Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

Dieudonné Ngalamulume[1]*, Okitundu Luwa D[2], Ndjukendi O Ally[3], Kamanaga Mbuyi Timothée[4], Kanga Matondo Emmanuel[5] and Florence Mbiya Muadi[6]

[1]*Doctoral Clinical Psychologist, DRC armed forces health service, FPSE, University of Kinshasa, Democratic Republic of Congo*
[2]*Neuropsychiatrist, PhD, CNPP/MA, University of Kinshasa, Democratic Republic of Congo*
[3]*Neuropsychiatrist, Doctoral Student in Child Psychiatry, CNPP/MA, University of Kinshasa, Democratic Republic of Congo*
[4]*Psychology and Clinical Doctor, PO FPSE, University of Kinshasa, Democratic Republic of Congo*
[5]*Doctor in Psychology, PO FPSE, University of Kinshasa, Democratic Republic of Congo*
[6]*Child and Teenage Psychologist, PhD, FPSE, University of Kinshasa, Democratic Republic of Congo*

*Corresponding Author: Dieudonné Ngalamulume, Doctoral Clinical Psychologist, DRC armed forces health service, FPSE, University of Kinshasa, Democratic Republic of Congo.

Abstract

Introduction: Post-Traumatic Stress Disorder (PTSD) and the military disrupted personality traits are a real public health problem. The trauma is unspeakable, indescribable and unpredictable and its psychic attack leaves sequels and personality disturbances to the victim. Lack of a proven tool to determine both trauma and personality characteristics before, during and after the crisis increases difficulties for diagnosis and therapeutic access to a large number of PTSD in the armed forces health services. The main objective of this study is to determine links between the clinical features of post-traumatic stress disorder and personality traits among the Congolese militaries suffering from PTSD, while showing the early diagnostic value of the projective tree test.

Method: The study is conducted within the clinical population of hospitalized militaries with psychiatric diagnosis at the Neuro-Psychopathological Center "CNPP / MA" of the University of Kinshasa in the years 2014 to 2017.

We used transversal clinical method, supported by quantitative approach using PCL-S scale according to DSM-IV (1994), in crisis remission phase and qualitative approach using the projective tree test according to Koch C (2005) in two separate moments between crisis and remission of disorders.

Results and Discussion: The results have showed corresponding values between the PTSD diagnosis by means of the tree design test and the overall scores and/or PCLS three sub-items. Important relationships have been found between Type B Botner's introverted personality traits, gender, grade, school education, war experiences, celibacy, province-East, use of care, substance abuse, work unavailability, and propensity to develop characteristics of chronic PTSD among the members of the armed forces.

Conclusion: The combination of clinical methods supported by an objective questionnaire and a subjective projective test offers early diagnostic opportunities in critical and post-critical periods for post-traumatic stress and chronic PTSD victims. To be effective, the care of a Congolese armed forces member suffering from PTSD should take into account a mixed approach of integrative model categorical and dimensional diagnosis, both from diagnostic and therapeutic strategies point of view and, through illustrations of a clinical case.

Keywords: PTSD, Personality of the Military, Diagnostic Strategies, Clinical Case, PCLS, Tree Design Test

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

10

Introduction

Post-Traumatic Stress Disorder (PTSD) is a chronic mental disorder that is a public health problem in the general population and particularly for post-deployment and returning mission members. Its prevalence and therapy are known despite the prevalence rate that varies from one study and/or country to another. Crocq L and Chidiac N [1] have traced the history and description of this psychic disorder of traumatic neurosis to DSM PTSD according to APA [2]. Jolly A [3] provided information on PTSD in a literature review of traumatic events. Nevertheless, the PTSD diagnostic strategies clinical forms and its co-morbidities still pose a problem related to the difficulties and obstacles of evaluation tools, under-diagnosis and clinical errors including lack of qualified personnel in our middle.

Post-Traumatic Stress Disorder (PTSD, PTSD) occurs when the subject has been a victim or witness of a traumatic event resulting in death or risk of death or serious physical injury to himself or another person. According to DSM-IV [4], the subject's reaction must include intense fear, feeling of powerlessness or horror. The version of DSM-IV is the first to recognize the subjective aspect related to the reactions characteristics of the subject in addition to the importance given to the trauma characteristics (gravity, suddenness, unpredictability, proximity, nature...). Other technical modifications and important practical attitudes will probably be made available to each version of DSM, among the reasons for misdiagnosis [1].

Depending on the trauma particularities and the subjects' characteristics involved in terms of trauma and personality traits, the members of the armed forces are one of the categories of populations at high risk of exposure to PTSD. In the general population, 10 to 15% of PTSD factors are associated with the characteristics of a traumatic event compared to 85 to 90% of the factors that are related to the characteristics of the subject "risk, individual vulnerability, personality profile". Longitudinal studies have diverse prevalence, for example in the US 8% of PTSD is in the general population, i.e. 5% of men and 10% of women for lifetime prevalence rate [5].

On the one hand, the Canadian prevalence rate is 2.7% for women and 1.2% for men [6]; while 40 to 60% are cases of chronic PTSD in six months post traumatic; it is estimated that 74% of women and 81% of men are exposed to PTSD and the conditional risk of exposure is estimated at 10 to 25%. The personality traits that Bowman [7] blames for in PTSD include: neuroticism or negative affectivity; locus of control; previous trauma and multiple trauma [8]; in addition to protective factors such as self and religious beliefs; political commitment and personal efficiency.

Currently, there is no consensus regarding the most relevant factors between trauma and personality traits so, PTSD is conceived as the result of the interaction of factors [4,7].

On the other hand, rates of co - morbidities are estimated at 80% of other associated disorders such as depression, anxiety "anxiety disorders", drug addiction or the abuse of drugs and alcohol. Schizophrenia spectrum disorders have co-morbidity in the order of 0-57% for schizophrenia-associated PTSD [9]; 91% to 98% of the exposure rate to traumatic events is found with 28% for PTSD and 2% for PTSD experienced by healthcare professionals [10]. "TCCL", Pineau H (2011), the post-deployment syndrome "PDS", Sara Palermo., et al. [11], the non-specific psych traumatic syndrome "DESNOS", Crocq L [1], are unexplained and associated clinical forms of PTSD as a result of traumatic events.

As such, PTSD is a multifactorial disorder and the factors of exposure to traumatic events are important, i.e. 73% of women and 81% of men, the subject's personality traits, common genetic factors are estimated at 35, 5%; 20% for specific factors, 30% for peri-traumatic dissociation, social support, and post-traumatic resilience associated with the cultural ticket influence of survivors' social context [12]. Other factors of PTSD are related to attachment in the childhood of insecure, anxious and avoiding type of the subject exposed to traumatic stress [13].

Regarding DR Congo, PTSD prevalence and incidence problem members of the armed forces is not subject to studies at the time of our research, it is also unknown in the civilian population because of various diagnostic and therapeutic difficulties. Our preliminary document review at Kinshasa's "HMC" central military hospital notes a low rate of 36 reported cases, i.e. 1.31% of PTSD diagnosed on 2745 neuropsychiatric consultations during the years 2014 to 2017 and this is a problem of lack to the extent that it is a high - risk

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

11

environment of psychosocial factors such as experiences of battles (war), post - armed conflict, return from missions and the throes of the war of aggression.

Following a long clinical observation of Congolese military patients who are hospitalized or traveling, we have identified post-traumatic stress and PTSD that are often under-diagnosed or under-identified, using the test called "Psychotraumatic check List scale" PCLS according to APA [4].

Similarly, the dissociative symptoms we have observed in hospitalized patients were often accompanied by intense peri-traumatic psychological distress, peri-traumatic dissociation of memory. Sometimes the traumatic symptoms have occurred in a delayed manner, that is to say remotely and separated from the time and place of a stressful event. For this reason, most of the hospitalized soldiers were diagnosed with a psychotic schizophrenia spectrum disorder, at the initial crisis then, during repetitions of psychotic crises "dissociative symptoms, delusional audio-visual hallucination", they had a definitive diagnosis of schizophrenia and/or psychotic depression in their medical records that we documented at CNPP/MA (2014 - 2017).

Indeed, all members of the armed forces who are exposed to stressful situations in a high prevalence population do not develop ipso facto post-traumatic stress disorder, they do not manifest at the same time the classic psycho traumatic symptoms and this, also depends on multiple factors internal "individuality" and external "event" that interact in the military struggling with the impact of the stressful event and cannot be systematically generalizable to each individual.

The general objective of the study is to determine the clinical characteristics and personality traits among the members of the armed forces suffering from PTSD: diagnostic value of the tree design projective test. Through this study we pursue the specific objective of highlighting the links that exist between tree design indices, personality traits and PCLS PTSD clinical features scores among the members of the armed forces

Clinical Method and Materials

During the years 2014 to 2017, we conducted a clinical survey supported by a questionnaire that we made up based on themes (PTSD psychosocial and demographic characteristics indicators). We administered this questionnaire in the form of a semi-structured clinical interview guide focusing on the dynamics of PTSD representations among the armed forces members hospitalized in the Open Men's Pavilion (POT), in the Department of Psychiatry at CNPP/MA, which is a center attached to the Faculty of Medicine of the University of Kinshasa in DR Congo.

The psychological survey conditions and objectives did not allow considering a rigorous experimental approach, the clinical population's choice was guided by the occurrence of disorders among the members of the armed forces during deployment to fight and returning from deployment, without any particular randomization objective. To make it happen, it cannot be considered as a representative population of the entire Congolese army, nor be compared to a control population, nor can it be compared to itself; the purpose of this study was rather to gather enough clinical information to verify the relationship between PTSD and personality traits among the members of the armed forces involved in the research.

The population targeted by our study is specific and indefinite, they are mentally sick soldiers who are hospitalized for dissociative behavior disorders and diagnosed by doctors as being potentially exposed to one or more traumatic and/or stressful events of occupational (war) or personal (emotional) origin. The size of convenience sample is about 126 subjects who participated in the exploratory clinical investigation, they were enrolled gradually until saturation, between 2014 and 2017 according to the inclusion criteria below:

- Be Congolese and willing to participate in the study.
- Have personal or substitution informed consent.
- Be part of the members of the armed forces with at least 6 months experience.

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

12

- Be diagnosed with behavioral disorder by a Neuropsychiatrist and Congolese Armed Forces health service psychologist.
- Collaborate in crisis clinical interview and post-critical evaluation.
- All members of the armed forces who did not meet the above criteria were excluded.

The clinical method is transversal in the mixed study type, it admits both the quantitative approach (objective elements) and the qualitative approach (subjective elements) in a complementary vision in clinical psychology. Our methodological approach was as follows: we conducted semi-structured clinical interviews with 126 subjects in order to trace a personal story (life story), the content of the life stories were supported by the tests and self-administered questionnaires which are given in two separated stages.

At the first scientific moment, PCLS scale was impossible to administer at critical times, the tree design (DA) was administered and produced with the following instruction: "design any tree"; the material was A4 paper and pencil. During the crisis, as in the post-crisis period, the design produced had identical clues for the majority of the subjects, despite the passage of patients from hallucinatory delusional speech to the narrative of life stories. We evaluated by tree design projective test during the crisis and after, the duration was variable between the two tests passes according to remission time for each patient.

At the second scientific moment, it corresponded to the post critical period and remission of psychotic seizures, we have evaluated PTSD scores by administered PCLS according to DSM - IV [4] and the tree test with revealing PTSD graphical indices are interpreted by following the graphological analysis of (Max Pulver) on the tree projective design (cited by Koch C 1958). Botner personality test (behavioral patterns) established the types (A, AB, B) in patients with PTSD.

Processing collected condensed data is made possible by mask capture using SPSS-21.0 software and statistical analyzes were performed with the Pearson Chi2 test to establish meaningful relationships; in addition to establish links of comparison between the tree design graphical indices, the interviews life stories (qualitative data) and the total score with the three PCLS dimensions (quantitative data), we used Mann Whitney's U test and Kruskal Wallis' test. We used Kappa coefficient to establish the degree of agreement between the overall scores and the tree designed graphical indices.

The content analysis of the clinical interviews and the tree design consisted in treating categories and units of the tree design indices graphemes meanings on the one hand, and the subject's speeches elements subjective content to semi-structured clinical interviews. To measure the independent variable "personality traits" and the dependent variable "characteristics of PTSD", we used the following techniques, namely:

- Semi-structured clinical diagnostic interview.
- Tree design Test (A4 paper, pencil, eraser).
- Scale of psycho traumatism check list scale "PCL S - IV".
- A socio-demographic characteristics questionnaire.
- Botner's personality self-questionnaire (in types of behavioral schemas B, AB, A).

The elements of graphical indices grid to the tree design projective test we studied are:

- Specificity of the design "small, framed, structured on the left".
- Location of the drawing on the A4 sheet.
- Size of the design "size".
- Shape of the tree "authenticity".
- Extraversion/introversion design traits.
- Tree structure or design proportion.

PCLS self-questionnaire scores elements are the characteristics of the 17 items corresponding to the 17 DSM-IV PTSD symptoms (1994); the positive score at 44 and above, the negative score at 43 or below. We have chosen this PCLS scale among others because of its availability, simplicity and especially psychometric qualities which are recognized by validated studies on different populations according to Weathers WF, Litz BT and Herman DS (1993), Herlterbach L (2014); Cottraux J., *et al*. (2003) and in the French army. Nevertheless, PCLS -IV is a standardized scale that is not validated on the Congolese population, particularly among Congolese soldiers.

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

13

Results

Socio-demographic descriptive analysis of the members of the armed forces

Table 1 describes the armed forces members' socio-demographic characteristics profile, those who formed the sample of the study: mostly aged (20 to 40 years) or 87.3%; men at 94.4%; primary and secondary education at 81%; singles at 69.8%; families with separated children at 73.8%; sibling size from 4 to 10 children at 73%, sibling rank from 1 to 2 children at 64.3%; Catholic and Protestant religion at 79.4%.

Characteristics	N	%
Age (20 - 40 years old)	110	87,3
Sex (male)	119	94,4
Primary and secondary studies	102	81
Single	88	69,8
Religion catholic	100	79,4
Rank in sibling (1st and 2nd)	81	64,3
Size of sibling (4 - 10)	92	73
Family structure (disunite)	93	73,8
Provinces (East DRC)	86	68,3

Table 1*: Sociodemographic characteristics profile of the surveyed subjects.*

Medico-psychosocial characteristics descriptive analysis of military patients

Table 2 presents the portrait that profiles from the soldiers' clinical, psychosocial and professional characteristics, those who participated in the study: the majority of rank soldiers at 86.5%; addicts at 80.2%, not available at work at 94.3%; socio-professional malfunction at 96.8%; misuse of medical care at 94.4%; schizophrenics at 60.3%; without co-morbidity at 65.9%; without epilepsy at 72.2%; Psychiatric ATCD at 54% and war experience at 60.3%.

Characteristics	N	%
Soldiers and noncommissioned officers	109	86,5
Age of recruitment (15 - 25 years old)	88	69,8
Seniority (1 - 10 years)	84	66,7
Number of Operations (multiples)	44	34,9
War experience	76	60,3
Hospital diagnosis		
Schizophrenia	76	60,3
Depression	12	9,5
Co-morbidity diagnosed(negative)	83	65,9
Personal psychiatric ATCD	68	54
ATR with epilepsy (negative)	91	72,2
Addiction +	101	80,2
Utilization of medical services	119	94,4
Unavailability at work	119	94,4
Socio-professional malfunction	112	96,8
Conscience	76	60,3

Table 2: *Subjects' psychosocial and clinical characteristics.*

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

14

Characteristics descriptive analysis of PTSD at PCL-S scores

Table 3 shows PTSD clinical features profile to overall PCL-S scores and the three sub-item scores in the subjects, 75.4% of PTSD diagnosis versus 24.6% of non-PTSD subjects; 60.3% of reviviscence sub-items, 73% of hyperactivity and 48.4% of avoidance symptoms in PTSD.

Characteristics	N	%
Total Score		
PCLS+	95	75,4
PCLS-	31	24,6
Reviviscence Score	76	60,3
Avoidance	61	48,4
Hyperactivity	92	73

Table 3: *Characteristics profile summary of PTSD at PCL-S scores.*

Characteristics descriptive analysis of PTSD on the tree design graphical indexes

Table 4 describes an indices-trait profile of the tree design that we have found in subjects with PCLS scores corresponding to the diagnosis of important or very important PTSD.

Characteristic Indices	N	%
Specific index (lines framed on the left, light, fine)	68	54
Position framed on the sheet on the left	66	52,4
Shape of the structured tree	77	61,1
Small sized tree	71	56,3
Tree authentic proportion	77	61,1
Introverted personality trait	81	64,3

Table 4: *Characteristics graphical indexes summary of PTSD on the tree design.*

Table 5 shows significant connections between PCLS scores ≥ 44 and primary education level χ^2 12,062 P 0, 002; marital status single χ^2 10.461 P 0.005.

Table 6 shows that 75.4% have positive scores on PCLS; 24.6% have negative scores on PCL-S.

Table 7 shows 64.3% of type B behavior patterns; 13.5% of AB type and 22.2% of type A behavior patterns.

Table 8 shows significant connections between type B behavioral patterns and PCLS test scores ≥ 44, P 0.010.

Table 9 shows significant links between introverted traits and PCLS test score. PCLS ≥ 44 P 0,033.

Analysis of agreement degree between PCLS scores and PTSD revealing tree indices

Table 10 shows the degree of agreement between PCL test S ≥ 44 and the specified tree design indices; location on the sheet; tree size; the introverted dynamic traits.

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

15

Characteristics	Test PCLS ≥ 44		Total	χ²	P
	Positive	Negative			
	N	N	N		
Age range					
19 - 29 years old	54	16	70	2,312	0,510
30 - 40 years old	32	9	41		
41 - 51 years old	8	5	13		
52 - 59 years old	1	1	2		
Sex					
Male	89	30	119	0,425	0,514
Female	6	1	7		
Study Level					
Primary	62	11	73	12,062	0,002
Secondary	21	8	29		
University	12	12	24		
Marital Status					
Single	72	16	88	10,461	0,005
Married	16	14	30		
Divorced	7	1	8		
Religion					
Catholic	46	15	61	2,615	0,624
Protestant	31	8	39		
Kimbanguist	2	0	2		
Branhamist	1	0	1		
Revival church	15	8	23		
Total	95	31	126		

Table 5: Relationship between socio-demographic characteristics of the subjects and scores of PCLS ≥ 44.

Test PCLS ≤ 43 (negative)	n	%
Positive	31	24,6
Negative	95	75,4
Total	126	100
Test PCLS ≥ 44 (positive)	**n**	**%**
Positive	95	75,4
Negative	31	24,6
Total	126	100

Table 6: Presentation of global scores on PCLS.

Botner's personality Type	n	%
B	81	64,3
AB	17	13,5
A	28	22,2
Total	126	100

Table 7: Personality type presentation to Botner's self-questionnaire.

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

16

Botner's personality Type	Test PCLS ≥ 44		Total	χ²	P
	Positive	Negative			
	N	n	N		
B	66	15	81	9,250	0,010
AB	14	3	17		
A	15	13	28		
Total	95	31	126		

Table 8: Relationship between Botner's personality type and PCLS test ≥ 44.

Extra or introverted trait Indices	Test PCLS ≥ 44		Total	χ²	P
	Positive	Negative			
	N	N	N		
Introverted	66	15	81	4,527	0,033
Extraverted	29	16	45		
Total	95	31	126		

Table 9: Relationship between extroverted or introverted trait indices and PCLS test ≥ 44.

Tree design index	Test PCLS ≥ 44		Total	Kappa	P
	Positive	Negative			
	N	N	N		
Tree design index					
Specified "small and framed"	57	11	68	0,190	0,017
Unspecified	38	20	58		
Location index on sheet					
Framed	55	11	66	0,170	0,030
Unframed	40	20	60		
Structure Index (Tree shape)					
Structured	61	16	77	0,105	0,212
Unstructured	34	15	49		
Tree size index					
Small	60	11	71	0,111	0,014
Mean	7	4	11		
Big	28	16	44		
proportion Index (Tree authenticity)					
Authentic	60	17	77	0,070	0,409
Non-authentic	35	14	49		
Extra or introverted trait index					
Introverted	66	15	81	0,183	0,033
Extraverted	29	16	45		

Table 10: Degree of agreement between PCLS scores ≥44 and tree design indexes.

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

17

Discussion

The set of results obtained have shown significant relationships between different variables studied and PCLS scores characteristic of PTSD; the global trend made it possible to highlight their convergences of graphic indices in the PTSD among Congolese militaries who participated in the research. The index list has obtained a high degree of agreement with the PCLS scores and made it possible to construct a grid of indicative indices of cryptographic diagnosis PTSD "graphic projection" and/or the clinical forms of the under diagnosed PTSD. This grid called: "GIPDA" will be the object of an upcoming publication in a randomized and controlled study using large representative sample.

Despite significant modifications to PCLS across different versions of DSM, other incomplete clinical forms of PTSD remain unexplained such as DESNOS, Crocq L [1] and PDS (Post Deployment Syndrome) which consists of a constellation of symptoms persisting for up to three months or more in active soldiers and/or veterans [11]. Our questioning goes beyond clinical concepts, looking for a tool to reach the correct diagnosis in order to avoid errors, forgetfulness and under-diagnosis of PTSD for the victims, especially the armed forces members exposed to the diagnostic difficulties, because they barely express psychic suffering in the self-questionnaire and, through clinical expression speeches to PCLS items. And this is dependent on their tendency of acquiescence and socio-professional desirability in the face of a PCLS self-questionnaire.

Combining the clinical method of both qualitative and quantitative approaches is not only necessary but also useful. It can diagnose and/or detect both trauma-related characteristics and those related to the topic "personality traits". Also, to take care of the medico-psychological care of the global person as underlined Tarquinio C [14], Fisher MP [15], Crocq L [1], Kedia M., et al. [16] especially among military members with complex PTSD.

This choice appears to be useful and necessary in a clinical setting, especially in the socioeconomic and precarious context where psycho-traumatic symptoms are manifested, in emergencies where early detection and psychological first aid is required. On the other hand, the high frequency of introverted personality traits of type B (Botner) personality in among the members of the armed forces with chronic PTSD, indicates the propensity of these specific features to PTSD; Similarly, this personality profile and inherent behavioral patterns are predisposed to being vulnerable to the impact of a traumatic event and, in addition to developing and maintaining chronic PTSD symptoms, building significant comorbid conditions according to Kieffer A [10] and Whitney D [17].

Botner's trend towards introverted personality profile and/or type B corresponds to one of the dimensions of personality traits according to the Five factors "Big Five Model"; and John Donahue and Kentl (1991) cited by Costa and McCrae [18] as an integrative model of the neuroticism dimension, negative emotion and nervousness (vulnerability). De Clercq M., et al. [13] showed that the transition to chronicity of PTSD is closely related to the victim's insecure, anxious and avoiding attachment to a stressful event in terms of vulnerability factors and specific dispositions. Which are related to the subject's traits.

Barrois C (1998) suggests that pre-morbid pathological personality with a prevalence of 13.5% in the general population is a vulnerability factor related to the characteristics of the subject with PTSD. Also, personality traits are a predisposing factor for PTSD according to Paris J [8] and Bowman ML [7]. According to Jehel L [19]; Yehuda R [20] and Risnick H [21], peri-traumatic intense distress and peri-traumatic dissociation associated with physical injury are risk factors that are related to the characteristics of the high-impact traumatic event such as suddenness, unpredictability, exposure time and latency, severity. These results corroborate with the different profiles of the trauma characteristics and the subject as we have described them in the subjects of our study through different tables above.

Indeed, the impact of socio-professional environment and military populations often mark differences in the types of studies using PCLS at the level of the results obtained for the military and civilians [22]. In our study the tree design test showed its relevance for screening pure PTSD and co-morbid PTSD, the projective design completes the PCL-S precision and sensitivity in highlighting the diagnosis of the personality features as vulnerability factors too, in the diagnosis of PTSD among people with a critical psychotic state while promoting the therapeutic follow - up to the tree design among people suffering from PTSD.

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

18

In addition, Bremner JD [23] and Nardoo D., *et al*. [24] showed in morphometric and spectrometric analysis using magnetic resonance imaging (MRI) that alteration of the anatomical structures of the hippocampus, amygdala and limbic structure Pre-frontal care in veterans suffering from PTSD is significant. In the same way, the graph-logical analysis of the tree designs according to Max Pulver (quoted by Koch C 1958) among PTSD victims betray the sociobiological and events bio markers, while revealing through projection the defect of the visual-spatial analysis among PTSD victims with neuro-anatomical alterations to the convergent patterns or tree design.

According to Fernandez L [25] the tree design test is relevant for trauma reconstruction even in the elderly. To do this, the projective test of tree design would better meet the military needs to evaluate a larger number in a short time and in emergency situations [26]. This result is confirmed by significant distributions. Between the tree design graphical indices and PLCS scores; between the reviviscence, avoidance and hyperactivity and different convergences sub-items of tree design graphical indices. This made possible the construction of a grid of graphical indices indicative of psycho-traumatism (GIPDA), among the members of the armed forces even the most reluctant and/or psychotic crisis, who have an introverted personality profile and with inherent type B behavioral patterns [27,28].

Conclusion

This research was carried out between 2014 and 2017 among hospitalized members of the armed forces at the Pavilion of the Neuro-Psychopathological Center of Mont Amba, University of Kinshasa, attached to the Faculty of Medicine. The study tries to solve a problem of critical diagnosis of PTSD in critical and post-critical periods in order to allow therapeutic accessibility of soldiers suffering from dissociative symptoms of PTSD and/or chronic psychosis as comorbidity. The study consisted in reporting a diagnostic assessment using the PCLS of DSM IV for Congolese soldiers hospitalized after a stressful and traumatic event (war or aggression).

To do this, we combined two integrated methods of complementary qualitative and quantitative studies types: Clinical Life Case (RV) narrative and Tree Designs (DA) with a clinical survey questionnaire and Botner's questionnaire of behavioral patterns personality. And this is done at two separate scientific moments. The life story of a clinical case allowed the individual to position himself subjectively in relation to his personal, family and social history; while the tree designs, meanwhile, is a graphic tool for projection, visualization highlighting dynamic and unconscious fundamental elements of this personal story. The RV, the DA and a questionnaire help to address the psycho traumatized individual in all its dimensions, its singularity and complexity by offering him opportunities for reflection, awareness and mental development of the trauma, while valuing his resilience in the post-traumatic period [25].

We compared a validated "PCLS IV" scale and an unconfirmed projective tool "tree design" in PTSD screening, which established concurrent validity. We thus constructed the grid of the tree graphical indexes from the significant correlations between these convergences of indices and the scores of PCLS three sub-items (reviviscence, avoidance, hyperactivity), for detection of tPTSD in emergencies and precariousness military situation. The tree design thus allows a specialized diagnostic and psychotherapeutic orientation for nurses and general practitioners treating; they are the most consulted and are located at the first contacts in the hospital circuit. Other factor analysis studies, cohorts and control cases using PCL-5 and experimental devices could verify and confirm the tree design accuracy, specificity and sensitivity, for the validity of the projective tree design test in the diagnosis of PTSD in civilian populations as well as among specific populations such as the members of the armed forces; when they are blocked by their "military attitude" of introversion and/or their sensitive personality (specific traits); highlighting the bias in PCLS - IV responses to reporting PTSD events and symptoms, in terms of bias in their tendency to deliberate acquiescence and social desirability, as well as reactions in administration and implication to a self-reported test.

Conflict of Interest

We declare that we have no conflicts of interest.

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

19

Bibliography

1. Crocq L. "De névrose traumatique au DSM – V". Fondation bon sauveur d' Alby. Journée recherche en psychiatrie (from Traumatic neurosis to DSM - V. Bon Sauveur d'Alby Foundation). Research Day in Psychiatry (2014).

2. American Psychiatric Association. Manuel Diagnostique et Statistique des Troubles Mentaux (Diagnostic and Statistical Manual of Mental Disorders) - DSM-III. Paris: Masson (1986).

3. Jolly Anne. Journal International de victimologie, Epidémiologie des PTSD, Tome 2, numéro 1 (International Victimology Newspaper, PTSD Epidemiology, Volume 2, Number 1) (2003).

4. American Psychiatry Association. Manuel Diagnostique et Statistique des Troubles Mentaux (Mental Disorders Diagnostic and Statistical Manual)- DSM- IV. Paris: Masson (2013).

5. Kessler RC., *et al*. "Posttraumatic Stress Disorder in the national comorbidity survey". *Archives of General Psychiatry* 52.12 (1995): 1048-1060.

6. Stein MB., *et al*. "Full and partial Posttraumatic Stress Disorder: Finding from a community survey". *American Journal of Psychiatry* 154.8 (1997): 1114-1119.

7. Bowman ML. "Individual differences in post-traumatic distress problems with the DSM-IV model". *Canadian Journal of Psychiatry* 44.1 (1999): 21-23.

8. Paris J. "Predispositions personality traits and posttraumatic stress disorder". *Harvard Review of Psychiatry* 8.4 (2000): 175-183.

9. Seow LS., *et al*. "A systemic review on co morbid post-traumatic stress disorder in schizophrenia". *Schizophrenia Research* 176.2-3 (2016): 441-451.

10. Kieffer A. Comorbidité entre schizophrénie et trouble de stress post traumatique, une revue de la littérature. UFR des sciences médicales. France: Université de Bordeaux (2017).

11. Sara Palermo. "Post-Deployment Syndrome in U.S. Active Duty Military and Veterans. The Difficulty in Recognizing the "Illness of War". *EC Psychology and Psychiatry* 7.9 (2018): 595-596.

12. Grinker L. "Why is the PTSD Rate So low among British Veterans?" Ochberg Society of Trauma Journalism (2015).

13. De Clercq M. "Urgences psychiatriques et interventions de crise". Paris: Deboeck Université. (Psychiatric emergencies and crisis interventions. Paris: Deboeck University) (2000).

14. Tarquinio C and Monet S. "Psycho-traumatism". Paris: Ed. Dunod (2014).

15. Fischer MP. "PTSD in the US Military and the polics of prevalence". *Social Science and Medicine* 115 (2014): 1-9.

16. Kedia M and Sebouraud AS. "L'Aide - mémoire de psycho- traumatologie (Psycho-Traumatology Memoir)". Paris: Dunod, 2nd edition (2013).

17. Whitney D. "Post-traumatic stress disorder". Toronto: University of Toronto (2015).

Correlates of PCL-S Tree and Scores Projective Design Indices in the Posttraumatic Stress Disorder Diagnostics (PTSD) among the Congolese Militaries

20

18. Costa PT and Mc Crae. "Les differences entre les sexes et les traits de personnalité". Journal de personnalité et de psychologie sociale (Differences between genders and personality traits. Personality and Social Psychology Newspaper) 81.1 (2008): 11-35.

19. Jehel L et Lopez G., *et al*. "Psycho-traumatology". Paris: Dunod (2006).

20. Yehuda R., *et al*. "The impact cumulative life time trauma and recent stress on cur repost traumatic stress disorder symptoms in holocaust survivors". *American Journal of Psychiatry* 152.12 (1995): 1815-1818.

21. Resnick HS., *et al*. "Vulnerability stress factors in development of pos traumatic stress disorder". *Journal of Nervous and Mental Disease* 180 (1992): 424-430.

22. Fu Q., *et al*. "Differential etiology of post-traumatic stress disorder with conduct disorder and major depression in male veterans". *Biological Psychiatry* 62.10 (2007): 1008-1094.

23. Bremmer JD. "Structural and functional plasticity of the human brain in pos traumatic stress disorder". *Progress in Brain Research* 167 (2008): 171-186.

24. Nardoo D., *et al*. "Gray matter density in limbic and paralimbic cortices associated with trauma load and EMDR outcome in PTSD". *Journal of Psychiatric Research* 44.7 (2009): 477-485.

25. Fernandez L. "Récit de vie et dessin d'arbre. Une reconstruction subjective de l'événement traumatique chez une personne âgée". *NPG Neurologie - Psychiatrie - Gériatrie* 13.76 (2013): 183-192.

26. Marclhacy C. "Le dessin et l'écriture dans la clinique (Design and writing in the clinic)". Paris: Dunod (2011).

27. Lise Holter Bach. "Corrélation entre consommation de biens et services médicaux et score de la post traumatic check listscale dans une population de militaires". Thèse de Médecine. Université de Lorraine de Nancy, France (2004).

28. Costa PT and Mc Crae RR. Traits principaux du système (The System principal traits) PEN Eysenck: Les cinq facteurs de solution (Five solution factors). *Journal de psychologie sociale* (social psychology newspaper) 69.2 (2006): 308-3017.