# The neural correlates of intimate partner violence in women

By

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Declaration

I, Srnka Jelka Flegar, hereby declare that the work on which this dissertation is based is my original work (except where acknowledgements indicate otherwise) and that neither the whole work nor any part of it has been, or is to be submitted for another degree in this or any other university. This work has not been published prior to registration of the MPhil in Liaison Psychiatry.

Signature:

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**The neural correlates of women who report intimate partner violence (IPV)**

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**Aims**

1. To determine whether there are differences in hippocampal volume (grey matter) in women who experience intimate partner violence versus those who do not. Does the presence of a psychiatric disorder, like PTSD, or substance abuse/dependency account for any differences?
2. To determine whether there are any differences in the white matter tracts between women who experience violence and those who do not, using DTI

## Background

Violence in its many forms is recognized as a worldwide problem. At the domestic level, violence has a significant impact on the morbidity and mortality of women children and adolescents.

Intimate partner violence (IPV) is a global public health problem. Population-based surveys from North America indicate that 1 in 4 women have ever experienced IPV, 1 in 10 are current victims [1-2]. Similarly, a cross-sectional survey from South Africa found that the lifetime prevalence of women experiencing IPV was 24.6%, and 9.5% in the last year [3]. The high prevalence of adverse physical and mental health outcomes, related to IPV is well documented [4-6], and includes chronic pain, gastrointestinal, and gynaecological signs such as sexually- transmitted diseases, depression, posttraumatic stress disorder (PTSD), alcohol and drug abuse. IPV accounts for up to 2.9% of the total disease and injury burden for women of all ages [7]. For those aged 18-44 years this increased to 7.9%, with poor mental health and substance abuse contributing 73% and 22% of the total burden attributable to IPV, respectively [7].



In pregnancy, rates of IPV are noted to be between 3-13% [8]. In South Africa, abuse during pregnancy is at least 6.8% [9]. Women who are pregnant and are exposed to IPV have high rates of stress, are more likely to smoke or use other drugs, deliver a preterm or low birth weight infant, have an increase in infectious complications, and are less likely to obtain prenatal care [10-11]. Furthermore, exposure to violence as a child, whether by experiencing maltreatment or by witnessing IPV, is related to being in an abusive intimate relationship as an adult [12]. Sons of women who are beaten are more

likely to assault their intimate partners, and daughters of women who are beaten are more likely to be beaten as adults [13]. This suggests that a significant number of South African children are at risk of adverse outcomes.

The deleterious and far reaching health and social consequences of IPV are complex and bound to multiple environmental and biological factors. Attempts to disentangle some of these links, requires an initial examination of the extent of the problem, and a review of known health related associations.

Alcohol consumption is associated with increased risk of all forms of interpersonal violence [14-15]. In South Africa, intimate partner violence has been shown to be significantly positively associated with drinking alcohol [3]. Furthermore, alcohol abuse is a significant problem in South Africa, with one study reporting that 37.4% of men and 10.7% of women were identified as hazardous drinkers [16]. Also of significance is the finding that 30-50 % of arrestees in Cape Town, Durban, and Johannesburg charged with offences categorised as “family violence” have raised blood alcohol levels , increasing the weight of evidence linking alcohol and violence [17].



Most of the research examining the health outcomes following IPV have come from industrialized countries, and show that depression and PTSD are the most prevalent mental health related sequelae [18-19], followed by alcohol and drug abuse [20-21]. Although it is difficult to establish causal pathways between alcohol abuse and IPV, one study postulated that the use of substances as an outcome of IPV was through PTSD [22]. They suggest that women might use alcohol to cope with specific groups of symptoms associated with PTSD, such as avoidance, hyperarousal and intrusion. However, not all women who use alcohol and experience IPV have a diagnosis of PTSD.

More research is needed, particularly from developing countries, to elucidate the biological factors that mediate the cycle of alcohol use and violence against women. This may be used to identify vulnerable individuals, and or institute effective interventions.

One possible avenue of research is to examine brain structure in women exposed to IPV.

The hippocampal formation in the mesial temporal lobe is a sensitive and vulnerable brain region [23]. Several studies have shown that repeated stressful experiences [24] and elevated levels of glucocorticoids [25] can lead to hippocampal structural damage with neuronal loss. Several magnetic resonance imaging (MRI) studies have shown significantly smaller hippocampal volumes in patients with PTSD caused by different trauma, including personal violence [26]. Futhermore, meta-analyses of MRI volumetric studies showed that subjects with PTSD have smaller hippocampal volume than healthy and traumatized subjects without PTSD [27-29]. However, this has not been a consistent finding in all studies. In particular, Fennema-Notestine et al found that intimate partner violence subjects with posttraumatic stress disorder did not demonstrate significantly smaller hippocampal or other mesial temporal lobe volumes [30].



In addition other structural changes have been found. Victims of intimate partner violence had smaller supratentorial cranial vaults and smaller frontal and occipital grey matter volumes relative to nonvictimized comparison subjects. Supratentorial cranial vault volume was negatively correlated with severity of childhood physical abuse, but not with intimate partner violence or posttraumatic stress disorder severity [30]. This study excluded individuals who had a previous history of alcohol abuse or current alcohol use.

The hippocampus is more vulnerable than other brain structures to the neurotoxic effects of alcohol [31]. It is reported that patients with chronic alcoholism have decreased brain weights and volumes [32-33]. The hippocampal volume reductions in patients with chronic alcoholism have been found to be proportional to the reduction in total brain volume [31]. Thus alcohol consumption needs to be accounted for in studies examining hippocampal damage.

Nevertheless, it would be important to include subjects who report alcohol use in a study investigating the biological correlates of IPV, since it is known that alcohol use is entangled in the cycle of violence, PTSD and other adverse health outcomes.

In this study we would like to determine the relationship between IPV and the hippocampal volume, controlling for PTSD and substances.

Much of the work on the psychobiology of PTSD has focused on grey matter measures. However, animal work suggests that white matter tracts are also important. Functional neuroimaging studies have shown decreased activity in the medial prefrontal and anterior cingulate areas to be correlated with increased activity of the amygdala [34].Therefore it has been suggested that PTSD represents a failure of medial prefrontal and anterior cingulate networks to regulate the activity of the amygdala, which results in hyper-reactivity to threat [35].

Diffusion tensor imaging (DTI) is a non-invasive MRI technique that enables the measurement of the diffusion of water in tissue in order to produce white matter tract images. Axonal membranes and myelin behave as major barriers to water diffusion, so damage to these structures leads to an increase in mean diffusivity (MD), a directionally-

averaged measure of diffusion, and a reduction of fractional anisotropy (FA), a measure of the directionality of diffusion, which varies from zero (diffusivity equal in all directions) to one (entirely unidirectional). This method is increasingly being used to measure in vivo integrity of white matter tracts.

One of the first studies to use DTI using a voxel-based approach in subjects with PTSD, reported a significant increase in FA in the left anterior cingulum in subjects with PTSD compared to those without [36]. Another study by Kim MJ et al reported a significant reduction in FA in the left anterior cingulate in subjects with PTSD compared to those without [37]. This group went on to examine eight isocubic regions of interest (ROI) in the cingulum bundle, and found that relative to the comparison group , PTSD subjects had significantly smaller FA values in the left ROI's but not in the right side [38]. These studies recruited subjects with PTSD following a once off traumatic event. They excluded individuals with lifetime exposure to severe psychological trauma including violence. In relation to the South African context, our interest is in complex PTSD (exposure to chronic multiple trauma), and how violence against women, in all its forms, affects the brain. To our knowledge, there has been no DTI study of subjects with complex PTSD or intimate partner violence.

## Study Methods

### Subjects

Participants for our case control study will be recruited from an ongoing MRC funded randomized clinical trial in Ceres , " The prevention of Fetal Alcohol Spectrum Disorder through a brief intervention with pregnant women " – PI Sandra Marais , that recruits pregnant women who are abusing alcohol.

In this trial all women (15 years and older) attending prenatal ultrasound scans at the Ceres Hospital were screened for alcohol consumption.

The group of women who indicated that they used alcohol were then screened further (visit 1), using the Alcohol Use Disorders Identification Test (AUDIT) to distinguish the "low-risk and risky" drinkers (< 7drinks a week, < 5 drinks per occasion) the "hazardous" drinkers (> 7 drinks per week, > 5 drinks per occasion) and those who are "alcohol dependent". Women who tested positive for risky and hazardous drinking were randomly allocated to an intervention and a control group according to cluster, randomized sampling. Women who were found to be alcohol dependent were appropriately referred for treatment.

An Abuse Assessment Screen (AAS) was completed in both control and intervention samples (visit 4 , day 58).

In our study we will recruit 40 women from the main study after they have delivered. These women will be re-interviewed using the following tools: Abuse Assessment Screen (AAS), Alcohol Use Disorders Identification Test (AUDIT) and the Mini International Neuropsychiatric Interview (MINI).

Cases are defined as women who report IPV in the last year.

Controls are defined as women with no reports of violence in the previous year.

All participants will undergo neuroimaging during the same visit.

Inclusion criteria

Age 15- 65 years of age

Exclusion criteria

1. Previous head injury
2. Other neurological conditions such as epilepsy and cerebrovascular disease
3. Severe current medical illness
4. Investigators clinical judgment
5. MRI contra-indicated
6. Pregnancy



**Questionnaires**

Demographic data will be obtained for all participants .

Alcohol Use Disorders Identification Test (AUDIT)

The AUDIT is a 10 item test developed by the World Health Organization to determine whether a person's use of alcohol is harmful. It is validated for use in both developed and developing countries. Questions 1-3 deal with alcohol consumption, 4-6 relate to

alcohol dependence and 7-10 consider alcohol related problems. The maximum total score is 40. A score of 4 or more out of 12 for questions 4-16 suggests alcohol dependence. In women a score of 7 or more indicates a strong likelihood of hazardous or harmful alcohol consumption. A score of 13 or more is suggestive of alcohol related harm.

Abuse Assessment Screen (AAS)

This screening tool devised in the 1990's, assesses physical abuse against pregnant women. Besides a question tapping sexual coercion, the abuse assessment screen (AAS) consists of three anchor questions related to the abuse perpetrated by the partner or someone important to the respondent. These are inclusive, respectively covering lifetime, preceding 12 months, and pregnancy periods. The opening question simultaneously deals with emotional and physical violence. The last two are restricted to physical abuse, inquiring at once whether the women has been hit, slapped, kicked, or otherwise physically hurt. Provided the answer is positive, details about the perpetrator and characteristics of the event are further checked. It is valid and reliable test in both clinical and community settings.



Mini International Neuropsychiatric Interview (MINI)

This is a short structured diagnostic interview, developed jointly by psychiatrists and clinicians in the United States and Europe, for DSM-IV and ICD-10 psychiatric disorders. With an administration time of approximately 15 minutes, it was designed to meet the need for a short but accurate structured psychiatric interview. This is a valid and reliable tool for screening for the presence of psychiatric disorders.

Neuroimaging

The Cape Universities Brain Imaging Centre (CUBIC) is a collaborative research initiative between Siemens, Stellenbosch University, the University of Cape Town, and the Medical Research Council. We will have access to Africa's first 3 Tesla Siemens Allegra MRI scanner to perform MRI and DTI scans for each participant. Scans will be taken at least 5 months post delivery to allow for any pregnancy related changes to resolve. Sedation will not be required. Gadolinium contrast agent will not be used.



**Study procedures**

The field worker will visit the women from the main study and obtain written consent from 40 candidates. Transport will be provided to and from CUBIC. During the visit to CUBIC, the women will undergo a psychiatric interview, an MRI scan that will include DTI sequences.

For the MRI data, the region of interest is the hippocampus. 3D T1-weighted MPRAGE (9 minutes) and 3D T2-weighted (9 minutes) sequences will be taken. The sequences will be set up for isotropic 1x1x1 mm^3.

**Statistical Analysis**

Data analysis will be performed using the SPSS statistical package in collaboration with statisticians from the MRC

Participants will be divided into groups.

Cases: defined as women who report IPV in the last year (a score of > 1 on the AAS)

Controls: defined as women with no reports of violence in the previous year.

Cases and controls will be compared on demographic variables (eg age, parity, highest level of education, employment) using ANOVA and Chi square as appropriate.

Hippocampal volume measurements

The FSL software package FIRST (FMRIB's integrated registration and segmentation tool) will be used to determine volume and shape differences for the left and right hippocampus (Patenaude et al. 2007). The process is as follows: the T1 images of each subject are transformed to MNI152 space by a 12-degree affine transformation. After the subcortical structures are aligned, a subcortical mask is applied to locate the different subcortical regions. Segmentation of these regions is then performed according to standardized shape models and voxel intensities. The absolute volumes of the individual structures are calculated, taking into account the transformation parameters of the initial registration. For this specific study, a boundary correction will be applied to the hippocampus to determine which voxels along the boundary belong to the structure. A correction with a z-value of 3 will be used in this regard. The segmentations and registrations will be examined for any misregistration A vertex statistical analysis will then performed on the segmented hippocampus for each subject to examine whether there are any significant differences in hippocampus structure and shape between cases and controls.

DTI- Post-processing :Tract-based spatial statistics (TBSS) white matter FA and MD analysis.

The whole analysis will be performed in the FMRIB's software library (FSL) (Smith 2006). For the data analysis, fractional anisotropy (FA) and mean diffusion (MD) maps will be created by firstly doing brain extraction (BET) and then fitting a tensor model to the raw diffusion data using FMRIB's Diffusion Toolbox (FDT) (Smith 2002). The subjects FA data will be aligned into a common space using the non-linear registration tool FNIRT (Andersson 2007). The mean FA image will then be created and thinned to create a mean FA skeleton that represents the centres of all WM tracts common to the group. Each subject's aligned FA data will then projected onto the skeleton and resulting data fed into voxelwise cross-subject statistics. For the MD images, the original non-linear registration parameters will be applied and all the subjects' MD data will be projected onto the mean FA skeleton, using the FA data to find the projection vectors. The statistical model will be a two-tailed unpaired t-test with threshold-free cluster enhancement for the two groups. Only clusters that have a p-value <0.05 corrected for multiple comparisons will be considered.



**Ethical Considerations**

The aims of the study will be explained to each participant before written consent is signed.

MRI is a safe scanning technique with no known harmful effects to women post delivery

All information received from participants will be kept as confidential and will not form part of their routine clinical records.

Participants who are identified as having a psychiatric disorder, including suicidality, will be referred to their nearest mental health care facility.

The study will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.

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# PARTICIPANT INFORMATION LEAFLET AND CONSENT FORM

**A comparative study of hippocampal volume and posttraumatic stress disorder in women who report alcohol use and intimate partner violence (IPV) versus those without reports of IPV**

**REFERENCE NUMBER:**

**PRINCIPAL INVESTIGATOR: Dr Bavanisha Vythilingum**

**ADDRESS: Department of Psychiatry and Mental Health , Groote Schuur Hospital , Observatory , 7925**

**CONTACT NUMBER: (021 ) 404 2137**

You are being invited to take part in a research project. Please take some time to read the information presented here, which will explain the details of this project. Please ask the study staff or doctor any questions about any part of this project that you do not fully understand. It is very important that you are fully satisfied that you clearly understand what this research entails and how you could be involved. Also, your participation is **entirely voluntary** and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part.

This study has been approved by the **Committee for Human Research at Cape Town University** and will be conducted according to the ethical guidelines and principles of the international Declaration of Helsinki, South African Guidelines for Good Clinical Practice and the Medical Research Council (MRC) Ethical Guidelines for Research.



## What is this research study all about?

We are interested in learning more about the effects that alcohol use and violence in women, have on the brain. We know that alcohol and violence are linked and associated with a number of mental health problems , such as posttraumatic stress disorder (PTSD). We will use a brain scan (magnetic resonance imaging MRI) to study a region of the brain that is sensitive to stress and alcohol. A questionnaire on PTSD ( called the Harvard Trauma Questionnaire HTQ) will help us to identify women who may suffer from this.

We will study 60 women from the Ceres area who have taken part in the Prevention of Fetal Alcohol Spectrum Disorder through brief interventions for pregnant women. We will compare the results from the brain scans and HTQ's.

## Why have you been invited to participate?

In the above mentioned study that you have participated in , you indicated whether you used alcohol and whether you experienced any abuse at home. To determine whether there are any brain differences between groups of women who use alcohol and experience abuse, versus those that do not , we need to study both groups of women.

**What will your responsibilities be?**

You will be required to make a single visit to CUBBI , Stellenbosch University. A mental health professional will help you to complete a questionnaire asking about PTSD During this same visit you will be required to have a brain scan (MRI).

**Will you benefit from taking part in this research?**

Appropriate treatment will be offered if you are found to have PTSD.
There may not be any immediate personal benefit to you for taking part , however , a better understanding of why some women who drink alcohol are exposed to violence at home while others who drink avoid this risk , may help us to develop appropriate interventions for these women in the future.

**Are there any risks involved in your taking part in this research?**

Magnetic Resonance Imaging (MRI) is a safe procedure , provided you do not have any of the following : pacemaker , aneurysm clip , artificial valve, vena cava filter, prosthesis (eye, breast etc), cochlear implants, shrapnel in eye or body , neurostimulator, any other implants like screws, plates , rods or joint replacements.
Brain images are captured using powerful magnetic fields. Ionising radiation is not used. There are no harmful effects .
The scanner may be unpleasant to lie in. The space is confined and the machine is noisy.

**If you do not agree to take part, what alternatives do you have?**

You can continue to access medical care from your local clinic and hospital.

**Who will have access to your medical records?**

The information collected will be treated as confidential and protected. The identity of each participant remains anonymous in the event the study is published. The researchers have access to the information only.
.

**Will you be paid to take part in this study and are there any costs involved?**

No you will not be paid to take part in the study but your transport and meal costs will be covered for each study visit. There will be no costs involved for you, if you do take part.

**Is there any thing else that you should know or do?**

You can contact Dr Flegar at (021) 4042137 if you have any further queries or encounter any problems.

You can contact the Committee for Human Research at 021-4066492 if you have any concerns or complaints that have not been adequately addressed by your study doctor.

You will receive a copy of this information and consent form for your own records.

## Declaration by participant

By signing below, I …….. agree to take part in a research study entitled *(insert title of study)*.

I declare that:

- I have read or had read to me this information and consent form and it is written in a language with which I am fluent and comfortable.
- I have had a chance to ask questions and all my questions have been adequately answered.
- I understand that taking part in this study is **voluntary** and I have not been pressurised to take part.
- I may choose to leave the study at any time and will not be penalised or prejudiced in any way.
- I may be asked to leave the study before it has finished, if the study doctor or researcher feels it is in my best interests, or if I do not follow the study plan, as agreed to.

Signed at (*place*) ..... on (*date*) …….. 2008.

..... .....
**Signature of participant** **Signature of witness**



## Declaration by investigator

I *(name)* …….. declare that:

- I explained the information in this document to ……
- I encouraged him/her to ask questions and took adequate time to answer them.
- I am satisfied that he/she adequately understands all aspects of the research, as discussed above
- I did/did not use a interpreter. (*If a interpreter is used then the interpreter must sign the declaration below.*

Signed at (*place*) ..... on (*date*) …….. 2008.

..... .....
**Signature of investigator** **Signature of witness**

## Declaration by interpreter

I *(name)* ……..……. declare that:

- I assisted the investigator (*name*) …….. to explain the information in this document to (*name of participant*) ……..…….. using the language medium of Afrikaans/Xhosa.
- We encouraged him/her to ask questions and took adequate time to answer them.
- I conveyed a factually correct version of what was related to me.
- I am satisfied that the participant fully understands the content of this informed consent document and has had all his/her question satisfactorily answered.

Signed at (*place*) .....…….. on (*date*) ……...…….. 2008.

..... .....
**Signature of interpreter** **Signature of witness**

# ABUSE ASSESSMENT SCREEN

**1. Have you ever been emotionally or physically abused by your partner or someone important to you?**

(i) Yes (ii) No

**2. Within the last year, have you been hit, slapped, kicked or otherwise physically hurt by someone?**

(i) Yes (ii) No

If yes, by whom? (Circle all that apply)
(a) Husband
(b) Ex-husband
(c) Boyfriend
(d) Stranger
(e) Others (specify)_____ Number of times: _____

**3. Since you have been pregnant, have you been hit, slapped, kicked or otherwise physically hurt by someone?**

(i) Yes (ii) No

If yes, by whom? (Circle all that apply)
(a) Husband
(b) Ex-husband
(c) Boyfriend
(d) Stranger
(e) Others (specify)

Number of times: _____ Indicate the area of injury:_____

Score the most severe incident to the following scale:
1. Threats of abuse, including use of a weapon
2. Slapping, pushing; no injuries and/or lasting pain
3. Punching, kicking, bruises, cuts and/or continuing pain
4. Beaten up, severe contusions, burns, broken bones
5. Head, internal, and/or permanent injury
6. Use of weapon, wound from weapon

**4. Within the past year, has anyone forced you to have sexual activities?**

(i) Yes (ii) No

If yes, by whom?
(a) Husband
(b) Ex-husband
(c) Boyfriend
(d) Stranger
(e) Others (specify) Number of times: _____

**5. Are you afraid of your partner or anyone you listed above?**

(i) Yes (ii) No

**6. Do you want us to reveal this information to: (for those who answered yes to questions 2,3, or 4)**

(a) The obstetricians looking after you

(i) Yes (ii) No

(b) The medical social worker for further management

(i) Yes (ii)

**Streng Vertroulik**

**NAAM: _____Verw. No: _____**

**ADRES: _____Datum: _____**

**Tel. No:_____**

**Inligting van Kliniek Rekord Kaart**

| | Verbruiker | Staker | Nie-verbruiker |
|---|---|---|---|
| **Tabak** | | | |
| **Alkohol** | | | |
| **Dwelms/ander middels** | | | |

**SCREENING FOR ALCOHOL USE (THE AUDIT) (Onderhoud weergawe)**

**Lees die vrae soos dit geskryf is. Skryf antwoorde versigtig neer. Begin die AUDIT deur te sê, "Ek gaan u nou vrae vra oor u alkohol gebruik die afgelope jaar ". Verduidelik wat 'n "standaard drankie" is en hoe om dit te bepaal. Kodeer die antwoorde volgens die "standaard drankie ". Plaas die korrekte nommer vir die antwoord bo die strepie.**

**1. Hoe gereeld drink u alkohol?**
**(0) Nooit (gaan na 9-10)**
**(1) Maandeliks of minder**
**(2) 2-4 keer per maand**
**(3) 2-3-keer per week**
**(4) 4 keer en meer per week** _____

**2. Hoeveel drankies met alkohol drink u gewoonlik op 'n keer?**
**(0) 1 of 2**
**(1) 3 of 4**
**(2) 5 of 6**
**(3) 7,8, of 9**
**(4) 10 of meer** _____

**3. Hoe dikwels drink u meer as ses drankies op 'n keer?**
**(0) Nooit**
**(1) Minder as maandeliks**
**(2) Maandeliks**
**(3) Weekliks**
**(4) Daagliks of amper daagliks** _____

**4. Hoe gereeld die afgelope jaar het u ondervind dat as u begin drink kan u nie ophou nie?**
**(0) Nooit**
**(1) Minder as maandeliks**
**(2) Maandeliks**
**(3) Weekliks**
**(4) Daagliks of byna daagliks** _____

**5. Hoe gereeld die afgelope jaar het u u pligte versuim as gevolg van u drank gebruik?**
**(0) Nooit**
**(1) Minder as maandeliks**
**(2) Maandeliks**
**(3) Weekliks**
**(4) Daagliks of byna daagliks** _____

**AUDIT ZONE LEVEL**: _____

**6. Hoe gereeld oor die afgelope jaar was dit vir u nodig om 'n regmaker in die oggend te drink ná 'n hewige drinksessie?**
**(0) Nooit**
**(1) Minder as maandeliks**
**(2) Maandeliks**
**(3) Weekliks**
**(4) Daagliks of byna daagliks** _____

**7. Hoeveel keer die afgelope jaar het u skuldig en spyt gevoel nadat u gedrink het?**
**(0) Nooit**
**(1) Minder as maandeliks**
**(2) Maandeliks**
**(3) Weekliks**
**(4) Daagliks of amper daagliks** _____

**8. Hoeveel keer die afgelope jaar kon u nie onthou wat die vorige aand gebeur het nie omdat u alkohol gedrink het?**
**(0) Nooit**
**(1) Minder as maandeliks**
**(2) Maandeliks**
**(3) Weekliks**
**(4) Daagliks of amper daagliks** _____

**9. Het u of iemand anders al seergekry as gevolg van u alkohol gebruik?**
**(0) Nee**
**(1) Ja, maar nie die afgelope jaar nie?**
**(2) Ja, die afgelope jaar**

_____

**10. Was 'n familielid, dokter, vriend of ander gesondheidswerker al bekommerd oor u alkohol gebruik en het hulle al voorgestel dat u minder drink?**
**(0) Nee**
**(1) Ja, maar nie die afgelope jaar nie**
**(2) Ja, die afgelope jaar** _____

**SKRYF TOTAAL VAN ITEMS 1-10 HIER** _____

**11. Dink u dat u nou 'n probleem het met alkohol gebruik?**
**(a) Nee**
**(b) Moontlik nie**
**(c) Onseker**
**(d) Moontlik**
**(e) Definitief**

**Ruler scale for readiness: a___b___c___d___e**
**Motivation**

**12. Hoe moeilik sal dit vir u wees om oor die volgende paar maande minder alkohol te gebruik of om op te hou drink?**
**(a) Baie maklik**
**(b) Redelik maklik**
**(c) Nie moeilik of maklik nie**
**(d) Redelik moeilik**
**(e) Baie moeilik**

**Ruler scale for Readiness: a___b___c___d___e**
**Confidence**

**Moenie vrae 11 en 12 saam tel nie. Hierdie vrae gee 'n aanduiding van die kliënt se gereedheid of motivering om sy alkohol gebruik te verander. Dit stel jou in staat om te besluit op watter vlak intervensie benodig word.**

UNIVERSITY OF CAPE TOWN

**Health Sciences Faculty**
**Research Ethics Committee**
**Room E52-24 Groote Schuur Hospital Old Main Building**
**Observatory 7925**
**Telephone** [021] 406 6338 • **Facsimile** [021] 406 6411
**e-mail:** lamees.emjedi@uct.ac.za

**18 September 2008**

**REC REF: 334/2008**

**Dr B Vythilingum**
Psychiatry & Mental Health
J Block

Dear Dr Vythilingum

**PROJECT TITLE: A COMPARATIVE STUDY OF HIPPOCAMPAL VOLUME AND POSTTRAUMATIC STRESS DISORDER IN WOMEN WHO REPORT ALCOHOL USE AND INTIMATE PARTNER VIOLENCE VERSUS THOSE WITHOUT REPORTS OF INTIMATE PARTNER VIOLENCE.**

Thank you for submitting your study to the Research Ethics Committee for review.

It is a pleasure to inform you that the Ethics Committee has **formally approved** the above-mentioned study.

**Approval is granted for one year till the 30 September 2009.**

Please submit an annual progress report if the research continues beyond the expiry date. Please submit a brief summary of findings if you complete the study within the approval period so that we can close our file.

Please note that the ongoing ethical conduct of the study remains the responsibility of the principal investigator.

**Please quote the REC. REF in all your correspondence.**

Yours sincerely

Wesley Henley

**PROFESSOR M BLOCKMAN**
**CHAIRPERSON, HSF HUMAN ETHICS**

pp

Federal Wide Assurance Number: FWA00001637.

lemjedi

# M . I . N . I .

# Mini International Neuropsychiatric Interview

## Afrikaanse Weergawe 5.0.0

## DSM-IV

**Y. Lecrubier, E. Weiller, T. Hergueta, P. Amorim, L.I. Bonora, J.P. Lépine**
Hôpital de la Salpétrière - Paris - FRANCE.

**D. Sheehan, J. Janavs, R. Baker, K.H. Sheehan, E. Knapp, M. Sheehan**
University of South Florida - Tampa - USA.

| | | | |
|---|---|---|---|
| **NAAM VAN PASIENT:** | _____ | ***PROTOKOL NOMMER::*** | _____ |
| ***GEBOORTE DATUM:*** | _____ | ***TYD ONDERHOUD BEGIN:*** | _____ |
| ***ONDERHOUDVOERDER :*** | _____ | ***TYD ONDERHOUD VOLTOOI::*** | _____ |
| ***DATUM VAN ONDERHOUD:*** | _____ | ***TOTALE TYD:*** | _____ |

| **MODULES** | **TYDSPAN** | |
|---|---|---|
| A. MAJOR DEPRESSIEWE EPISODE | HUIDIG (Laaste 2 weke) + Lewenslank | |
| A'. MDE MET MELANCHOLIE | Huidig (afgelope 2 weke) | Opsioneel |
| B. DISTIMIE | Huidig (afgelope 2 jaar) | |
| C. SELFMOORDRISIKO | Huidig (afgelope maand) | |
| D. (HIPO) MANIESE EPISODE | Huidig+ Lewenslank | |
| E. PANIEKSTEURING | Lewenslank + huidig (afgelope maand) | |
| F. AGORAFOBIE | Huidig | |
| G. SOSIALE FOBIE | Huidig (afgelope maand) | |
| H. OBSESSIEF-KOMPULSIEWE STEURING | Huidig (afgelope maand) | |
| I. POST TRAUMATIESE STRESSTEURING | Huidig (afgelope maand) | Opsioneel |
| J. ALKOHOL AFHANKLIKHEID / MISBRUIK | Huidig (afgelope 12 maande) | |
| K. MIDDELAFHANKLIKHEID/ MISBRUIK (Nie alkohol) | Huidig (afgelope 12 maande) | |
| L. PSIGOTIESE STEURINGS | Lewenslank + Huidig | |
| M. ANOREKSIA NERVOSA | Huidig (afgelope 3 maande) | |
| N. BULIMIA NERVOSA | Huidig (afgelope 3 maande) | |
| O. ALGEMENE ANGSSTEURING | Huidig (afgelope 3 maande) | |
| P. ANTI-SOSIALE PERSOONLIKHEID-STEURING | Lewenslank | Opsioneel |

## ALGEMENE INSTRUKSIES

Die M.I.N.I. is ontwerp as ‘n kort gestruktureerde onderhoud vir die primêre As I psigiatriese steurings in DSM-IV en ICD-10. Geldigheid- en betroubaarheidstudies is gedoen om die M.I.N.I. met die SCID-P en die CIDI te vergelyk. Die resultate van hierdie studies toon dat die M.I.N.I. aanvaarbare geldigheid- en betroubaarheidstellings het, maar kan in ‘n baie korter tyd (gem. 18.7 ± 11.6 min., mediaan 15 min.) geadministreer word as bogenoemde instrumente. Dit kan na ‘n kort opleidingsessie deur klinici gebruik word. Ander onderhoudvoerders het meer intensiewe opleiding nodig.

- **Onderhoud:**

Om die onderhoud so kort as moontlik te hou, moet die pasient ingelig word dat u ‘n onderhoud gaan voer wat meer gestruktureerd as normaalweg is, met spesifieke vrae oor sielkundige probleme wat ‘n «ja» of «nee» antwoord verg.

- **Algemene formaat :**

Die M.I.N.I. word onderverdeel in **modules** wat deur letters geidentifiseer word en wat elk ooreenstem met ‘n diagnostiese kategorie.

- Aan die begin van elke module (behalwe die module vir psigotiese toestande ), is daar **siftingvrae** wat ooreenstem met die hoof kriteria van die siekte. Die kriteria word aangebied in ‘n **grys area**.
- Aan die einde van elke module is daar **diagnostiese areas**, wat die klinikus in staat stel om aan te dui of daar aan die diagnostiese kriteria voldoen word.

- **Algemeen:**

*Sinne wat in* **«** gewone druk » geskryf is, moet presies só gelees word, om die raming van die diagnostiese kriteria te standariseer.

*Sinne wat in* **« HOOFLETTERS** » geskryf is moet nie aan die pasient gelees word nie. Dit is instruksies aan die onderhoudvoerder om te help met die telling van die diagnostiese algoritmes.

*Sinne wat in* « **bold »** geskryf is dui die tydstrek van die ondersoek aan. Die onderhoudvoerder moet dit so gereeld as wat dit nodig is lees. Slegs simptome wat voorkom gedurende die tydgleuf wat aangedui word moet oorweeg word wanneer die respons bereken word.

*Sinne (in parenteses/hakies*) is kliniese voorbeelde van die simptome. Hierdie mag aan die pasient voorgelees word om die vraag te verklaar.

*Antwoorde met ‘n peiltjie bo* ( è ) dui aan dat daar nie voldoen word aan een van die kriteria wat nodig is vir die diagnose nie. In so ‘n geval, moet die onderhoudvoerder na die einde van die module gaan om « NEE » te omkring in al die diagnostiese **boxes** en daarna na die volgende module beweeg.

Wanneer terme met ‘n *slash (/)* geskei word moet die onderhoudvoerder slegs die simptome lees wat bekend is om teenwoordig te wees by die pasient (byvoorbeeld, vraag A3).

- **Evaluerings Instruksies:**

Alle vrae wat gelees word moet evalueer word. Die evaluering word gedoen teen die regte kant van elke vraag deur of JA of NEE te omkring. Die klinikus moet seker wees dat elke dimensie van die vraag in ag geneem word deur die pasient (bv.: tydsduur, frekwensie, ernstigheid, « en/of » alternatiewe).

Simptome wat beter voor verklaar kan word deur ‘n organiese oorsaak of deur die gebruik van alkohol of substanse moet nie positief gekodeer word in die M.I.N.I. nie. Die M.I.N.I. Plus het vrae wat hierdie kwessies ondersoek.

---

Vir enige vrae, voorstelle, behoefte aan ‘n opleiding sessie, of inligting i.v.m. die hersiening van die M.I.N.I., kontak asb.:

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è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## A. MAJOR DEPRESSIEWE EPISODE

| | | | | |
|---|---|---|---|---|
| A1 | Was u aanhoudend depressief of mismoedig vir die grootste gedeelte van die dag en vir omtrent elke dag van die laaste twee weke? | NEE | JA | 1 |
| A2 | Was u in die laaste twee weke minder geinterreseerd in die meeste dinge of minder in staat om dinge te geniet wat u voorheen geniet het? | NEE | JA | 2 |
| | IS **A1** OF **A2** JA ? è | NEE | JA | |
| A3 | **Wanneer u depressief of ongeinterreseerd in die laaaste twee weke gevoel het:** | | | |
| a | Het u eetlus afgeneem of toegeneem bykans elke dag of het u gewig toegeneem of afgeneem sonder dat u probeer het? (m.a.w., ± 5 % van liggaamsgewig of ± 3,5 kg of ± 8 lbs., vir 'n 70 kg / 120 lbs. persoon in 'n maand)<br>INDIEN **JA** VIR ENIGE VAN BOGENOEMDE, MERK **JA** | NEE | JA | 3 |
| b | Het u omtrent elke aand probleme ondervind om te slaap (raak u moeilik aan die slaap, word u in die middel van die nag wakker, word u vroeg wakker of slaap u oormatig baie)? | NEE | JA | 4 |
| c | Het u omtrent elke dag stadiger beweeg of gepraat as normaalweg? Was u omtrent elke dag vroetelrig, rusteloos of het u dit moeilik gevind om stil te sit? | NEE | JA | 5 |
| d | Het u omtrent elke dag moeg of sonder energie gevoel? | NEE | JA | 6 |
| e | Voel u omtrent elke dag skuldig of waardeloos? | NEE | JA | 7 |
| f | Het u dit moeilik gevind om te konsentreer of om besluite te neem? | NEE | JA | 8 |
| g | Het u herhaardelik oorweeg om uself te beseer, selfmoordgedagtes gekoester, of gewens u was dood? | NEE | JA | 9 |

| A4 | **IS 3 OF MEER A3 ANTWOORDE JA ?**<br>**(OF 4 A3 ANTWOORDE AS A1 OF A2 NEE IS)** | **NEE** | **JA** |
|---|---|---|---|
| | | ***MAJOR DEPRESSIEWE EPISODE HUIDIGLIK*** | |

INDIEN DIE PASIENT HUIDIG AAN DIE KRITERIA VIR 'N MAJOR DEPRESSIEWE EPISODE VOLDOEN :

| | | | | |
|---|---|---|---|---|
| A5a | Het u ooit gedurende u leeftyd periodes gehad waar u vir twee weke of meer depressief gevoel het, of ongeinterreseerd was in die meeste dinge en waar u meeste van die probleme gehad het waarvan ons nou gepraat het ? è | NEE | JA | 10 |
| b | Was daar 'n tydperk van ten minste 2 maande sonder depressie en/of 'n afname in belangstelling tussen u huidige episode en u vorige episode? | NEE | JA | 11 |

| | **NEE** | **JA** |
|---|---|---|
| IS **A5b** gekodeer **JA**? | ***MAJOR DEPRESSIEWE EPISODE VERLEDE*** | |

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## A'. MAJOR DEPRESSIEWE EPISODE MET MELANCHOLIESE EIENSKAPPE (opsioneel)

INDIEN DIE PASIENT 'N DIAGNOSE VAN 'N MAJOR DEPRESSIEWE EPISODE (**A4 = JA**) HET, ONDERSOEK DIE VOLGENDE:

| | | | | |
|---|---|---|---|---|
| A6 a | IS **A2 JA** ? | NEE | JA | 12 |
| b | Gedurende die ergste tydperk van die huidige episode , het u ooit u vermoe verloor om te reageer op dinge wat voorheen vir u plesier verskaf het of wat u opgebeur het? | NEE | JA | 13 |
| | **INDIEN NEE**: Wanneer iets goed gebeur, het dit u nooit laat beter voel nie, selfs nie eens tydelik nie? | | | |
| | | è | | |
| | IS **A6a** OF **A6b** JA? | NEE | JA | |

**Gedurende die laaste twee week periode, wanneer u depressief of ongeinterriseerd gevoel het:**

| | | | | |
|---|---|---|---|---|
| A7a | Het u depressief gevoel op 'n manier wat anders was as wanneer iemand na aan jou sterf ? | NEE | JA | 14 |
| b | Het u gereeld erger in die oggend gevoel, omtrent elke dag ? | NEE | JA | 15 |
| c | Het u omtrent elke dag ten minste 2 ure voor u gewone tyd wakker geword en kon nie weer aan die slaap raak nie? | NEE | JA | 16 |
| e | IS **A3c JA** ? | NEE | JA | 17 |
| d | IS **A3a JA** (ANOREKSIE OF GEWIGSVERLIES ALLEEN )? | NEE | JA | 18 |
| f | Het u oormatig skuldig gevoel of dat dit buite verhouding met die realiteit van die situasie was? | NEE | JA | 19 |

IS **3** OF MEER **A7** ANTWOORDE JA?

| **NEE** | **JA** |
|---|---|

***MAJOR DEPRESSIEWE EPISODE***
***Met Melankoliese Einskappe***
***HUIDIGLIK***

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## B. DISTIMIE

INDIEN DIE PASIENT SE SIMPTOME HUIDIG AAN DIE KRITERIA VIR 'N MAJOR DEPRESSIEWE EPISODE VOLDOEN, MOENIE HIERDIE MODULE ONDERSOEK NIE.

| | | | | |
|---|---|---|---|---|
| B1 | Het u vir die laaste twee jaar die meeste van die tyd hartseer, laag of depressief gevoel ? | è NEE | JA | 20 |
| B2 | Is hierdie tydperk onderbreek deur 'n periode van twee maande of meer waartydens u goed gevoel het ? | NEE | è JA | 21 |
| B3 | **Gedurende hierdie tydperk toe u die meeste van die tyd depressief was :** | | | |
| a | Het u eetlus beduidend verander ? | NEE | JA | 22 |
| b | Het u probleme met u slaappatroon ondervind, in die sin dat u te veel of te min geslaap het ? | NEE | JA | 23 |
| c | Het u moeg of sonder energie gevoel ? | NEE | JA | 24 |
| d | Het u u selfvertroue verloor ? | NEE | JA | 25 |
| e | Het u probleme ondervind met konsentrasie of om besluite te neem ? | NEE | JA | 26 |
| f | Het u moedeloos gevoel ? | NEE | JA | 27 |
| | IS **2** OF MEER **B3** ANTWOORDE **JA** ? | è NEE | JA | |
| B4 | Het die simptome van depressie 'n beduidende ongemak by u veroorsaak of u vermoe om by die werk, sosiaal of in ander belangrike maniere te funksioneer, ingekort ? | è NEE | JA | 28 |

IS **B4** GEKODEER **JA** ?

| **NEE** | **JA** |
|---|---|
| ***DISTIMIE HUIDIGLIK*** | |

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## C. SELFMOORDRISIKO

**Het u in die laaste maand :**

| | | | | |
|---|---|---|---|---|
| C1 | Gedink dat dit beter sal wees om dood te wees of gewens dat u dood was ? | NEE | JA | 1 |
| C2 | Gevoel u wil uself beseer ? | NEE | JA | 2 |
| C3 | Gedink aan selfmoord ? | NEE | JA | 3 |
| C4 | ‘n Selfmoord plan gehad ? | NEE | JA | 4 |
| C5 | ‘n Selfmoord poging aangewend ? | NEE | JA | 5 |

**In u leeftyd**

| | | | | |
|---|---|---|---|---|
| C6 | Het u ooit ‘n selfmoordpoging aangewend? | NEE | JA | 6 |

IS TEN MINSTE **1** VAN BG**. JA?**

INDIEN JA, DUI DIE VLAK VAN SELFMOORDRISIKO SOOS VOLG AAN :

C1 of C2 of C6 = JA : LAAG
C3 of (C2 +C6) = JA : GEMIDDELD
C4 of C5 of (C3 + C6) = JA : HOOG

| **NEE** | **JA** |
|---|---|

***SELFMOORDRISIKO HUIDIGLIK***

| | |
|---|---|
| **LAAG** | **ÿ** |
| **GEMIDDELD** | **ÿ** |
| **HOOG** | **ÿ** |

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## D. (HIPO) MANIESE EPISODE

| | | | | |
|---|---|---|---|---|
| D1a | Het u al **ooit** 'n tydperk beleef waar u so goed of «hoog» of so vol energie of vol van uself gevoel het dat u in die moeilikheid beland het, of dat ander persone gedink het u is nie uself nie? (Moenie tye wat u geintoksikeerd van alkohol of ander substanse was insluit nie.)<br>INDIEN DIE PASIENT NIE DUIDELIKHEID HET OOR WAT BEDOEL WORD MET «HOOG» NIE, VERDUIDELIK DEUR TE SÊ : Met «hoog» bedoel ek : u gemoed is gelig, u energie is verhoog, u benodig minder slaap, u gedagtes is vinniger, u is vol idees, u produktiwiteit, kreatiwiteit, motivering of impulsiewe gedrag is verhoog. | NEE | JA | 1 |
| | INDIEN JA : | | | |
| b | Voel u tans "hoog" of vol energie ? | NEE | JA | 2 |
| D2a | Was u al ooit so aanhoudend geirriteerd, vir 'n aantal dae, dat u argumente of verbale of fisiese gevegte gehad het of dat u op mense buite u familie geskree het? Het u, of ander, opgelet dat u meer geirriteerd is of oorreageer, in vergelyking met ander, selfs in omstandighede wat u voel dit was geregverdig? (Moenie tye wat u geintoksikeerd was met alkohol of ander substanse inagneem nie.) | NEE | JA | 3 |
| | INDIEN JA : | | | |
| b | Voel u tans gedurig geirriteerd? | NEE | JA | 4 |
| | è<br>Is **D1a** OF **D2a** GEKODEER **JA** ? | NEE | JA | |

D3 INDIEN D1B OF D2B = JA : ONDERSOEK SLEGS HUIDIGE EPISODE
INDIEN D1B EN D2B = NEE : ONDERSOEK SLEGS DIE **MEES SIMPTOMATIESE** EPISODE

**Gedurende die tye wat u «hoog», vol energie of geirriteerd gevoel het, het/was u:**

| | | | | |
|---|---|---|---|---|
| A | Gevoel dat u dinge kon doen wat ander nie kan doen nie, of dat u 'n besonder belangrike persoon is? | NEE | JA | 5 |
| B | Minder slaap benodig (b.v., uitgerus gevoel na slegs 'n paar uur se slaap) ? | NEE | JA | 6 |
| c | Sonder ophou gepraat, of so vinnig dat dit vir ander moeilik was om u te verstaan? | NEE | JA | 7 |
| d | Gedagtes gejaag? | NEE | JA | 8 |
| e | So maklik afleibaar geword dat enige onderbreking u aandag kon aflei? | NEE | JA | 9 |
| f | So aktief of fisies rusteloos geword dat ander bekommerd was oor u? | NEE | JA | 10 |

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

g So graag aan plesierige aktiwiteite (b.v. te veel geld uitgee, roekelose bestuur of ontoepaslike seksuele gedrag) deelgeneem dat u die gevolge geignoreer het? NEE JA 11

IS **3** OF MEER **D3** ANTWOORDE **JA** è
OF **4** INDIEN **D1a = NEE** (VERLEDE) OF **D1b = NEE** (HUIDIGE EPISODE) ? NEE JA

D4 Het hierdie simptome ten minste ‘n week geduur en het dit beduidende probleme by die huis, werk of skool veroorsaak of was u gehospitaliseer vir die probleme? NEE JA 12
INDIEN JA VIR ENIGE, JA

IS **D4** GEKODEER **NEE** ?

**NEE** **JA**

***HIPOMANIESE EPISODE***

INDIEN JA, SPESIFISEER OF DIE EPISODE HUIDIG OF IN DIE VERLEDE IS.

***HUIDIG*** ☐
***VERLEDE*** ☐

IS **D4** GEKODEER **JA** ?

**NEE** **JA**

***MANIESE EPISODE***

INDIEN JA, SPESIFISEER OF DIE EPISODE HUIDIG OF IN DIE VERLEDE IS.

***HUIDIG*** ☐
***VERLEDE*** ☐

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## E. PANIEKSTEURING

| | | | | |
|---|---|---|---|---|
| E1 | Het u, meer as een maal, vlae of aanvalle gehad waar u skielik angstig, bang of ongemaklik gevoel het, self in omstandighede waar die meeste ander persone nie so sou voel nie? Het die aanval binne 10 minute sy piek bereik?<br>JA SLEGS INDIEN DIE AANVAL BINNE 10 MINUTE SY PIEK BERIEK HET. | NEE | JA | 1 |
| | INDIEN **E1 = NEE**, OMKRING NEE IN E5 EN GAAN NA F1 | | | |
| E2 | Op enige tydstip in die verlede, het enige van hierdie aanvalle onverwags of spontaan voorgekom of in 'n onvoorspelbare of onuitgelokte manier?<br>INDIEN **E2 = NEE**, OMKRING NEE IN E5 EN GAAN NA F1 | NEE | JA | 2 |
| E3 | Het u al ooit so 'n episode gehad wat gevolg is deur 'n maand of meer se aanhoudende vrees vir nog 'n aanval of bekommernis oor die gevolg van so 'n aanval?<br>INDIEN **E3 = NEE**, OMKRING NEE IN E5 EN GAAN NA F1 | NEE | JA | 3 |
| E4 | **Gedurende die ergste aanval wat u kan onthou :** | | | |
| a | Het u hart 'n slag gemis, vinniger of in u keel geklop ? | NEE | JA | 4 |
| b | Was u hande klam of sweterig ? | NEE | JA | 5 |
| c | Was u bewerig ? | NEE | JA | 6 |
| d | Was u kortasem of het u dit moeilik gevind om asem te haal? | NEE | JA | 7 |
| e | Het u 'n versmorende gevoel of 'n knop in u keel gehad? | NEE | JA | 8 |
| f | Het u borskas pyn, drukking of ongemak gehad? | NEE | JA | 9 |
| g | Het u skielik naarheid, maagprobleme of diarree ervaar? | NEE | JA | 10 |
| h | Het u duiselig, lighoofdig, flou of onvas gevoel ? | NEE | JA | 11 |
| i | Het dinge om u vreemd, onwerklik, verwyderd of onbekend gevoel, of het u verwyderd of buite u liggaam of 'n deel van u liggaam gevoel? | NEE | JA | 12 |
| j | Het u gevoel dat beheer verloor of was u bang dat u besig is mal te word? | NEE | JA | 13 |
| k | Was u bang dat u besig is om te sterf? | NEE | JA | 14 |
| l | Was dele van u liggaam gevoelloos of prikkelend? | NEE | JA | 15 |
| m | Het u warm gloede ervaar of koud gekry ? | NEE | JA | 16 |
| E5 | IS **4** OF MEER **E4** ANTWOORDE **JA**?<br>INDIEN **E5 = NEE,** GAAN NA E7 | NEE | JA<br>***Panieksteuring Lewnslank*** | |
| E6 | In die laaste maand, het u sulke aanvalle herhaaldelik gehad (2 of meer) gevolg deur aanhoudende vrees vir nog 'n toe-val ?<br>INDIEN **E6 = JA**, GAAN NA F1 | NEE | JA<br>***Paniek steuring Huidig*** | 17 |
| E7 | IS **1**, **2** OF **3 E4** ANTWOORDE GEKODEER **JA** ? | NEE<br>***Beperkte Lewensduur*** | JA<br>***Simptoom Aanvalle*** | 18 |

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## F. AGORAFOBIE

F1 Voel u gespanne of besonders angstig of ongemaklik in sekere plekke of situasies waar dit moeilik sal wees om te ontsnap, en waar hulp miskien nie beskikbaar sal wees in geval van 'n paniek aanval nie, soos tussen 'n groot groep mense, om in 'n tou te staan, wanneer u alleen tuis is of wanneer u alleen weg is van die huis, of wanneer u 'n brug oorsteek, reis in 'n bus, trein of motor ?

NEE JA 19

INDIEN **F1 = NEE,** OMKRING NEE BY F2

F2 Is u so bang vir hierdie situasasies dat u dit vermy, daardeur worstel, of dat u 'n metgesel nodig het om dit te konfron-teer / vermag ?

NEE JA
***Agorafobie Huidig***

IS **F2** (HUIDIG AGORAFOBIE) GEKOODEER **NEE**
en
IS **E6** (HUIDIG PANIEKSTEURING) GEKODEER JA ?

**NEE** **JA**

***PANIEKSTEURING Sonder Agorafobie HUIDIG***

IS **F2** (HUIDIG AGORAFOBIE) GEKODEER **JA**
en
IS **E6** (HUIDIG PANIEKSTEURING) GEKODEER **JA ?**

**NEE** **JA**

***PANIEKSTEURING met Agorafobie HUIDIGLIK***

IS **F2** (HUIDIG AGORAFOBIE) GEKODEER **JA**
And
IS **E5** (PANIEKSTEURING LEWENSLANK) GEKODEER **NEE** ?

**NEE** **JA**

***AGORAFOBIE Sonder'n geskiedenis van Paniekstеuring HUIDIGLIK***

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## G. SOSIALE FOBIE

| | | | | |
|---|---|---|---|---|
| G1 | Was u in die laaste maand bang of skaam om dopgehou te word, om die middelpunt van die geselskap te wees, of om verneder te word ? Dit sluit situasies in soos om in die publiek te praat of te eet, te skryf terwyl iemand toekyk, of om in sosiale situasies te wees. | è NEE | JA | 1 |
| G2 | Is hierdie angs oormatig of onredelik ? | è NEE | JA | 2 |
| G3 | Vrees u hierdie situasies so dat u dit vermy of daardeur worstel ? | è NEE | JA | 3 |
| G4 | Ontwrig hierdie vrees u normale werk of sosiale funksionering of veroorsaak dit vir u ellende ? | NEE | JA | 4 |

IS **G4** GEKODEER **JA** ?

| **NEE** | **JA** |
|---|---|

***SOSIALE FOBIE HUIDIGLIK***

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## H. OBSESSIEF-KOMPULSIEWE STEURING

H1 In die laaste maand, was u gepla deur herhalende gedagtes, impulse of beelde wat ongevraagd, onsmaaklik, ontoepaslik, indringend of ontstellend was ? (b.v. die gedagte dat u vuil is, gekontamineer is of kieme het **of** die vrees dat u ander kan kontamineer, **of** 'n vrees om iemand skade aan te doen selfs al wou u nie , **of** 'n vrees dat u op 'n impuls sal reageer, **of** 'n vrees of bygeloof dat u verantwoordelik sal wees vir dinge wat verkeerd gaan, **of** obsessies met seksuele gedagtes, beelde of impulse, **of** ophoop, versameling, **of** godsdienstige obsessies.) NEE JA 1

MOENIE OORMATIGE BEKOMMERNIS OOR WERKLIKE LEWENSPROBLEME INSLUIT NIE. MOENIE OBSESSIES WAT DIREK VERBAND HOU MET EETSTEURINGS, SEKSUELE AFWYKINGS, PATOLOGIESE DOBBELARY, OF ALKOHOL OF MIDDEL MISBRUIK INSLUIT NIE, WANT DIE PASIËNT KAN PLESIER PUT UIT DIE AKTIWITEIT EN MAG DIT SLEGS WEERSTAAN A.G.V. DIE NEGATIEWE GEVOLGE.

INDIEN **H1 = NEE**, GAAN NA H4

H2 Het dit aanhou opkom in u gedagtes al het u probeer om dit te ignoreer of om daarvan ontslae te raak ? NEE JA 2

INDIEN **H2 = NEE,** GAAN NA H4

H3 Glo u dat hierdie obsessies 'n produk van u eie gedagtes is en dat dit nie van buite af ingeplaas word nie ? NEE JA 3

H4 In die laaste maand, het u dinge herhaaldelik gedoen sonder dat u kon ophou, soos om oordadig te was of skoon te maak, om dinge oor en oor te tel of te kontroleer, of herhaling, versameling, rangskikking van dinge, of ander bygelowige rituele ? NEE JA 4

IS **H3** OF **H4** GEKODEER **JA** ? è NEE JA

H5 Het u opgelet dat hierdie obsessiewe gedagtes en / of kompulsiewe gedrag wat u nie kan weerstaan om te doen nie, oormatig of onredelik was ? è NEE JA 5

H6 Het hierdie obsessiewe gedagtes en / of kompulsiewe gedrag beduidend ingemeng met u normale roetine, werksfunksionering, gewone sosiale aktiwiteite, of verhoudings, of het dit meer as een uur per dag opgeneem ? NEE JA 6

IS **H6** GEKODEER **JA** ?

**NEE** **JA**

***OBSESSIEF-KOMPULSIEWE STEURING HUIDIG***

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## I. POST TRAUMATIESE STRESSTEURING (opsioneel)

| | | | | |
|---|---|---|---|---|
| I1 | Het u al ooit u 'n uiters traumatiese gebeurtenis wat dood of dreigende dood of ernstige besering aan u of iemand anders insluit, ervaar of aanskou of moes u dit hanteer?<br>VOORBEELDE VAN TRAUMATIESE GEBEURE : 'N ERNSTIGE ONGELUK, SEKSUELE OF FISIESE AANRANDING, 'N TERRORISTE AANVAL, OM GEISELAAR GEHOU TE WORD, ONTVOERING, AANHOUDING, VUUR, ONTDEKKING VAN 'N LIGGAAM, ONVERWAGSE DOOD, OORLOG, NATUURRAMPE... | è<br>NEE | JA | 1 |
| I2 | Gedurende die laaste maand, het u die gebeurtenis herleef op 'n onstellende wyse ( b.v. drome, intense herlewing, terugflitse of fisiese reaksies ) ? | è<br>NEE | JA | 2 |

| | | | | |
|---|---|---|---|---|
| I3 | **In die afgelope maand :** | | | |
| a | Het u dit vermy om aan die gebeurtenis terug te dink, of het u dinge vermy wat u aan die gebeurtenis herinner ? | NEE | JA | 3 |
| b | Het u probleme ondervind om sekere belangrike dele van die gebeurtenis te onthou ? | NEE | JA | 4 |
| c | Was u minder geïnteresseer in u stokperdjies en sosiale aktiwiteite ? | NEE | JA | 5 |
| d | Het u afgesonder of vervreemd van ander gevoel ? | NEE | JA | 6 |
| e | Het u opgelet dat u emosies afgestomp is ? | NEE | JA | 7 |
| f | Het u gevoel dat u lewe verkort sou word a.g.v. hierdie trrauma ? | NEE | JA | 8 |
| | IS **3** OF MEER **I3** ANTWOORDE GEKODEER **JA** ? | è<br>NEE | JA | |
| I4 | **In die afgelope maand :** | | | |
| a | Het u probleme ondervind om te slaap ? | NEE | JA | 9 |
| b | Was u besonders geïrriteerd of het u woede uitbarstings gehad ? | NEE | JA | 10 |
| c | Het u probleme ondervind met u konsentrasie ? | NEE | JA | 11 |
| d | Was u gespanne of gedurig op u hoede ? | NEE | JA | 12 |
| e | Is u maklik skrik gemaak ? | NEE | JA | 13 |
| | IS **2** OF MEER **I4** ANTWOORDE **JA** ? | è<br>NEE | JA | |
| I5 | Het hierdie probleme gedurende die laaste maand, beduidend met u werk of sosiale aktiwiteite ingemeng of het dit vir u beduidende ellende veroorsaak ? | NEE | JA | 14 |

IS **I5** GEKODEER **JA** ?

| **NEE** | **JA** |
|---|---|

***POST TRAUMATIESE STRESSTEURING HUIDIG***

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

## J. ALKOHOL MISBRUIK EN AFHANKLIKHEID

| | | | | |
|---|---|---|---|---|
| J1 | Het u in die laaste 12 maande, 3 of meer alkoholiese drankies in ‘n 3 uur periode op 3 of meer geleenthede gehad ? | è NEE | JA | 1 |
| J2 | **In die laaste 12 maande :** | | | |
| a | Was dit nodig om meer te drink om sodoende dieselfde effek te kry as toe u begin drink het ? | NEE | JA | 2 |
| b | Het u hande gebewe, het u gesweet of het u geagiteerd gevoel wanneer u minder gedrink het ?<br>Of, het u gedrink om hierdie simptome te verhoed of om te voorkom dat u babelas raak b.v. «die bewerasies» , sweterigheid of agitasie ?<br>INDIEN JA VIR ENIGE VAN BG., MERK JA | NEE | JA | 3 |
| c | Gedurende die tye wat u alkohol gebruik het, het u meer gebruik as wat u beplan het toe u begin het ? | NEE | JA | 4 |
| d | Het u probeer om minder te drink of om op te hou maar dit het misluk ? | NEE | JA | 5 |
| e | Op die dae wat u gedrink het, het u ‘n aansienlike tyd daaraan spandeer om alkohol te bekom, om dit te drink, of om van die effek van alkohol te herstel ? | NEE | JA | 6 |
| f | Het u minder tyd spandeer aan werk of om u stokperdjies te geniet, of saam met ander a.g.v. u alkohol gewoontes ? | NEE | JA | 7 |
| g | Het u aanhou drink al het u geweet dat dit nadelig vir u fisiese en geestelike welsyn is ? | NEE | JA | 8 |

IS **3** OF MEER **J2** ANTWOORDE GEKODEER **JA** ?

**NEE** **JA**

***ALKOHOL AFHANKLIKHEID HUIDIG***

IS DIE PASIËNT POSITIEF VIR ALKOHOL AFHANKLIKHEID ? NEE è JA

| | | | | |
|---|---|---|---|---|
| J3 | **In afgelope12 maande :** | | | |
| a | Was u geïntoksikeerd, hoog, of babelas toe ander verantwoordelikhede by die skool, werk of tuis gehad het? Het dit vir u probleme veroorsaak ?<br>SLEGS JA INDIEN DIT VIR U PROBLEME VEROORSAAK HET. | NEE | JA | 9 |

è BETEKEN: **GAAN** NA DIE DIAGNOSTIESE AREAS VAN HIERDIE MODULE, **OMKRING NEE** IN ALMAL EN **SKUIF AAN** NA DIE VOLGENDE MODULE

| | | | | |
|---|---|---|---|---|
| b | Was u geïntoksikeerd in enige situasie waar u fisies in gevaar was, b.v. motor / motorfiets bestuur, gebruik van masjinerie of bestuur van ‘n boot, ens. ? | NEE | JA | 10 |
| c | Het u enige probleme met die gereg gehad a.g.v. u alkohol gewoontes, b.v., ‘n arrestasie of wanordelike gedrag ? | NEE | JA | 11 |
| d | Het u aanhou drink al het dit probleme met u familie of ander persone veroorsaak ? | NEE | JA | 12 |

IS **1** OF MEE **J3** ANTWOORDE GEKODEER **JA** ?

| **NEE** | **JA** |
|---|---|
| ***ALKOHOL MISBRUIK HUIDIG*** | |

## CARD OF SUBSTANCES

| | | |
|---|---|---|
| AMFETAMIEN | PETROL | MORFIEN |
| CANNABIS | GOM | OPIUM |
| KOKAIEN | DAGGA | PALFIUM |
| KODEÏEN | HASHISH | PCP |
| CRACK | HEROÏEN | RITALIN |
| DICONAL | LSD | TEMGESIC |
| ECSTASY | MARIJUANA | THC |
| ETER | MESCALINE | TOLUENE |
| FREEBASE | METHADONE | TRICHLORETHYLENE |

è MEANS : **GO** TO THE DIAGNOSTIC BOX(ES) OF THIS MODULE, **CIRCLE NO** IN ALL OF THEM AND **MOVE** TO THE NEXT MODULE

## K. NIE-ALKOHOLIESE PSIGO-AKTIEWE SUBSTANS GEBRUIKSTEURINGS

K1 Nou gaan ek vir u vir u wys (WYS DIE KAART MET DIE SUBSTANSE ) / vir u 'n lys lees (LEES DIE LYS) van straat dwelms of medikasies. In die laaste 12 maande, het u enige van hierdie middels meer as een maal geneem om hoog te raak, om beter te voel, of om u stemming te verander ?

è NEE JA

OMKRING ELKE MIDDEL WAT GEBRUIK IS :

Stimulante : amfetamines, « speed », crystal meth, « rush », Dexedrine, Ritalin, dieet pille.
Kokaïen : snorting, IV, freebase, crack, « speedball ».
Narkotika : heroin, morfien, dilaudid, opium, demerol, methadone, kodeien, percodan, darvon.
Hallusinogene : LSD (« acid »), mescaline, peyote, PCP (« angel dust », « peace pill »), psilocybin, STP, « mushrooms », ecstasy, MDA, or MDMA.
Inhalante : « gom », etiel kloried, stikstof, (« laggas »), amiel of butiel nitraat (« poppers »).
Marijuana : hashish (« hash »), THC, « pot », « grass », « weed », « reefer », dagga.
Kalmeermiddels : quaalude, Seconal (« reds »), Valium, Xanax, Librium, Ativan, Dalmane, Halcion, barbiturate, Miltown.
Allerlei: steroïede, nie-voorgeskrewe slaap of diëet pille. Enige ander ?

SPESIFISEER MEES GEBRUIKTE MIDDEL(S) :

_____

**S**PESIFISEER IN DIE KRITERIA HIER ONDER, WAT ONDERSOEK SAL WORD :

- INDIEN GELYKTYDIG OF OPVOLGENDE POLI-SUBSTANS GEBRUIK :
  ELKE MIDDEL (OF MIDDEL KLAS) AFSONDERLIK GEBRUIK
  MIDDEL (OF MIDDEL KLAS) DIE MEESTE GEBRUIK ☐
- INDIEN EEN MIDDEL (OF MIDDEL KLASIFIKASIE) GEBRUIK :
  ENKEL MIDDEL (OF MIDDEL KLAS) ALLEEN ☐

☐

K2 **In ag genome die gebruik van [NOEM DIE SPESIFIEKE MIDDEL / MIDDEL KLAS] in die laaste 12 maande:**

a Het u gevind dat u nodig gehad het om meer van [NOEM DIE MIDDEL OF MIDDEL KLAS] om dieselfde effek te kry soos toe u begin het om die middel te gebruik ? NEE JA 1

b Toe u verminder het of gestop het om die [NAAM VAN MIDDEL OF MIDDELKLAS] te gebruik het u onttrekking simptome (pyn, bewe, koors, swakheid, diarree, naarheid, sweet, hartkloppings, probleme om te slaap , agitasie, angs, irritasie of depressie) ervaar ?
Of het u enige middels gebruik om te voorkom dat u siek (ONTTREKKINGSSIMPTOME) word of om beter te voel ?
INDIEN **JA** VIR ENIGE VAN BG. , MERK **JA** NEE JA 2

c Het u ooit ondervind dat wanneer u [NAAM VAN MIDDEL OF MIDDEL KLAS] gebruik het, u meer geneem het as wat u beplan het ? NEE JA 3

| | | | | |
|---|---|---|---|---|
| d | Het u probeer om op te hou of minder [NAAM VAN MIDDEL OF MIDDEL KLAS] te gebruik, maar nie geslaag nie ? | NEE | JA | 4 |
| e | Op die dae wat u [ NAAM VAN MIDDEL OF MIDDEL KLAS ] gebruik het, het u ‘n substansiële tyd (< 2 uur ) daaraan spandeer om dit te bekom, te gebruik of om van die effek daarvan te herstel of om daaraan te dink ? | NEE | JA | 5 |
| f | Het u minder tyd aan u werk, stokperdjies of saam met u familie of vriende spandeer a.g.v. die middel gebruik ? | NEE | JA | 6 |
| g | Het u aangehou om die [NAAM VAN MIDDEL OF MIDDEL KLAS] te gebruik alhoewel u dit vir u fisiese of psigiese siektes veroorsaak het ? | NEE | JA | 7 |

IS **3** OF MEER **K2** ANTWOORDE GEKODEER **JA** ?

SPESIFISEER MIDDEL(S) :

_____

| **NEE** | **JA** |
|---|---|
| ***MIDDEL(S) AFHANKLIKHEID HUIDIG*** | |

è

IS DIE PASIËNT POSITIEF GEKODEER VIR MIDDEL AFHANKLIKHEID ? NEE JA

K3 **In die laaste 12 maande :**

| | | | | |
|---|---|---|---|---|
| a | Was u geïntoksikeerd, hoog, of babelaas van [NAAM VAN MIDDEL OF MIDDEL KLAS], meer as een maal wanneer u ander verantwoordelikhede gehad het by die skool of werk of tuis ? Het dit enige probleme veroorsaak ? (SLEGS JA INDIEN DIT PROBLEME VEROORSAAK HET) | NEE | JA | 8 |
| b | Was u hoog of geïntoksikeerd van [NAAM VAN MIDDEL OF MIDDEL KLAS] in enige situasie waar u fisies ingevaar was (b.v. motor bestuur, of ‘n motorfiets, die gebruik van masjinirie, boot vaart, ens.) ? | NO | YES | 9 |
| c | Het u enige geregtelike probleme gehad a.g.v. die gebruik van [NAAM VAN MIDDEL OF MIDDEL KLAS] b.v. ‘n arrestasie of wangedrag ? | NO | YES | 10 |
| d | Het u aangehou om [NAAM VAN MIDDEL OF MIDDEL KLAS] te gebruik al het dit vir u probleme met u familie of ander persone veroorsaak ? | NEE | JA | 11 |

IS **1** OF MEER **K3** ANTWOORDE GEKODEER **JA** ?

SPESIFISEER MIDDEL(S) :

_____

| **NEE** | **JA** |
|---|---|
| ***MIDDEL(S) MISBRUIK HUIDIG*** | |

## L. PSIGOTIESE STEURINGS

VRA VIR 'N VOORBEELD VAN ELKE VRAAG WAT JA BEANTWOORD IS. MERK JA SLEGS INDIEN DIE VOORBEELD DUIDELIK WYS DAT DAAR 'N STEURING IN GEDAGTES OF PERSEPSIE IS OF INDIEN DIT NIE KULTUREEL TOEPASLIK IS NIE .

VOORDAT U DIT MERK, ONDERSOEK EERS OF DIE WANE AS « BISAR » BESKOU KAN WORD.

WANE IS BISAR INDIEN : DUIDELIK ONMOONTLIK , ABSURD, NIE VERSTAANBAAR EN KAN NIE SPRUIT UIT NORMALE LEWENS ERVARINGE NIE.

HALLUSINASIES IS BISAR INDIEN : 'N STEM KOMMENTAAR LEWER OP 'N PERSOON SE GEDAGTES EN GEDRAG, OF INDIEN TWEE OF MEER STEMME MET MEKAAR 'N GESPREK VOER.

---

Nou gaan ek u uitvra oor ongewone ervarings wat sekere individue mag ervaar.

| | | | | BISAR | |
|---|---|---|---|---|---|
| L1a | Het u al ooit geglo dat iemand op u spioneer of dat iemand 'n komplot teen u voer om u skade aan te doen ? | NEE | JA | JA | 1 |
| b | **INDIEN JA** : Glo u tans hierdie dinge ? | NEE | JA | JA è **L6a** | 2 |
| L2a | Het u al ooit geglo dat iemand u gedagtes kan lees of hoor of dat u iemand anders se gedagtes kan lees of hoor ? | NEE | | JA | 3 |
| b | **INDIEN JA** : Glo u tans hierdie dinge ? | NEE | | JA è **L6a** | 4 |
| L3a | Het u al ooit geglo dat iemand, of 'n mag buite u, gedagtes in u kop plaas wat nie u eie is nie, of u laat optree op 'n manier wat nie uself is nie ? Het dit al ooit gevoel asof u besete is ? | NEE | | JA | 5 |
| b | **INDIEN JA** : Glo u dit tans ? | NEE | | JA è **L6a** | 6 |
| L4a | Het u al ooit geglo dat spesiale boodskappe vir u deur die TV, radio of koerant gestuur word of dat 'n persoon wat u nie persoonlik ken nie besonders geïnterreseerd in u was ? | NEE | JA | JA | 7 |
| b | **INIDEN JA** : Glo u dit tans ? | NEE | JA | JA è **L6a** | 8 |
| L5a | Het u familie of vriende ooit enige van u menings of oortuigings vreemd of onrealisties gevind ? ENIGE WANE WAT NIE ONDERSOEK IS IN VRAAG L1 TOT L4, B.V. VAN GRANDIOSE, RUÏNEER, SKULD, HIPOKONDRIASE,... | NEE | JA | JA | 9 |
| b | **INDIEN JA** : Beskou hulle tans u menings en oortuigings as vreemd ? | NEE | JA | JA | 10 |
| L6a | Het u al ooit dinge gehoor wat ander nie kan hoor nie, soos stemme ? HALLUSINASIES IS « BISAR » SLEGS INDIEN DIE PASIËNT JA OP DIE VOLGENDE ANTWOORD: Het u 'n stem gehoor wat kommentaar lewer op u gedagtes of gedrag, of het u twee of meer stemme gehoor wat met mekaar praat ? | NEE | JA | JA | 11 |
| b | **INDIEN JA** : Het u hierdie dinge in die laaste maand gehoor ? | NEE | JA | JA è **L8b** | 12 |

L7a Het u al ooit visioene ervaar of dinge gesien wat ander nie kan sien nie terwyl u wakker was ? NEE JA 13
SLEGS JA INDIEN DIE VISIOENE KULTUREEL ONVANPAS IS.

b **INDIEN JA** : Het u hierdie dinge in die laaste maand gesien ? **:** NEE JA 14

OORDEEL/ MENING VAN ONDERVRAER :

L8b TOON DIE PASIËNT TANS ONSAMEHANGENDHEID, GEDISORGANISEERDE SPRAAK, OF LOS ASSOSIASIES ? NEE JA 15

L9b TOON DIE PASIËNT TANS GEDISORGANISEERDE OF KATATONIESE GEDRAG ? NEE JA 16

L10b IS DIE NEGETIEWE SIMPTOME VAN SKISOFRENIE B.V. BEDUIDENDE AFGESTOMPTHEID, ARMOEDE VAN SPRAAK (ALOGIA) OF 'N ONVERMOË OM 'N DOELGERIGTE AKTIWITEIT TE INISIEER OF VOL TE HOU (AVOLUSIE), PROMINENT GEDURENDE DIE ONDERHOUD ? NEE JA 17

L11 VAN **L1 TOT L10** :
- IS **1** OF MEER « **b** » VRAE **JA BISAR** ?

**OF**
- IS **2** OF MEER « **b** » VRAE **JA** (EERDER AS JA BISAR) ?

**NEE** **JA**

***PSIGOTIESE SINDROOM HUIDIG***

L12 VAN **L1 TOT L7** :
- IS **1** OF MEER « **a** » VRAE GEKODEER **JA BISAR** ?

**OF**
- IS **2** OF MEER « **a** » VRAE GEKODEER **JA** (EERDER AS JA BISAR**)** ?

(KONTROLEER DAT DIE 2 SIMPTOME GEDURENDE DIESELFDE TYDPERK VOORGEKOM HET)

**OF**
- IS **L11** GEKODEER **JA** ?

**NEE** **JA**

***PSIGOTIESE SINDROOM LEEFTYD***

L13a INDIEN **L11 JA** IS OF TEN MINSTE EEN **JA** VAN **L1** TO **L7** :

IS DIE PASIËNT POSITIEF VIR 'N MAJOR DEPRESSIEWE EPISODE (HUIDIG OF IN DIE VERLEDE) è NEE JA
**OF** 'N MANIESE EPISODE (HUIDIG OF IN DIE VERLEDE) ?

b INDIEN **L13a JA**
U het my vroeër vertel dat u 'n periode(s) gehad het toe u (depressief/ hoog/ aanhoudend geïrriteerd) gevoel het. Was die ervarings wat u beskryf het (SIMPTOME JA VAN L1 TOT L7) eksklusief beperk tot tye toe u depressief / hoog / geïrriteerd gevoel het ? NEE JA 18

IS **L13b** GEKODEER **JA** ?

**NEE** **JA**

***GEMOED STEURING MET PSIGOTIESE TREKKE HUIDIG***

è MEANS : **GO** TO THE DIAGNOSTIC BOX(ES) OF THIS MODULE, **CIRCLE NO** IN ALL OF THEM AND **MOVE** TO THE NEXT MODULE

## M. ANOREXIA NERVOSA

| | | | | | |
|---|---|---|---|---|---|
| M1 a | Hoe lank is u ? | \|__\|__\|__\| | | Ft ÿ<br>Ins ÿ<br>Cm ÿ | |
| b | Wat was u laagste gewig in die laaste 2 maande ? | \|__\|__\|__\| | | Lbs. ÿ<br>Kg ÿ | |
| c | IS DIE PASIENT SE GEWIG LAER AS DIE OOREENSTEMMENDE DRUMPEL VIR HAAR / SY LENGTE ? SIEN TABEL ONDER | è<br>NEE | JA | | 1 |

**In die laaste 3 maande :**

| | | | | |
|---|---|---|---|---|
| M2 | Ten spyte van hierdie lae gewig, het u probeer om nie gewig op te tel nie ? | è<br>NEE | JA | 2 |
| M3 | Het u dit gevrees om gewig op te tel of om vet te word, alhoewel u onder gewig was ? | è<br>NEE | JA | 3 |
| M4 a | Het u uself as vet beskou of gedink 'n gedeelte van u liggaam is te vet ? | NEE | JA | 4 |
| b | Het u gewig of liggaams vorm dit grootliks beïnvloed hoe u oor u self voel ? | NEE | JA | 5 |
| c | Het u gedink dat u huidige gewig normaal was of dat dit te veel was ? | NEE | JA | 6 |
| M5 | IS **1** OF MEER **M4** ANTWOORDE GEKODEER **JA** ? | è<br>NEE | JA | |
| M6 | SLEGS VIR DAMES : Gedurende die laaste 3 maande, het u al u menstruele periodes oorgeslaan op die datum wat hulle veronderstel was om voor te kom (toe u nie swanger was nie) ? | è<br>NEE | JA | 7 |

VIR DAMES : IS **M5** EN **M6** GEKODEER **JA** ?
VIE MANS : IS **M5** GEKODEER **JA** ?

| **NEE** | **JA** |
|---|---|
| ***ANOREXIA NERVOSA HUIDIG*** | |



TABEL LENGTE / GEWIGS DRUMPEL (LENGTE-SONDER SKOENE ; GEWIG- SONDER KLERE)

| LENGTE (cm) | | 140 | 145 | 150 | 155 | 160 | 165 | 170 | 175 | 180 | 185 | 190 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| GEWIG (kg) | Dames | 37 | 38 | 39 | 41 | 43 | 45 | 47 | 50 | 52 | 54 | 57 |
| | Mans | 41 | 43 | 45 | 47 | 49 | 51 | 52 | 54 | 56 | 58 | 61 |

DIE GEWIGS DRUMPEL BO IS BEREKEN AS 15% ONDER DIE NORMALE GRENS VIR DIE PASIËNT SE HOOGTE EN GESLAG, VOLGENS DIE VEREISTES VAN DIE DSM-IV.

è MEANS : **GO** TO THE DIAGNOSTIC BOX(ES) OF THIS MODULE, **CIRCLE NO** IN ALL OF THEM AND **MOVE** TO THE NEXT MODULE

## N. BULIMIA NERVOSA

| | | | | |
|---|---|---|---|---|
| N1 | In die laaste drie maande, het u eet »binges» of tye wanneer u 'n baie groot hoeveelheid voedsel binne 'n 2 –uur periode geeet het gehad ? | è NEE | JA | 8 |
| N2 | In die laaste 3 maande, het u eet binges» so gereeld as twee maal per week gehad ? | è NEE | JA | 9 |
| N3 | Gedurende hierdie «binges», het u gevoel dat u eetgewoontes buite beheer was ? | è NEE | JA | 10 |
| N4 | Het u enige iets gedoen om te verhoed of te kompenseer vir gewigs toename na hierdie «binges», soos om te vomeer, lakseer middels te gebruik, te vas, enemas, duiretikums of ander medikasie te gebruik ? | è NEE | JA | 11 |
| N5 | Beïnvloed u liggaamsgewig of vorm grootliks hoe u oor uself voel ? | è NEE | JA | 12 |
| N6 | VOLDOEN DIE PASIËNT AAN DIE KRITERIA VIR ANOREXIA NERVOSA ? | NEE | JA | 13 |
| | INDIEN **N6** = **NEE**, GAAN NA **N8** | | | |
| N7 | Kom hierdie «binges» slegs voor wanneer u onder _____kg/lbs.* is ?<br>* NEEM DIE DRUMPELGEWIG VIR DIE PASIËNT SE LENGTE / GEWIG TABEL IN ANOREXIA NERVOSA MODULE | NEE | JA | 14 |

IS **N5 JA** EN **N7 NEE** (OF OORGESLAAN) ?

| **NEE** | **JA** |
|---|---|
| ***BULIMIA NERVOSA HUIDIG*** | |

IS **N7** GEKODEER **JA**?

| **NEE** | **JA** |
|---|---|
| ***ANOREXIA NERVOSA Binge-Etery/Purging(reiniging) Tipe HUIDIG*** | |

è MEANS : **GO** TO THE DIAGNOSTIC BOX(ES) OF THIS MODULE, **CIRCLE NO** IN ALL OF THEM AND **MOVE** TO THE NEXT MODULE

## O. ALGEMENE ANGSSTEURING

O1 a Was u oormatig bekommerd of gespanne oor verskeie dinge van die daaglikse lewe, by die werk, by die huis of in u nabye kring gedurende die laaste 6 maande ? è NEE JA 1

MOENIE JA MERK INDIEN DIE FOKUS VAN DIE ANGS BEPERK IS TOT 'N ANDER STEURING WAT VOORHEEN ONERSOEK IS, SOOS OM 'N PANIEK AANVAL TE KRY (PANIEKSTEURING ) , OM IN DIE PUBLIEK VERLEË TE WEES (SOSIALE FOBIE ), GEWIG OP TE TEL (ANOREXIA NERVOSA) , OM GEKONTAMINEER TE WORD (OKS )...

b Is hierdie bekommernisse omtrent altyd teenwoordig ? è NEE JA 2

O2 Vind u dit moeilik om die bekommernisse te beheer of meng dit in met u vermoë om te fokus op wat u doen ? è NEE JA 2

VAN O3a TOT O3f, MERK DIE SIMPTOME WAT BEPERK IS TOT ENIGE STEURING WAT ONDERSOEK IS VOOR HIERDIE PUNT NEE .

O3 **Wanneer u angstig was gedurende die laaste 6 maande, het u , omtrent elke dag :**

a Rusteloos, angstig of by breekpunt gevoel ? NEE JA 3

b Gespanne gevoel ? NEE JA 4

c Moeg , swak of uitgeput gevoel ? NEE JA 5

d Dit moeilik gevind om te konsentreer of gevind dat u gedagtes stil staan ? NEE JA 6

e Geïrriteerd gevoel ? NEE JA 7

f Probleme gehad om te slaap (moeilik aan die slaap geraak,in die middel van die nag wakker geword, vroeg wakker geraak of te veel geslaap) ? NEE JA 8

IS **3** OF MEER **O3** ANTWOORDE GEKODEER **JA** ?

| **NEE** | **JA** |
|---|---|

***ALGEMENE ANGS STEURING HUIDIG***

è MEANS : **GO** TO THE DIAGNOSTIC BOX(ES) OF THIS MODULE, **CIRCLE NO** IN ALL OF THEM AND **MOVE** TO THE NEXT MODULE

## P. ANTISOSIALE PERSOONLIKHEIDSSTEURING (opsioneel)

P1 **Voor u 15 jaar oud was, het u :**

| | | | | |
|---|---|---|---|---|
| a | Herhaaldelik stokkies gedraai of weggehardloop van die huis gedurende die nag ? | NEE | JA | 1 |
| b | Herhaaldelik leuns vertel, bedrieg, gesteel of ander om die bos gelei ? | NEE | JA | 2 |
| c | Gevegte begin of ander geboelie, gedreig of geïntimideer ? | NEE | JA | 3 |
| d | Doelbewus dinge verniel of vure begin ? | NEE | JA | 4 |
| e | Doelbewus diere seer gemaak ? | NEE | JA | 5 |
| f | Iemand geforseer om seks te hê ? | NEE | JA | 6 |

è

IS **2** OF MEER **P1** ANTWOORDE GEKODEER **JA** ? NEE JA

P2 MOENIE JA MERK INDIEN DIE GEDRAG HIERONDER UITSLUITLIK POLITIES OF GODSDIENSTIG GEMOTIVEER IS NIE

**Vandat u 15 jaar oud was, het u :**

| | | | | |
|---|---|---|---|---|
| a | Herhaaldelik opgetree in 'n manier wat andere as onverantwoordelik beskou het, soos om nie te betaal vir dinge wat u skuld nie, om doelbewus impulsief te wees, of om nie te werk om uself te onderhou nie ? | NEE | JA | 7 |
| b | Dinge gedoen wat onwettig was al is u nie gevang nie (b.v., eiendom verniel, winkeldiefstal, diefstal, substanse verkoop, of 'n misdaad gepleeg) ? | NEE | JA | 8 |
| c | Gedurig betrokke geraak in fisiese gevegte (insluitend fisiese gevegte met u lewensmaat of kinders) ? | NEE | JA | 9 |
| d | Dikwels gejok of ander om die bos gelei om geld of plesier te verkry, of sommer net vir pret gejok ? | NEE | JA | 10 |
| e | Ander aan gevaar bloot gestel sonder om om te gee ? | NEE | JA | 11 |
| f | Nie skuldig gevoel nadat u iemand seer gemaak het of sleg behandel het nie, of voor gejok het, gesteel het van, of eiendom beskadig het nie ? | NEE | JA | 12 |

IS **3** OF MEER ITEMS VAN **P2** GEMERK **JA** ?

**NEE** **JA**

***ANTI SOSIALE PERSOONLIKHEID STEURING LEEFTYD***

# VERWYSINGS

Lecrubier Y, Sheehan D, Weiller E, Amorim P, Bonora I, Sheehan K, Janavs J, Dunbar G. The Mini International Neuropsychiatric Interview (M.I.N.I.), a short diagnostic interview : Reliability and validity according to the CIDI. *European Psychiatry*, 1997 ; **12** : 224-231.

Sheehan DV, Lecrubier Y, Harnett Sheehan K, Janavs J, Weiller E, Bonora LI, Keskiner A, Schinka J, Knapp E, Sheehan MF, Dunbar GC. Reliability and validity of the Mini International Neuropsychiatric Interview (M.I.N.I.) according to the SCID-P. *European Psychiatry*, 1997 ; **12** : 232-241.

Sheehan DV, Lecrubier Y, Harnett Sheehan K, Amorim P, Janavs J, Weiller E, Hergueta T., Baker R, Dunbar G. The Mini International Neuropsychiatric Interview (M.I.N.I.), : The development and validation of a structured diagnostic psychiatric interview. In press. *Journal of Clinical Psychiatry*, 1998.

Amorim P, Lecrubier Y, Weiller E, Hergueta T, Sheehan D. DSM-III-R Psychotic disorders : procedural validity of the Mini International Neuropsychiatric Interview (M.I.N.I.). Concordance and causes for discordance with the CIDI. *European Psychiatry*, 1998 ; **13** : 26-34.

The M.I.N.I. was developed simultaneously into French and English. The French and English original versions of the M.I.N.I. for DSM-IV were translated and can be asked to the authors (see page 3). An ICD-10 version is also available into French, English and Danish.

| **Translations** | **M.I.N.I. 4.4 or earlier versions** | **M.I.N.I. 4.6/5.0, M.I.N.I. Plus4.6/5.0, M.I.N.I. screen 5.0** |
|---|---|---|
| Afrikaans | | R Emsley, N. Keyter |
| Arabic | | O. Osman, E. Al-Radi |
| Basque | | In preparation |
| Bengali | | H. Banerjee, A. Banerjee |
| Brazilian | P. Amorim | In preparation |
| Catalan | | In preparation |
| Czech | P. Zvolsky | P. Zvolsky |
| Chinese | | L. Caroll |
| Croatian | | In preparation |
| Danish | P. Bech | P. Bech, T. Scütze |
| Dutch/Flemish | E. Griez, K. Schruers, T. Overbeek, K. Demyttenaere | I. van Vliet, H. Leroy, H. van Megen |
| Farsi/Persian | | K. Khooshabi, A. Zomorodi |
| Finnish | M. Heikkinen, M. Lijeström, O. Tuominen | M. Heikkinen |
| German | I. van Denffer, M. Ackenheil, R. Dietz-Bauer | M. Ackenheil, G. Stotz, R. Dietz-Bauer |
| Gujarati | | M. Patel, B. Patel |
| Greek | S. Beratis | T. Calligas, S. Beratis |
| Hebrew | J. Zohar, Y. Sasson | R. Barda, I. Levinson |
| Hindi | | K. Batra, S. Gambir |
| Hungarian | I. Bitter, J. Balazs | I. Bitter, J. Balazs |
| Italian | P. Donda, E. Weiller, I. Bonora | L. Conti, P. Donda, A. Rossi, M. Piccinelli, M. Tansella, G. Cassano |
| Japanese | | H. Watanabe |
| Latvian | V. Janavs, J. Janavs, I. Nagobads | V. Janavs, J. Janavs |
| Norwegian | G. Pedersen, S. Blomhoff | K. Leiknes, U. Malt, E. Malt |
| Polish | M. Masiak, E. Jasiak | M. Masiak, E. Jasiak |
| Portuguese | P. Amorim | P. Amorim, T. Guterres |
| Punjabi | | S. Gambir |
| Romanian | | O. Driga |
| Russian | | A. Bystitsky, E. Selivra, M. Bystitsky |
| Serbian | I. Timotijevic | I. Timotijevic |
| Setswana | | K. Ketlogetswe |
| Slovenian | M. Kocmur | M. Kocmur |
| Spanish | L. Ferrando, J. Bobes-Garcia, J. Gibert-Rahola | L. Ferrando, L. Franco-Alfonso, M. Soto, J. Bobes-Garcia, O. Soto, L. Franco |
| Swedish | M. Waern, S. Andersch, M. Humble | C. Allgulander, M. Waern, A. Brimse, M. Humble |
| Turkish | T. Örnek, A. Keskiner, I. Vahip | T. Örnek, A. Keskiner |
| Urdu | | A. Taj, S. Gambir |
| Welsh | | In preparation |

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**The Neural Correlates of Intimate Partner Violence in Women**

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**Abstract**

**Objective**: It is unclear whether changes in hippocampal volume after trauma exposure are due to trauma or its psychiatric sequelae, and there are few data available on white matter integrity after trauma exposure. This study aimed to examine hippocampal volume and white matter tracts in women with and without exposure to intimate partner violence (IPV), while controlling for comorbidity.

**Methods**: 19 women with IPV exposure in the last year, and 21 women without IPV exposure in the last year underwent structural magnetic resonance imaging (MRI) including diffusion tensor imaging (DTI) sequences. Additional data on alcohol use and presence of psychiatric disorder was collected. Differences in fractional anisotropy (FA) between the two groups were examined in relation to demographic measures, alcohol use and psychiatric disorder.

**Results**: IPV subjects did not demonstrate significantly different hippocampal volumes compared to subjects without recent IPV. The FA was significantly reduced in the body of the corpus callosum of the IPV subjects. Adjusting for age, alcohol use, smoking and psychiatric diagnosis did not change the significance of the result.

**Discussion**: The finding of no difference in hippocampal volume between the two groups is consistent with some studies. However, other studies examining trauma exposure without PTSD report on reduced hippocampal volumes in these subjects. It is possible that the severity of trauma or IPV exposure is one of the moderating factors in hippocampal volume changes. The finding of reduced FA in the body of the corpus callosum suggests altered integrity of this white matter tract in women exposed to IPV. The origin of this abnormality remains unclear. Our combined findings are similar to previous results of children with PTSD.

Key words: Corpus callosum, hippocampal volume, intimate partner violence, neuroimaging

## Introduction

Intimate partner violence (IPV) is a global public health problem. Population-based surveys from North America indicate that 1 in 4 women have experienced IPV in their lifetime, and 1 in 10 are current victims [1-2]. Similarly, a cross-sectional survey from South Africa found that the lifetime prevalence of women experiencing IPV was 24.6% , and 9.5% in the last year [3]. The high prevalence of adverse physical and mental health outcomes related to IPV is well established in the research literature [4-6]. In a review of mental health outcomes of women with IPV, victims of partner violence were up to 5 times more likely to develop depression, suicidality, PTSD and substance abuse compared to non victims [7].

Brain imaging has been used to explore the neurobiological correlates of trauma exposure. There is however, a dearth of neurological studies that specifically examine women with exposure to intimate partner violence. Some studies investigating PTSD in women have specifically recruited subjects with IPV exposure [8-11]. In one such study, the authors report that women exposed to IPV display deficits in executive functioning, working memory and visuoconstruction [11]. In another study, women with IPV were found to have smaller supratentorial cranial vault volumes that was largely due to reduced mesial temporal grey matter particularly in the parahippoocampal region, and reduced frontal and occipital grey matter regions [10]. Taken together, these findings suggest that frontal subcortical networks are implicated in women exposed to violence which corresponds with deficits in cognitive tasks that utilise these pathways. In another study, the neuronal integrity of the anterior cingulate in women with IPV was examined using single voxel proton magnetic resonance spectroscopy and correlated with neuropsychological

measures of executive functioning that are thought to rely on the intact functioning of the anterior cingulate [9]. Interestingly, there was no difference in metabolite ratios in the anterior cingulate of IPV subjects relative to controls. The IPV subjects displayed deficits in executive functioning; however, there was no significant relationship between the metabolite ratios and the measures of executive functioning. These findings are inconsistent with several previous functional neuroimaging studies of the anterior cingulate in PTSD subjects [12-14], and, with the only other study of neuronal metabolites N-acetylaspartate (NAA) in the anterior cingulate of subjects with PTSD, which reported on reduced NAA/Creatine in the anterior cingulate of maltreated children and adolescents with PTSD relative to traumatized subjects without PTSD [15]. It therefore remains unclear whether changes in the anterior cingulate are a unique feature of paediatric PTSD, or whether other brain structures are involved in IPV related exposure.

It is clear from the literature that neuroimaging studies of women exposed to IPV require replication. Furthermore, there are no studies that have examined white matter (WM) tracts in women with IPV. Given the discrepant findings of abnormalities in the hippocampus in women with IPV, examining the WM tracts that connect frontal-subcortical brain areas, may shed light on the effects of IPV on female brain structure. In light of limited neurobiological data on the effects of IPV exposure in women, our study aimed to evaluate hippocampal volume and the integrity of WM tracts in women with IPV exposure.

## Methods

### Subjects

Forty women were recruited from a rural community north of Cape Town. Subjects had been part of a larger clinical trial investigating the prevention of fetal alcohol

spectrum disorder through a series of brief interventions to change drinking behaviour in pregnant women [16]. We selected this sample on the basis of the high prevalence of alcohol abuse and IPV in that area. In addition, the field worker was familiar with these women through her work in the main study, which made it easier to recruit subjects given the sensitive nature of our study. Inclusion criteria were women aged 16 to 65 years. Subjects were excluded if 1) they were pregnant, 2) MRI was contra-indicated, 3) there was a history of a neurological disorder, including previous head injury, epilepsy, or cerebrovascular disease, or 4) current medical illness.

Interview

All participants were seen by a psychiatrist who completed the following questionnaires. The Abuse Assessment Screen (AAS) was used to classify participants as cases or controls: cases (n=19) were defined as women who reported IPV in the last year (score >1), and controls (n=21) were defined as women with no reports of violence in the previous year. The Alcohol Use Disorders Identification Test (AUDIT) and the Mini International Neuropsychiatric Interview (MINI), were used to obtain additional data on alcohol use, and to screen for the presence of psychiatric disorders, in particular PTSD and major depression. All participants gave written informed consent to participate in the study, which was approved by the University of Cape Town Research Ethics Committee.



MRI scanning

Scanning took place at the Cape Universities Brain Imaging Centre (CUBIC) in Tygerberg Hospital. Images were acquired using a 3 Tesla Siemens Allegra MRI scanner. Scans were taken up to 12 months post delivery to allow for any pregnancy related changes to resolve. T1 MPRAGE images were acquired in the sagittal plane with the following parameters: TR = 2200, TE = 5.2, FOV = 256 x 256 and 160 slices with a thickness of 1x1x1 mm. For the diffusion-weighted images (DWI) 3 averages

were obtained and each average consisted of 30 diffusion directions with b=1000 $mm/s^2$, 3 b=0 $mm/s^2$ images, TR = 8800 and TE = 88. The images were acquired as a mosaic (960 x 960 matrix) with 60 slices per volume and a slice thickness of 2.2mm

Hippocampal volume measurements

The FSL software package FIRST (FMRIB's integrated registration and segmentation tool) was used to determine volume and shape differences for the left and right hippocampus [17,18]. The process is as follows: the T1 images of each subject are transformed to Montreal Neurological Institute (MNI) 152 space by a 12-degree affine transformation. After the subcortical structures are aligned, a subcortical mask is applied to locate the different subcortical regions. Segmentation of these regions is then performed according to standardized shape models and voxel intensities. The absolute volumes of the individual structures are calculated, taking into account the transformation parameters of the initial registration. For this study, a boundary correction was applied to the hippocampus to determine which voxels along the boundary belong to the structure. A correction with a z-value of 3 was used. The segmentations and registrations were examined for any misregistration. A vertex statistical analysis was performed on the segmented hippocampus for each subject to examine whether there were any significant differences in hippocampus structure and shape between cases and controls. A total of 2 control and 4 IPV subjects were excluded from this analysis because of problematic registration and artefacts in the left hemisphere of the brain. Thus the final analysis was performed on 19 control subjects and 15 IPV cases.

Diffusion tensor imaging

Diffusion tensor imaging (DTI) is a non-invasive MRI technique that enables the measurement of the diffusion of water in tissue in order to produce white matter (WM) images. Fractional anisotropy (FA) is the quantitative measure of the directionality of diffusion which varies from zero (diffusivity equal in all directions) to one (entirely unidirectional). FA measures in DTI are indices of WM integrity.

Post-processing: Tract-based spatial statistics (TBSS) white matter FA analysis. The whole analysis was performed in the FMRIB's software library (FSL) [19]. For the data analysis, fractional anisotropy (FA) and mean diffusion (MD) maps were created by firstly doing brain extraction (BET) and then fitting a tensor model to the raw diffusion data using FMRIB's Diffusion Toolbox (FDT) [20]. The subjects FA data were aligned into a common space using the non-linear registration tool FNIRT [21]. The mean FA image was then created and thinned to create a mean FA skeleton that represents the centres of all white matter (WM) tracts common to the group. Each subject's aligned FA data were then projected onto the skeleton and resulting data fed into voxelwise cross-subject statistics. A two-tailed unpaired t-test with threshold-free cluster enhancement was used for the two groups. Only clusters that have a p-value <0.05 corrected for multiple comparisons was considered.



**Results**

The demographic variables in Table 1 were measured at entry to the larger study. There was no significant difference in demographic data between subjects with recent IPV exposure and control subjects.

The group of women who reported IPV in the previous year, scored significantly higher on the AUDIT, (p 0.001). Similarly, current psychiatric morbidity was

significantly greater in the IPV subjects relative to those women without reports of IPV in the previous year (p 0.003). Table 2.

IPV FIRST hippocampus volume analysis

A surface FDR correction for multiple comparisons was performed on the vertex maps of the left and right hippocampus. There was no significant difference in volume between IPV subjects and controls ($p>0.05$)

Fractional anisotropy (FA) was significantly reduced in the body of the corpus callosum only, in the IPV exposure subjects (p 0.0003). Figure 1.

Age, smoking, alcohol and psychiatric diagnosis can affect white matter tracts. For this reason age, smoking status, alcohol use and presence of psychiatric diagnosis were adjusted in the analysis, but this did not impact on the finding. Table 3



Discussion

This study yielded several findings. First, women with recent IPV use more alcohol and experience more psychiatric morbidity than women without recent IPV exposure. Second, the hippocampal volume in women with IPV is not reduced compared to women without IPV exposure in the last year. Third, a change in the integrity of WM tracts in the body of the corpus callosum is seen in women exposed to interpersonal violence. Fourth, the abnormality in the WM tracts of the corpus callosum in IPV subjects could not be accounted for by alcohol use or psychiatric diagnosis.

The adverse mental health sequelae of IPV are well documented in the literature [22-27]. Similarly, in our study, women with IPV exposure used more alcohol (26.3% alcohol dependence, 10.5% alcohol abuse) and had more psychiatric diagnoses (31.6% major depression, 15.8% anxiety disorders) than non-exposed subjects.

Previous literature on hippocampal volume after exposure to IPV has been inconsistent. One the one hand, a series of meta-analyses of structural brain abnormalities in PTSD, ( 6 studies, N=175) that compared hippocampal volume in persons exposed to trauma without PTSD and healthy controls (HC) reported that the trauma exposed non-PTSD subjects had significantly smaller bilateral hippocampal volumes compared to the HC subjects [28]. However, our negative finding is in keeping with data from several neuroimaging studies of PTSD subjects [10, 29-31].

One question is whether decreased hippocampal volume in PTSD is due to trauma exposure (such as IPV), or due to PTSD. Although only 1 of the 19 IPV-exposure subjects had PTSD in our study, in a similar study where half the IPV exposure subjects had PTSD, PTSD status did not significantly change the finding that hippocampal volume was not reduced [10]. Given that age, gender and PTSD severity, (which is plausibly genetically mediated) are some of the moderators of reduced hippocampal volume in subjects with PTSD, it is possible that the differential effects on brain structure can be accounted for by different types of stress exposure (combat versus interpersonal) or different sample compilations (male and female versus studies with only female subjects).



The corpus callosum is the largest white matter (WM) fibre bundle in the brain. Corpus callosum fibres connect corresponding areas of cortex between hemispheres. Given that the FA measurement error is lowest in regions with intrinsically high anisotropy, like the corpus callosum [32], it is more likely that our finding of significantly reduced FA in the body of the corpus callosum of IPV exposure subjects represents altered white matter integrity. It is also possible that our study lacked sufficient power to detect differences in FA in other WM tracts.

Several studies of paediatric PTSD have consistently reported FA reductions in the corpus callosum [33, 34]. Changes in the corpus callosum in paediatric PTSD are thought to be due to atrophy or neurodevelopmental deficits as a result of trauma exposure. This theory is supported by animal studies that describe abnormalities in the corpus callosum in male monkeys exposed to prenatal stress [35]. In a recent study using DTI, A.P. Jackowski et al report on reduced corpus callosum in maltreated children with PTSD, but conclude that it is impossible to say whether the changes in the corpus callosum are a function of PTSD or of maltreatment as all subjects had PTSD secondary to physical abuse, sexual abuse or exposure to domestic violence [36]. Similarly, in our study childhood trauma was not measured, therefore it is possible that the changes we report on in the corpus callosum , are as a result of childhood trauma. Another consideration might be, given that women with IPV exposure experience more psychiatric disorders including alcohol, relative to women without IPV exposure, might suggest that the morphological differences in the corpus callosum are due to developmental or genetic factors that predispose these individuals to mental health problems. However, alcohol use and psychiatric diagnosis was explored in our covariate analysis, and found not to significantly alter the result.



The corpus collosum plays a role in visuomotor integration and may interact in important ways with subcortical structures, notably basal ganglia, in response initiation [37]. Injury may be reflected in slowed response initiation and longer reaction times on tasks involving hemispheric transfer or integration between regions. Changes in the integrity of this structure may be associated with less efficient compensatory mechanisms. Although we did not perform neuropsychological tests, these data correlate with visuoconstruction deficits reported in women with IPV [11]. Given our finding of altered integrity of the corpus callosum, future work could

combine neuroimaging and neuropsychological data to see whether changes in corpus callosum integrity correlate with deficits in visuomotor integration. Further work is also required to elucidate the clinical significance of corpus callosum changes in women with IPV.

The significance of our findings is limited by, first the lack of longitudinal trauma data, and other variables like medication use, which is known to affect both grey and white matter brain structures. Second, IPV was only measured using the Abuse Assessment Screen (AAS) during a face to face interview. Administering the Conflicts Tactics Scale (CTS) in addition to the AAS, would improve the reliability of the measure of IPV and yield more information on the type and severity of interpersonal violence, which are important factors in determining ill health following IPV. The problem of possible under reporting of IPV during a face to face interview might be addressed through an anonymous self report questionnaire.

In summary, our study found that the corpus callosum was altered in women who reported interpersonal violence, while no difference was seen in the hippocampus. Further research is needed to replicate our findings. Integrative biobehavioural methodologies that combine neuropsychological testing with neuroimaging for example could be used to shed light on the clinical significance of abnormalities found in research settings in women with IPV. A greater understanding in this area may ultimately lead to improved treatments.

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interventions to change drinking behaviour for the prevention of fetal alcohol spectrum disorders [16]

**Table 1**

| Variable | Controls n=21<br>Mean or % | IPV Cases n=19<br>Mean or % | P-Value |
|---|---|---|---|
| **Age** | 25.4 | 22.1 | 0.094 |
| **Primary school education only** | 42.9 | 26.3 | 0.271 |
| **Further training after school** | 14.3 | 10.5 | 0.719 |
| **Employed** | 52.4 | 36.8 | 0.323 |
| **Live in town** | 76.2 | 89.5 | 0.262 |
| **In a relationship** | 52.4 | 63.2 | 0.490 |
| **Pregnant more than once** | 52.4 | 52.6 | 0.987 |
| **Smoker** | 35 | 63.2 | 0.077 |

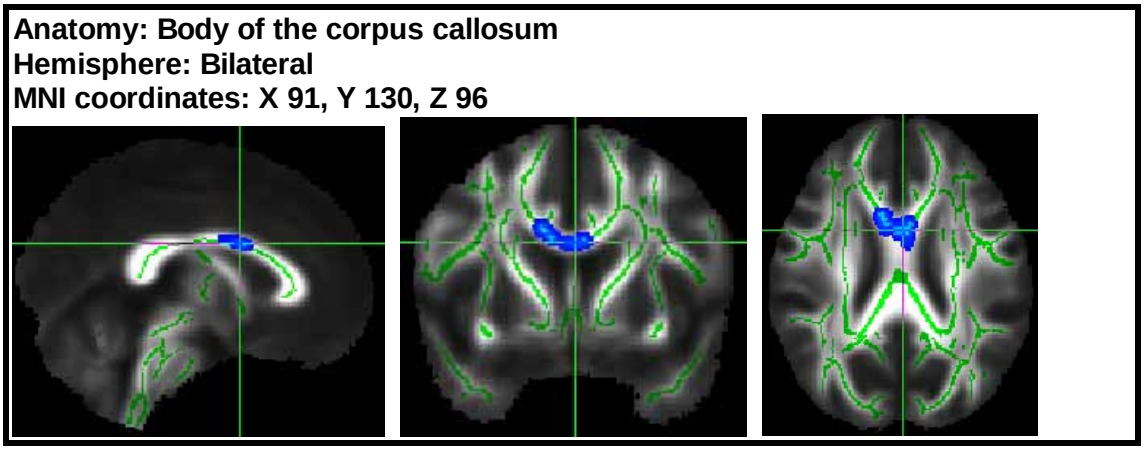
Table 2

| Variable | Contols n=21 Mean(%) | IPV Cases n=19 Mean (%) | P-Value |
|---|---|---|---|
| **Audit score** | 2.5 | 11.2 | 0.001 |
| **MINI** | 14.3 | 57.9 | 0.003 |
| **MDD** | 1 (4.8) | 6 (31.6) | |
| **Dysthymia** | 0 | 1 (5.3) | |
| **PTSD** | 0 | 1 (5.3) | |
| **GAD** | 0 | 1 (5.3) | |
| **SAD** | 1 (4.8) | 0 | |
| **Agoraphobia** | 2 (9.5) | 0 | |
| **Alcohol abuse** | 0 | 2 (10.5) | |
| **Alcohol Dependence** | 0 | 5 (26.3) | |
| **Metamphetamine dependence** | 0 | 1 (5.3) | |

Table 3

| | Controls n=21 Mean | Controls SD | Cases n=19 mean | Cases SD | P value |
|---|---|---|---|---|---|
| **FA Corpus Callosum** | 0.68 | 0.07 | 0.59 | 0.08 | 0.0003 |

Figure 1



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## Neurological studies of women with intimate partner violence

Intimate partner violence (IPV) is a global public health problem associated with significant morbidity. Epidemiologic studies estimate that 10-69% of women worldwide report IPV at some point in their life [1]. Psychiatric disorders commonly follow IPV exposure, particularly major depressive disorder, posttraumatic stress disorder (PTSD) and alcohol abuse. These sequelae contribute significantly (95%) to the burden of disease of IPV [2]. A better understanding of the mechanisms that lead to or protect against mental disorders following IPV exposure, may improve the treatment and management of these disorders.

Structural and functional neuroimaging is one approach to examine the neurobiological effects of IPV exposure. The objective of this paper is determine what is already known about the effects of interpersonal violence on the female brain, by reviewing all neurological studies that have examined women with IPV exposure. The evidence for the neurological correlates of IPV in women was obtained by searching PubMed and PsychInfo using the terms " intimate partner violence", "IPV related PTSD", "neuroimaging", "brain changes", " neural correlates" and "neurological" . Studies of women only as recipients of IPV were selected from English language journals. No limits were placed on dates and all study designs were considered in light of the paucity of data in this area. Four studies matched the search criteria [Table 1]. An analysis of each study follows.

Table 1 Neurological studies of women with IPV

| Study | Published | Design | Sample size | Neurological investigation |
|---|---|---|---|---|
| Stein M, Kennedy C et al [3] | 2002 | Case-control | IPV=39 (17 PTSD +, 22 PTSD - )<br>[a]NC=22 | Neuropsychological tests |
| Fennema-Notestine C, Stein M et al [4] | 2002 | Case-control | IPV=22 (11 PTSD +, 11 PTSD - )<br>NC=17 | MRI [b] |
| Seedat S, Videen J et al [5] | 2005 | Case-control | NC= 11<br>IPV=16 (7 PTSD+, 9 PTSD- ) | $^{1}$H-MRS [c] |
| Simmons A, Paulus M et al [6] | 2008 | Case-control | IPV+PTSD=15<br>NC=15 | f-MRI [d] |

a= non-traumatised controls
b= quantative magnetic resonance imaging
c= single voxel proton magnetic resonance spectroscopy
d= functional magnetic resonance imaging



There is general consensus from the research literature that individuals with PTSD display cognitive deficits. However, the types of cognitive deficits observed have varied across studies. Similarly, the literature is inconsistent regarding whether the cognitive deficits in subjects with PTSD are a feature of trauma exposure, or PTSD or an existing risk factor for both. The aim of Stein et al's study was to describe various domains of neuropsychologic function in 3 groups of women: those experiencing IPV who have developed PTSD, those experiencing IPV who have not developed PTSD and those who have not experienced IPV [3]. A total of 39 subjects with IPV (22 with current PTSD) and 17 non-victimized comparison (NC) subjects were recruited through advertisements and contacts with community services specialising in domestic violence. IPV subjects were matched with NC subjects in terms of age,

educational level and socioeconomic status. Exclusion criteria included history of psychotic disorder, drug and alcohol abuse, neurological disorders and current use of psychotropic medication. A number of standardised diagnostic tests and neuropsychological measures were applied to IPV and NC subjects (Table 2 and 3).

Table 2

Diagnostic and symptom severity measures

| Test | Assesses |
|---|---|
| CAPS (Clinician administered PTSD scale for DSM-IV) [a] | Presence and severity of PTSD (questions directed towards experiences of domestic violence) |
| PTSD, major depressive disorder, panic disorder, generalised anxiety disorder modules of SCID-P (Structured clinical interview for DSM-IV) [b] | Presence or absence of lifetime PTSD for any trauma other than domestic violence, presence of depression, panic disorder or generalised anxiety disorder |
| Center for Epidemiologic Studies-Depression Scale (CES-D) [c] | Level of depression in the previous week |
| Impact of event scale-Revised (IES-R) [d] | Severity of PTSD symptoms over the week before testing |
| Revised version Conflicts Tactics Scale (CTS-2) [e] | Severity of IPV |
| Dissociative Experiences Scale (DES-T) [f] | Pathologic dissociation |

a Blake et al,1995
b First et al 1997
c Radloff 1977
d Weiss and Marmar 1997
e Strauss et al 1996
f Bernstein and Putnam 1986

Table 3

Neuropsychological tests

| Cognitive Domain | Test |
|---|---|
| Attention and Working Memory | Wechsler Adult Intelligence Scale-III (WAIS-III) Digit Span subset [a]<br>Auditory Consonants Trigrams [b] |
| Psychomotor Speed | Part A of the Trail Making Test [c] |
| Verbal learning and memory | California Verbal Learning Test [d]<br>Verbal Paired Associates [e]<br>Logical Memory subset of WAIS-III [f] |
| Visuoconstruction and Visual memory | Continuous Visual Memory Test [g]<br>Rey-Osterrieth Complex Figure Test [h] |
| Language | Controlled Oral Word Association Test [h]<br>Vocabularly subset of WAIS-III [a] |
| Executive function | Part B of the Trail Making Test [c]<br>Category Test [e]<br>Stroop Colour-Word Interference Test [i] |

a Wechsler 1997a
b Lezak 1995
c Hays 1995, Reitan 1992
d Delis et al 1987
e Reitan and Wolfson 1993
f Weschler 1997b
g Trahan and Larabee 1988
h Spreen and Strauss 1998
i Golden 1978

The key findings from this study [3] are firstly that women with IPV, regardless of PTSD status, demonstrated uniformly similar cognitive deficits. In the IPV group, cognitive deficits were seen in measures of working memory, visuoconstruction, and executive functioning. In contrast to other studies of PTSD [7], there was no evidence for deficits in verbal learning or memory in the IPV subjects.

Secondly, although the PTSD + subjects had higher scores on measures of PTSD, dissociative and depressive symptoms and had been exposed to more severe IPV, no consistent relationship was found between these measures and any of the neuropsychological tests. This finding is in contrast to results from studies of male Vietnam veterans with PTSD and cognitive impairment [8]. The authors suggest that the small sample size, the difference in the subjects sampled (male versus female), and the difference in exposures (combat versus interpersonal violence), may account for the inconsistency in results. Furthermore, the neuropsychological differences may be explained by pre-existing differences in cognitive function that are more common in persons at risk of IPV.

In the second study under review, Fennema-Notestine et al examine brain morphometry in 22 women with recent IPV exposure (11+PTSD and 11 - PTSD) and in 17 women without significant trauma histories (NC) to test the hypothesis that the hippocampus is smaller in the group of women with IPV + PTSD [4]. The subjects in this neuroimaging study were part of the larger neuropsychological study already described above. Using magnetic resonance imaging (MRI), 3 mesial temporal lobe structures were analysed, the hippocampus, amygdala and parahippocampal gyrus. In addition, whole brain fluid volume and grey and white matter volumes were measured in the cortex and cerebellum for exploratory analyses.

Summary of results: Brain morphometry in female victims of intimate partner violence with and without posttraumatic disorder [4]

1. Bilateral hippocampal volume did not differ significantly between the IPV+PTSD group and the NC and IPV-PTSD groups. Even after controlling for different head sizes using supratentorial cranial vault volumes (STCN) proportionalised values, the results remained nonsignificant (p>0,05)
2. IPV group (N=22) displayed smaller STCN volumes compared to NC even after controlling for age and education level.
3. Raw volume measures of other mesial temporal lobe structures (amygdala and parahippocampal gyrus) : No significant difference was found between IPV+PTSD subjects and NC subjects. PTSD-IPV subjects had smaller mesial temporal lobes (MTL) relative to PTSD+IPV and NC subjects. This smaller volume in the PTSD-IPV group was mainly as a result of a larger difference in the right MTL grey matter, particularly in the parahippocampal region.
4. Cerebrospinal fluid spaces were examined first to assess whether there was brain volume loss in addition to smaller cerebral cranial vault size. Overall CSF (STCN fluid) and cortical (sulcal) fluid were not significantly different between groups for either raw or proportionalized (to STCN) measures.

However, regression analyses of ventricular volumes revealed differences between NC and IPV groups for both raw values and for volumes proportionalised to STCN. In this regression model, apart from education which was identified as an independent significant contributor, the remaining variance is attributed to the difference between groups. The difference in ventricular volume was significant between the NC and PTSD-IPV subjects only, and this may reflect tissue loss or neurodevelopmental effects specific to the PTSD-IPV subjects.

5. Cortical and cerebellar grey and white matter:

Cerebrum was more affected than the cerebellum in the IPV group when the volume of the cerebellar cranial vault was expressed as a proportion of the volume of the total cranial vault (STCN plus cerebellar vault).

Within the cerebrum, there was no difference between the NC and IPV group when each lobe was expressed as a proportion of the total cerebral volume (STCN grey and white matter).

Regional examination of grey and white matter volumes suggested a significant reduction in cortical grey matter and no difference in subcortical grey matter or cerebral white matter volumes in the IPV group relative to the NC group. The cortical grey matter difference was largely attributable to smaller frontal and occipital grey matter regions in IPV subjects.



While structural and functional imaging studies suggest several areas of dysfunction in subjects with PTSD, little is known about the relationship between these regional deficits and brain chemistry. Magnetic resonance spectroscopy (MRS), allows for neuronal metabolites N-acetylaspartate (NAA), choline (Cho), creatine (Cr), and myo-inositol (mI) to be measured and used as a proxy measure of neuronal density. In a study by Seedat et al, single voxel proton magnetic resonance spectroscopy ($_1$H-MRS) was used to investigate the neuronal integrity of the anterior cingulate in women with IPV exposure (with and without PTSD), compared with a group of healthy non-traumatized controls (NC), to test the hypothesis that subjects with PTSD have reduced concentrations of metabolites in the anterior cingulate, and that these reductions in metabolites are correlated with deficits in cognitive tests of executive function [5]. Empirical studies have implicated the anterior cingulate in mediating certain core PTSD symptoms, such as heightened fear conditioning and difficulty prioritizing stimuli [9,10 ]. Previous positron emission tomography and functional magnetic resonance imaging studies have documented differences in

regional cerebral metabolism in the anterior cortex [9, 11]. Furthermore, in a MRS study of maltreated children and adolescents with PTSD, De Bellis et al report significantly lower ratios of NAA to Cr in the anterior cingulate compared to healthy matched subjects [12]. These findings suggest that the anterior cingulate is an integral part of PTSD neural circuitry.

In this third study under review [5], 16 women with IPV (7 with PTSD and 9 without PTSD) and 11 NC were recruited from community services for abused women. In keeping with other studies, confounding was reduced by excluding subjects with lifetime histories of psychotic disorders, drug and alcohol abuse and preexisting neurological disorders. The diagnosis of PTSD was made using the Structured Clinical Interview for DSM-IV Diagnosis (SCID-P), and the nature and severity of IPV was determined using the Conflicts Tactics Scale (CTS-2). The neurocognitive tests of executive functioning that were administered included Part B of the Trail Making Test, cognitive set shifting and the Stroop Colour-Word Interference Task, a measure that is thought to rely on the intact functioning of the anterior cingulate [13-15]. Metabolites NAA, choline (Cho) and MI were measured relative to creatine (Cr) in the anterior cingulated and correlated with the neuropsychological measures.



The results overall yielded negative findings. Specifically, there was no significant difference in metabolite ratios in the anterior cingulated between the IPV and NC subjects. Interestingly, the ratios of Cho and MI relative to creatine were significantly higher in the PTSD+IPV subjects compared to the PTSD-IPV subjects (p=0,049). Considering that there was no significant difference in IPV severity between women with and without PTSD, the authors suggest that elevated levels of choline and myo-inositol in the anterior cingulate may represent a marker of PTSD rather than of abuse.

On measures of executive functioning, the IPV group performed significantly worse compared to the NC subjects (Table 4). Contrary to the hypothesis, the metabolite ratios in the anterior cingulate were not significantly correlated with the deficits in executive functioning in the IPV group.

Table 4

Results of neurocognitive testing [5]

| Executive Functioning | IPV subjects n=16 | Healthy controls n=7 | IPV vs Control subjects:P |
|---|---|---|---|
| Stroop mean total score | 41.7 +/- 8.3 | 54.3 +/- 0.0 | 0.001 |
| Stroop mean Word score | 96.3+/- 14.1 | 111.1 +/- 14.4 | 0.016 |
| Stroop mean Colour score | 71.8 +/- 9.7 | 88.9 +/- 12.5 | 0.001 |
| Trail Making Test Part B (time to complete) | 77.2 +/- 35.2 | 46.4 +/- 14.5 | 0.012 |



The final study under review describes the neural correlates of PTSD related hyperarousal or anticipatory fear. Simmons et al hypothesize that women with IPV related PTSD relative to non-traumatized control (NC), show increased anterior/middle insula activation during anticipatory processing, and that exaggerated insula reactivity is functionally connected to increased amygdala activity during the anticipation of aversive stimuli [6]. Also, given that the insula is thought to play a key role in the hyperarousal component of PTSD, the authors hypothesize that the anterior/middle insula activity would relate more strongly to hyperarousal symptoms and less strongly to re-experiencing and avoidance components of PTSD.

15 women with IPV-PTSD (3 subjects had sub-threshold PTSD) and 15 healthy controls completed a cued anticipation task (involving images of positive and negative events) during functional magnetic resonance imaging (fMRI). The diagnosis of PTSD was made using CAPS. No detail is given regarding the measure of IPV. Although 3 of the 15 women with IPV-PTSD, were sub-threshold for PTSD, their results were included in the final analyses as excluding them did not change the results in any meaningful way.

Summary of results: Functional Activation and Neural Networks in Women with Posttraumatic Stress Disorder Related to Intimate Partner Violence [6]

Behavioural

There was no significant difference in response latency and accuracy between the IPV-PTSD and NC subjects during the task.

Brain Activation

Both groups of subjects had increased activation of bilateral anterior insula during anticipation of negative compared to positive stimuli. The IPV-PTSD subjects had greater activation in the right anterior/middle insula in anticipation of negative stimuli compared to the NC subjects.

Functional Connectivity

Functional connectivity between activation in bilateral anterior insula and bilateral amygdala and between right anterior/middle insula and bilateral amygdala were significantly weaker in IPV-PTSD relative to NC subjects.

Brain Behaviour Relationships

In the IPV-PTSD group there was a positive correlation between the IES-R Hyperarousal scores and activity in the left anterior insula.

Taken together, these data suggest that in women with IPV-related PTSD: 1) the anterior and anterior/middle insula are important in cued anticipation of negative stimuli; 2) subregions of the insula, such as the anterior/middle insula, are hyperactivated during negative anticipation; and 3) anterior/middle insula activity might be most strongly related to symptoms of hyperarousal in IPV related PTSD.

This literature review yielded 4 case-control studies with heterogeneous hypotheses and outcome measures in women with IPV. The overall quality of the studies was good. Details of how the subjects were selected were provided. All studies used valid and reliable questionnaires to measure IPV and other variables such as PTSD and depression. Most of the subjects were recruited from community centers that were involved with domestic violence. It is possible that women who seek help for IPV differ from women who fail to report IPV. This limits the generalisability of the findings.



In summary, although the findings from the studies require replication, what they suggest is that women with IPV have a subtle pattern of cognitive impairment, with minor deficits seen in working memory, executive function and visuoconstruction. Structural brain changes are also reported in women with IPV. These differences include smaller supratentorial cranial vaults and smaller frontal and occipital grey matter volumes. Unlike in PTSD, neuronal integrity of the amygdala appears unaltered in women with IPV who display deficits in executive functioning. Taken together, these data suggest that IPV exposure is associated with dysfunction of frontal-subcortical networks. Finally, in women who develop PTSD as a result of IPV,

hyperactivity of the insula in anticipation of negative events is strongly related to hyperarousal symptoms of PTSD.

This review underscores the need for more research on the effects of violence against women. Although some work shows that women with IPV exposure have neurological deficits and structural brain changes, future longitudinal studies are required to determine causality of the neurobiological differences seen in women with and without IPV. Furthermore, integrated methodologies are needed to translate neuropsychological and neuroimaging results into the real world. The functional significance, for example, of executive functioning difficulties in victims of IPV may make individuals more susceptible to violence or influence their ability to leave a violent partner. In conclusion, refining our understanding of the pathways that lead to adverse health outcomes related to IPV creates opportunities for developing better interventions and treatments for the disorders associated with IPV.



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