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PERSONAL SPACE OF WAR VETERANS WITH PTSD – SOME CHARACTERISTICS AND COMPARISON WITH HEALTHY INDIVIDUALS

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SUMMARY

Background: *The aim of this study was to determine the size of personal space among war veterans with PTSD, compared to healthy individuals, and to examine its associations with some sociodemographic and clinical characteristics.*

Subjects and Methods: *Participants were 83 male war veterans with chronic PTSD and 85 healthy male employees of the medical institutions. Preferred interpersonal distances were assessed by using a stop-distance technique, where male and female research assistants approached the participants from four directions (front, behind, left, right). The patients filled out The Mississippi Scale for Combat-Related Posttraumatic Stress Disorder (M-PTSD).*

Results: *War veterans with PTSD preferred significantly larger interpersonal distances compared to healthy participants. Larger personal space size was preferred by those who had children, and the largest preferred distances were observed for the approaches from behind. Both samples preferred larger distances when approached by a male person.*

Conclusion: *The findings of this study contribute to increased understanding of the personal space in patients with PTSD, and may be implemented into prevention of aggressive behavior during psychiatric treatment, and into development of more effective therapeutic strategies.*

Key words: *war veterans – PTSD - personal space - stop-distance technique*

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INTRODUCTION

Personal space is usually defined as the area around person into which intrusion by others causes discomfort, and the respect of personal space boundaries is one of the conditions for a personal feeling of safety (Hayduk 1983). The function of personal space are self-protective, communication, and arousal regulation (Uzell & Horne 2006). The communication function informs another person about nature of the realtionship between persons (Hall 1966), while the arousal regulation function uses interpersonal distance to control the amount of sensory information and to avoid sensory overload (Evans 1974). The self-protective function is used to mitigate and protect oneself from possible emotional and physical threats. It is assumed that a higher perceived risk for privacy, emotional state, or physical being, requires larger interpersonal distance to enable escape (Edney et al. 1976). The arousal regulation function uses interpersonal distance as a means to control the amount of sensory information received and to avoid sensory overload (Evans 1974). Numerous studies have shown a number of factors that affect the personal space size, including gender, race, social status, personality characteristics, level of intimacy, and mood state (Vranic 2003, Lloyd 2009, Gadit 2010).

Mental health status is also an important determinant. Personal space provides a person with information concerning the nature of relationship with others (Hall 1966), it protects from possible emotional and physical threats (Edney et al. 1976), and serves as a means to control sensory overload (Evans 1974). Since mental disorders negatively reflect on different aspects of life, including the quality of social functioning, it is expected that these individuals prefer larger interpersonal distances. Indeed, several studies showed that individuals with low self-esteem, and those with higer levels of anxiety require larger personal space (Roger 1982, Lourenco et al. 2011). Also, patients with schizophrenia have a need for greater personal space compared to mentally healthy individuals (Deus & Jokic-Begic 2006, Park et al. 2009).

Although the complexity of the symptoms among individuals with posttraumatic disorder (PTSD) significantly interferes with their family and general social life (Bravo-Mehmedbasic et al. 2010, Bras et al. 2011), there are relatively few published papers concerning the personal space size among this population. Recent study of Bogovic et al. (2014) showed that veterans with PTSD have need for greater personal space compared to veterans without PTSD. Some previous studies found that intrusion in the personal space of individuals with PTSD leads to significant increases in pulse and anxiety

intensity, and can also cause aggresive reactions (Lion 1987, Brown & Yantis 1996). Increased understanding of the personal space and its determinants in this population may contribute to the development of more effective therapeutic strategies, prevention of aggressive reactions amongst individuals participating in therapy, and to improvement of their interpersonal communication.

The aim of this study was to compare the size of personal space among war veterans with PTSD with the personal space of individuals without psychiatric diagnosis, and to examine its correlations with sociodemographic and clinical characteristics of the patients.

SUBJECTS AND METHODS

Subjects

Eighty-three male war veterans, inpatients diagnosed with posttraumatic stress disorder (PTSD) according to the criteria of ICD-10 (WHO 1992) and the *Mississippi Scale for Combat-Related Posttraumatic Stress Disorder* (*M-PTSD*; Keane et al. 1988) participated in the study, as well as a group of 85 healthy male participants, employees of the medical institutions. Exclusion criteria in both groups were: severe somatic conditions, neurological disease, psychotic disorders or other mental illness, and alcohol and/or drug addiction. Individuals in the control group did not have combat experience.

The average age of the clinical sample was 48.96 years (SD=6.7). One participant did not complete elementary school, 18 completed only elementary school, 59 completed secondary school, and 5 participants had a university degree. Twenty-nine were employed, 15 unemployed, and 39 retired. Sixty-one participants were married, 13 divorced, and 9 were single. Seventy participants had children. The average number of hospitalisations was 6.58 (SD=6.1), and the mean duration of psychiatric tretament was 9.67 years (SD=5.5). The group of healthy participants was significantly younger compared to the clinical sample (M=32.78 years, SD=10.9; t=-11.56, $p<0.001$). There were also significant differences in education level ($\chi^2=23.59$, $p<0.001$) and employment status ($\chi^2=74.37$, $p<0.001$): among the healthy participants, a significantly greater number of individuals had a university degree, and all of them were employed.

The study was approved by the Ethics Committee of the psychiatric institution within the study was undertaken, and was performed in accordance with the Declaration of Helsinki and subsequent revisions. All participants gave their informed consent for participation.

Instruments and procedure

The intensity of PTSD symptoms was assessed using the Mississippi Scale for Combat-Related Posttraumatic Stress Disorder (M-PTSD) (Keane et al. 1988). It is a 35-item self-report measure derived from the DSM-III criteria for PTSD. The value of the index can range between 35 and 175, with the originally proposed cut-off score of 107 indicating a significant PTSD psychopathology. The M-PTSD is a popular measure, considered to be one of the best instruments for the identification of PTSD, with adequate psychometric properties (Keane et al. 1988, Bunjevac & Kuterovac-Jagodic 1995). Cronbach's α coefficient in this study was high ($\alpha=0.98$).

Personal space size was assessed using stop-distance technique (Hayduk 1985) in which participants were alternately approached by one female and one male reserach assistant (previously unknown to all participants) from four directions (front, behind, right, left). At the moment when they felt uncomfortable due to the proximity of the approaching person, the participants had to say ″Stop″. In order to measure the distance between participants and the approaching person, the floor was demarcated with tape extending from a central spot (where the participant stood) in all four directions. Each taped line was 350 cm long with marked distances every 5 cm. Two distances were recorded: the distance between the front foot heel of the approaching person and the participant, and the distance between the back foot toes of the approaching person and the participant. The mean of these distances was used in data analysis. The total personal space size was calculated as a size of a square comprising of four right-angle triangles, where the sides of the triangles represent the four measured stop-distances. Research assistant, as well as participants were not familiar with the research hypoteses. The order of approaching direction and the order of approaching male and female research assistant were alternated. All research assistants were given detailed instructions about the procedure (i.e., to wear everyday clothes, to walk silently, making eye contact, cadence of approaching).

RESULTS

The mean preferred stop-distances from all four approaching directions in two situations (female vs. male approach situation) are presented in Table 1. Among the patients with PTSD the total personal space size (in m^2) for the female approach situation was 5.38 (SD=3.62), and for the male approach situation it was 7.49 (SD=4.25). Among the healthy participants, for the female approach situation the total personal space size was 0.53 (SD=0.40), while for the male approach situation it was 0.98 (SD=0.80). The differences between the groups were statistically significant ($t(female)=12.28$, $p<0.001$; $t(male)=13.86$, $p<0.001$).

A 2x2x4 Mixed Design ANCOVA (Group (PTSD, control) x Gender of approaching person (male, female)) x Approach direction (front, behind, right, left)) was performed to compare the preferred interpersonal distances of the two groups, as well as to examine the interaction effects between the gender of the approaching person and the approach direction. Due to

Table 1. Mean Interpersonal Distances (cm) for Clinical (PTSD) and Control Group

Group	Gender of approaching person	Mean Approach Distance (SD) Front	Behind	Right	Left
PTSD	Male	201 (51.9)	234 (65.5)	162 (56.6)	160 (50.1)
	Female	165 (53.6)	200 (66.8)	134 (51.6)	135 (49.2)
Control	Male	76 (29.9)	66 (36.1)	59 (25.6)	61 (29.2)
	Female	59 (21.8)	45 (21.8)	46 (20.2)	46 (19.6)

observed significant differences in age, education level and employment status between the groups, the effects of these variables were statistically controlled.

The results showed significant effects of group ($F=144.48$, $p<0.001$, $\eta_p=0.47$), and gender of approaching person ($F=28.5$, $p<0.001$, $\eta_p=0.15$): patients with PTSD preferred larger interpersonal distances compared to healthy individuals, and both groups maintained larger interpersonal distances when approached by a male person. The effect of approach direction was not statistically significant ($F=0.72$, $p>0.05$, $\eta_p=0.04$). However, significant interaction effect was observed between the groups and approach direction ($F=45.5$, $p<0.01$, $\eta_p=0.04$): greater differences in the size of personal space depending on the direction of approach were observed among patients with PTSD, i.e. the maximum distances were preferred when a person came from behind, then from the front, and then from the left and right. Also, significant interaction effect was found between the groups and the gender of the approaching person ($F=2.65$, $p<0.001$, $\eta_p=0.08$): greater differences in the size of personal space depending on the gender of the approaching person were observed among patients with PTSD, i.e. compared to healthy individuals, they preferred significantly greater distances when approached by male.

A mean M-PTSD score was 129.6 (SD=15.2), which indicates significant degree of PTSD symptoms among the clinical sample.

The correlation between the personal space size and the age of the participants ($r_{s\text{-}m}=0.08$, $p=0.475$; $r_{s\text{-}f}=0.13$, $p=0.234$), as well as the correlation between the personal space size and the educational status ($r_{s\text{-}m}=-0.19$, $p=0.086$; $r_{s\text{-}f}=-0.15$, $p=0.173$) were not statistically significant. Personal space size of employed participants did not differ significantly from the space size of unemployed and retired participants (Kruskal-Wallis test: $\chi^2_m=2.884$, $p=0.237$; $\chi^2_f=1.190$, $p=0.552$). Also, there was no significant difference in personal space size between married participants and those who were single or divorced (Kruskal-Wallis test: $\chi^2_m=1.420$, $p=0.492$; $\chi^2_f=0.604$, $p=0.739$). The only statistically significant difference was found between participants with children and those without children (Mann-Whitney U test: $U_m=658.000$, $p=0.011$; $U_f=617.000$, $p=0.042$): participants with children preferred larger personal space size.

No statistically significant associations (Spearman´s rank correlation coefficient) were found between the total personal space size (male and female approach situation) and the results on M-PTSD ($r_{s\text{-}m}=-0.05$, $p=0.647$; $r_{s\text{-}f}=-0.06$, $p=0.613$), duration of psychiatric treatment ($r_{s\text{-}m}=0.01$, $p=.956$; $r_{s\text{-}f}=0.03$, $p=0.763$), and number of hospitalisations ($r_{s\text{-}m}=0.12$, $p=0.296$; $r_{s\text{-}f}=0.10$, $p=0.385$).

DISCUSSION

Consistent with our expectations, the findings of this study showed that war veterans with PTSD preferred significantly larger interpersonal distances compared to individuals without psychiatric diagnosis. Average preferred approaching distances of the group with PTSD for all four directions were in the range of the social zone (120 to 360 cm), while average distances of the healthy participants were within the range of the personal zone (45 to 120 cm) (according to Hall 1966). Similar results were found in other studies conducted on patients with schizophrenia (Deus & Jokic-Begic 2006), and on abused children (Vranic 2003). Aziraj and Ceranic (2013) showed that patients with anxiety disorders require even greater personal space than patients with psychotic disorders. The need for large personal space size could be due to the complexity of PTSD symptoms that cause disturbance in regulating interpersonal distances. Namely, disturbed emotional state often increases sensitivity and vulnerability, thus reinforcing the need for a sense of security and protection. Therefore, the self-protective and arousal regulation functions of personal space become more prominent. On the other hand, the need for greater personal space probably reflects the treatment conditions: psychiatric inpatients reside in a limited space which is often intruded by frequent entries of medical staff and other patients (Andes & Shattell 2006).

In accordance with other studies (Deus & Jokic-Begic 2006, Vranic 2003), both samples of participants in our study preferred larger interpersonal distances when approached by a male person. This may be due to the fact that women are generally seen as more supportive and submissive in society than men (Pedersen & Sabin 1982), while men are more likely to be associated with negative motives (Patterson & Mahoney 1975). Moreover, war veterans were exposed to a series of traumatic situations on the battlefield where the people were mostly men, so it can be assumed that approaching males may draw traumatic memories which then reflect on the need for greater personal space.

The largest preferred distance for the PTSD participants was for the approaches from behind, for both gender situations. Possible reason for this finding is the lack of visual control experienced when approached from behind, as a greater need for visual control among these participants might be expected due to previous exposure to life threatening situations during combat.

Concerning sociodemographic determinants of personal space among patients with PTSD, the only significant correlation was found between parental status and personal space size: participants with children preferred larger personal space size. This result could possibly be explained from an evolutionary perspective. Namely, the role of guardianship of the children may be the reason why fathers require greater interpersonal distances when approaching person is a stranger. Although different studies to date showed that the intensity of PTSD symptoms is positively associated with psychopatological deviations in individual's experience and behavior (Jokic-Begic 2000, Mrsic Husar & Bogovic 2008, Jaksic et al. 2015), no significant correlations were found between personal space size and duration of psychiatric treatment, number of hospitalizations and the results on the M-PTSD questionnaire. This might be due to the homogeneity of the sample, i.e. due to high levels of intensity of PTSD symptoms reported in our study. All participants had chronic PTSD and were in the psychiatric hospital at the time the study was conducted.

These findings on the personal space among patients with PTSD might be implemented in constructing better environments in which therapeutic process takes place. Additionally, education of healthcare professionals in order to avoid sudden approaches, touching without warning and small distances during interactions with patients, may lead to better communication, and sense of security and protection. It may also lead to a better acceptance of the treatment, and to prevention of aggressive behavior. Baron et al. (2009) recommended a distance corresponding to the area of social zone of personal space, which is consistent with the findings of this study.

It is necessary to highlight some limitations of this study. It was not performed in a natural environment, and the participants were aware that they were being observed, giving rise to the possibility that the procedure affected the behavior of participants. In addition, perceived attractiveness of the approaching person was not taken into account, while some studies have demonstrated that people prefer smaller interpersonal distances when they are approached by attractive persons (Fisher 1974, Worchel 1986). Also, possible influence of other factors on the preferred interpersonal distance cannot be excluded, such as individual personality traits, mood state, social functioning and the quality of social support. Maybe results would be different if female war veterans were also included in the study, but it could be the topic for some future research.

CONCLUSIONS

War veterans with PTSD preferred significantly larger interpersonal distances compared to healthy individuals, especially when approached by a male person and when they were approached from behind. Larger personal space was preferred by those who had children. We hope these findings will contribute to development of more adequate communication methods and treatment approaches and, in turn, to diminishing potentially frustrating environmental factors and situations for patients with PTSD.

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