The effect of age at first trauma and multiple traumatisation on symptoms of Complex PTSD

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Thesis declaration form

I confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

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Overview

This thesis investigates the impact of multiple traumatisation on the presentation of Post-Traumatic Stress Disorder (PTSD). Part 1 consists of a literature review of studies that compare the psychological outcomes of single and multiple traumatisation – or Type I and Type II trauma. This considers the symptom profiles of these two types of trauma history in light of the debate around the concept of Complex PTSD. The review explores the impact of Type I and Type II trauma on symptoms of PTSD and on additional outcomes that are not included within the PTSD diagnosis.

Part 2 consists of an empirical paper into the effects of the age at first trauma and multiple traumatisation on symptoms of Complex PTSD. The presence and severity of symptoms of PTSD, dissociation, interpersonal problems, somatisation and depression are compared in treatment-seeking adults who have experienced traumas exclusively in adulthood, to those who have been exposed to traumas in both childhood and adulthood. The impact of the number of traumas individuals have been exposed to, as well as the range of different trauma they have experienced are also investigated.

Part 3 is a critical appraisal of the literature review and empirical paper. Here the problematic nature of assessing and measuring trauma frequency is considered. The implications of introducing a diagnostic term of Complex PTSD are also discussed. Finally reflections are offered on the differing perspectives of working with issues around multiple traumatisation and Complex PTSD from the role of researcher and role of clinician.

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Part 1: Literature Review

A systematic review of the psychological effects of Type I versus Type II trauma

Abstract

Aims

A number of studies have explored the impact of Type I trauma, where individuals have experienced a single trauma. Fewer studies have examined the impact of Type II trauma, where individuals have been exposed to multiple traumas. The present review sought to explore the evidence of the psychological impact of multiple traumatisation by examining studies that compare the effect of Type I and Type II trauma.

Method

A systematic review was conducted across five databases. Exclusion criteria were applied, which left a sample of eight papers. A quality assurance checklist was then used to assess the quality and strength of the evidence.

Results

Type II trauma victims were shown to have increased PTSD severity in addition to increased co-morbid symptoms, such as depression, compared to Type I trauma. A difference was also demonstrated depending on whether the Type II trauma was comprised of a number of separate and different traumas (cumulative trauma), or a series of similar traumas from the same perpetrator (repeated trauma).

Conclusions

The review has implications for understanding the impact of Type II trauma on PTSD and Complex PTSD. It also highlights the need for further research into the subcategories of Type II trauma.

A systematic review of the psychological effects of Type I versus Type II trauma

Post-Traumatic Stress Disorder (PTSD) is defined in the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV; American Psychological Association, 2000) as being classified into three overarching domains of symptoms: re-experiencing, avoidance and arousal. These clusters of symptoms are observable in individuals who fail to recuperate psychologically from a traumatic event, which was of an exceptionally threatening or catastrophic nature. The DSM-IV defines trauma as "event or events that involved actual or threatened death or serious injury, or a threat to the physical integrity of self or others." (American Psychological Association, 2000). This definition of trauma has been criticised by some for being too limited and for not fully encapsulating the nature of prolonged or cumulative traumas (Kira et al., 2008). The American Psychological Association (APA) Trauma Group definition was less limited, and trauma was instead identified by the outcomes that it produced, being defined as "a process that leads to the disorganization of a core sense of self and world and leaves an indelible mark on one's world views that psychological disorders often follow upon exposure to" (APA, 2000).

In considering the impact of childhood traumas on adult psychological functioning, Terr (1991) proposed the categorisation of two distinct types of trauma. Type I trauma refers to the experience of a sudden, unexpected single trauma, whereas Type II trauma refers to exposure to long-standing or repeated traumatic experiences (Terr, 1991). These terms have continued to be used in research around exposure to

multiple traumas (Solomon & Heide, 1999), with Type I trauma referring to the experience of a single traumatic event (van der Velden & Wittmann, 2008) and Type II trauma, referring to exposure to multiple (two or more) traumatic experiences (Lehmann, 1997). Type II trauma can include repeated trauma, where the individual experiences a number of similar traumas from the same perpetrator, such as in child abuse or domestic violence (Streeck-Fisher & van der Kolk, 2000), or can include cumulative traumas, where the individual is exposed to a number of different traumatic experiences from different perpetrators (Herman, 1992; Yehuda et al., 1995).

There is much research into the nature and prevalence of PTSD following the experience of a single traumatic event – or Type I trauma (van der Velden & Wittmann, 2008). Current research frequently focuses on the impact of a single traumatic event and does not often consider participants' full trauma histories in examining the nature of PTSD symptoms (Ide & Paez, 2000). Prevalence studies have demonstrated that it is common for individuals to have experienced more than one traumatic experience (Resnick, Kilpatrick, Dansky, Saunders & Best, 1993) and that in some populations, single (as opposed to multiple) trauma exposure places individuals in the minority (Kira et al., 2008). It is therefore important to understand the impact of multiple traumas on the PTSD presentation and psychological functioning of victims (Herman, 1992). Whilst the symptomatology of victims of single incident traumas are well captured in DSM-IV diagnosis of PTSD, victims of interpersonal or repeated trauma present with a more complex picture (Luxenberg, Spinazzola & Van der Kolk, 2001). Exposure to multiple traumas can increase the likelihood of a pathological response (Peretz, Baider, Ever-

Hadani, & De-Nour 1994; Van der Kolk, 2005), and leads to greater severity of PTSD symptoms (Eriksson, Vande Kemp, Gorsuch, Hoke & Foy, 2001; Horowitz, Weine & Jekel, 1995; Scott, 2007).

It has been suggested that the symptom profile of individuals who have experienced severe and extensive traumatisation goes beyond greater severity of PTSD symptoms, and actually represents a separate diagnostic category (Taylor et al., 2006). Research has highlighted the additional symptoms following exposure to Type II trauma, which are not captured within a PTSD diagnosis (van der Kolk, Roth, Pelcovitz, Sunday & Spinazzola, 2005). Although not currently identified as a separate and distinct diagnostic category, DSM-IV identifies Disorders of Extreme Stress Not Otherwise Specified (DESNOS; APA, 2000). The International Classification of Diseases – Tenth Edition identifies a diagnostic category of Enduring Personality Changes After Catastrophic Experience (ICD-10; World Health Organisation, 1994), the characteristics of which are similar to those of DESNOS (Beltran, Silove & Llewellyn, 2009; Blaz-Kapusta, 2008). Characteristics of DESNOS were identified in the DSM-IV field trial for PTSD by examining symptoms common in survivors of child abuse, concentration camps and domestic violence, but which were not captured in the PTSD criteria (van der Kolk, Roth, Pelcovitz, Sunday & Spinazzola, 2005). This resulted in a list of 27 symptoms of DESNOS being identified (Kilpatrick et al., 1998). Herman (1992) grouped these symptoms into seven categories, thereby forming the concept of Complex PTSD (Ford, 1999; van der Kolk et al., 2005). Complex PTSD represents a more severe symptom profile of posttraumatic stress, in addition to further fundamental alternations

in the individual, including alterations in psychological and interpersonal systems, typified by impairments in attention and consciousness; relations with others; and somatic functioning (Dorahy et al., 2009). The full list of symptoms of DESNOS and their clusters within Complex PTSD can be seen in Table 1.

Table 1.
Symptoms of Disorders of Extreme Stress Not Otherwise Specified (DESNOS) and categories of Complex PTSD

Complex PTSD Categories	DESNOS Symptoms
Alterations in regulation of affect and impulses	Affect regulation Modulation of anger Self-destructive Suicidal preoccupation Difficulty modulating sexual involvement Excessive risk taking
Alterations in attention or consciousness	Amnesia Transient dissociative experiences & depersonalisation
Somatisation	Digestive system Chronic pain Cardiopulmonary symptoms Conversion symptoms Sexual symptoms
Alterations in self-perception	Ineffectiveness Permanent damage Guilt & responsibility Shame Nobody can understand Minimizing
Alterations in the perception of the perpetrator	Adopting distorted beliefs Idealisation of the perpetrator Preoccupation with hurting perpetrator
Alterations in relations to others	Inability to trust Revictimization Victimizing others
Alterations in systems of meaning	Despair and hopelessness Loss of previously sustaining beliefs

Although Complex PTSD is not included in the DSM-IV or ICD-10, there is on-going debate as to whether this construct should be added to DSM-5 and ICD-11 (Andrews & Slade, 2002; Kupfer, Regier & Kuhl, 2008; Sar, 2011). Some have argued that Complex PTSD does not constitute a separate disorder, but that instead these additional symptoms are a result of comorbid conditions (Resick et al., 2012). Diagnoses such as eating disorder, borderline personality disorder, mood disorder, substance use and somatoform disorder are frequently linked to histories of early and repeated traumatisation, and could also explain alterations in regulation of affect, attention, self-perception, relations to others, systems of meaning and somatisation (Friedman, Resick, Bryant & Brewin, 2011). However, a growing body of evidence has given support to the concept of Complex PTSD as a distinct and separate disorder (Cloitre, Garvert, Brewin, Bryant & Maercker, 2013; Roth, Newman, Pelcovitz, van der Kolk & Mandel, 1997). The ICD-11 Working Group has recommended that Complex PTSD is included as a separate diagnostic entry in ICD-11 (Maercker, 2013), however this remains a contentious issue and it is still unclear whether DSM-5 will include a category for Complex PTSD (Barbui & Tansella, 2013; Bisson, 2013).

It is currently unclear whether symptoms of Complex PTSD represent a reaction to the exposure to multiple traumas, exposure to traumas in childhood, or exposure to particular types of trauma (such as interpersonal trauma). What remains to be fully understood in this issue is the psychological impact of Type II traumas, and as yet no review has examined the evidence regarding the differing impact of Type I and Type II traumas. A number of studies have examined the symptoms and functioning of

individuals who have experienced multiple traumas. These have demonstrated increasing rates of PTSD with the increase of reported traumas experienced (Nishith, Mechanic & Resnick, 2000; Pham, Weinstein & Longman, 2004), as well as additional symptoms such as impairments in self-regulation (Cloitre et al., 2009). However, very few of these studies utilise a comparison group of participants who have experienced a single trauma experience and make direct comparisons between individuals who have experienced multiple traumas and those who have experienced a single traumatic event.

The current review aims to systematically review the current evidence of the psychological effects of single traumatic incidents, or Type I trauma, compared to the experience of multiple traumas, or Type II trauma.

Method

A systemic electronic search was conducted on five databases; PsychINFO, Medline, EMBASE, Web of Science and SCOPUS. The following search terms were used; "multiple trauma*" or "repeated trauma*" or "repeated trauma*" or "multiple trauma*" or "Type I trauma*" or "Type II trauma*". These search terms were combined with "PTSD" or "post traumatic stress disorder" or "post-traumatic stress disorder" or "posttraumatic stress disorder". Studies were only included if they were written in English, published in peer-reviewed journals and if they were about human subjects. This initially produced a total of 481 hits from across the five databases. Repetitions were removed from the sample (n = 334). The abstracts of the remaining sample were then read. Papers were eliminated if they were not original research (n = 7), were only

concerning physical outcomes of physical traumas (*n* = 13), did not measure trauma history (*n* = 25), were only a prevalence study of trauma exposure in a particular population (*n* = 43), or assessed the impact of trauma frequency through correlation rather than having a control group with which to compare (*n* = 31). Studies were only kept in the final sample if they made comparisons between groups that had experienced single trauma and groups that had experienced more than one trauma. This left a final sample of eight papers.

The sample was analysed using a Quality Assurance Checklist (Kmet, Lee & Cook, 2004). The criteria from this checklist can be seen in Table 2.

Table 2.
Assessment criteria of Quality Assurance Checklist (Kmet, Lee & Cook, 2004).

Item Number	Criteria
1	Question / objective sufficiently described?
2	Study design evident and appropriate?
3	Method of subject/comparison group selection or source of information/input variables described and appropriate?
4	Subject (and comparison group, if applicable) characteristics sufficiently described?
5	If interventional and random allocation was possible, was it described?
6	If interventional and blinding of investigators was possible, was it reported?
7	If interventional and blinding of subjects was possible, was it reported?
8	Outcome and (if applicable) exposure measure(s) well defined and robust to measurement / misclassification bias? Means of assessment reported?
9	Sample size appropriate?
10	Analytic methods described/justified and appropriate?
11	Some estimate of variance is reported for the main results?
12	Controlled for confounding?
13	Results reported in sufficient detail?
14	Conclusions supported by the results?

Note Scoring: Yes = 2; Partial = 1; No = 0

Results

Study Characteristics

Sample characteristics. Half of the studies only included female participants (2, 3, 4 & 8), and the other half included more females than males. Table 3 contains further information regarding demographics and reference numbers of the studies. Four of the studies recruited undergraduate university students (1, 3, 4 & 8). Two studies recruited individuals seeking treatment for PTSD (5 and 6) one study recruited from schools (7), and the remaining study used a general population sample (2). With the exception of one study, which focused on adolescents (7), all of the studies only included adult participants.

Table 3.
Sample characteristics of studies meeting inclusion criteria of review

Study, Year and Reference Number	N	Mean Age	Gender	Location	Sample type
Amir & Sol, 1999 (1)	983	23.54	Female (58%) & male	Israel	Students
Casey & Nurius, 2005 (2)	427	46	Female	America	Community
Green et al., 2000 (3)	2507	19.4	Female	America	Students
Green et al., 2005 (4)	209	19.7	Female	America	Students
Hagenaars et al., 2011 (5)	110	35.05	Female (78%) & male	America	PTSD outpatients
McTeague et al., 2010 (6)	49	35.52	Female (66%) & male	America	PTSD outpatients & community controls
Suliman et al., 2009 (7)	922	15.73	Female (59%) & male	S. Africa	School students
Wilson et al., 1999 (8)	922	19.48	Female	America	Students

Group categorisations. Two of the studies focused only on exposure to sexual traumas (2 and 8), whereas the remaining studies examined the impact of a range of traumatic experiences. Of the eight studies that met inclusion criteria for review, trauma

Table 4.
Comparison groups used in studies meeting inclusion criteria for review

Comparison Groups	Study Reference Number (1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
No trauma exposure	X		X	X		X		X
Non-Criterion A exposure			X	X				
Type I Trauma								
Single Trauma (undefined type)	X	X			X	X	X	
Single non-interpersonal trauma			X					
Single interpersonal trauma			X					
Single physical assault				X				
Single sexual assault				X				X
Type II Trauma								
2 Traumas							X	
3 Traumas							X	
4 – 5 Traumas							X	
6 + Traumas							X	
More than 1 trauma (undefined)	X				X	X		
More than 1 sexual trauma								X
Repeated Trauma (same perpetrator)		X	X	X				
Cumulative Trauma (different incidents)		X	X	X				

frequency was defined and categorised in a number of ways. All of the studies used a Type I trauma group, however how the inclusion criteria of this group differed between the studies (see Table 3). Five of the studies categorised participants according to a single traumatic incident, but did not separate these individuals according to the nature of the incident (1, 2, 5, 6 & 8). The remaining studies separated single trauma experiences into a single experience of an interpersonal trauma and a single experience of a non-interpersonal trauma (3), a single experience of physical assault (4) or a single experience of sexual assault (4 & 8). In addition to comparing Type II traumas to Type I

traumas, five of the studies also included comparison groups that had not been exposed to any traumatic experiences (1, 3, 4, 6 & 8) and two studies made comparisons with individuals who had been exposed to experiences that were classified as stressful life events, but which were not 'traumatic' according to the Criterion A of the DSM-IV (3 & 4).

There was also variation in how Type II traumas were categorised. Three studies used an undefined multiple trauma group, where participants had experienced two or more traumatic experiences and where subgroups were not formed on the basis of the nature of the traumatic incident (1, 5 & 6). One study looked at multiple sexual traumas, whereby individuals had experienced two or more experiences of sexual assault or rape (8) and one study identified separate groups according the exact number of traumatic experiences individuals had been exposed to (7). Three studies made a distinction between repeated trauma and cumulative trauma (2, 3 & 4). Repeated trauma was defined as being situations where the individual experienced on-going repeated traumatic experiences from the same perpetrator, such as in cases of child abuse or domestic violence. Cumulative trauma refers to individuals being exposed to two or more traumatic experiences which are separate incidents from different perpetrators.

Table 5.
Outcomes measured by studies meeting inclusion criteria for review

	Study Reference Number							
Outcomes measured by study	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Post-Traumatic Stress outcomes								
PTSD severity	X	X	X		X	X	X	X
DESNOS				X				
Dissociation					X			X
Emotional outcomes								
Anxiety							X	
Depression		X	X				X	
Guilt					X			
Shame					X			
Anger					X			
General distress	X					X		
Self-regulation			X					
Behavioural outcomes								
Aggression				X				
Interpersonal problems					X			
Risky sexual behaviour				X				
Drug use		X						
Binge drinking		X						
Cognitive outcomes								
Risk recognition								X
Recall of trauma		X						
Physiological outcomes								
Physical health		X						
Physiological arousal						X		
Intervention related outcomes								
Help seeking		X						
Perceived helpfulness of support		X						
Treatment prognosis						X		

Outcomes. In comparing the impact of Type I and Type II trauma, the studies looked at a range of outcomes. All of the studies examined PTSD severity, with the exception of one study (4), which focused on Disorders of Extreme Stress Not

Otherwise Specified (DESNOS). The range of symptoms that were examined across the sample are depicted in Table 5.

A range of measures were used across the eight studies. Four of the studies used standardised, validated measures (3, 6, 7 & 8), three used a combination of standardised measures and tools that were un-validated and adapted from other scales (1, 4 & 5) and one study (2) only used measures that were not standardized and were devised for the purposes of the study.

Assessment of Quality of Studies

The strength and quality of the papers was assessed using a Quality Assurance Checklist. Each paper was assessed according to 14 criteria (see Table 2), and given a score of zero (did not meet specified criteria), one (partially met specified criteria) or two (fully met specified criteria). Criteria five, six and seven were excluded as the sample did not include intervention studies. A total ranking was then calculated for each paper. These rankings are displayed in Table 6.

Strengths of studies. All of the studies employed modest to large samples, therefore making valid comparisons between Type I and Type II trauma groups. With the exception of one study, the studies also utilised valid and reliable means of measuring psychological outcomes of post-traumatic reactions. All of the studies set out clear aims and used appropriate statistical analysis with an estimate of variance reported for the main results.

Table 6.
Assessment of studies using Quality Assurance Criteria

Study, Year and Reference Number	Quality Assurance Criteria											Total Score (%)
	1	2	3	4	8	9	10	11	12	13	14	
Amir & Sol, 1999 (1)	2	2	1	1	1	2	2	2	1	2	2	81.81
Casey & Nurius, 2005 (2)	2	2	2	1	1	2	2	2	1	2	2	86.36
Green et al., 2000 (3)	2	2	2	1	2	2	2	2	2	2	2	95.45
Green et al., 2005 (4)	2	2	1	1	2	2	2	2	2	2	2	90.91
Hagenaars et al., 2011 (5)	2	2	2	2	1	2	2	2	2	2	2	95.45
McTeague et al., 2010 (6)	1	2	1	1	2	2	2	2	1	2	1	77.27
Suliman et al., 2009 (7)	2	2	1	2	2	2	2	2	0	2	2	86.36
Wilson et al., 1999 (8)	2	2	1	2	1	2	2	2	0	2	1	77.27

Limitations of studies. It is notable that none of the studies utilised blinding of the researchers, whereby the researchers who assessed participants for the presence or severity of symptoms were blind to their trauma histories. This highlights a weakness of the studies and the potential for bias.

There was discrepancy between the studies in how incidences of childhood trauma were dealt with. One of the studies excluded cases where any trauma had occurred in childhood (4), and one study excluded cases were trauma had only occurred in childhood (8). This is potentially reducing incidences of repeated traumatisation and therefore skewing the picture of the effect of Type II trauma as a whole.

None of the studies matched the comparison groups according to demographic or identifying features, such as age, gender, ethnicity, socioeconomic status etc. However, four of the studies did assess whether there were significant differences in these variables between Type I and Type II trauma groups, and then control for any differences in analysis (2, 3, 4 and 5).

Of the eight studies, five used samples of students – one of which was recruited from high schools (7) and the remaining four from universities (1, 3, 4 & 8). These groups therefore represent individuals that despite their trauma histories have been able to function well enough to achieve high academic attainment. These studies are therefore likely to be missing the most extreme cases whereby extensive traumatisation has left the individual unable to engage with education or employment and unable to function at such a high level.

Evidence for Differences Between Type I and Type II Trauma Exposure

PTSD and DESNOS. Of the seven studies that measured PTSD symptoms, Type II trauma was demonstrated to be associated with significantly greater PTSD severity compared to Type I trauma (1, 2, 3, 5, 6, 7 & 8). Type II trauma was linked with significantly more current and lifetime symptoms of PTSD (2), significantly more intrusions on measures of PTSD (1) and significantly higher levels of dissociation (8). Two of the studies examined subtypes of Type II trauma and compared the impact of cumulative and repeated trauma on symptoms of PTSD, with cumulative trauma referring to trauma experiences that are different in nature and repeated trauma referring to traumatisation of similar acts from the same perpetrator. Both studies found cumulative trauma to be associated with significantly higher rates of PTSD, followed by Type I trauma, and then repeated trauma, with individuals who had not been exposed to any traumas scoring significantly lower (2 & 3).

In the one study that measured DESNOS (4), Type II trauma was associated with significantly increased DESNOS traits (acts of self-harm, suicidal ideation, dangerous sexual behaviour and excessive risk taking). When cumulative and repeated trauma were examined, the repeated trauma group was demonstrated to have significantly more symptoms of DESNOS, followed by the cumulative trauma group, with a Type I trauma group having significantly lower scores (4).

Emotional differences. Type II trauma was demonstrated to be linked to significantly increased general distress (1 & 6), depression (2 & 7), guilt (5), anger (5), shame (5), dissociation (5), interpersonal sensitivity (5), mistrust (5) and functional impairment (6). The direction of anger was also demonstrated to differ, with Type II trauma being associated with significantly more anger towards the self, and Type I trauma being linked with significantly more anger towards others (5). In terms of the differing subgroups of Type II trauma, cumulative traumas victims were shown to have significantly higher levels of depression and problems with self-regulation, followed by Type I trauma, and then repeated trauma, with those with no trauma exposure having significantly lower levels of depression (3).

Cognitive differences. Individuals who had experienced Type II traumas were significantly more likely to have forgotten some aspects of their traumatic experience (2). They were also significantly more likely to rate imagery as more aversive (6) and to have significantly poorer risk recognition (8).

Behavioural differences. Both repeated and cumulative trauma histories were shown to have significantly increased binge-drinking compared to Type I trauma (2). In contrast to this, only cumulative trauma was associated with significantly increased drug use (2). The experience of repeated trauma was associated with significantly increased risky sexual behaviour (4) and significantly increased violence perpetration (4). In terms of the nature of the traumatic experiences, the number of sexual traumas experienced was significantly more predictive of alcohol and drug misuse than the overall number of traumas (2).

Physiological differences. Type II trauma victims had significantly worse self-rated physical health than Type I trauma victims (2). Individuals with Type II trauma exposure had significantly higher overall arousal than those with Type I trauma exposure (6). However, individuals who had experienced Type I trauma were shown to have significantly exaggerated startle reflex potentiation, defensive reactivity, greater fear potentiation and heightened sympathetic activation as compared to individuals with Type II trauma exposure (6).

Intervention differences. Type II trauma exposure was linked to significantly poorer treatment prognosis than Type I trauma exposure (6). Repeated trauma, but not cumulative trauma, was linked with seeking significantly more sources of help and being significantly more likely to seek the help of therapeutic services (2). Those who had experienced cumulative trauma perceived informal sources of help as significantly less helpful than those who have experienced Type I traumas.

Table 7.
Comparison of outcomes of exposure to cumulative or repeated trauma

Outcome	Cumulative trauma significantly higher	Repeated trauma significantly higher
Post-Traumatic Stress Disorder		
Lifetime symptoms of PTSD	X	
Current symptoms of PTSD	X	
Depression		
Lifetime symptoms of Depression	X	
Current symptoms of Depression	X	
Alterations in regulation of affect and impulses		
Affect regulation impairments	X	
Tried to hurt self		X
Thoughts of killing self		X
Risky sexual behaviour		X
Number of consensual sexual partners		X
Number of times had consensual sex at first meeting		X
Excessive risk taking		X
Drug use	X	
Alterations in attention or consciousness		
Amnesia	X	
Somatisation		
Self-rated physical health problems	X	
Alterations in relations to others		
Violence perpetration		X
Increased help-seeking		X
Seeking help from therapeutic services		X
Perception of support being unhelpful	X	

Repeated vs. cumulative traumatisation. Table 7 depicts the findings of the studies that made comparisons between repeated and cumulative traumas (2, 3 and 4). In one study there were significant differences in the trauma histories of the two groups,

with repeated trauma victims being more likely to have identified a family member as the perpetrator of their sexual assault (2) to have a younger age at their first trauma (2) and for there to have been more physical violence between parents (4) and received more parental verbal abuse (4). Cumulative trauma victims were more likely to have experienced more severe assaults that resulted in physical injury (2) and more likely to have believed their life was endangered during their assault (2). The cumulative trauma group also experienced more traumas overall and more interpersonal traumas (2), indicating a potential confounding variable of comparisons between these groups. One study excluded participants who had experienced their first trauma in childhood (4), therefore resulting in no significant difference between the age of first trauma in the cumulative and repeated trauma groups that they examined. Although the remaining study controlled for demographic factors, such as age and ethnicity if they differed significantly between the two groups, the study did not control for differences in trauma history between the two groups, such as age at first trauma and number of traumas exposed to when comparing cumulative and repeated traumatisation (3).

Discussion

Conclusions

Type I and II trauma. The present review sought to examine studies that have compared the psychological effects of Type I and Type II trauma. Eight studies were identified as meeting the inclusion criteria. These studies showed a dose-effect of trauma exposure, whereby individuals who had experienced more than one traumatic incident displayed more severe symptoms of PTSD than individuals who had experienced a

single traumatic experience. It would be expected that the experience of numerous traumas would increase the likelihood that an individual would develop PTSD, as the more incidents that they are exposed to, then the greater the chance that one of those incidents would be sufficient to result in PTSD. However, these studies demonstrated that the impact of Type II trauma went beyond this and those who developed PTSD displayed a more severe symptom profile, indicating an additive effect of traumatic experiences. In addition to greater severity of PTSD, Type II trauma victims also displayed further emotional and behavioural problems. Those who had experienced Type II trauma showed higher levels of depression, anger, shame, guilt and mistrust.

In contrast to a pattern of increasing PTSD severity and additional symptoms following Type II trauma, measures of physiological outcomes indicated that physiological arousal, startle responses and fear reactions were actually increased in individuals who had experienced Type I trauma, compared to multiple traumatisation. This indicates that whilst there is an increase in psychological distress, there is potentially a reaction to multiple traumas where individuals show a blunted fear response (Cuthbert et al., 2003), potentially due to increased dissociation (Hooper, Frewen, van der Kolk & Lanius, 2007).

Cumulative and repeated traumas. The studies also highlighted a difference between the different subcategories of Type II trauma. Repeated trauma, where the individual experienced ongoing or chronic traumas of the same type from the same perpetrator or perpetrators (such as in child abuse, domestic violence or torture), was demonstrated to have a different impact from cumulative trauma, where individuals had

experienced multiple traumas that were different in nature or were from different perpetrators. Individuals who had been exposed to cumulative traumas had increased levels of PTSD, depression, binge drinking and impairments in self-regulation, compared to both victims of Type I trauma and of repeated trauma. Type I trauma victims were also shown to have increased PTSD severity and depression than repeated trauma victims, but lower than cumulative trauma victims. This would indicate the role that separate cumulative traumas have in contributing to PTSD symptoms, and that similar to physiological responses, there is a different response to repeated traumatisation, potentially where individuals become desensitised and post-trauma symptoms therefore stop increasing.

In contrast, repeated trauma victims were shown to have higher rates of DESNOS, and to also display increased interpersonal problems such as perpetrating violence and risky sexual behaviour. Symptoms of DESNOS and interpersonal problems are indicators of Complex PTSD. This highlights the possibility that PTSD severity is a result of cumulative traumas, but that the occurrence of Complex PTSD is a response to repeated traumatisation. Whereas cumulative traumas may have an additive effect, increasing PTSD symptoms as more traumas are experienced, the nature of repeated traumas may result in alterations in psychological and interpersonal systems, including attention and consciousness (such as risk perception) and relations with others (such as violence perpetration). This would indicate that rather than Complex PTSD being a product of being exposed to numerous traumas, that there is a fundamental difference between cumulative and repeated traumatisation. It is possible that repeated trauma is

associated with a greater expectancy of the trauma, and therefore the experience of anticipatory anxiety prior to the trauma onset (Simpson, Drevets, Snyder, Gusnard & Raiche, 2001). This highlights the importance of future research into Complex PTSD, identifying subcategories of Type II trauma so that the impact of cumulative and repeated trauma can be more fully understood.

However, it is important to note that cumulative and repeated trauma survivors may not represent distinct and mutually exclusive groups. Individuals may have experienced repeated trauma, such as child abuse, and then go on to experience a number of other very different traumas, meaning that they have been exposed to both repeated and cumulative traumas. In fact research into revictimization indicates that individuals who have experienced repeated interpersonal traumas are at higher risk from experiencing additional traumas from other perpetrators in the future (Arata, 2000; Classen, Palesh & Aggarwal, 2005; Messman-Moore & Long, 2003). This means that cumulative trauma groups may be likely to consist of a substantial proportion of individuals who have also experienced repeated traumas. Of the three studies in the present review that compared cumulative and repeated traumatisation, two of the studies excluded participants who had experienced both repeated and cumulative traumas (Green et al., 2000; Green et al., 2005), thereby ensuring that the groups were mutually exclusive. Casey and Nurius (2005) did not exclude such participants, meaning that their cumulative trauma group would have included repeated trauma victims as well. What is currently lacking in the literature is an understanding of the different presentations of individuals who have been exposed to repeated trauma only, cumulative trauma only and

a combination of both repeated and cumulative trauma. In comparing these groups it would also be important to control for effects of the age at the time of trauma exposure, in order to clarify whether any differences really represent a difference between repeated and cumulative trauma, or whether they are indicative of developmental trauma. Such comparisons would provide insight into the potentially differing effects of repeated and cumulative traumatisation.

Previous findings. The findings of these studies support those of previous research which did not make comparisons between Type I and Type II trauma groups, but instead conducted correlations based on symptomatology and the number of traumas experienced. Studies with refugees (Pham, Weinstein & Longman, 2004), veterans (Orcutt, Erikson & Wolfe, 2002) treatment-seeking individuals (Follette, Polusny, Bechtle & Naugle, 1996) and community samples (Breslau, Chilcoat, Kessler & Glenn, 1999) have repeatedly demonstrated an association with increased trauma exposure and both increased PTSD prevalence and increased PTSD severity. Studies have also repeatedly demonstrated an association with increased trauma exposure and an increased prevalence of symptoms additional to the core symptoms of PTSD (Cloitre et al., 2009; Ford & Kidd, 1998; Newman, Orsillo, Herman, Niles & Litz, 1995). The evidence from the studies in the present review therefore support and aid weight to the proposition that traumas have an additive impact on PTSD symptomatology, as well as resulting in further additional symptoms.

Implications

Understanding the impact of multiple traumas is problematic. The studies highlight that there is no uniform means of measuring the number of traumas that an individual has experienced – whether this is measured by the total number of traumas experienced, or whether it is measured by the number of trauma categories they have experienced. Both forms of measurement are problematic, as it may be difficult for individuals to recall or separate all of their experiences (Weathers & Keane, 2007). There is also no consensus in how the traumas are then classified, with some studies having an overall category of 'multiple traumas' (Amir & Sol, 1999; Hagenaars et al., 2011; McTeague et al., 2010), others identifying specific number of traumas into separate groups (Suliman et al., 2009), and others comparing multiple interpersonal traumas (Wilson et al., 1999). This is likely to reflect the lack of standardised and robust measures for Type II traumatisation. The development of a robust measure for gathering a trauma history, which clearly delineates uniform definitions for multiple traumatisation, would aid research in this area. Such a measure would need to be empirically driven (Weathers & Keane, 2007) as well as culturally sensitive (Hollifield et al., 2002).

Whilst some of the studies specifically sampled groups that were likely to have been exposed to multiple traumas, for instance populations that included individuals who had experienced active military service (Amir & Sol, 1999), other samples were derived from high-functioning or 'typical' sections of the community who were not treatment-seeking (Green et al., 2000; Green et al., 2005; Suliman et al., 2009; Wilson et

al., 1998). Despite this, all of the studies were able to recruit a substantial number of Type II trauma victims in order to make adequate comparisons, and went on to demonstrate the high levels of distress in these groups. This indicates the high-prevalence of multiple traumatisation within a number of populations. It is therefore important for future research into PTSD or other trauma reactions, to consider past traumatisation and gather a full and complete trauma history. The additive effect of Type II trauma indicates that studies that only measure the effect of the most recent or worst trauma experience may actually be picking up an additive effect of the individual having experienced a number of traumas in their past (Delahanty & Nugent, 2006).

Future Research

The review highlights the importance of firstly forming a consensus definition of Type II trauma and secondly, devising the means of measuring Type II trauma as reliably as possible. This would enable future research into PTSD to more routinely assess and evaluate the impact of trauma exposure on individuals' presentation and symptomatology. The review also indicates the need to identify the separate subcategories of Type II trauma in future research so that the differing impact on cumulative and repeated traumatisation can be more fully understood. By comparing the impact of single, cumulative and repeated traumas in investigating multiple traumatisation, then the nature and aetiology of Complex PTSD can be more fully understood.

There were no studies that met the inclusion criteria of the review that had compared the impact of Type I and Type II trauma on children. It is important for this to also be investigated so that it can be explored whether this pattern found in adults is replicated when traumas are experienced during maturational development. This would not only provide information regarding the nature of the response to Type II traumatisation in childhood, but would also be informative in separating the impact of exposure to repeated traumas and exposure to traumas at a young age.

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Part 2: Empirical Paper

The effect of age at first trauma and multiple traumatisation on symptoms of Complex PTSD

Abstract

Aims

There is a growing body of evidence into the prevalence of Complex PTSD, however what is as of yet unclear is whether Complex PTSD is a result of multiple traumas, or a consequence of traumas occurring at a young age. The aim of the current study was to investigate the effect of age at first trauma and the number of traumas experienced on symptoms of Complex PTSD.

Method

Seventy-two individuals with PTSD were recruited from three mental health outpatient services. Participants were administered standardised measures regarding their experiences of traumatic events (THQ) and symptoms of PTSD (PCL) and Complex PTSD (DES, SDQ-5, IIP-25 and BDI-II).

Results

Age at first trauma was shown to effect interpersonal problems, with the childhood trauma group displaying increased symptoms once the number of traumas experienced was controlled for. Age at first trauma was not related to dissociation, somatisation, PTSD severity or depression. In contrast, the number of traumas experienced was related to PTSD severity, interpersonal problems, dissociation, somatisation and depression.

Conclusion

The results suggest that the experience of multiple traumas may lead to symptoms of Complex PTSD. With the exception of interpersonal problems, the study suggests that Complex PTSD is a response to the cumulative effect of multiple traumas, rather than a response to traumas occurring in childhood.

The effect of age of first trauma and multiple traumatisation on symptoms of Complex PTSD

Post-Traumatic Stress Disorder (PTSD) is defined in the Diagnostic and Statistical Manual of Mental Disorders – Fourth Edition (DSM-IV-TR; APA, 2000) as being classified into three overarching domains of symptoms: re-experiencing, avoidance and arousal. These clusters of symptoms are observable in individuals who fail to recuperate psychologically from a traumatic event, which was of an exceptionally threatening or catastrophic nature. Dysfunction in these can result in anxiety, insomnia, distressing and recurrent dreams, flashback imagery and intrusive thoughts, irritability, poor concentration, avoidance behaviour and detachment (Green, 2003). There has been much research into PTSD following a single experience of trauma. Individuals with PTSD who experience intrusive reliving, typically experience a small number of distinct intrusive memories which are experienced as distressing and vivid, and which occur in a repetitive manner (Hackman, Ehlers, Speckman & Clark, 2004). These intrusive memories are typically of the moments of the traumatic incident that represent the greatest emotional impact. With treatment, the vividness, distress and frequency of intrusive memories decrease (Hackman et al., 2004).

Around 25 – 30% of people experiencing a traumatic event, go on to experience PTSD (NICE, 2005). Interpersonal trauma, such as rape or sexual assault, is associated with high levels of PTSD. In a study of 51 rape victims, 70% were found to have PTSD (Bownes, O'Gorman & Sayers, 1991), whereas other studies have estimated that 50% of adult rape victims develop PTSD (Arata, 1999). Rates of PTSD amongst child survivors

of childhood sexual abuse vary from 21% to 50%, and PTSD rates amongst adult survivors vary from 72% to 100% (Nishith, Mechanic & Resick, 2000). Characteristics of the assault (such as being attacked by a stranger, weapons being displayed and injuries being sustained) were associated with an increased likelihood of developing PTSD (Bownes et al., 1991). Receiving negative social reactions upon disclosing the assault has also been associated with increased severity of PTSD in rape victims (Ullman & Filipas, 2001). Proximal factors do not account fully for the variability in whether an individual develops post-rape PTSD (Nishith, Mechanic & Resick, 2000), indicating the need to also consider other contributing factors such as the age at which the trauma occurred and the number of traumatic experiences that an individual has experienced.

Rather than discrete traumatic experiences, individuals may experience on-going, chronic exposure to untenable environments. Research has demonstrated that in groups that have typically experienced multiple traumatic events, such as refugees, maladaptive traumatic reactions can reflect more complex reactions than those strictly specified in the diagnostic category of PTSD (Palic & Elkit, 2011). In a cross-sectional study of London Community Mental Health Teams (CMHTs), it was demonstrated that psychiatrists reported significant diagnostic uncertainty for 30% on the asylum seekers or refugees who were under the care of their CMHT (McColl & Johnson, 2006). A cross-sectional study of Somali refugees demonstrated that individuals with a refugee status presented with higher rates of PTSD, depression and psychosis than non-refugee controls (Kroll, Yusuf & Fujiwara, 2011). The range of additional and co-morbid

symptoms displayed by groups that have experienced multiple traumas has led some to argue that the PTSD diagnosis may not encompass the full range of posttraumatic reactions in those who have experienced multiple traumas (Beltran et al., 2008). Existing research indicates that the phenomenology of individuals who experience a single incidence of trauma differ from those exposed to chronic, repeated traumas (Ide & Paez, 2000; Van de Kolk & Courtois, 2005; Terr, 1991). The International Classification of Diseases – 10 (ICD-10; WHO, 1992) highlights a diagnostic category termed 'Enduring Personality Change After Catastrophic Experience'. This describes enduring consequences of prolonged stress. The diagnostic criteria includes hostile or mistrustful attitude to the world, social withdrawal, feelings of emptiness or hopelessness and chronic feelings of being threatened. However, this diagnostic category is not empirically based. DSM-IV has also highlighted the complexities of some trauma reactions and includes the category of 'Disorders of Extreme Stress Otherwise Not Specified' (DESNOS). Although not a diagnostic category in itself, this addition to the PTSD category highlights the consequences of chronic exposure to early interpersonal trauma. DESNOS is typified by alterations in six areas: regulation of affect and impulses; attention and consciousness; self-perception; relations with others; somatisation; and systems of meaning. DESNOS is also frequently referred to as Complex PTSD (Palic & Elkit, 2011). This is the term used to describe the complicated clinical presentation of individuals who have experienced reoccurring trauma (Herman, 1992).

Whilst the symptomatology of victims of single incident traumas are well captured in DSM-IV diagnosis of PTSD, victims of interpersonal or repeated trauma present with a more complex picture (Luxenberg, Spinazzola & Van der Kolk, 2001). Compared with individuals with PTSD, individuals with Complex PTSD display a more severe and complicated symptom profile, including alterations in character and an increased vulnerability to self-directed harm and revictimization (Dorahy et al., 2009). Complex PTSD is typified by a more severe symptom profile, in addition to further factors, including alterations in the individual's character, impairments in relating to others and increased risk of self-directed harm (Taylor et al., 2006). Identified as central to the concept of Complex PTSD are alterations in psychological and interpersonal systems, including: attention and consciousness; relations with others; and somatic functioning (Dorahy et al., 2009). Alterations in attention and consciousness can include a range of dissociative experiences. Dissociation is a lack of integration of thoughts, feelings and experiences into a coherent stream of consciousness (Bernstein & Putnam, 1986). It can be experienced as a discontinuity in awareness (Perry & Laurence, 1984). Alterations in relations with others can include different types of interpersonal problems, which refer to problems in relating to others, which causes distress for the individual. These can include aggression, a need to please others, disinterest in connecting with others or problems accepting authority (Horowitz, Rosenberg, Baer, Ureno & Villasenor, 1988). 'Alterations in somatic functioning' refers to physical symptoms that cannot be explained by any known medical condition. These symptoms are often recurrent and frequently changing. Somatisation is often typified by multiple medically unexplained complaints, prominent illness and sick role behaviour and invalidism,

disproportionate disability and preoccupation with health and illness (Creed & Barsky, 2004).

The relationship between PTSD and Complex PTSD remains unclear (Dorahy et al., 2009). It is unclear whether Complex PTSD is simply a more severe version of PTSD, or whether it represents an independent disorder. Symptoms of Complex PTSD occur together in many traumatised individuals but rarely occur as a syndrome in individuals not exposed to high-magnitude or chronic stressors (Luxenberg, Spinazzola & Van der Kolk, 2009). This supports the proposition that Complex PTSD represents a complex posttraumatic syndrome associated with chronic or severe interpersonal traumatisation. Although DESNOS is currently grouped under 'associated features of PTSD' in DSM-IV, it is now being researched and considered for free-standing diagnosis in DSM-5 (Luxenberg et al., 2001). The World Health Organisation (WHO) is developing the International Classification of Diseases version 11 (ICD-11), which is due to be released in 2015. The ICD-11 Working Group has reviewed the evidence regarding stress based mental disorders in terms of scientific validity, clinical utility and consensus with proposals for DSM-5. This Working Group proposes the new category of Complex PTSD, which they recommend includes the three core elements of PTSD (re-experiencing, avoidance and hyper-arousal) in addition to enduring disturbances in the domains of affect, self, and interpersonal relationships (Maercker, 2013). The Working Group identifies Complex PTSD as being a distinct and distinguishable diagnosis from personality disorders and PTSD. Regardless of the nature of the stressor and the extent of the trauma history, the diagnosis of PTSD or Complex PTSD is

determined by the symptom profile (Cloitre, Garvert, Brewin, Bryant & Maercker, 2013). Whereas the symptoms of PTSD are directly connected to trauma-related stimuli, the additional features of Complex PTSD are pervasive and occur across various contexts, regardless of the presence of reminders of traumatic experiences (Cloitre et al., 2013).

The incident of having experienced a single-trauma is likely to be rare in clinical settings, as is the incidence of 'pure' PTSD that occurs without the presence of comorbid symptoms (Kessler et al., 1995; Van der Kolk et al., 2005). Comorbidity in PTSD is common, with individuals with PTSD being eight times more likely to have three or more additional disorders than individual without PTSD (Green et al., 2006). These mostly include major depression, other anxiety disorders, substance abuse, somatisation disorder and Axis II disorders (Kilpatrick et al., 2003). This high rate of co-morbidity indicates that pure forms of PTSD may therefore actually be unrepresentative of the typical presentation of PTSD. This highlights the possibility that PTSD as a diagnostic category only describes limited aspects of pathological reactions to trauma and that further research is required into Complex PTSD.

Multiple traumas are an important area to investigate as treatment trials for PTSD cases have primarily been based on cases of a single trauma (Palic & Elklit, 2011). This body of evidence forms the basis of the National Institute of Clinical Excellence guidelines (NICE, 2005), which recommends that individuals diagnosed with PTSD are offered trauma-focused Cognitive Behavioural Therapy (TF-CBT) or Eye Movement Desensitisation and Reprocessing (EMDR). There is limited research into the

effectiveness of trauma-focused psychological treatments on the complex reactions to prolonged and repeated exposure to traumatic events (Palic & Elkit, 2011), indicating that a greater understanding of the processes involved in repeated traumas is required.

The occurrence of revictimization in individuals who experience interpersonal trauma may contribute to the more complex presentation of PTSD cases in this group and again highlights the importance of understanding the impact of multiple traumas. Childhood maltreatment has consistently been linked with difficulty trusting others, revictimization and victimization of others (Arnow, 2004). A history of prior victimization is the best predictor of subsequent victimization (Nishith, Mechanic & Resick, 2000). Revictimization can impact on the individual's trauma pathology. Studies with rape victims show link between victimization history, increased post-rape pathology and prolonged or compromised recovery (Nishith et al., 2000). Compared with individuals with PTSD, individuals with Complex PTSD are more vulnerable to revictimization (Dorahy et al., 2009). There are high rates of childhood physical and sexual abuse in both clinical and non-clinical adult populations (Finkelhor, 2011). Estimates of the prevalence of histories of childhood traumas in psychiatric populations range from 40 to 70% (Luxenberg, Spinazzola & van der Kolk, 2001). Despite this, trauma related disorders are largely undiagnosed, potentially because symptoms may not be recognised as related to trauma experience. This highlights the need to develop a greater understanding of the complex reactions in response to repeated interpersonal traumas.

Research has linked Complex PTSD diagnosis with histories of interpersonal victimization, multiple traumatic events or traumatic exposure of extended duration (Luxenberg, Spinazzola & Van der Kolk, 2009). Longer durations of abuse, as well as the combination of both physical and sexual abuse, have been linked to Complex PTSD (Roth, Newman, Pelcovitz, Van der Kolk & Mandel, 1997). The ICD-11 Working Group has identified Complex PTSD as typically arising from severe and prolonged stressors usually involving several or repeated adverse events (Maercker, 2013). In addition to multiple traumas, symptoms of Complex PTSD are more prevalent in those with history of early onset interpersonal trauma. Early childhood trauma and wartime atrocity have been shown to be significant risk factors for Complex PTSD (Dorahy et al., 2009). Whilst both repeated traumas and early onset of traumas have been implicated as being important in leading to Complex PTSD, the role of frequency and onset of traumatic events is not yet fully understood. In a study of women receiving treatment for trauma related symptoms related to childhood abuse, symptoms of Complex PTSD (emotion regulation, interpersonal problems and dissociation) and whether traumas occurred in childhood or adulthood were assessed (Cloitre et al., 2009). They found an overall additive effect of cumulative trauma to symptom complexity. Within the same study it was demonstrated that in a sample of children and adolescents presenting to a child trauma service, symptoms of Complex PTSD were related to the experience of multiple traumas, but not to single traumas (Cloitre et al., 2009).

Hagenaars, Fisch & Minnen (2011) investigated the effect of age on onset and frequency of traumatic events on PTSD symptom profiles. Outpatients of a PTSD

outpatient service were assessed for a range of PTSD related symptoms, including dissociation, guilt, shame, anger and interpersonal sensitivity. Comparisons were made on the basis of trauma characteristics in terms of childhood versus adulthood trauma, and single versus multiple traumas. They found that individuals who had experienced multiple traumas reported increased dissociation and shame as compared to individuals who experienced a single trauma event. This effect was independent of PTSD severity. Their findings also indicated that multiple trauma patients displayed increased guilt and interpersonal sensitivity, that anger was more often directed towards themselves and that victims of childhood trauma experienced more dissociation and state anger than adult trauma victims, however these effects disappeared after controlling for PTSD severity. However, whilst PTSD related symptoms were demonstrated to be affected by the number of times that a trauma was experienced, what was not clear was how symptoms of Complex PTSD, were impacted by the frequency and onset of traumatic events. It is currently unclear in the existing literature whether the symptoms displayed in Complex PTSD are a result of experiencing multiple traumas, or whether these symptoms arise from trauma occurring during childhood.

The present study seeks to inform this issue by investigating the effect of the age at first trauma exposure and the number of traumas experienced on symptoms of Complex PTSD in individuals who have a diagnosis of PTSD. The present study will compare symptoms of Complex PTSD (dissociation, interpersonal problems and somatisation) in individuals who have experienced traumas in childhood with individuals who experienced traumas in adulthood. As all participants will be adults

who received a diagnosis of PTSD following trauma in adulthood, it will not be possible to make a comparison to individuals who only experienced trauma in childhood. As a result comparisons will be made between participants who only experienced trauma in adulthood, and participants who have experienced additional childhood trauma. In terms of this comparison, it is hypothesised that individuals who experienced additional childhood trauma will not display significantly greater symptoms of Complex PTSD compared to individuals who only experienced traumas in adulthood, when the number of traumas experienced is controlled for.

The relationship between the number of traumas individuals have experienced and symptoms of Complex PTSD will also be explored. Due to the complexities in measuring trauma frequency, the impact of the number of traumas experienced will be assessed in two ways: the overall number of traumas individuals have experienced, or trauma exposure; and the number of different types of trauma individuals have experienced (i.e. natural disasters, interpersonal trauma, traumatic loss etc.), or the range of traumas experienced. It is hypothesised that symptoms of Complex PTSD will be significantly higher in individuals who have experienced an increased trauma exposure and increased range of traumas. It is therefore hypothesised that trauma exposure and range of traumas experienced are stronger predictors of symptoms of Complex PTSD than age at first trauma.

Aims

To summarise, the aims are as follows;

1. Compare symptoms of Complex PTSD in participants who have experienced traumas only in adulthood and those who have experienced traumas in both childhood and adulthood. It is hypothesised that there will be no significant different between the symptoms of Complex PTSD of the two groups.
2. Assess the impact of trauma exposure (the total number of traumas experienced) on symptoms of Complex PTSD. It is hypothesised that increased trauma exposure will be significantly related to increased symptoms of Complex PTSD.
3. Assess the impact of trauma range (the number of types of trauma experienced) on symptoms of Complex PTSD. It is hypothesised that increased trauma range will be significantly associated with increased symptoms of Complex PTSD.

Method

Design

A cross-sectional study was conducted, based on a cohort of 356 adults who were either receiving or awaiting treatment of PTSD from NHS secondary-care outpatient mental health services in three London boroughs. Within this sample, comparisons were made between two independent groups; individuals who had experienced traumas in childhood, and individuals who had experienced traumas exclusively in adulthood.

Participants

Seventy-two participants with a diagnosis of PTSD were recruited from the secondary-care outpatient mental health services in three London boroughs. Individuals were included if they met the DSM-IV criteria for PTSD according to a clinical assessment with a qualified clinical psychologist or psychiatrist. Mean age of the sample was 47.32 (*SD* 9.02; range 29 to 66). Thirty-eight participants were female (52.8%) and 34 were male (47.2%). Participants indicated their race and nationality as part of their initial assessment into the service: 36 categorised themselves as White (50%), 19 as 'other ethnic group' (26.4%), 12 as Black (16.7%), one as Asian (1.4%) and four did not disclose their race (5.6%). Of the sample, 22 were British (30.6%), 21 were Turkish (29.2%), 15 were Iranian (20.8%), three were African (4.2%), two were Albanian (2.8%), two were Greek (2.8%), two were Russian (2.8%), one was Cypriot (1.4%), one was Irish (1.4%), and three participants did not disclose their nationality (4.2%).

Forty-two participants were receiving treatment for PTSD (58.3%) and 30 were on a waiting list for treatment (41.7%). Of those who were receiving treatment, a number of different treatment approaches were provided (with some participants having engaged in more than one therapy through the course of their treatment plan). The treatments that participants had either completed or were currently engaging with included: Psycho-education (*n* = 25, 34.7%), Behavioural Activation (*n* = 12, 16.7%), Symptom Management Group (*n* = 9, 12.5%), Narrative Exposure Therapy (*n* = 7,

9.7%), Cognitive Behavioural Therapy (*n* = 5, 6.9%), Psychotherapy (*n* = 2, 2.8%), and Mentalization Based Therapy (*n* = 2, 2.8%).

Measures

Trauma History Questionnaire (THQ; Green, 1996). The Trauma History Questionnaire (THQ) is a 24-item self-report measure that examines experiences of potentially traumatic events including crime-related events (e.g. robbery mugging), general disaster (e.g. injury, accident, natural disaster, witnessing death), and sexual and physical assault (e.g. physical assault with or without weapon, sexual assault, rape, being kidnapped or taken hostage). There is also the opportunity for participants to complete an "other" category where they can enter any other extraordinary stressful situation or event what was not included within the previous 23 items. Answers are given using a yes/no format. For each event endorsed, participants are asked to provide the number of times they experienced the event as well as their age at the time of the event.

In comparisons with the SLESQ (Stressful Life Events Questionnaire; Goodman et al., 1998), construct validity of the THQ was found to be good with the Cohen's coefficient kappa statistic in the good to excellent range (k = .61 – 1.00). A positive significant relation (r = .46, p<.001) between THQ and Conflict Tactics Scale has also been demonstrated (Humphreys et al., 1999). Test-retest reliability of the THQ was shown as fair to excellent (Green et al., 2000; Green et al., 2005). Moderate to high test-retest reliability (Mueser et al., 2001) was demonstrated for a range of traumatic experiences in individuals with severe mental illness. Kappa coefficients ranged from

.57 to .89 (Kappas in range of .40 - .60 are considered fair, .60 - .75 are considered good, and over .75 are considered excellent; Fleiss, 1971). Inter-rater reliability ranged from .76 to 1.00 (Muser et al., 2001).

PTSD Checklist – civilian (PCL-C; Weathers, 1993). The PCL (civilian) is a 17-item self-report measure of the 17 DSM-IV symptoms of PTSD. The PCL-C asks about symptoms in relation to "stressful experiences." The measure can be used when assessing survivors who have symptoms due to multiple events. Participants are asked to consider how much they have experienced each symptom over the past month and to rate each item according to a five-point Likert-scale (ranging from 1 – Not all at, to 5 – Extremely). A total severity score can be calculated for each participant, ranging from 17 to 85.

The Clinician Assessed PTSD Scale (CAPS) is considered the gold-standard of assessing and diagnosing PTSD. A correlation of the PCL-C with the CAPS was .93, whereas diagnostic efficiency compared to the CAPS was .90 (Blanchard, Jones-Alexander, Buckley & Forneris, 1996). Test-retest reliability of the PCL-C has been demonstrated to be good, ranging from correlation coefficients of .68 to .92 (Ruggiero, Del Ben, Scotti & Rabalais, 2003).

Dissociative Experiences Scale (DES; Bernstein & Putnam, 1986). The DES comprises 28 items that describe common dissociative experiences. Participants' rate for each item what percentage of the time that particular dissociative symptom is experienced. The overall DES score is the average of all the individual scores. The level

of dissociative symptoms as indicated by the DES have been demonstrated to be elevated in individuals with trauma-related disorders (such as PTSD and dissociative disorders), but to not be substantially elevated in individuals with other psychiatric and neurological disorders (Berstein & Putnam, 1986).

In a meta-analytic validation of the DES, the measure was shown to have excellent convergent validity with other dissociative experiences questionnaires and interviews (combined effect size d = 1.82; van Ijzendoorn & Schuengel, 1996). The DES was also demonstrated to have good predictive validity for PTSD (combined effect size d = .75) and history of abuse (combined effect size d = .52; van Ijzendoorn & Schuengel, 1996).

Somatoform Dissociation Questionnaire (SDQ-5; Nijenhaus, Spinhoven, van Dyck, van der Hart & Vanderlinden, 1997). The SDQ-5 is a screening tool for DSM-IV dissociative disorders. It focuses on somatoform manifestations of mental dissociation processes (Nijenhaus et al., 1997). The measure includes five items which participants are required to rank on a five-point Likert-scale, indicating how often they have experienced this symptom over the past year. For items that are endorsed, respondents are required to indicate if a medical diagnosis was given for this symptom and what the diagnosis was.

Sensitivity and specificity of the SDQ-5 have been shown to be good (94% and 98% respectively; Nijenhaus, Spinhoven, van Dyck, van der Hart & Vanderlinden, 1998). The measure was also demonstrated to have good positive predictive value (84%)

and negative predictive value (99%) of prevalence rates of dissociative disorders among psychiatric patients (Nijenhaus et al., 1998).

Inventory of Interpersonal Problems (IIP-25; Kim & Pilkonis, 1999). The IIP-25 is a short version of the Inventory of Interpersonal Problems. It contains 25 items that identify an individual's most salient interpersonal difficulties. Respondents indicate how difficult they find each of the difficulties on a five-point Likert-scale (ranging from 'Not at all' to 'Extremely'). The measure consists of five subscales; interpersonal sensitivity, interpersonal ambivalence, aggression, need for approval and lack of sociability.

The IIP-25 has been demonstrated to have excellent internal consistency, with the Cronbach's coefficient being greater than .80 (Kim & Pilkonis, 1999). Convergent validity was also demonstrated to be good, with Pearson correlations between the full-version of the IIP and the subscales of the IIP-25 ranging from .97 for aggression and .92 for interpersonal sensitivity and interpersonal ambivalence. Predictive validity of the IIP-25 in detecting personality disorders was assessed by a receiver operating characteristic (ROC) analysis. When compared to structured diagnostic interviews, the IIP-25 was shown to have good sensitivity of .95, positive predictive value of .71, efficiency (i.e. overall diagnostic agreement) of .67 (Kim & Pilkonis, 1999).

Beck Depression Inventory – 2nd edition (BDI-II; Beck, Steer & Brown). The BDI-II is a 21 item measure used to assess the presence and severity of symptoms of depression as listed in the DSM-IV. For each item, respondents are required to indicate

on a four-point scale (0 to 3), the extent they have experienced that symptom over the previous two weeks.

The BDI-II has been demonstrated to have excellence performance as a screening tool for Major Depressive Disorder (AUC = .96; Arnau, Meagher, Norris & Bramson, 2001). The BDI-II has also been demonstrated to be reliable across different populations. Coefficient alphas are .92 for outpatients and .93 for college students. The correlations for the corrected item-total were significant at .05 level (with a Bonferroni adjustment), for both the outpatient and the college student samples. Test-retest reliability was shown to be good, with a correlation of .93, which was significant at $p < .001$.

Procedure

The caseloads of the Complex Care Service Lines in three London boroughs were used to identify patients who had received a diagnosis of PTSD. Patient files were then used to identify which of these patients are English-speaking. Invitations to take part in the study (see Appendix 2) and Participant Invitation Sheets (Appendix 3) were then posted to all English speaking patients with a diagnosis of PTSD. Potential participants were given the opportunity to discuss the study with the researcher either in person or on the phone. Informed written consent (Appendix 4) was gained from all individuals who chose to participate. Participants were required to complete six outcome measures; Trauma History Questionnaire (THQ), PTSD Checklist – civilian version (PCL-C), Dissociative Experiences Scale (DES), Somatoform Dissociation Scale (SDQ-

5), Inventory of Interpersonal Problems (IIP-25) and Beck Depression inventory (BDI-II).

Participants were given the choice of completing the measures with the researcher, or to complete the questionnaire themselves and to return the measures to a Freepost address at University College London. Participants who chose to meet with the researcher to complete the measures were given an appointment at a time that was convenient for them. This took place in a clinical room at the site of the Support & Recovery Team that they were under the care of. Following the completion of the measures, they received debriefing from the researcher. Participants who chose to complete the measures themselves were given telephone debriefing from the researcher. All participants were given details of how to obtain support from either the researcher or their allocated clinician within their treatment plan, in addition to support phone-lines that they could contact outside of office-hours if they felt distressed by the measures in any way. All participants were also given the opportunity for a follow-up meeting with the researcher if they felt that they required this.

Ethical considerations. Ethical approval was granted by the City Road & Hampstead National Research Ethics Committee (see Appendix 1). Approval was also granted by the NHS Research & Development departments for the appropriate NHS Trusts in which the study was conducted.

All participants were provided with a Participant Information Sheet and the opportunity to ask the researcher any questions they had. Clinicians within the three

services were also provided with information about the study so that individuals had to opportunity to consider taking part with someone external to the research if they wished. All participants gave informed consent. All participants were provided with debriefing following completion of the measures. All of participants' responses were anonymised and kept confidential.

Power Analysis

Power analysis for this study was informed by prior work by Hagenaars, Fisch & Minnen (2011). In this study the authors used measures of symptoms associated with PTSD to assess individuals who have experienced single or multiple traumas. For the measure of trait dissociation between single and multiple trauma groups, they found an effect size of d = .62. A power calculation was carried out using the "G*Power 3" computer program (Faul, Erdfelder, Lang and Buchner, 2007), specifying alpha = 5%, desired power = 80% and a one-tailed test. This indicated that the required sample size was estimated to be N = 66.

Results

Trauma History

All participants had been exposed to multiple traumatic experiences each (mean = 22.8 traumas, SD = 12.21). Participants had experienced a range of trauma types across eight categories: Serious accident or illness where life was endangered (n = 68, 94.4%); traumatic or sudden loss of spouse, child or significant other, such as through

murder, combat or accident (n = 61, 84.7%); witnessing another being seriously injured or killed (n = 58, 80.5%); crime, such as burglary or mugging (n = 56, 77.7%); physical assault or physical abuse (n = 54, 75%); sexual assault, rape or sexual abuse (n = 46, 63.8%); natural disaster (n = 25, 34.7%); and combat or active military experience in a warzone (n = 17, 23.6%). Participants had experienced a mean of 5.33 (SD = 1.61) different trauma types each.

Tests of Normality

Tests of normality showed that the IIP-25 (D(72) = .06, p = .20) and BDI-II (D(72) = .09, p = .20) were normally distributed. In contrast, the PCL-C (D(72) = .15, p = .001), DES (D(72) = .12, p = .01) and SDQ-5 (D(72) = .16, p < .001) were not normally distributed. These three measures were subsequently transformed to ensure that they were normally distributed. The transformed variables were used for all of the subsequent analyses.

Study Participation

Twenty-one participants (29.17%) completed the outcome measures via an interview with the research and the remaining 51 participants (70.83%) chose to complete the outcome measures themselves. Comparisons of the two groups showed that they did not differ in gender (t(70) = -.56, p = .58), age (t(70) = -.11, p = 92), ethnicity (t(70) = -1.29, p = .20) nationality (t(70) = .79, p = .43) or whether they were receiving treating or awaiting treatment (t(70) = 1.18, p = .24). There was also no significant difference between the two groups in the number of traumas they had been exposed to

(t(70) = -3.29, p = .21), the range of traumas they had experienced (t(70) = -2.5, p = .14), the age at first trauma (t(70) = -.11, p = .92), nor scores on the PCL-C (t(70) = -1.01, p = .31), DES (t(70) = -1.5, p = .13), SDQ-5 (t(70) = -2.09, p = .44), IIP-25 (t(70) = -2.7, p = .87) or BDI-II (t(70) = -.16, p = .11).

Age at First Trauma

Childhood trauma was classified as any trauma occurring prior to 16 years of age. Any traumas that occurred at either 16 years or older were categorised as adulthood traumas. Within the sample, 30 participants had only experienced traumas in adulthood (Adulthood Trauma group) and 42 participants had experienced traumas in both childhood and adulthood (Childhood Trauma group). The groups were first compared on demographic information to ensure that these variables were not responsible for any group differences. Table 1 shows the mean age and trauma history of the two groups. The groups did not differ in gender (X^2(1, N = 72) = .77, p = .38) or age (t(70) = .22, p = .82). The groups were also compared according to whether participants had commenced treatment for PTSD or were awaiting treatment. This found that the groups did not differ in treatment stage (X^2(1, N = 72) = 1.47, p = .22). The groups were compared on race and as 50% of the cells had fewer than the expected count, the comparison was run with participants categorised according to the largest group, as White or Non-White. This showed no difference between the groups (X^2(1, N = 72) = .23, p = .63). Due to the small numbers in some of the nationality groups, 72.7% of the cells had expected frequencies less than five, thereby violating an assumption of the Chi Square. Nationality was therefore analysed by categorising participants as either British or Non-

British, which showed a difference between the Childhood Trauma and Adulthood Trauma groups, with non-British participants being significantly more likely to have experienced Adulthood traumas only ($X^2(1, N = 72) = 4.67$, $p = .03$). To account for this difference, ANCOVA analyses were used for Childhood vs. Adulthood Trauma comparisons with nationality entered as a covariate.

Table 1
Mean (SD) age, trauma exposure (number of traumatic experiences) and range of traumas experienced (number of different trauma types experienced) of Childhood and Adulthood Trauma groups

Participant characteristics	Childhood Trauma ($n = 42$)	Adulthood Trauma ($n = 30$)
Age (in years)	47.12 (8.5)	47.6 (9.84)
Number of Traumas Experienced	26.67 (12.06)**	17.47 (10.39)
Range of Traumas Experienced	5.76 (1.46)**	4.73 (1.62)

** $p < .01$. * $p < .05$.

The groups were also compared on trauma exposure, the total number of traumas that participants had experienced. Participants in the Childhood Trauma group had significantly increased trauma exposure ($t(70) = -3.37$, $p = .001$). Due to the difficulties in identifying an exact number of trauma incidents (for example if the individual had experienced a number of very similar traumas, such as in a domestic violence, abuse or combat situation, or if the individual had experienced a prolonged trauma, such as being captured and tortured), in addition to measuring trauma exposure, the range of traumas experienced (number of different trauma types that participants experienced) was also measured. There were eight trauma categories identified in the THQ, meaning that participants were allocated a score from one to eight to reflect the range of traumas

experienced. In a comparison of the two groups, the Childhood Trauma group had been exposed to significantly greater range of traumatic experiences than the Adulthood trauma group ($t(70) = -2.82$, $p = .006$).

Table 2
Mean (SD) scores of Childhood and Adulthood Trauma groups on outcome measures

Outcome Measure	Childhood Trauma ($n = 42$)	Adulthood Trauma ($n = 30$)
PTSD Checklist (PCL-C)	68.4 (14.04)	65.67 (14.45)
Dissociative Experiences Scale (DES)	38.72 (29.3)	36.23 (28.38)
Somatoform Dissociation Questionnaire (SDQ-5)	11.76 (5.23)	9.6 (4.47)
Inventory of Interpersonal Problems (IIP-25)	59.4 (18.69)**	42.4 (19.07)
Beck Depression Inventory (BDI-II)	42.36 (14.2)	39.43 (13.78)

** $p < .01$. * $p < .05$.
Note. Levels of significance are from analysis using nationality and either trauma exposure or range of traumas experienced as covariates.

Table 2 depicts the raw scores for each of the outcome measures according to Childhood and Adulthood Trauma groups. ANCOVA analysis showed that, controlling for nationality, those who had experienced both childhood and adulthood trauma had significantly higher IIP-25 scores than those who had only experienced traumas in adulthood ($F(1, 71) = 13.37$, $p < .001$). The Childhood Trauma group also scored higher on the SDQ-5 ($F(1, 71) = 4.55$, $p = .04$). Conversely, there were no differences between the two groups in PCL-C scores ($F(1, 71) = 1.51$, $p = .22$), DES scores ($F(1, 71) = .54$, $p = .45$) or BDI-II scores ($F(1, 71) = 1.72$, $p = .19$).

An ANCOVA analysis was used with the total number of traumas experienced entered as a covariate to examine whether increased trauma exposure was responsible

for the differences found between the Childhood Trauma and Adulthood Trauma groups. Once trauma exposure was controlled, for in addition to nationality, SDQ-5 scores were no longer significantly different ($F(1, 71) = .97$, $p = .33$). However differences in IIP-25 scores remained significant, irrespective of trauma exposure ($F(1, 71) = 6.27$, $p = .01$). An ANCOVA was also used with the range of traumas experienced used as a covariate. This showed a similar pattern, in that once the range of traumas was controlled for in addition to nationality, SDQ-5 scores were no longer significantly higher for the Childhood Trauma group ($F(1, 71) = 1.34$, $p = .25$), but that IIP-25 scores remained significantly higher for this group ($F(1, 71) = 6.32$, $p = .01$).

Table 3
Mean (SD) scores of Childhood and Adulthood Trauma groups on subscales of the Inventory of Interpersonal Problems (IIP-25)

IIP-25 Subscale	Childhood Trauma ($n = 42$)	Adulthood Trauma ($n = 30$)
Interpersonal Sensitivity	13.59 (4.8)	10.1 (4.97)
Interpersonal Ambivalence	10.19 (5.77)	7.2 (5.28)
Aggression	11.09 (6.1)**	6.7 (5.07)
Need for Social Approval	12.71 (5.17)*	9.03 (4.7)
Lack of Sociability	11.81 (5.18)	10.83 (10.3)

** $p < .01$. * $p < .05$.
Note. Levels of significance are from analysis using nationality and either trauma exposure or range of traumas experienced as covariates.

In order to further explore this difference between the groups, the subscales of the IIP-25 were examined. Table 3 shows the raw scores for the Childhood Trauma and Adulthood Trauma groups for the five subscales of the Inventory of Interpersonal Problems. ANCOVA analysis showed that, controlling for nationality, participants who had experienced both childhood and adulthood traumas scored significantly higher than

participants who had experienced adulthood traumas only on the subscales of Interpersonal Sensitivity ($F(1, 71) = 8.26$, $p = .005$), Interpersonal Ambivalence ($F(1, 71) = 4.97$, $p = .03$), Aggression ($F(1, 71) = 15.92$, $p < .001$), Need for Social Approval ($F(1, 71) = 7.42$, $p = .008$). In contrast, there was no significant difference in Lack of Sociability ($F(1, 71) = .07$, $p = .79$).

Trauma exposure was entered as a covariate in an ANCOVA analysis of the impact of Childhood and Adulthood Trauma groups on the IIP-25 subscales. This showed that once nationality and trauma exposure was controlled for, Aggression ($F(1, 71) = 8.32$, $p = .005$) and Need for Social Approval ($F(1, 71) = 4.21$, $p = .04$) remained significantly higher in those who had experienced both childhood and adulthood traumas. However, these differences were no longer significant for Interpersonal Ambivalence ($F(1, 71) = 2.41$, $p = .12$) nor Interpersonal Sensitivity ($F(1, 71) = 3.12$, $p = .08$).

The range of traumas experienced was then entered as a covariate instead of trauma exposure in an ANCOVA analysis of the IIP-25 subscales. Once nationality and number of traumas experienced was controlled for, Interpersonal Sensitivity ($F(1, 71) = 2.63$, $p = .11$) and Interpersonal Ambivalence ($F(1, 71) = 2.39$, $p = .13$) no longer differed between the two groups. Once again, Aggression ($F(1, 71) = 7.83$, $p = .007$) and Need for Social Approval ($F(1, 71) = 5.25$, $p = .02$) remained higher for the Childhood Trauma group.

Range of Traumas Experienced

Trauma range (as measured by the number of types of trauma that participants had experienced) was subjected to a correlation with each of the outcome measures. This showed a strong positive correlation with scores on the PCL-C ($r = .52$, $p < .001$), IIP-25 ($r = .42$, $p < .001$) and BDI-II ($r = .42$, $p < .001$). A moderate positive relationship was also found between range of trauma experiences and scores on the DES ($r = .36$, $p = .006$) and SDQ-5 ($r = .35$, $p = .002$).

Age at First Trauma and Trauma Range

Age at first trauma (either childhood or adulthood) and range of traumas experienced (as measured by the number of trauma categories experienced) were used in a multiple regression analysis to predict scores on each of the outcome measures. The model accounted for 27% of the variance in PCL-C scores ($R^2 = .27$, $F(2, 70) = 12.72$, $p < .001$), 10% of the variance in DES scores ($R^2 = .1$, $F(2, 70) = 4.06$, $p = .02$), 14% of variance in SDQ-5 scores ($R^2 = .14$, $F(2, 70) = 5.57$, $p = .006$), 26% of variance in IIP-25 scores ($R^2 = .28$, $F(2, 70) = 12.26$, $p < .001$) and 18% of variances in BDI-II scores ($R^2 = .18$, $F(2, 70) = 7.63$, $p = .001$).

The impact of age at first trauma and range of traumas experienced were then assessed separately. The individual impact of age at first trauma and range of traumas experienced can be seen in Table 4. Range of traumas experienced made a significant contribution to the prediction model with the PCL-C ($t(71) = 5.03$, $p < .001$), DES ($t(71) = 2.81$, $p = .006$), SDQ-5 ($t(71) = 3.18$, $p = .002$), IIP-25 ($t(71) = 3.86$, $p < .001$) and BDI-II ($t(71) = 3.92$, $p < .001$). In contrast to this, age at first trauma made a significant

contribution to the prediction of IIP-25 scores ($t(71) = 3.77$, $p < .001$), but made no significant contribution to the prediction of PCL-C ($t(71) = .91$, $p = .37$), DES ($t(71) = .36$, $p = .72$), SDQ-5 ($t(71) = 1.89$, $p = .06$) or BDI-II scores ($t(71) = .87$, $p = .39$).

Table 4
Partial correlations (Beta scores) from multiple regression analyses of age at first trauma and range of traumas experienced on outcome measures

Outcome Measure	Partial correlation with age at first trauma	Partial correlation with range of trauma experiences
PTSD Checklist (PCL-C)	.11	.52**
Dissociative Experiences Scale (DES)	.04	.32**
Somatoform Dissociation Questionnaire (SDQ-5)	.22	.35**
Inventory of Interpersonal Problems (IIP-25)	.41**	.42**
Beck Depression Inventory (BDI-II)	.10	.42**

** $P < .01$. * $p < .05$.

Summary of Findings

To summarise, an increased trauma exposure and increased range of traumatic experiences were associated with elevated levels of dissociation, somatisation, interpersonal problems and depression, in addition to greater PTSD severity. Childhood trauma was associated with increased aggression and need for approval, relative to adulthood trauma.

Discussion

Conclusions

The present study aimed to investigate the effects of the number of traumas experienced and age at first trauma on symptoms of Complex PTSD. Whilst there is a growing body of evidence for the concept of Complex PTSD, which includes additional symptoms of problems with regulation of affect attention and consciousness, relations with others and somatic functioning (Dorahy et al., 2009). This study sought to explore these experiences through measuring dissociation, interpersonal problems and somatisation, in addition to PTSD severity and depression in a group of adults seeking treatment for PTSD. Comparisons were made between individuals who had experienced both childhood and adulthood trauma, and individuals who had experienced adulthood trauma only. The relationship between symptomatology and the trauma frequency was also investigated, with trauma frequency being measured by the range of traumas experienced (number of different types of traumas experienced), which was deemed more reliable than trauma exposure (the overall number of traumas experienced). The findings supported those of previous studies that have explored the impact of childhood trauma and multiple traumatisation on symptoms of Complex PTSD (Cloitre et al., 2009; Hagenaars, Fisch & Minnen, 2011) and found that the number of traumas experienced, but not age at first trauma, were linked to symptoms of Complex PTSD.

Interpersonal problems. The findings indicated that individuals who had experienced trauma in their childhood were more likely to display interpersonal

problems than individuals who had only experienced traumas in adulthood. This effect remained once trauma exposure and the range of traumas experienced was controlled for. This supports previous findings that interpersonal problems are linked with trauma experiences in childhood (Bierer, Schmeidler, Mitropoulou, Silverman & Siever, 2003; Cloitre, Miranda, Stovall-McClough & Han, 2005; Herman, Perry & Van der Kolk, 1989). A number of studies have demonstrated a link between adult interpersonal problems and a range of childhood traumas, including sexual abuse (Delilo, 2001), physical abuse (Malinosky-Rummell & Hansen, 1993) and psychological abuse (Messmen-Moore & Coates, 2007). One possible explanation for this link is that traumas which occur in childhood disrupt the child's ability to identify and regulate their own emotions, as well as their ability to identify and understand the emotions of others (Fonagy & Bateman, 2008). This ability, referred to as 'mentalization' (Fonagy, Gergely, Jurist & Target, 2004) is highly important in interacting with others and in forming successful relationships with others (Allen & Fonagy, 2006). It is therefore possible that the experience of traumas in childhood impaired the development of mentalization skills in this group, therefore leading to greater interpersonal problems amongst these individuals. As mentalization abilities are impaired when arousal is increased (Fonagy & Luyten, 2009), it could also be possible that this group simply has higher overall levels of arousal, therefore leading to impairments in mentalization and subsequent interpersonal problems. In order to more fully explore whether the differences in interpersonal problems were a reflection of deficits in the ability to mentalize, or an artefact of higher arousal, the overall anxiety levels of the two groups would need to be investigated. Although general levels of anxiety were not measured in

the present study, PTSD severity was. There was no difference found between the groups in PTSD severity, indicating that there is unlikely to be a difference in arousal between the two groups.

Aggression. When interpersonal problems were more closely examined, the findings indicated that once trauma exposure and range of traumas experienced was controlled for, aggression was elevated in those who had experienced childhood traumas compared to those whose traumas occurred exclusively in adulthood. Traumas experienced in childhood may have an impact on an individual's ability to regulate their own emotions (Ehring & Quack, 2010), meaning that experiences of anger or anxiety may be more readily expressed as aggressive acts, compared to individuals who are better able to regulate and manage these emotions (Fonagy, 2004).

This difference in aggression could instead be attributed to traumas occurring at a developmental stage when understanding and beliefs of the self and others are being formed, and therefore having a long-lasting impact on how others are viewed (Janoff-Bulman, 1989). If core beliefs are formed that others are dangerous and a threat, then this may lead to a tendency to interpret others behaviour as being confrontational or threatening (Chen, 1996), and to therefore respond with aggression or violence (Zelli, Dodge, Lochman & Laird, 1999).

Alternatively, it may be that interpersonal traumas (such as crime, combat, physical assault and sexual assault) model aggressive behaviour to the child. Both witnessing others being aggressive (Litrownik, Newton, Hunter, English & Everson,

2003) and being the victim of aggression in childhood (Hoglund & Nicholas, 1995; Lansford et al., 2002) have been demonstrated to increase the likelihood of children acting aggressively themselves. It may be that through social learning (Bandura, 1971), individuals who experienced interpersonal trauma in childhood have learnt the aggressive behaviour that has been modelled to them.

Need for approval. The findings also demonstrated that once trauma exposure and the range of traumas experienced were controlled for, individual's who had experienced childhood traumas displayed an increased need for approval than individuals whose traumas occurred exclusively in adulthood. Need for approval from others may be linked to a decreased self-esteem, as rather than be able to rely on inner resources, individuals are dependent on validation from external sources (Lobel & Teiber, 1994). Trauma occurring in childhood may jeopardize the child's sense of self and ability to validate themselves (Finzi-Dottan & Karu, 2006; Roesler & McKenzie, 1994). Alternatively, rather than being a reflection of the individuals relationship with themselves and inner sense of self, the need for approval from others may instead be an indication of their relationship with others and perception of others. If a child grew up in an environment where they were exposed to physical and sexual abuse and neglect, then they may have learnt that they needed to attempt to appease others in order to stay safe (Cantor & Price, 2007; Crittenden & DiLalla, 1988). This need for approval from others may have therefore become a learnt behaviour.

Dissociation. In contrast to interpersonal problems, the findings indicated no effect of age at first trauma on the extent of participants' experience of dissociation, with

there being no difference between symptoms of dissociation in individuals who had experienced adulthood traumas compared to those who had experienced both adulthood and childhood traumas. This is in contrast with previous theories that have suggested that dissociation is a response to extreme fear when the individual is unable to defend or escape (rendering a 'fight or flight' response useless), indicating that childhood trauma would be more likely to lead to dissociation than adulthood trauma (Sanders & Giolas, 1991; van der Kolk et al.,1996). Despite no effect of age at first trauma, the dissociation was associated with trauma frequency, with individuals who experienced increased trauma exposure and increased range of traumas displaying increased dissociation. As an individual experiences traumas repeatedly, particularly if they are in a situation where they are unable to escape (such as torture, domestic violence or child abuse) they may experience a greater need to protect themselves psychologically through dissociation. Past studies have described prisoners consciously training themselves to dissociate in order to withstand hunger, cold and pain (Partnoy, 1986; Sharansky, 1988). It is possible that it is a learnt defence mechanism, meaning that repeated traumas act as 'rehearsing' the mind's defences, causing dissociation to be initiated more readily and in individuals who have experienced multiple traumas (Green et al., 2000).

Alternatively, it is possible that the nature, and therefore the experience of repeated traumas are intrinsically different from single traumas. A one-off trauma, such as a traffic accident, mugging or terrorist attack may be associated with high levels of shock as the event was not expected by the individual. Traumas that are repeated numerous times on a regular basis, such as when the individual is a victim of domestic

violence, child abuse or torture, then prior to the traumas the individual may experience regular and high levels of anticipatory anxiety. Anticipatory anxiety was shown to be predicted by prior occurrences of post-treatment anxiety, even when trait anxiety was controlled for, in women receiving chemotherapy for breast cancer (Jacobsen, Bovbjerg & Redd, 1993). It has also been demonstrated that adults with PTSD experienced increased cortisol levels when faced with reminders of their trauma experiences (Elzinga, Schmahl, Vermetten, van Dyck & Bremner, 2003). As well as being fear-inducing in their own right, subsequent traumas may also act as a cue of previous experiences of trauma. Therefore, as the number of traumas an individual experiences increases, they are also likely to experience an increase in anticipatory anxiety and a corresponding increase in cortisol levels. Individuals who have already experienced multiple traumas, would have more trauma cues and therefore be more likely to experience anticipatory anxiety and have higher cortisol levels, meaning they would be more likely to experience dissociation.

This finding could also be explained through the link with dissociation and shame. Individuals are more likely to dissociate when the trauma involves self-disgust or shame (Talbot, Talbot & Tu, 2004). It may be that the individuals who experienced numerous traumas were more likely to have experienced incidents that were associated with feelings of shame. It has been established that shame plays an important role in traumas such as sexual assault, violent crime and domestic violence (Andrews, Brewin, Rose, & Kirk, 2000; Fugate, Landis, Riordan, Naurekas & Engel, 2005; Gibson & Litenberg, 2001). It could also be the case that as an individual experiences multiple

traumas, the cognitions and beliefs that they hold about those traumas change. As an individual experiences more traumas, they may begin to blame themselves more, and with increased self-blame they may therefore experience increased shame (Lutwark, Panish & Ferrari, 2003), thereby increasing the likelihood of dissociation.

Somatisation. The results showed that there was no difference in somatisation between individuals who had experienced traumas in childhood to those who had experienced traumas only in adulthood. In line with dissociation, symptoms of somatisation were related to trauma exposure and the range of traumas experienced. This supports previous findings that have linked increased somatisation with the experience of multiple traumas (Banyard, Williams & Siegel, 2001). Shame has been linked to somatisation (Pineles, Street & Koenen, 2006), indicating that the link between multiple trauma and somatisation could me mediated by increased levels of shame in individuals who have experienced more traumas. Further research would need to also measure shame to explore its relation to trauma exposure and somatisation.

PTSD severity. Similar to dissociation and somatisation, there was also no impact of age at first trauma on PTSD severity, however there was a relationship between PTSD severity and trauma exposure and range of traumas experienced. This is in line with previous findings that have linked the experience of multiple traumas with increased PTSD severity (Green et al., 2000; Eriksson, Vande Kemp, Gorsuch, Hoke & Foy, 2001; Scott, 2007).

Depression. Symptoms of depression were also found to be linked to trauma exposure and range of traumas experienced, but not to age at first trauma. This also supports previous findings (Carlson & Rosser-Hogan, 1991; Green et al., 2000; Suliman et al., 2009). Increased negative life experiences are associated with depression (Kessler, 1997; Kraaij, Arensman & Spinhoven, 2002). Depression is also likely to be linked to trauma history through the impact that PTSD has on daily functioning. Avoidance, reliving and hyper-arousal may make it difficult to go out, to socialise, to work or to achieve desired goals. This could lead to isolation, a lack of activity and a lack of achievements and fulfilment, all of which are risk factors for depression (Cole & Dendukuri, 2003; Lewinsohn et al., 1994).

Limitations

Self-report measures. The study used self-report measures as a means of assessing trauma history and symptoms of Complex PTSD. Measuring trauma exposure is intrinsically problematic as for individuals who have experienced numerous traumas of very similar nature (such as in child abuse, domestic violence or combat) and who may have difficulty in identifying and recalling each separate incident to come to an exact number of how many traumas they have experienced. Identifying a specific number does also not capture the extended duration of some of the traumas, such as having a life-threatening illness or being held captive or tortured for a period of weeks or months. In indicating how many times they had experienced a particular event, some individuals may have classified these experiences as being equal to several traumas, whereas others may have classified them as a single trauma experience.

Self-report measures also have some limitations in the measurement of symptoms of Complex PTSD. Questionnaires regarding symptoms and psychological functioning require a certain amount of insight for the respondent to be able to be aware of and identify their own internal experiences. According to mentalization theory, chronic early traumatisation leads to individuals experiencing problems with identifying, recognizing and labelling their own emotions (Fonagy & Luyten, 2009). This would mean that individuals with mentalization problems may score artificially lower on outcomes regarding PTSD, depression, dissociation and somatisation, masking any difference between individuals who have experienced childhood traumas compared to adulthood traumas. Future research should seek to gather a range of sources of information to supplement the self-report information, such as interviewing significant others.

Examining multiple traumas. The study examined the number of times individuals had been exposed to particular traumas; however the specific nature of these incidents was not explored. This research does not assess the difference between multiple traumatisation which consists of chronic and enduring traumas that are likely to be similar in nature (such as child abuse and domestic violence), to individuals experiencing multiple but very different traumas across their lifetime. Future research would benefit from exploring in greater detail the characteristics of the traumas, such as whether the perpetrator was the same across interpersonal traumas, the duration of time in-between traumas, and whether there was the presence of expectation or anticipation prior to the trauma instead of the trauma being experienced as a sudden shock.

No comparison groups. As all of the participants had experienced multiple traumas (both in terms of the overall number of traumas they had experienced, and the number of types of trauma they had experienced), it was not possible to compare a single trauma group to a multiple trauma group. This is likely to a reflection of the setting in which the sample was recruited from and the realities of secondary care mental health services. In order to allow such a comparison, it would be advantageous for future research to also recruit participants from other settings, such as primary care services and non-treatment seeking groups, where individuals may be likely to have experienced less extensive trauma histories.

As all of the participants had experienced traumas in adulthood, it was also not possible to make a comparison with individuals who had only experienced adult traumas to individuals who had only experienced child traumas. This is possibly a reflection of the high levels of revictimization in individuals who have experienced childhood traumas (Nishith et al., 2000). A child and adolescent group could be a potential comparison group in future research studies.

Self-selection bias. Although all of the individuals with a diagnosis of PTSD who were either receiving or awaiting treatment within three mental health services were invited to participate in the study, individuals who chose to partake were unlikely to be representative of this group and there is likely to be some self-selection bias. Those with the most severe PTSD symptoms may have feared flashbacks being triggered by being asked questions about their trauma history, and may want to avoid talking or thinking

about their experiences. This could mean that individuals with the most severe symptom profiles were less likely to participate in the study.

Implications

The hypothesis that the number of traumas experienced is related to symptoms of Complex PTSD was supported by the findings. The hypothesis that age at first trauma would have no effect on symptoms of Complex PTSD was upheld for dissociation and somatisation, but was the null hypothesis was accepted in terms of interpersonal problems. These findings have implications for understanding the concept of Complex PTSD. Whereas there has been debate within the literature as to whether the additional symptoms of Complex PTSD are due to the experience of multiple traumatisation, or the experience of traumas at a young age, this study lends support to the Complex PTSD being a response to the cumulative effect of numerous trauma experiences. As interpersonal problems were found to be different in this respect, this also pulls into question the symptoms that are included in the classification of Complex PTSD.

The ICD-11 Working Group has proposed related but distinct diagnostic categories of PTSD and Complex PTSD (Maercker et al., 2013). A latent profile analysis (LPA) of 302 individuals seeking treatment for interpersonal traumas provided evidence of empirically distinguishable concepts of Complex PTSD and PTSD, in addition to a distinction between Complex PTSD and PTSD with comorbid Borderline Personality Disorder (Cloitre et al., 2013). The LPA highlighted that trauma history was not determinant of a diagnosis of Complex PTSD compared to PTSD, and stressed a

probabilistic rather than determinative relationship of trauma history and the diagnosis of Complex PTSD (Cloitre et al. 2013). This highlights that whilst the current study provides information for understanding the relative impacts of age at traumatic experiences and level of trauma exposure on symptoms of Complex, it does not imply that individuals who have experienced multiple traumas would automatically meet criteria for Complex PTSD. Whilst gathering a history of multiple traumatisation would inform a clinician's understanding of an individual, it would not be sufficient to identify Complex PTSD on this basis (Cloitre et al., 2013).

The study also has clinical implications for the treatment of individuals who have survived multiple traumatic experiences. Interventions commonly employed for PTSD, such as Trauma-Focused Cognitive Behavioural Therapy (TF-CBT), Eye Movement Desensitisation and Reprocessing (EMDR), Narrative Exposure Therapy (NET), are focused on the fear-based activation of re-experiencing, avoidance and hyper-arousal (Cohen & Mannarino, 2008; Robjant & Fazel, 2010; Seidler & Wager, 2006; Wilson, Becker & Tinker, 1995). These interventions do not typically focus on affect dysregulation, negative self-concept and interpersonal difficulties (Cloitre, Koenen, Cohen & Han, 2002; Resick, Nishith & Griffin, 2003), which define Complex PTSD and which are pervasive symptoms unrelated to trauma stimuli and the activation of fear (Cloitre et al., 2013). This study supports the proposal of Complex PTSD as a separate concept, and therefore highlights the need for research into interventions that not only address the core symptoms of PTSD, but also address the additional features of Complex PTSD.

Future Research

It is important to note that in a multiple regression, age at first trauma and trauma frequency still did not entirely predict symptomology. This highlights the importance of other additional factors in the development of Complex PTSD. Other factors have been shown to be important in predicting PTSD symptomology, including the absence of social support (Andrews, Brewin & Rose, 2003) and severity of the trauma and additional life stresses at the time of the trauma (Brewin. Andrews & Valentine, 2000). Future research in Complex PTSD should also explore the impact of these factors on symptoms of Complex PTSD.

What is also not yet clear is why some individuals who have experienced multiple traumas go on to develop symptoms of Complex PTSD, and others do not develop these additional symptoms and instead display a symptom profile either of PTSD or do not meet diagnostic threshold for either conditions (Agaibi & Wilson, 2005; Cloitre et al., 2009; Yehuda, 2004). Further research is required into understanding resilience and protective factors in relation to Complex PTSD.

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Critical Appraisal

This section aims to consider in more depth the keys issues raised in the literature review and empirical paper. Firstly the problematic nature of assessing trauma frequency, or the number of traumatic experiences individuals have been exposed to, is considered. This includes both issues of classifying multiple traumas, and problems in measurement. Secondly, whether Post-Traumatic Stress Disorder (PTSD) and Complex PTSD constitute separate diagnostic terms, and the clinical implications of this are considered. Finally, I offer my perspective and reflections on working both as a researcher and as a clinician with individuals who have been exposed to multiple traumas.

Assessing Trauma Frequency

The problematic nature of measuring the number of traumas an individual has experienced, or trauma frequency, was highlighted in both the literature review and the empirical paper. In the literature review, a number of different measures of trauma history were employed by the papers, as were definitions of multiple traumas. In the empirical paper the problematic and potentially unreliable nature of asking participants to identify the number of times they had experienced each trauma was briefly discussed and the number of trauma categories participants were exposed to was used to supplement this measurement. This raises the question of whether trauma frequency can ever be measured in a reliable and valid way. Accurately assessing the impact of trauma

frequency is dependent on two factors – the definition or classification of multiple traumas, and the measurement of trauma experiences.

Classification. There is currently no consensus definition for multiple traumas. Whereas some studies define multiple traumas as more than one trauma exposure, regardless of the type of trauma or the age of the individual (Hagenaars et al., 2011; McTeague et al., 2010; Suliman et al., 2009), others have classified multiple traumas differently, including: being exposed to trauma in childhood and again in adulthood (Wilson et al., 1999); being exposed more than one interpersonal trauma (Casey & Nurius, 2005; Green et al., 2000); trauma from different perpetrators (Griffing et al., 2006); or more than one type of trauma exposure, such as natural disaster, combat experience or interpersonal trauma (Amir & Sol, 1999). There also remains the question of how to classify the subcategories of Type II trauma. Repeated trauma refers to the on-going experience of chronic traumas that are very similar in nature from the same perpetrator or trauma of an extended duration, such as child abuse, domestic violence or torture. Cumulative trauma refers to a series of unrelated traumas, such as an individual being in a road traffic accident, a victim of rape and experiencing a natural disaster at different points in their life. Whereas some studies have classified repeated and cumulative trauma groups according to perpetrator identity (Casey & Nurius, 2005; Green et al., 2000), others have grouped participants according to the nature of the trauma experiences (Green et al., 2005). There is also a lack of consistency as to how on-going traumas of extended duration (such as in the experience of torture over a period of weeks or months) are classified or counted (Loutan, Bollini, Pampallona, De

Hann, & Gariazzo, 1999; Mollica & Caspi-Yavin, 1991). Having a unified and comprehensive definition of Type II trauma is necessary in order to enable future research in this area (Weathers & Keane, 2007). Defining Criterion A in the DSM-IV classification of PTSD led to sustained and productive study of PTSD, where researchers from different areas were able to unify their research (Breslau & Kessler, 2001). Just as Criterion A became the adopted standard in the field of PTSD research, future research into multiple traumatisation and Complex PTSD would benefit from a clear and explicit definition of Type II trauma within the DSM 5 classification of Complex PTSD. Definitions of Type II trauma need to be empirically and theoretically driven (Kira et al., 2008).

Measurement. Although a consensus definition of Type II trauma would aid research and understanding in the area and reduced discrepancy between studies, there would however remain problems with accurately measuring trauma frequency. Individuals may experience difficulty in identifying the number of traumas they have been exposed to not only because traumas may have occurred at a young age, or may have been very similar and therefore difficult to distinguish and accurately count, but also due to the nature of PTSD. Memory abnormalities underlie many of the symptoms of PTSD (Brewin, Dalgleish & Joseph, 1996). Impaired memory performance has been demonstrated in individuals with PTSD (Vasterling et al., 2002). In particular this impairment has been shown to affect verbal declarative memory (Bremner, Vermetten, Afzal, Vythilingam, 2004; Brewin, 2001). Impairments in autobiographical memories has been demonstrated in individuals with depression (Williams & Boradbent, 1986;

Williams & Dritschel, 1988), with depressed individuals more likely to recall 'over-generalised' memories rather than specific incidents or events (Evans, Williams, O'Loughlin & Howells, 1992). Over-generalised memory recall has also been demonstrated in PTSD patients compared to healthy controls (McNally, Lasko, Macklin & Pitman, 1995). Autobiographical memory impairments have been linked to trauma exposure, with individuals who had experienced childhood traumas displaying difficulties retrieving specific personal memories (Kuyken & Brewin, 1995). This indicates that due to memory problems and impairments in autobiographical memory, individuals with PTSD who have experienced multiple traumas may experience difficulties in recalling all of their past traumas (McNally, 1997), therefore weakening the reliability of measures of trauma frequency.

One of the key defining features of PTSD is avoidance of trauma-related stimuli, which can include cognitive avoidance, or avoiding voluntarily recalling or thinking about the traumatic event (Dunmore, Clark & Ehlers, 1999). This may therefore further complicate recall of past traumas and accurate measurement of trauma exposure. By avoiding thinking about or fully recalling traumatic incidents, it would be difficult for individuals to recall a detailed narrative of their trauma experiences (Williams & Moulds, 2007). This may result in individuals misclassifying a number of separate incidents as one event, or identifying a few similar events as one incident.

These difficulties do not mean however that research should not investigate the impact of trauma exposure. Instead they highlight the need for robust empirically

developed instruments that support individuals in accurately recalling their traumatic experiences to the best of their ability (Hollifield et al, 2002).

Complex PTSD as a Diagnosis

Whether Complex PTSD constitutes a separate condition from PTSD remains a contentious issue (McDonnell, Robjant & Katona, 2013). The literature review and empirical paper add to this debate through their exploration of the impact of multiple traumatisation. The literature review demonstrated that when survivors of a single trauma and survivors of multiple traumas are compared, a different symptom profile is evident in the two groups. This included greater severity of PTSD symptoms, and also additional symptoms following multiple traumatisation. The empirical paper also demonstrated the role of multiple traumatisation, rather that early traumatisation, in the development of symptoms of Complex PTSD. Both the literature review and the empirical paper give weight to the proposition that exposure to multiple traumas results in a different symptom profile than that of PTSD.

The literature review and empirical paper also indicated areas of further research that are required in order for Complex PTSD to be more fully understood. The review highlighted the possible differing impact of cumulative and repeated traumas, which requires further investigation. The empirical paper also demonstrated that interpersonal problems potentially develop in a different way to somatisation and dissociation, indicating the need for the different symptoms of Complex PTSD to be carefully defined and measured so that each can be investigated further in future research. It is also

noteworthy that the studies in the literature review and the empirical paper assessed the impact of Criterion A trauma, where life was seriously endangered (Breslau & Kessler, 2001), on symptoms of Complex PTSD. However, research into symptoms such as interpersonal problems and self-regulation have demonstrated the impact of maladaptive attachment experiences, including deprivation, where individuals experience the absence of a secure attachment or the loss of a significant attachment (Sbarra & Hazan, 2008; Schore, 2001; Zilberstein, 2006). This raises the question of whether Complex PTSD can be a product not only of Criterion A traumas, but also of attachment traumas. Further investigation into the link between not only traumatic experiences, but also attachment experiences and symptoms of Complex PTSD is needed to clarify whether these experiences can lead to Complex PTSD, or whether instead they represent a similar but distinct disorder, such as an attachment disorder (Fowler, Allen, Oldham & Frueh, 2013; Schmid, Peterman & Fegert, 2013).

If Complex PTSD is included in DSM-5 and ICD-11, as is recommended by the ICD-11 Working Group (Maercker et al., 2013) then this has implications for both future research and clinical practice. In terms of research, clear consensus definitions provided by DSM-5 and ICD-11 would facilitate investigation into the aetiology, nature and prognosis of this condition. In clinical practice, diagnostic criteria would support consistent and valid assessments. However, the most appropriate interventions for this client group is currently unclear. NICE guidelines for the treatment of PTSD recommend Trauma-Focused Cognitive Behavioural Therapy (TF-CBT) or Eye – Movement Desensitization and Reprocessing (EMDR). However, whether these or other trauma-

focused therapies adequately target symptoms of Complex PTSD is as yet unclear. Randomised Control Trials are required into the treatment of individuals with Complex PTSD so that intervention guidelines can be developed. There are treatments that have been demonstrated to have efficacy with symptoms that also occur in Complex PTSD. For example, Mentalization Based Therapy has been shown to improve self-regulation and self-destructiveness and suicidal ideation in individuals with Borderline Personality Disorder (Bateman & Fonagy, 2004), Compassion Focused Therapy has been shown to be effective with individuals with high levels of shame, guilty and responsibility (Gilbert, 2009) and Cognitive Analytic Therapy has been demonstrated to be improve interpersonal problems, such as mistrust of others and violence perpetration (Denman, 2001). It is impractical and unrealistic to provide clients with several courses of different models of treatment, however RCTs could identify the elements of the therapies that are appropriate and helpful for individuals with Complex PTSD, thereby enabling evidence-based treatment of this condition.

Clinical Perspective

During the course of this research I was also working in a clinical post in a trauma service, providing Narrative Exposure Therapy (NET) to individuals with severe PTSD who had been exposed to multiple traumatic experiences, including child abuse, domestic violence, torture, political persecution, forced-migration and combat. Carrying out this clinical work in addition to my thesis enabled me to view the issues surrounding Complex PTSD and multiple traumatisation from different perspectives and to consider these from both the position of a researcher and the position of a clinician.

Clinical role informing my research. I found that working clinically with individuals who had survived multiple traumatic experiences informed my understanding of the issues and potential pitfalls involved in the research. As part of NET, clients are initially supported to create a 'Lifeline', which forms a visual timeline of their life experiences, with both the positive and negative significant events in their life being recorded chronologically, and a note being made of the events which were traumatic and which their PTSD symptoms are related to (Robjant & Fazel, 2010). I found in working within this model that clients struggled a great deal to identify and organise the memories of the traumatic events in their life. They had experienced so many traumatic memories, which they had usually never spoken to anyone about before, that they expressed confusion in identifying how old they were when certain events occurred, what order events occurred in and whether some of their memories were of several different events or of fragments of a single event. It seemed that both the chaotic and fractured nature of their histories, and the arousal and avoidance related to their PTSD contributed to difficulties in providing an account of their trauma history. This highlighted to me the potential limitations within my research, and the problems in accurately assessing and measuring participants' trauma exposure and the potential unreliability of requiring participants to recall the number of times they had experienced each trauma and the ages that they were at the time.

In addition to the difficulties in organising and communicating trauma histories, I also noticed that often clients would recall further events later that they had originally forgotten to put on the Lifeline when this was first created. Similarly, in my research two

of the participants contacted me a few days after their interviews to inform me that they had since recalled further traumatic incidents that they forgot to include when I administered the Trauma History Questionnaire. Although I provided all participants with my contact details, it may have been the case that more participants recalled additional events but did not contact me about this. It may be beneficial for future research where a trauma history is gathered from participants who have been exposed to multiple traumas, for researchers to complete a follow-up or repeat interview at a later date to maximise participants opportunity to recall and communicate their traumatic experiences.

After completing the Lifeline, in subsequent NET sessions, the therapist and client then work their way through the Lifeline in order, building up a chronological narrative of the client's life. When a trauma memory is reached, exposure is facilitated by talking through the memory in great detail until a coherent and un-fractured account is gathered. This trauma memory is then read over again in the following session in order to repeat the exposure until habituation occurs, and the memory is no longer associated with increased arousal (Robjant & Fazel, 2010). I found in this stage of the therapy that once clients were supported to go through their trauma memory in a structured exposure, and once their arousal connected to the memory began to decrease, on many occasions they reported that memories which they had previously merged in their mind and thought occurred in one event, were actually similar but separate events that took place days or weeks apart. This also occurred conversely, with clients describing memories that were so fragmented that they classed the incidents on the

Lifeline as a few separate events, and only once exposure and desensitisation took place, did they then create a coherent narrative and come to the realisation that these memories were fragments of one event. This again highlighted to me the difficulties and limitations in gathering a trauma history from individuals who are still extremely traumatised. Past research has demonstrated that survivors of traumatic incidents are able to give more detailed and coherent accounts of the events following completion of trauma-focused therapy (Foa, Molnar & Cashman, 1995). One possibility for future research would be to assess symptoms and psychological outcomes in individuals prior to treatment and to gather trauma history once participants have completed treatment for PTSD, when participants may be able to recall their traumatic experiences with greater ease.

Research role informing my clinical work. In addition to my clinical role informing my understanding of the issues involved in the research, my role as a researcher also informed my clinical understanding. NET focuses on the fear-network, targeting the core symptoms of PTSD (reliving, hyper-arousal and avoidance) that are triggered by trauma-related stimuli (Neuner, Schauer, Roth & Elbert, 2002). However, the clients I was working with were frequently presenting with additional symptoms, such as chronic pain and recurrent health problems with unknown origin or cause; dissociation; shame and a very negative self-perception; either very fearful of others and avoidant of activities that would involve interacting with others, or confrontational and aggressive with others; self-destructiveness; and preoccupation with the perpetrator. These problems seemed more pervasive and did not seem to be triggered by trauma-

related stimuli. This meant that for some of the clients, the trauma-focused therapy which focused primarily, if not exclusively on the fear-network seemed too limited. As the interventions progressed, I witnessed notable improvements in PTSD symptoms that were evident both in standardised outcome measures and in clients own descriptions of their functioning. Despite these improvements, this group of clients were still struggling to function with everyday life due to continuing problems with interacting with others and regulating their affect. As my understanding of Complex PTSD developed through the course of my research I was able to use this knowledge to make sense of the presentations of the clients I was working with. This understanding not only informed my formulations, but also enabled me to bring in techniques and strategies from other models, such as Compassionate Focused Therapy, which widened the focus of the intervention from only focusing on the fear-network and addressed these more pervasive symptoms (Courtois & Ford, 2009; Gilbert & Procter, 2006; Lee, 2009; Lee & James, 2012).

This dilemma in treating multiple traumatisation highlighted to me the risk that without recognition of Complex PTSD as a diagnostic term, there is the risk that symptoms of Complex PTSD will be dismissed by trauma services, and will either be labelled incorrectly or overlooked. This may result in clients' symptoms being misclassified as a comorbid diagnosis, and potentially receiving a number of courses of different treatments that aren't necessarily appropriate for them (McNally, Bryant & Ehlers, 2003; Orr & Roth, 2000). This not only runs the risk of being distressing and demoralizing for clients (Borowsky et al., 2000), but is also costly for NHS resources

(Narrow, Regier, Rae, Manderscheid & Locke, 1993). This demonstrated to me the need for a clinically useful and valid Complex PTSD diagnostic guide that can be applied to that these clients can receive appropriate assessment and treatment. This also demonstrated to me the need for future research to evaluate interventions for Complex PTSD. Well-designed clinical trials with appropriate inclusion and exclusion criteria are required, as well as comparisons against standard treatments for PTSD needed (Resick et al., 2012). With clear DSM-IV and ICD-11 entries for Complex PTSD, researchers will be able to evaluate intervention according to a consensus definition of Complex PTSD and clinicians will be enabled to assess and then provide appropriate evidence-based treatments for this client group.

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Appendices

Appendix 1: Research Ethics Committee Approval Letter

NHS
Health Research Authority
NRES Committee London - City Road & Hampstead
Bristol Research Ethics Committee Centre
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Whitefriars
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BS1 2NT

Telephone:
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22 January 2013

Prof Chris Brewin
Professor of Psychology
University College London
Gower Street
London
WC1E 6BT

Dear Prof Brewin

Study title: **The effect of trauma onset and frequency on symptoms of Complex PTSD in victims of rape and sexual assault**
REC reference: **12/LO/1572**
IRAS project ID: **107188**

Thank you for your letter of 6th November 2012. I can confirm the REC has received the documents listed below and that these comply with the approval conditions detailed in our letter dated 24 October 2012.

Documents received

The documents received were as follows:

Document	*Version*	*Date*
Other: GP Information Sheet	1.0	31 October 2012
Participant Consent Form	2.0	25 October 2012
Participant Information Sheet	4.0	25 October 2012

Approved documents

The final list of approved documentation for the study is therefore as follows:

Document	*Version*	*Date*
Advertisement	1	25 August 2012
Evidence of insurance or indemnity		30 July 2012
Investigator CV		04 September 2012

Letter from Sponsor		16 July 2012
Other: CV - Louise Roberts		25 August 2012
Other: CV - Dr Georgina Smith		
Other: Questionnaire - Postraumatice Diagnostic Scale		
Other: GP Information Sheet	1.0	31 October 2012
Participant Consent Form	1	17 July 2012
Participant Consent Form	2.0	25 October 2012
Participant Information Sheet	3	25 August 2012
Participant Information Sheet	4.0	25 October 2012
Protocol	3	25 August 2012
Questionnaire: Trauma History		
Questionnaire: Inventory of Interpersonal Problems		
Questionnaire: Dissociative Experiences Scale		
Questionnaire: Somatoform Dissociation Questionnaire		
Questionnaire: Beck Depression Inventory		
REC application	3.4	30 August 2012
Referees or other scientific critique report		07 May 2012
Summary/Synopsis	1	25 August 2012

You should ensure that the sponsor has a copy of the final documentation for the study. It is the sponsor's responsibility to ensure that the documentation is made available to R&D offices at all participating sites.

12/LO/1572 **Please quote this number on all correspondence**

Yours sincerely

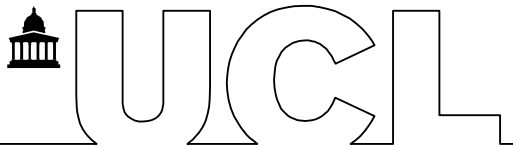
Miss Georgina Castledine
Committee Co-ordinator

E-mail: nrescommittee.london-cityroadandhampstead@nhs.net

Copy to: *Mr David Wilson,*
Ms Akua Asare, Imperial College Healthcare NHS Trust (Hammersmith Hospital, Charing Queen Charlotte and Chelsea)

Appendix 2: Letter of Invitation

University College London
Gower Street, London
WC1E 6BT



Research Department of Clinical, Educational and Health Psychology
University College London
1 - 19 Torrington Place
London WC1E 7HB
Tel

Private and Confidential
To be opened by addressee only
[Address]

[Date]

Dear [Name],

We are contacting you to invite you to take part in a research study into people's responses to traumatic experiences. We are currently writing to individuals within your borough who are either receiving or awaiting treatment for Post-Traumatic Stress Disorder from their Complex Care Team.

The research would involve completing six questionnaires; one about your past experiences and one about your current feelings and behaviours. If you would like to take part in the study then you will have the choice of completing the questionnaires yourself and returning them to a secure Freepost address, or meeting with a researcher who will give you support in completing the six questionnaires.

We have enclosed an Information Sheet with frequently asked questions about the study. If you would like further information then please do not hesitate to contact the researcher.

The researcher will be contacting you by telephone over the next fortnight to see if you would like to take part in the study.

Yours sincerely,

Louise Roberts
Trainee Clinical Psychologist

Professor Chris Brewin
Professor of Psychology

Appendix 3: Information Sheet

University College London
Gower Street, London
WC1E 6BT

Information Sheet – Frequently Asked Questions

Invitation to participate in a research study
You are being invited to take part in a research study that involves completing some questionnaires, either with a researcher or by yourself. This sheet contains Frequently Asked Questions about the research for your information. Please contact the researcher if there is anything that is not clear or if you would like more information.

Why have I been contacted?
We are contacting people who have been referred to the Complex Care Teams within your borough. As part of our research we want to understand the impact that distressing and traumatic experiences can have on people.

What is the purpose of the study?
We know from past research that when people are the victim of a traumatic experience, they can experience a range of distressing feelings and that these incidents can have an impact on the victim for some time afterwards. What we do not yet fully understand is the impact of having lots of traumatic experiences in our lives, and whether the number of traumas we have experienced, or the age we were at the time, means that we have a different response.

In this research we want to get a better understanding of people's reaction to distressing experiences so that we can better understand how to provide the best support and treatment for people who have been the victim of traumatic events.

Do I have to take part?
It is up to you to decide whether or not to take part. If you decide to take part you are still free to withdraw at any time without giving a reason. A decision to withdraw at any time, or a decision not to take part, will not affect the standard of care you receive.

What will I have to do?
If you decide to take part then you will have the choice of meeting with the researcher, Louise Roberts to receive assistance in completing the questionnaires, or you can complete the questionnaires in your own time and will be supplied with a Freepost envelope to return them in. You are welcome to read through the questionnaires to see what they contain before deciding whether to take part.

If you chose to meet with the researcher then she will arrange a time for you to meet at your Complex Care Team at a time that is convenient for you. The researcher will be able to assist you with completing the questionnaires and will also be able to provide support within this session if you find that you are feeling distressed by the questions in any way.

No identifiable information will be recorded in the results. We will not put your name on any of your questionnaires, and you will be assigned a confidential participant number instead so that your answers are kept anonymous. The questions will be kept in a locked NHS cabinet, which only the researcher will have access to.

What will happen to me if I take part?
Taking part in the study does not involve any lifestyle restrictions or changes. It will not affect the care that you receive from the Complex Care Team.

What are the possible disadvantages and risks of taking part?
Some people may find it upsetting to think or talk about the difficult feelings that they may be experiencing or about their past experiences. If you feel uncomfortable or distressed whilst filing out the questionnaires, the researcher will be able to give you support. You can contact the researcher at the contact details below. There is also a list of contact details for other organisations you can contact on the front page of the questionnaire pack.

What are the possible benefits of taking part?
People who have experienced traumatic events sometimes report feeling reassured as they realise from the statements in these questionnaires that they are not alone in what they are experiencing, and that others have experienced similar feelings and responses.

The information we get from this study may help us to treat people who have been the victim of traumatic and distressing experiences better in the future.

Will my taking part in the study be kept confidential?
All information which is collected during the course of the study will be kept strictly confidential. All the data is stored without any identifying details under secure conditions. No identifiable information will be recorded in the results.

The only exception to this is if you meet with the researcher to discuss the questionnaires and are feeling that either you or somebody else may be in danger of being harmed. If this is the case, the researcher will discuss with you who would be best to tell to ensure that you are safe.

What will happen if I don't want to carry on with the study?
You will be free to withdraw from the study at any time, without giving a reason. Withdrawing from the study will not affect the standard of care you receive. Please contact the researcher if you want your questionnaire withdrawn from the study.

What if something goes wrong?
If you wish to complain, or have any concerns about any aspect of the way you have been approached or treated by members of staff you may have experienced due to your participation in the research, National Health Service or UCL complaints mechanisms are available to you. Please ask the researcher if you would like more information on this.

In the unlikely event that you are harmed by taking part in this study, compensation may be available. If you suspect that the harm is the result of the Sponsor's (University College London) or the hospital's negligence then you may be able to claim compensation. After discussing with your research doctor, please make the claim in writing to Professor Chris Brewin who is the Chief Investigator for the research and is based at University College London. The Chief Investigator will then pass the claim to the Sponsor's Insurers, via the Sponsor's office. You may have to bear the costs of the legal action initially, and you should consult a lawyer about this.

What happens if I would like to find out about the study results?
It will not be possible to identify individual results specifically, though a summary of the findings will be available if you are interested. No participants will be identified in any report or publication arising from the study.

We will make arrangements for participants to be informed of the progress of the research and the results will be summarized in a document following the completion of the project. Please let us know if you would like to receive a copy.

Who has reviewed this study?
All NHS research is looked at by an independent group of people, called a Research Ethics Committee to protect your safety, rights, well-being and dignity. This study has been reviewed and been given approval by the City Road and Hampstead London National Research Ethics Committee.

Who can I contact for further information?
For more information about this research, please contact:

Ms Louise Roberts
Trainee Clinical Psychologist
Research Department of Clinical, Educational and Health Psychology
University College London
1 - 19 Torrington Place
London WC1E 7HB
Tel

Or if you have any complaints about this study please contact:

Ms Sukhdip Rai
Research Governance Officer
North Central London Research Consortium
3rd Floor, Bedford House, 125 - 133 Camden High Street, London, NW1 7JR
Tel

Thank you for considering taking part in this research study!

Appendix 4: Consent Form

University College London
Gower Street, London
WC1E 6BT

Participant Consent Form

Participant Identification Number for this trial _____

Study Title: The effect of trauma onset and frequency on symptoms of Complex PTSD

Chief Investigator: Professor Chris Brewin
Name of Researcher: Louise Roberts

Please Initial Boxes

1. I confirm that I have read and understand the Participant Information Sheet (25.08.2012, Version 3.0) for the above study ☐

2. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving any reason, without the medical care or legal rights being affected ☐

3. I understand that all information given by me or about me will be treated as confidential by the research team. ☐

4. I agree to take part in the above study. ☐

Name of Participant	Date	Signature
_____	_____	_____

Appendix 5: Results of regression analyses

Variable	Age at first trauma			Range of traumas experienced			R^2	F
	B	*SE Error*	*Beta*	*B*	*SE Error*	*Beta*		
PTSD Checklist (PCL-C)	-21165.7	69960.5	-.06	550106.6	11143.5	.53	.27	12.7**
Dissociative Experiences Scale (DES)	-.36	.67	-.06	.58	.21	.33	.10	4.01*
Somatoform Dissociation Questionnaire (SDQ-5)	.04	.04	.12	.04	.01	.31	.14	5.56**
Inventory of Interpersonal Problems (IIP-25)	12.72	4.13	.31	4.1	1.4	.32	.26	12.2**
Beck Depression Inventory (BDI-II)	-.99	3.24	-0.3	3.81	1.01	.43	.18	7.6**

** $P < .01$. * $p < .05$.