительные связи между нейротизмом и тревожностью.

Выявлено умеренную достоверную отрицательную корреляцию между экстраверсией и тревожностью у мужчин и сильную отрицательную корреляцию между экстраверсией и нейротизмом у женщин. У женщин и мужчин обнаружен противоположный характер корреляций между нейротизмом и индексом агрессивности (сильная отрицательная – у женщин и умеренная положительная – у мужчин). Обсуждается необходимость исследования различий в содержании половых гормонов и гормонов стресса и их взаимосвязей с чертами личности у мужчин и женщин для понимания механизмов развития агрессивности.

Ключевые слова: индекс агрессивности, экстраверсия, нейротизм, тревожность, мужчины, женщины.

The authors of this study confirm that the research and publication of the results were not associated with any conflicts regarding commercial or financial relations, relations with organizations and/or individuals who may have been related to the study, and interrelations of coauthors of the article.

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