

# Evaluation of the efficacy of a South African psychosocial framework for the rehabilitation of torture survivors

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## Key issues box:

- When treating torture survivors in developing countries, it is essential to consider the inherent stressors and daily traumas in these environments.
- To assist with the psychosocial impacts due to torture, an evidence-based, contextually appropriate psychosocial rehabilitation framework has been developed by the Centre for the Study of Violence and Reconciliation.
- Following a 3-month intervention based on this psychosocial framework, torture survivors' anxiety and functioning improve, despite harsh contextual realities.
- However, ethical complexities and high levels of participant attrition during longer therapeutic intervention present challenges to experimental endeavours designed to test the efficacy of the rehabilitation framework.

## Abstract

**Introduction:** To address the consequences of past torture experiences as well as current traumas and daily stressors, the Centre for the Study of Violence and Reconciliation (CSVR) developed a contextually appropriate psychosocial framework for the rehabilitation of individuals who have been affected by torture. **Method:** To test the efficacy of this framework, a quasi-experimental study was conducted with torture survivor clients of the CSVR who met the 1985 United Nations Convention Against Torture (UNCAT) definition. A comparison group of clients ( $n=38$ ) was initially included on a waiting list and thereafter received treatment, whilst the treatment group of clients ( $n=44$ ) entered straight into treatment. **Results:** Baseline t-test comparisons conducted on 13 outcome indicators revealed significantly better initial psychological health and functioning of clients in the treatment group than those in the comparison group, with moderately large differences on PTSD, trauma and anxiety, and strong difference in depression scores. Three-month follow-up comparisons using the conservative Wilcoxon test revealed significantly greater improvement on the functioning and anxiety indicators of the treatment group relative to the waiting-list comparison group (odds ratios = 2.49 and 2.61 respectively). After a

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further three months, when treatment was based on the CSVR framework for both groups, fewer than half the respondents remained in the study (n=20 in the treatment group; n=16 in the comparison group), and the Wilcoxon repeated measures test results on changes since baseline were counter-intuitive: for these remaining clients, there were now more significant outcome improvements for the comparison group than for the treatment group. However, the relative odds ratios for the groups were not significant for these indicators. Furthermore, the clients who dropped out from the treatment group had shown overall improvement in their psychological health and functioning in the initial three months of the study, whereas those who dropped out from the comparison group had shown improvements on fewer indicators. Thus, the research findings on the efficacy of the framework are inconclusive. **Discussion:** We suggest that this inconclusiveness can be explained by the severe challenges and ethical complexities of psychosocial research on vulnerable groups. The study highlights the serious problem of attrition of participants in the treatment programme which affected the overall study, and which may explain findings that at first appear counter-intuitive.

### Introduction

Continuing traumas, daily stressors and trauma reactions from past traumas are characteristic of torture survivors in South Africa. Consequently, in 2013, the Centre for the Study of Violence and Reconciliation (CSVr) based in Johannesburg, designed a contextually appropriate, evidence-based psychosocial framework for guiding the long-term rehabilitation of individual survivors of torture (Bandeira et al., 2013). This paper

presents this framework and describes a quantitative study designed to examine the effectiveness of its use for torture rehabilitation.<sup>1</sup>

### Torture and its consequences

Torture is a gross human rights violation that distresses the individual, family, community and society at large. Despite a number of international conventions prohibiting torture and cruel and degrading treatment (CIDT), torture is still practised in more than 140 countries internationally, and still widely practised in Africa where it has been criminalised in only 10 countries (Amnesty International, 2014). Sub-Saharan Africa hosts the largest number of refugees internationally, with South Africa receiving most of the asylum seekers in Africa (McCull et al., 2010; UNHCR, 2015). Many of these people are likely to have been tortured in their country of origin or in transit (McCull et al., 2010). Within South Africa, current victims of torture include youth in conflict with the law, non-nationals, and people who are in the wrong place at the wrong time (Bantjes, Langa, & Jensen, 2012; Langa, 2013).

The consequences of torture may be categorised broadly as physical, psychological and social. The physical consequences may be complicated by the psychological consequences (Quiroga & Jaranson, 2005). Similarly, torture-related mental health problems can cause physical and social problems which impact on both the personal and social functioning of survivors

<sup>1</sup> While the intervention was named a "model", due to the multi-modal nature of the document, it was felt to be more representative to call it a multi-modal framework for the rehabilitation of torture survivors.

(Baird, Williams, Hearn, & Amris, 2016). The physical sequelae of torture include pain - often chronic, disability and medical conditions (Harlacher, Nordin, & Polatin, 2016; Jørgensen, Auning-Hansen, & Elklit, 2017; Patel, Kellezi, & Williams, 2014).

The psychological consequences of torture are often viewed in terms of posttraumatic stress disorder (PTSD) and major depressive disorder (MDD) (Harlacher et al., 2016; Higson-Smith, 2013). Lesser acknowledged psychological consequences include cognitive impairment, decreased functioning, sleep disturbances, memory problems, attentional deficits and anger. Co-morbid psychiatric conditions include depression, suicide, psychosis and substance abuse (Bandeira, 2013; Quiroga, 2017; Quiroga & Jaranson, 2005).

The social consequences of torture impact on the social wellbeing of the survivor. These effects include the loss of “employment, status, family and identity” (Higson-Smith, 2013, p.165), separation from loved ones (Higson-Smith, 2013; Quiroga & Jaranson, 2005), the loss of functioning and safety, and loss of cultural and community connections (Higson-Smith, 2013).

### **Living in contexts of continuing threat and daily stress**

Vulnerability to mental health challenges has been linked to pre-migratory exposure to war trauma and torture, the migration process itself, and the post-migratory stressors of host countries which include poverty and inadequate housing, and difficulties with asylum procedures (Bogic, Njoku, & Priebe, 2015; Buhmann, Mortensen, Nordentoft, Ryberg, & Ekstrøm, 2015; Jaranson & Quiroga, 2011; Jørgensen et al., 2017; Stammel et al., 2017).

Although the South African Constitution (Republic of South Africa, 1996) and the Refugee Act (Republic of South Africa, 1998) provide basic civil and political rights such as free basic healthcare, access to education and employment to refugees and asylum seekers regardless of nationality and legal status, in reality these constitutional rights may be denied (Bandeira, 2013; Higson-Smith, 2013; Langa, 2013; Patel et al., 2014; Quiroga & Jaranson, 2005). Refugees and asylum seekers experience high levels of crime and violence, xenophobia and exploitation (Bandeira, Higson-Smith, Bantjes, & Polatin, 2010; Higson-Smith, 2013; Langa, 2013; Mohamed, Dix-Peek, & Kater, 2016), and the South African asylum-seeking process has been associated with inconvenience, cost and distress (Higson-Smith & Bro, 2010; Langa, 2013). Continuing traumas threaten the survival of many refugees and asylum seekers through ongoing threats from the police, government officials and community members, and through domestic violence, sexual violence and xenophobia (Higson-Smith, 2013; Mohamed et al., 2016). Such traumas “may influence the way that survivors respond or adapt to their precarious circumstances, but it is the circumstances themselves that produce and maintain the client’s psychological state” (Higson-Smith, 2013, p. 166). Fear, anger and distress, emotional collapse, helplessness and hopelessness (Bandeira, 2013; Kaminer & Eagle, 2010) are associated with daily stressors of documentation problems, concerns over the health and schooling of family members, accommodation problems, unemployment, poverty, loss of social and material support, ostracism and lack of security (Bandeira et al., 2010; Higson-Smith, Mulder, & Masitha, 2007; Miller & Rasmussen, 2010).

### **Research on treatment approaches for torture survivors**

There are few scientific research studies on the treatment of torture survivors as clinicians are inclined to prioritise direct services to clients over research processes. Ethical concerns of differential treatment of clients in control trials (Jaranson & Quiroga, 2011; Stammel et al., 2017), the expense of scarce resources of rehabilitation programmes (Bandeira, 2013), and generalisability of study results (Pérez-sales, Witcombe, & Otero Oyague, 2017) are among the challenges of outcome studies.

The few experimental or quasi-experimental designs on torture survivors are usually affected by small sample sizes, the lack of control groups (Jaranson & Quiroga, 2011) and instruments with limited validity and reliability often focused only on improvement in PTSD and MDD (Jaranson & Quiroga, 2011). Meta-analyses of randomised control trials illustrate improvements of generally small effect sizes in PTSD and depression when using Cognitive Behavioural Therapy (CBT) and Narrative Exposure Therapy (NET), with moderate improvement on follow-up (Patel et al., 2014). However, exceptional experimental studies do exist, with substantial improvements found using the Common Elements Treatment Approach, compared to the less effective Cognitive Processing Therapy (Weiss et al., 2015). Quasi-experimental and outcome research on the rehabilitation of torture survivors provides further support for CBT (Halvorsen & Stenmark, 2010; Neuner et al., 2010) and NET (Dibaj, Overaas Halvorsen, Edward Ottesen Kennair, & Inge Stenmark, 2017; Hansen, Hansen-Nord, Smier, Engelkes-Heby, & Modvig, 2017), culturally tailored health promotion intervention (Berkson, Tor, Mollica, Lavelle, & Cosenza, 2014)

and educational groups (Phaneth, Panha, Sopheap, Harlacher, & Polatin, 2014). Furthermore, the literature reviewed indicates a strong prevalence of European and North American studies on the rehabilitation of torture survivors, with few outcome studies based in Africa. There is clear need for scientific/ experimental research in this area of work in an African context.

### **The CSVR multi-modal framework for the psychosocial rehabilitation of individual survivors of torture**

Given the dire contextual realities in which many torture survivors live, research on the effectiveness of treatment frameworks needs to include psychological and social health as consequences of torture (Patel, Kellezi, & Williams, 2014) in addition to the usual consequences of PTSD and MDD (Bandeira, 2013; Higson-Smith, 2013). Accordingly, the Centre for the Study of Violence and Reconciliation (CSVr) developed a multi-modal guiding framework for the rehabilitation of individual torture survivors that takes into account their lived realities of continuing traumas and ongoing daily stressors (Bandeira et al., 2013).

The development of the multi-modal CSVr model, hereafter referred to as the CSVr framework, was based on a literature search, analysis of intervention process notes of CSVr clinical staff, and a Delphi process for expert consensus on the most severe impacts of torture and the most appropriate methods of torture intervention in a South African context. There was consultation between the research and clinical teams on the categorisation of the impacts, their assessment and the most appropriate intervention approaches. As a result, the CSVr framework comprises the 18 most severe impacts of torture (14 after grouping the impacts) in contexts such as those found

in South Africa, and the most appropriate intervention strategies associated with each (Table A - 1, numbered alphabetically per area). Aspects of trauma-focused CBT (TFCBT), NET, dialectical behavioural therapy, supportive therapy, problem solving and solution-focused therapy underpin therapeutic interventions in the framework, with an emphasis on empowerment. As such, the framework is considered to be multi-modal and informed by multiple theories.

Many centres adopt a multi-disciplinary, multi-modal, or “common-sense” approach to psychosocial interventions (Pérez-sales et al., 2017) in which the therapist chooses from different modalities according to the needs of the torture survivors. These approaches provide a more meaningful personalisation of the survivors’ needs, which together with a clear therapeutic relationship and culturally tailored goals, may be more appropriate than a rigid “one-size-fits-all” therapeutic model. While there are several multi-modal treatment approaches for assisting torture survivors (Drozdek, 2015; Stammel et al., 2017), the CSV framework offers clearly articulated therapeutic guidance relevant to South African and developing contexts. For example, it provides clear outlines for the role of clinicians in attending to the therapeutic needs of clients, and for the “core business” of the CSV clinical team, both essential therapeutic elements for maintaining therapeutic boundaries, empowering clients and increasing their resilience. Although it is assumed that what the client brings to therapy will be the focus of the session, the CSV framework provides guidelines on how to assist clients when certain needs arise, for example:

- Lack of safety, repeated victimisation and high levels of violence in a South African context:

Given the reality of unsafe circumstances, it may be appropriate that clients’ reactions include paranoia and hypervigilance. The clinical approach outlined in the framework uses reality testing, dealing with perceived threats, safety planning, skills development and symptom management to assist clients to reduce repeated victimisation and increase their skills to ensure their continued safety.

- Continuing traumas while dealing with past traumas and torture experiences: The framework provides guidelines on how clinicians may help clients understand their reactions to past traumas and how these reactions relate to their responses to the ongoing traumas that may affect them.
- Managing relationships with service providers, family members and community members: The framework provides guidelines on how clinicians may assist clients to deal with their emotional reactions to traumas, and to build the social capital necessary to maintain relationships and obtain services, for example, medical and legal assistance or documentation from the Department of Home Affairs.

### Research design

The design of the current research is described as quasi-experimental. It comprises two groups of participants, both groups observed over six months but differentiated according to when their participants approached the Centre, when they commenced treatment with the CSV framework, and the duration of treatment based on the CSV framework (Figure 1). The ‘treatment’ group comprised clients who came for counselling between July 2014 and December 2015 and were treated based

on the CSVR framework for six months. The ‘comparison’ group comprised clients who came for counselling at the Centre between January and June 2014 and were placed on a 3-month ‘Waiting list’ condition before commencing three months of treatment based on the CSVR framework.

Psychological wellbeing and functioning were measured three times: participants in the treatment group were measured before the start of the CSVR intervention treatment (T1), three months after the start of CSVR framework treatment (T2), and after a further three months of the CSVR framework treatment (T3); participants in the comparison group were measured before the start of a 3-month waiting period (T1), at the end of the 3-month waiting period (T2), and then three months after the start of the CSVR framework treatment (T3) (see Figure 1).

Written informed consent was obtained from all participants. Ethical clearance was provided by an internal CSVR ethics committee as well as by external experts in the violence and/or torture field, including a lecturer at a Johannesburg-based university and two partners working at international NGOs providing services to survivors of torture. This approach to ethical clearance was necessary as there is no overarching national ethics body in South Africa, and CSVR is not affiliated with a university.

### Hypotheses

As the treatment group received specialised counselling for the first three months and the comparison group received less specialised communication (as part of the waiting list protocol) for their first three months, it was hypothesised that there would be greater improvement in the psychological and functioning measurements from T1 to T2 for the treatment group than

for the comparison group. Secondly, it was hypothesised that there would be greater improvement in the psychological and functioning measurements from T1 to T3 for the treatment group than for the comparison group, as the treatment group received treatment based on the CSVR framework for six months, while the comparison group received this treatment for three months only following the 3-month waiting list condition.

### Methods

#### *Procedure*

The treatment group received treatment based on the CSVR framework for six months; the comparison group received an initial 3-month waiting condition before receiving treatment based on the CSVR framework for three months.

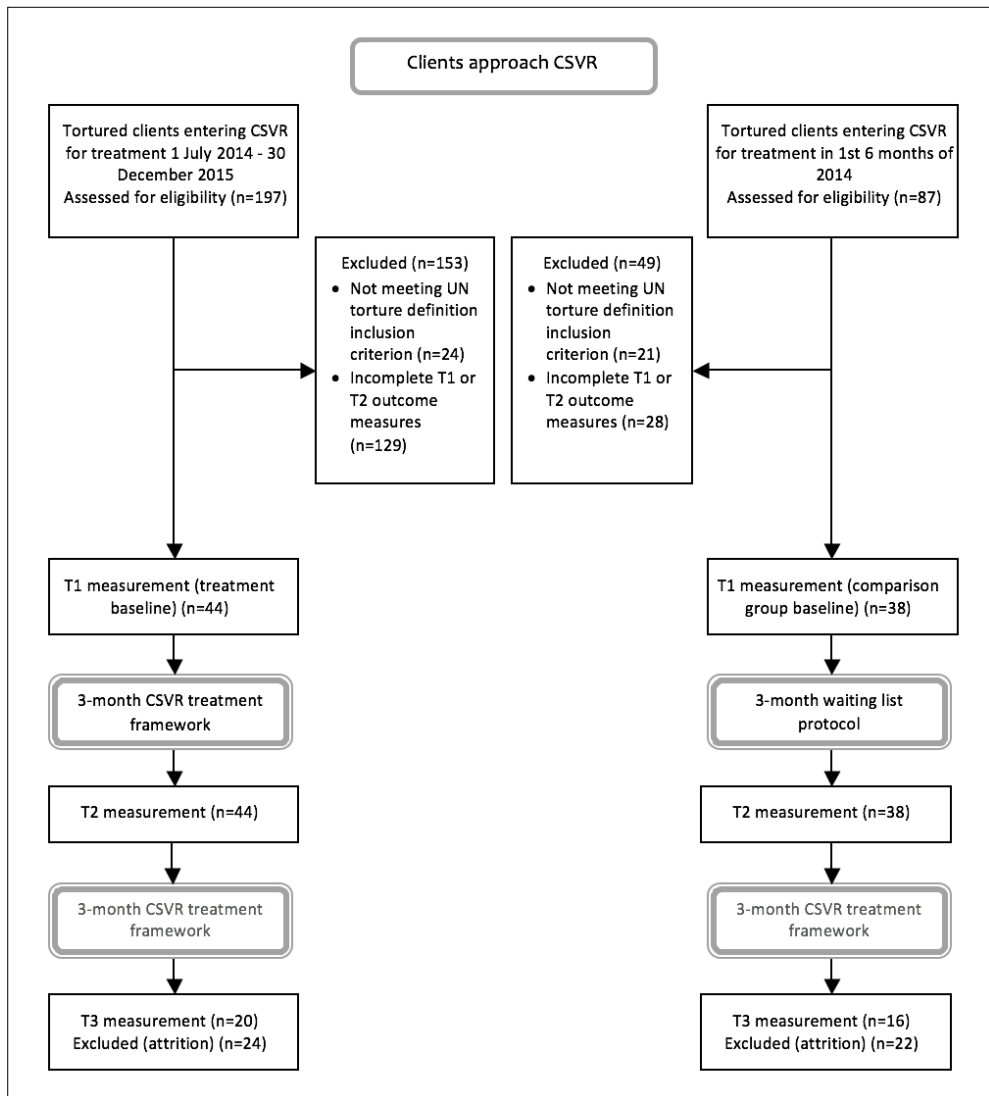
In the 3-month waiting condition, a clear waiting list management took place. A trained trauma professional phoned clients in the comparison group every two weeks to check that they still wanted to come for counselling, and to refer clients for medical, legal and humanitarian assistance if necessary. This condition compared with clients who went straight into treatment using the CSVR framework (see *The CSVR multi-modal framework for the psychosocial rehabilitation of individual survivors of torture*, on page 37). Emergency cases in both groups (clients experiencing psychosis, who were suicidal or other emergencies) were contained and referred for psychiatric assistance at a local hospital, or for medication from the consultant psychiatrist at the CSVR.

Baseline measures were carried out using the same instrument at the start of the CSVR treatment condition of the treatment group, and at the start of the waiting time condition of the comparison group (T1). A

second set of measures was carried out three months after commencement of the CSVr condition of the treatment group, and three months after the start of the waiting time condition of the comparison group (T2). A third set of measures was carried out three months after the second set of measures,

i.e. six months after commencement of the CSVr condition of the treatment group, and three months after commencement of the CSVr condition of the comparison group (T3) - see Figure 1.

Every two weeks, clinicians participated in supervision sessions which focused



**Figure 1:** Study procedure

both on fidelity to the framework as well as guidance with therapeutic concerns. Supervisors ensured that clinicians followed the framework and concurrently documented which aspects of the framework were utilised using a fidelity checklist. Any difficulties with the implementation of the framework were discussed with the researchers and indicated in the fidelity checklist.

### *Participants*

All participants were selected according to the 1985 UNCAT definition of torture (United Nations General Assembly, 1985) and were over 18 years old. No substantial historical events were noted for the 6-month period that separated the groups.

*Participants in the treatment group:* The participants in the treatment group were selected from clients who approached the CSVR between 1 July 2014 and 30 December 2015. Over this period, 197 clients were screened, and 24 clients excluded based on the UN torture definition, and a further 129 clients excluded due to incomplete T1 or T2 outcome measures. Thus 44 clients had completed both their baseline assessment and a three-month follow-up and were included in the treatment group. Of this group, 20 completed their six-month follow-up and were included in the follow-up study (Figure 1).

*Participants in the comparison group:* The participants in the comparison group were selected from clients who approached the CSVR from January to June 2014. Over this period, 87 clients were screened, 66 of whom met the inclusion criteria for the waiting list group, with 21 excluded as they had not experienced torture according to the UN torture definition. A further 28 clients were then excluded as they had not completed a follow-up assessment, leaving 38 clients as participants in the comparison group. These 38 clients had completed a comparison

(waiting list) baseline (T1), were included in the waiting list group, and had also completed a treatment baseline (T2). At T3, 16 participants from this group remained, having completed the waiting list baseline, treatment baseline and 3-month follow-up assessment, and these 16 were included in the follow-up study (Figure 1).

*Assessment measures:* The assessment tools used for all clients at T1, T2 and T3 included the Harvard Trauma Questionnaire (HTQ) measuring posttraumatic stress disorder (PTSD), clients' self-perception of functioning and overall trauma (Harvard Program in Refugee Trauma, 1992), the Hospital Anxiety and Depression Scale (HADS) measuring anxiety and depression (Zigmond & Snaith, 1983), the De Jong Gierveld Loneliness Scale measuring clients' emotional loneliness and social loneliness (de Jong Gierveld & Van Tilburg, 2006), the number of areas of pain in the body,<sup>2</sup> and management of aspects of functioning.<sup>3</sup> Reliability measures are presented in Table A - 2.<sup>4</sup>

All assessments were administered by trained psychologists or social workers. Translation through interpretation was

<sup>2</sup> The total number of areas of pain was based on the areas of pain in the body pointed out or indicated verbally.

<sup>3</sup> For management of aspects of functioning, four Likert-type scaled questions were adapted from the International Classification of Pain and Disability (ICF) (WHO, 2001): Family-related stressors, External stressors (excluding family-related stressors), Managing situations that made the client angry, and Psychological or emotional functioning. Scale responses ranged from managing very poorly, to managing very well.

<sup>4</sup> As Cronbach's coefficient  $\alpha$  is correlated with the number of items in the scale, average inter-item correlations are also presented as their values are independent of scale length (Table A - 2).



provided to clients in the main languages of clients who come to the clinic. These include French, Swahili, Amharic, Somali and Lingala. All interpreters were trained on the assessment tools.

*Analysis methods:* Initially the baseline (T1) psychological and functioning measurement means of the treatment and comparison groups were compared using *t* tests and Cohen's *d* effect sizes, and categorical variables compared via the Chi square test. Thereafter the mean changes of the two groups were compared for the first three months (T1 to T2) and then for the six month period (T1 to T3) via mixed analysis of variance (ANOVA).<sup>5</sup> In both cases, the ANOVA interaction effects were examined for evidence of a significant differential pattern in the mean scores across the time periods depending on the group, and partial eta-squared effect sizes were used as measures of the strength of differences. Where necessary, the Scheffé *post hoc* test was used to locate significant differences between means. In view of the multiple violations of the assumptions of the mixed ANOVA analyses, the conservative non-parametric Wilcoxon signed-ranks test was used on the separate groups. In addition, the odds ratio was used to indicate effect sizes for the individual groups, and for assessing the odds of improvement in the treatment group relative to the comparison group.<sup>6</sup>

Finally, *post hoc* analyses were used to examine the effects of the higher than expected attrition rate of respondents of the two groups who dropped out of the study after T2, i.e. during the 3-month counselling period between T2 and T3. This comparison was deemed necessary to examine whether a systematic bias may have been added to the data at T3, should the participants who left the comparison group after T2 differ from the participants who left the treatment group after T2. Such a situation would bias the samples and the results of the T1-T3 comparison relevant to the second hypothesis. This analysis was a simple examination of the demographics, as well as of the direction of the mean differences for each scale from T1 to T2 for the participants in each group who dropped out after T2. No other *post hoc* analyses on the results are presented.

## Results

Table 1 shows details of the participant characteristics for both groups. Approximately half of the participants were male, fewer than 10% were South Africans, and the dominant groups were from Congo (DRC), Ethiopia and Somalia. Over half were living with a partner, spouse, family member or friend, approximately 80% were either asylum seekers or refugees, and fewer than half of the participants of each group had experienced torture within the past year in each group (a third of the comparison versus 39% of the treatment group). Before the torture, 5% or fewer were unemployed whereas approximately three-quarters or more were unemployed at the start of the study. The ages of the participants ranged from 18 to 72 years, with mean age in the mid-thirties ( $M=36.20$  years,  $SD=10.35$  years for the treatment group, and  $M=34.82$  years,  $SD=8.68$  years for the comparison group). The treatment group had a higher

<sup>5</sup> Ideally, mixed multivariate Analyses of Variance (MANOVA) would be computed on the components of the scales to detect multivariate response patterns, while controlling the family-wise Type 1 error rate with greater power to detect differences. However, the sample sizes were small, and in all instances, assumption violations of the multivariate analyses mitigated against the MANOVA tests.

<sup>6</sup> This exploratory approach was undertaken whilst recognising that the family-wise Type 1 error increases with multiple statistical tests.

**Table 1:** *Demographics of treatment and comparison groups*

Demographics		Treatment group (n=44)		Comparison group (n=38)		p <sup>^</sup>
		n	%	n	%	
Gender	Female	22	50%	16	42%	0.47
	Male	22	50%	22	58%	
Nationality	Burundi	2	5%	1	3%	0.98
	Congolese (DRC)	15	34%	13	34%	
	Eritrean	0	0%	4	11%	
	Ethiopian	8	18%	13	34%	
	Somali	12	27%	3	8%	
	South African	1	2%	3	8%	
	Zimbabwean	2	5%	0	0%	
	Other *	4	9%	1	3%	
Marital status	Currently married	24	55%	8	21%	0.01
	Divorced/separated	3	7%	4	11%	
	Never married	13	30%	18	47%	
	Widowed	4	9%	7	18%	
	Missing	0	0%	1	3%	
Currently living	Living alone/strangers/shelter	14	32%	7	19%	0.14
	Living with family/ children	16	36%	5	13%	
	Living with friends	7	16%	10	26%	
	Living with spouse/ partner	4	9%	4	11%	
	Other	0	0%	4	11%	
	Missing	3	7%	8	21%	
	Legal SA status	Asylum seeker/ refugee	37	84%	30	
	Citizen	2	5%	3	8%	
	Undocumented	4	9%	1	3%	
	Missing	1	2%	4	11%	
Pre-torture employment	Minor/ student	5	11%	5	13%	0.83
	Unskilled labour/ semi-skilled	22	50%	21	56%	
	Skilled/ professional	14	32%	10	26%	
	Unemployed	2	5%	1	3%	
	Missing	1	2%	1	3%	
Current employment	Minor/ student	0	0%	2	5%	0.39
	Unskilled labour/ semi-skilled	8	18%	3	8%	
	Skilled/ professional	3	7%	2	6%	
	Unemployed	32	73%	31	82%	
	Missing	1	2%	0	0%	

Demographics		Treatment group (n=44)		Comparison group (n=38)		p <sup>^</sup>
		n	%	n	%	
Education	No schooling	4	9%	1	3%	<.001
	Completed primary	10	23%	1	3%	
	Completed secondary	10	23%	25	66%	
	Tertiary/ postgraduate	14	32%	9	24%	
	Missing	6	14%	2	5%	
Time since torture	Less than a month	1	2%	3	8%	0.84
	2-6 months	6	14%	4	11%	
	7 months-1 year	10	23%	5	13%	
	2-5 years	13	30%	9	24%	
	6-10 years	7	16%	10	26%	
	More than 10 years	7	16%	0	0%	
	Missing	0	0%	7	18%	

<sup>^</sup> categories were combined for Chi square calculation when expected frequencies < 5

\* Angolan, Ugandan, Rwandan, Swazi, Zambian

Note that rounding error occurs where percentages do not sum to 100%

percentage of married participants than the comparison group (55% versus 21% respectively), and fewer of the treatment group had completed secondary or tertiary education (55% versus 90%).

In addition to the research selection criterion of torture experiences (United Nations General Assembly, 1985), the participants had experienced various other forms of trauma. On average, participants had experienced approximately five additional forms of trauma ( $M=4.96$ ;  $SD=2.47$ ), with most participants having witnessed trauma and experienced assault.<sup>7</sup> No significant difference in the number of forms of trauma experienced was observed between the groups ( $t(80)=1.75$ ,  $p=.08$ , Cohen's

$d=0.39$ ,  $M=4.52$  and  $5.47$ ,  $SD=2.19$  and  $2.73$  for the treatment and comparison and groups respectively). Similarly, the odds of experiencing any type of trauma in one group are in general not significantly greater than the odds in the other group, based on Fisher's Exact Probability test (the trauma type of mugging was the only exception, see Table 2). It is acknowledged that experiences of what is considered to be traumatic are subjective, and that cumulative trauma plays an important role in survivors' distress (Başoğlu, 2009).

The baseline (T1) scores of the two groups were examined prior to comparing the changes in the means of the psychological and functioning measures across the first three months (T1 to T2) for each group.<sup>8</sup> The t test results show

<sup>7</sup> The current study does not focus on multiples of any single type of traumatic event since this data is not collected. Thus, the cumulative traumas experienced is likely to be higher.

<sup>8</sup> Levene's test of the assumption of homogeneity of variances showed that 7 of the 13 t test

**Table 2:** Trauma types experienced by respondents of the comparison and treatment groups

	Treatment group (n=44)		Comparison group (n=38)		Odds ratio: Treatment/ Comparison	
	n	%	n	%	OR	Fisher exact test (p)
Torture/ CIDT	44	100%	38	100%	-	-
Witness to trauma	31	70%	30	79%	0.64	0.27
Assault	25	57%	28	74%	0.47	0.09
Bereavement/ traumatic bereavement	16	36%	21	55%	0.46	0.07
Armed robbery	18	41%	18	47%	0.77	0.36
Xenophobia	12	27%	17	45%	0.46	0.08
Mugging	5	11%	13	34%	0.25	0.02
War	15	34%	13	34%	0.99	0.59
Hostage/ kidnapping/ abduction	9	20%	8	21%	0.96	0.58
Rape/ attempted rape/ sodomy	14	32%	6	16%	2.49	0.08
Motor vehicle accident	2	5%	5	13%	0.31	0.16
Hijacking	5	11%	5	13%	0.85	0.53
Relationship/ domestic violence	2	5%	5	13%	0.31	0.16

that three of the four initial coping or managing scores of the treatment group are significantly better than those of the comparison group, and the PTSD, trauma, anxiety and depression scores are lower ( $\alpha=.05$ ). The effect sizes of these differences are moderately large (Cohen's  $d$  with magnitude at least .5), with the exception of the strong difference in depression scores of the two groups ( $t(79)=3.36, p<.001, M=1.54$  and  $1.97, SD=0.62$  and  $0.52$  for the treatment and comparison groups respectively). Thus, the initial psychological health and functioning of the treatment group appears somewhat better than that of the comparison group.

*Comparison of the changes in the psychological and functioning measures across the first three months (T1 to T2) for each group:* Based on the direction of the differences between each of the T1-T2 pairwise means for the treatment and the comparison groups considered separately, all 13 of the pairwise differences of the treatment group are in the ideal direction of improved psychological health and functioning, compared to 10 of the pairwise differences of the comparison group (the exceptions being the indicators of social and total loneliness, and the HTQ scale of functioning). These T1-T2 effects do not differ significantly between the groups as none of the interaction effects of mixed ANOVA comparisons are significant ( $\alpha=.05$ ). For both groups, the results of the T1-T2 effects are moderately strong for anxiety, depression and the number of areas of pain, with other effect sizes weak (partial eta squared values of .05 or lower). However, as Levene's test shows homogeneity of variance

comparisons were adjusted to accommodate heterogeneous variances (the three loneliness scales, external stressors, PTSD, the anxiety and depression scales).

assumption violations for the T1 or T2 scores of 7 of the 13 ANOVA comparisons, the T1-T2 comparisons of the separate groups were re-examined using the conservative non-parametric Wilcoxon signed-ranks test with Z score conversion for large sample sizes and asymptotic significance, and the odds ratio (OR) used to indicate effect size (Table 3).

The Wilcoxon results of the treatment group show seven significance changes (emotional and total loneliness, external stressors, functioning, trauma, anxiety and areas of pain), all with odds ratios greater than 1 (Table 3). By contrast, there are two significant T1-T2 differences (depression and areas of pain) in the comparison group. For the treatment group, the odds of improvement relative to non-improvement are greater (odds > 1) for 9 of the indicators of psychological health and functioning, compared to 5 indicators for the comparison group. Furthermore, ratios of the odds for the treatment group relative to the comparison group computed per indicator variable show OR values greater than 1 for most indicators (emotional and total loneliness, the coping indicators of external stressors and psychological difficulties, the HTQ scales of PTSD, functioning and trauma, the HADS anxiety scale, and areas of pain - Table 3). Thus, for these indicators, members in the treatment group improved their psychological health and functioning from T1-T2 more than members in the comparison group did. However, based on the Fisher Exact Probability test (1-tailed,  $\alpha=.05$ ), the odds ratios are only significant for the HTQ functioning scale and for the HADS anxiety scale. The OR value of 2.49 for functioning means that the clients in the treatment group improved their functioning 2.49 times more than the clients in the comparison group did; the OR value of

2.61 for anxiety means that the clients in the treatment group reduced their anxiety 2.61 times more than the clients in the comparison group did.

There thus appears to be partial support for the expectation of greater improvement in psychological health and functioning from T1 to T2 for the treatment group relative to the comparison group. We therefore conclude, conservatively, that there is insufficient statistical evidence for overall support of the first hypothesis of the research and we instead discuss the significant T1-T2 differences on the individual indicators, specifically differences on the indicators of functioning and anxiety.

*Comparison of the changes in the psychological and functioning measures across the three time periods (T1-T3) for each group:* The comparisons from T1 to T3 are based on substantially reduced sample sizes owing to attrition of participants in the two groups after the second set of measures. Under half the respondents remained after T2 (45% or 20 of the 44 participants in the treatment group, and 42% or 16 of the 38 participants in the comparison group).

Based on the mixed ANOVA tests, there is no evidence of significant interaction effects that would show a difference in the changes of scores over time depending on the group, and the magnitude of all effect sizes, as measured by partial eta squared values, are negligible to weak. However, significant main effects across time, in the direction of increased psychological health and functioning, were found for coping with anger, the HTQ, the HADS, as well as for number of areas of pain. In particular, based on *post hoc* Scheffé comparisons, measures of self-perception of functioning, depression and number of areas of pain improved significantly from one time to the next. As for the T1-T2 comparisons, the

**Table 3:** Wilcoxon signed-rank test and odds ratio effect sizes for T1-T2 repeated measures for treatment and comparison groups

Indicators		Treatment group (n=44)			Comparison group (n=38)			Odds ratio: Treatment/ Comparison	
		Z	p ^	Odds ^^	Z	p ^	Odds ^^	OR	Fisher exact test (p)
Connection to others	Emotional loneliness	2.06	0.04 *	1.32	0.10	0.92	1.06	1.25	0.40
	Social loneliness	0.98	0.33	1.16	0.13	0.89	1.24	0.94	0.53
	Total loneliness	2.11	0.03 *	1.29	0.03	0.98	1.09	1.18	0.44
Coping or managing	Angry situation	1.43	0.15	0.83	0.49	0.63	0.84	0.98	0.58
	Family related stressors	0.59	0.56	0.67	1.59	0.11	0.87	0.77	0.38
	External stressors	2.06	0.04 *	1.06	0.07	0.94	0.69	1.54	0.23
	Psychological difficulties	1.34	0.18	0.97	0.58	0.56	0.79	1.23	0.42
Harvard trauma questionnaire	PTSD	1.70	0.09	1.21	0.27	0.79	1.10	1.10	0.52
	Functioning	2.57	0.01 *	1.71	0.39	0.69	0.68	2.49	0.04 *
	Trauma	2.28	0.02 *	1.56	0.02	0.99	0.79	1.97	0.10
Hospital anxiety and depression scale	Anxiety	2.83	0.01 **	1.56	0.48	0.63	0.60	2.61	0.04 *
	Depression	0.99	0.32	0.87	3.17	0.01 **	1.79	0.49	0.10
Pain	Number of areas of pain	2.44	0.01 *	1.23	2.26	0.02 *	0.94	1.31	0.36

\*  $p < .05$ ; \*\*  $p < .01$

^ denotes the asymptotic significance value (2-tailed) for Wilcoxon Z for large samples

^^ tied changes were randomly distributed in equal proportions to positive and negative changes, rendering the odds ratio more conservative than the Z score

T1-T3 comparisons were re-examined using the conservative non-parametric Wilcoxon signed-ranks test on the separate groups, owing to violations of ANOVA assumptions.

For both groups, most of the outcome means changed in the direction of improved

psychological health and functioning, exceptions being social loneliness and coping with external stressors. However, counter-intuitively, the results of the Wilcoxon signed-ranks tests on the T1-T3 comparisons computed on the separate

groups revealed more significant T1-T3 improvements for the comparison group than for the treatment group. For the comparison group, 7 of the 13 outcome measures improved significantly from T1 to T3 ( $\alpha=.05$ ), (coping with anger, the HTQ measures of PTSD, functioning and trauma, the HADS measures of anxiety and depression, and areas of pain), compared to only 1 of the 13 outcome measures (areas of pain) for the treatment group. Nevertheless, none of the odds ratios computed via the ratio of odds for the treatment and comparison groups per indicator variable are significant based on the Fisher Exact Probability test ( $\alpha=.05$ ). Thus, although there are more significant T1-T3 improvements in the comparison group than in the treatment group, the magnitude of these improvements is not sufficient to render the odds of the improvements in the comparison group significantly greater than the odds of the improvements in the treatment group.

However, the counter-intuitive Wilcoxon test results on the T1-T3 comparisons, whatever their magnitude, need to be addressed. A possible explanation is presented in a *post hoc* set of comparisons using a basic analysis of attrition after T2. *Comparison of participants in each group who dropped out after T2:* Based on the Chi square test for between-group comparisons, there is no evidence of significant differences in the demographic characteristics of participants who dropped out of the treatment group after T2 versus those who dropped out of the comparison group after T2. However, comparison of the T1-T2 changes in the psychological health and functioning measures of these two groups suggests that there may be a differential pattern of attrition between the groups.

In Table 4, the means for each scale are presented for those members of the treatment group and the comparison group who left the programme after the second set of measures.<sup>9</sup> The outcome measures with T1-T2 changes in the direction of improved psychological health and functioning are indicated with a tick ( ).<sup>10</sup>

The members of the treatment group who left the programme after T2 had improved their mean scores on all 13 measures at T2. By contrast, the members of the comparison group who left the programme after T2 had improved their mean scores on fewer than half (6 out of 13) of the measures (social and total loneliness, family related stressors, psychological difficulties, depression and areas of pain), a significant difference in percentages ( $p=.002$ ). Thus, participants in the treatment group who left the programme at T2 had improved their overall psychological health and functioning, whereas the participants in the comparison group who left the programme at T2 had not shown this overall level of improvement. After T2, the treatment group appears to have been weakened by the loss of members who had improved health after three months, while the comparison group had not lost overall improvers. This differential pattern of attrition between the groups may explain the counter-intuitive findings of greater improvement from T1-T3 of the remaining members of the comparison group compared to the remaining members of the treatment group.

<sup>9</sup> As tests of significance are reserved for a future in-depth article on attrition, this analysis does not indicate significance or effect size.

<sup>10</sup> In each comparison, the direction of the means is based on the difference in the pairwise means of individuals.

**Table 4:** Mean scores from T1-T2 of participants who left the comparison and treatment groups after T2

Indicators			Participants who left after T2:				
			those who left from the treatment group (n=24)		those who left from the comparison group (n=22)		
			Mean	T1-T2	Mean	T1-T2	
Connection to others	Emotional loneliness	T1	2.83	ü	2.48		
		T2	2.52		2.50		
	Social loneliness	T1	2.87	ü	2.52	ü	
		T2	2.75		2.32		
	Total loneliness	T1	5.70	ü	5.00	ü	
		T2	5.17		4.82		
Coping or managing	Angry situation	T1	2.61	ü	2.14		
		T2	2.67		2.00		
	Family related stressors	T1	2.23	ü	1.60	ü	
		T2	2.43		2.21		
	External stressors	T1	1.87	ü	1.90		
		T2	2.33		1.86		
	Psychological difficulties	T1	2.35	ü	2.10	ü	
		T2	2.74		2.24		
	PTSD	T1	2.54	ü	2.76		
		T2	2.33		2.91		
	Harvard trauma questionnaire	Functioning	T1	2.48	ü	2.60	
			T2	2.25		2.82	
Trauma		T1	2.50	ü	2.67		
		T2	2.28		2.83		
Hospital anxiety and depression scale	Anxiety	T1	1.71	ü	1.86		
		T2	1.31		1.89		
	Depression	T1	1.57	ü	1.89	ü	
		T2	1.28		1.63		
Pain	Areas of pain	T1	1.96	ü	3.23	ü	
		T2	1.83		2.32		



## Discussion

The research was designed to test the efficacy of the CSVR psychosocial intervention framework using a sample of torture survivors, almost all of whom were asylum seekers, refugees and undocumented persons in a South African environment filled with daily stressors and continuing traumas. These individuals were found to have clinical baseline scores on PTSD, depression, anxiety and low levels of functioning, which may be explained, at least in part, by their history of torture which severely impacts psychological and psychiatric wellbeing (Bandeira et al., 2010; Higson-Smith, 2013; McColl et al., 2010; Patel et al., 2014; Quiroga & Jaranson, 2005). The CSVR framework is designed to address the complexity of the past traumas exacerbated by contextual realities of a hostile South African environment (Bandeira, 2013; Bandeira et al., 2013).

### *Efficacy of the CSVR framework*

The assessment of the efficacy of the CSVR framework was based on the expectation of a long-term differential effect when an initial three-month waiting list condition was included, compared to when clients entered straight into treatment. The findings of the research did not provide clear support for the hypotheses of greater improvement in the psychological health and coping indicators of the CSVR treatment group than the waiting list comparison group. However, the results are complex and less than clear.

The data gathered reflect the challenges of attempting rigorous quasi-experimental quantitative research in the context of torture, using established measurement scales that were found to have lower than desirable reliability for our sample, and data that do not meet all the stringent

assumptions required for parametric statistical analyses. Attrition created a further problematic effect in our study as the treatment group clients who dropped out of the study after T2 showed greater overall improvement in their psychological health and coping from T1 to T2 than the comparison group clients who dropped out of the study after T2. This differential attrition effect may have biased the longer-term comparison of the mean scores from T1 to T3 (the second hypothesis of the study), creating paradoxical results. Thus, our main finding pertaining to the hypotheses on the efficacy of the CSVR framework is that we have not found sufficient evidence to warrant the efficacy of the framework, owing mainly to several severe challenges inherent in research of this nature. It may be fairer to conclude that the research results on the efficacy of the framework are inconclusive.

However, there are several interesting results in the research. Firstly, improvement in the psychological wellbeing and functioning of the clients of both groups from T1 to T3 occurred despite the context of the lack of safety and continuing daily traumas of the torture survivor clients. This result is consistent with the CSVR framework's prioritisation of empowerment, problem solving and trauma-related therapy. Secondly, after three months of treatment under the CSVR framework, there are indications of clients' improved connection to others. This result is encouraging within the inherent mistrust, isolation and fear as consequences of torture (Quiroga & Jaranson, 2005). Building trusting relationships after a torture experience should be viewed as a long-term therapeutic goal (as per the approach of the CSVR), as torture often results in the annihilation of interpersonal trust (Bandeira, 2013;

Bandeira et al., 2013). Further research is warranted on the prioritisation of a family and group model or framework in the South African context to mitigate the isolation felt by the torture survivor, and the best way to reintegrate the torture survivor into trusting familial, group and community relationships. Thirdly, after three months in therapy, clients appear to deal better with their past traumas and torture experiences in the context of unsafe situations, specifically in terms of increased functioning and reduced anxiety levels.

We move now to discuss the main challenges of scientific research on trauma, based on the lessons of this study.

#### *Challenges of research on trauma rehabilitation*

It is essential to conduct thorough research on the outcomes of torture rehabilitation programmes that could improve the quality of the services and care to torture survivors, contribute to professional development in the field, and empower torture survivors (Jaranson & Quiroga, 2011). Although quantitative studies involving the principles of randomised experimental design, sound sampling techniques, objective measures and rigid statistical analysis are scientific ideals, such criteria are, in reality, unattainable in the complex and challenging world of torture rehabilitation with its thorny ethical considerations and limitations. Ethical compliance precludes randomised control group designs; instead, researchers of torture attempting scientific studies are restricted to quasi-experimental or outcome designs with compromised internal validity.

We present the consequences of these research design restrictions in our research. Although there was no apparent reason for the groups to differ at baseline, and no outstanding historical events occurring in the time interval between the start of the

CSVR treatment framework for the two groups, we found that the psychological health and functioning of members of the treatment group was somewhat better than that of the comparison group at baseline testing. The groups also differed on marital status and education levels.

In addition to these baseline differences between the groups, the nature of the comparison group condition, i.e. the waiting list protocol, was not a true placebo comparison as it offered a level of support to clients in the comparison group. The comparison group clients received support in telephone calls every second week, referrals offered for legal, medical or humanitarian aid, and assistance offered if they were psychotic, suicidal or required other emergency assistance. After three months of receiving this level of support, these waiting list clients may well have felt somewhat better on a psychological and functioning level than they had at baseline. Indeed, the results of the comparison group clients showed significant improvement in their depression scores. However, despite the possible confounding effect of the waiting list condition, it is an ethical necessity in the context of the vulnerability of torture survivors.

High levels of overall attrition are expected in this population due to the transient nature of tortured refugees in South Africa who often need to move to find employment or accommodation, or due to safety concerns. Furthermore, many refugees and asylum seekers use the CSVR for introduction to legal, medical or humanitarian aid, and then terminate contact with the centre. Although previous CSVR reports indicate an attrition rate of 21–44% of clients annually (Dix-Peek, 2012a, 2012b), the current research indicates a much higher rate (75% or 129 of 173 clients in the treatment group, and 42% or 28 of

66 clients in the comparison group).<sup>11</sup> The high rate of attrition from screening to T1, referred to here as overall attrition, for both groups, but particularly for the treatment group, is a clear limitation of the current research. Contextual challenges of staffing changes within CSVr may have contributed to clients not completing their baseline T1 or follow-up T2 assessments and the consequent stark overall attrition for the treatment group. CSVr has attempted to mitigate the high overall attrition through ensuring that clients receive transport money to and from the office, conducting drop-out reports for a better understanding of why clients stop coming for counselling, providing ongoing training with CSVr clinicians and monitoring and evaluation staff, and ensuring adherence to the monitoring and evaluation system.

The high rate of attrition of clients after the initial three months of the programme is also of great concern for the CSVr rehabilitation endeavours as over half of the clients left the study after T2 (55% of the treatment group members and 58% of the comparison group members). A rudimentary *post hoc* attrition analysis of the means of the outcome measures suggests that different patterns of attrition in the comparison and treatment groups may explain the counter-intuitive results from T1-T3. The comparison group clients who left the programme at T2 showed limited improvement in their psychological health and functioning, while the treatment group clients who left the programme at T2 showed improvement on all indicators. While attrition of participants was not planned, losing participants from the treatment group

who improved their health may be evidence of the preliminary success of the CSVr framework, although the sustainability of the improvement is unknown.

The topic of attrition is planned as part of a future journal article.

### Conclusion

The CSVr psychosocial framework for the rehabilitation of torture survivors provides a set of therapeutic guidelines in the context of daily stressors, continuing traumas, past torture and trauma events. It is also a framework designed for developing country settings where survivors live with lack of safety and extreme socio-economic concerns. Thus evidence-based research on the efficacy of this framework is essential as a first step towards investigating its legitimacy as “best practice” for torture survivors in developing countries. However, conducting such research is often not prioritised due to scarce financial and human resources, practitioners who may not recognise the need to prioritise outcome research over the “core” therapeutic and psychosocial work (Bandeira, 2013; Montgomery & Patel, 2011), attrition and small samples sizes, limited academic and research expertise, and ethical concerns (Jaranson & Quiroga, 2011). Our study has aimed to contribute to a detailed understanding of the intricacies and challenges of undertaking psychosocial research in the torture field. It highlights the serious problem of attrition and offers several lessons for future studies.

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<sup>11</sup> These numbers exclude clients who were excluded as they were not tortured according to the UNCAT definition of torture.

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## Appendix 1

**Table A - 1:** *Impacts and intervention strategies used in the CSVR framework*

Area	Impact	Intervention approaches
Current stressors	1. Accommodation difficulties	<ul style="list-style-type: none"> <li>• Referral</li> <li>• Building assertiveness</li> <li>• Increasing internal locus of control</li> </ul>
	2. Concern for employment opportunities	<ul style="list-style-type: none"> <li>• Referral</li> <li>• Building assertiveness</li> <li>• Increasing internal locus of control</li> </ul>
	3. Difficulties with service providers	<ul style="list-style-type: none"> <li>• Prepare client for possible difficulties</li> <li>• Explore a negative experience</li> <li>• Problem solve</li> <li>• Prepare client for next interaction</li> </ul>
	4. Economic difficulties	<ul style="list-style-type: none"> <li>• Referral</li> <li>• Building assertiveness</li> <li>• Increasing internal locus of control</li> </ul>
	5. Loss of status, recognition, position in society	<ul style="list-style-type: none"> <li>• Psycho-education</li> <li>• Building self-esteem</li> <li>• Addressing guilt</li> <li>• Meaning making and reframing</li> </ul>
	6. Pain	<ul style="list-style-type: none"> <li>• Referral and accessing medication</li> <li>• Skills development</li> <li>• Psycho-education</li> </ul>
	7. Repeated victimisation	<ul style="list-style-type: none"> <li>• Referral</li> <li>• Safety planning — dealing with real threats</li> <li>• Psycho-education</li> <li>• Skills development and symptom management</li> <li>• Reality testing</li> <li>• Dealing with perceived threat</li> </ul>
	8. Safety concerns	<ul style="list-style-type: none"> <li>• Referral</li> <li>• Safety planning — dealing with real threats</li> <li>• Psycho-education</li> <li>• Skills development and symptom management</li> <li>• Reality testing</li> <li>• Dealing with perceived threat</li> </ul>

Area	Impact	Intervention approaches
Social / interpersonal difficulties	9. Family breakdown	<ul style="list-style-type: none"> <li>• Assisting the client with family tracing</li> <li>• Skills development</li> <li>• Psycho-education</li> </ul>
	10. Family-related stressors	<ul style="list-style-type: none"> <li>• Psycho-education</li> <li>• Skills development</li> <li>• Problem solving</li> <li>• Referral</li> <li>• Crisis management</li> </ul>
	11. Isolation	<ul style="list-style-type: none"> <li>• Explore causes and impact of isolation</li> <li>• Develop client's skills in relation to reducing their isolation</li> <li>• Prepare client for possible negative experiences</li> </ul>
Psychological responses	12. Anger	<ul style="list-style-type: none"> <li>• Skills development</li> <li>• Psycho-education</li> <li>• Exploring underlying emotions</li> <li>• Boundary setting</li> </ul>
	13. Bereavement	<ul style="list-style-type: none"> <li>• Emotional expression and dealing with unresolved issues</li> <li>• Meaning making</li> <li>• Integrating rituals / cultural and religious healing practices</li> <li>• Psycho-education</li> </ul>
	14. Coping difficulties and stress	<ul style="list-style-type: none"> <li>• Increasing coping</li> <li>• Problem solving</li> <li>• Skills development</li> <li>• Referral</li> </ul>
	15. Distress	<ul style="list-style-type: none"> <li>• Contain the client and explore cause(s) of distress</li> <li>• Problem solve in a direct and quick solution-focussed way</li> <li>• Skills development</li> <li>• Referral</li> </ul>
	16. Intrusions	<ul style="list-style-type: none"> <li>• Symptom management</li> <li>• Exposure</li> <li>• Psycho-education</li> <li>• Meaning-making</li> </ul>
	17. Mood disturbances	<ul style="list-style-type: none"> <li>• Assessing for suicide</li> <li>• Cognitive behavioural interventions</li> <li>• Psycho-education</li> <li>• Referral for psychiatric assessment and medication</li> </ul>
	18. Traumatic responses	<ul style="list-style-type: none"> <li>• Symptom management</li> <li>• Exposure</li> <li>• Psycho-education</li> <li>• Meaning-making</li> </ul>

For the full framework, see Bandeira et al., (2013): [http://www.csvr.org.za/images/docs/Other/developing\\_african\\_rehabilitation\\_model\\_part2\\_engagment\\_clinical\\_team.pdf](http://www.csvr.org.za/images/docs/Other/developing_african_rehabilitation_model_part2_engagment_clinical_team.pdf).

**Table A - 2:** Reliability measures for scales based on the literature and the current study

Scale <sup>12</sup>	Coefficient $\alpha$ from literature	Number of items	Coefficient $\alpha$ from current study	Average inter-item correlations	n
The De Jong Gierveld Loneliness Scale					
Emotional loneliness	.81 - .91	3	.45	.21	79
Social loneliness	.80 - .94	3	.77	.54	78
Total loneliness		6	.69	.29	78
Functioning		4	.69	.37	76
Harvard Trauma Questionnaire PTSD	.96	16	.82	.23	79
Harvard Trauma Questionnaire Self Perception of functioning		24	.89	.26	78
Harvard Total trauma score	.93 - .98				
Hospital anxiety and depression scale: Anxiety	.92	7	.70	.25	80
Hospital anxiety and depression scale: Depression	.88	7	.74	.29	80
Overall	.94				
Pain		8	.75	.27	81

Most scales were found to have acceptable coefficient  $\alpha$  reliability, although the reliability of the emotional loneliness scale is inadequate, and the average inter-item correlations of most scales fall short of the required minimum value. As poor reliability reduces the power of statistical tests and generally attenuates effect sizes below their true (population) values, the low

to moderate reliabilities of the scales may well have impacted negatively on the results of the study (Kline, 1998).

<sup>12</sup> For a more extensive outline of the De Jong Gierveld Loneliness scale (de Jong Gierveld & Van Tilburg, 2006), Harvard Trauma Questionnaire, and Hospital Anxiety and Depression Scale, contact the authors.