

# Intrusive Memories and Ruminations Related to Violent Crime Among Young Offenders: Phenomenological Characteristics

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*Very little is known about the nature of perpetrator's memories of violent crime. The authors conducted semistructured interviews with a representative sample of 105 young offenders convicted of serious violence, assessing intrusive memories, ruminations, and symptoms of posttraumatic stress disorder related to their violent crime. Forty-eight (46%) participants described significant intrusive memories of the assault, and 38 (36%) reported ruminations related to the assault. Ethnic origin and historical variables explained 19% of the variance of posttraumatic stress disorder symptom severity; intrusion and rumination characteristics added an additional 48% explained variance. The intrusive memories tended to concern the moment when the event turned for the worse for the perpetrator. The findings have implications for risk assessment and therapeutic interventions for violent offenders.*

Very little is known about memories of violent actions. Some recent studies on selected populations have suggested that the commission of a violent crime may lead to posttraumatic stress disorder (PTSD; Kruppa, Hickey, & Hubbard, 1995; Spitzer et al., 2001). However, there is a lack of data on (a) the extent to which violent offenders report distressing memories of the offence, and (b) the phenomenology and content of these memories in unselected populations of violent offenders. This study presents the

results of structured interviews with a large representative sample of young offenders convicted of a serious violent crime. The interviews concentrated on two types of distressing intrusive cognitions: unwanted intrusive memories and ruminations. Posttraumatic stress disorder theorists have suggested that intrusive memories in which the individual reexperiences part of the traumatic event are functionally distinct from intrusive thoughts or ruminations about the trauma that do not represent reexperiencing

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(De Silva & Marks, 1999; Ehlers & Clark, 2000; Ehlers, Hackmann, & Michael, 2004; Joseph, Williams, & Yule, 1997). The latter include evaluative thoughts about the trauma (Reynolds & Brewin, 1998, 1999) and rumination about the event (Murray, Ehlers, & Mayou, 2002). Characteristics of intrusive memories such as the degree of distress and the “here and now” quality and rumination have been shown to predict PTSD severity in prospective longitudinal studies of assault and road traffic accident survivors (Ehlers, Mayou, & Bryant, 1998; Michael, Ehlers, Halligan, & Clark, 2004; Michael, Halligan, Clark, & Ehlers, in press; Murray et al., 2002).

## METHOD

### Design

An interview study of violent young offenders currently incarcerated within the England and Wales Young Offender's Institution system was conducted, focusing on distressing intrusive memories of and ruminations about the assault.

### Participants

Participants were 105 male prisoners, all of whom had been convicted of grievous bodily harm (GBH), attempted murder, manslaughter, or murder. All participants were imprisoned at two young offenders' institutions (YOI) within the UK during a 20-month period. The exclusion criteria were (a) unable to speak English fluently, (b) severe learning disability, (c) active psychosis, (d) actively suicidal, (e) subjects who denied being present at the scene of the offence for which they have been convicted, and (f) an unacceptably high security risk, e.g., a history of hostage taking. Of the 149 participants who met the legally defined entry criteria during the study period, 113 were suitable for inclusion in the study. Of these, 6 (5%) declined to take part in the study without stating a reason and 2 (2%) refused because they experienced distressing flashbacks during the consenting process, giving an overall compliance rate of 105 out of 113 subjects approached (93%). All participants completed the interview and questionnaires. The mean time

from the assault to the time of interview was 22.6 months ( $SD = 11.18$ , range: 5–76 months,  $Mdn = 21$  months).

### Measures

**Participant and assault characteristics.** Demographic characteristics were assessed using a semistructured interview adapted from Dunmore and colleagues (Dunmore, Clark, & Ehlers, 1999, 2001), which included questions relating to demographic information, medical and psychiatric history, and criminal history. Previous traumatic experiences were assessed with a trauma checklist from the first part of the Posttraumatic Diagnostic Scale (Foa, 1995; Foa, Cashman, Jaycox, & Perry, 1997).

Characteristics of the offence were assessed using The Index Offence Interview, a 32-item, semistructured interview adapted from Dunmore and colleagues (Dunmore et al., 1999, 2001), which included questions related to (a) legal aspects, e.g., conviction, plea, initial charge, sentence; (b) descriptive aspects, e.g., victim(s), code-fendant(s), location, timing, duration, use of weapons; (c) medical aspects, e.g., victim and perpetrator injuries; and (d) situational aspects, e.g., drug or alcohol intoxication, background stress, perceived provocation, planning and preparation, motivation for, and current attitude towards the assault.

The Quick Test (Ammons & Ammons, 1962), a structured assessment that uses nonverbal (picture) cues to estimate an intelligence quotient (IQ), was used to measure intelligence. The Quick Test has been shown to have good correlation with the Wechsler Adult Intelligence Scale ( $r = .91$ ; Frith, Leary, Cahill, & Johnstone, 1991; Wechsler, 1981).

**Intrusive memories.** The presence or absence of intrusive memories for the index offence was assessed using an adapted Intrusion Interview (Michael et al., 2004) a semistructured interview that covers occurrence, content, frequency, modalities, and qualities of intrusive memories. Intrusive memories were defined as memories that (a) were part of what actually happened at the time, and (b) were recurrent, distressing, and involuntarily triggered.

Trauma-related phenomena occurring during sleep were not considered because it is possible that different mechanisms are involved in their development and/or maintenance (Hackmann, Ehlers, Speckens, & Clark, 2004). Thinking about the assault (e.g., “What should I have done differently?”), even if it was involuntary, was excluded if it consisted of post hoc elaborations of memories rather than memories of sensations, actions, or thoughts at the time of the assault. The Intrusion Interview consisted of a series of questions asked in a fixed order, and lasted approximately 30 minutes. The interviewer first asked a generic screening question designed to elicit reports of unwanted memories of the assault of an intrusive nature:

People who have committed a violent offence can remember the event in different ways. Some people have memories of parts of the assault that just pop into their mind when they do not want them to. These are usually from particular moments from before, during or after the incident that somehow “got stuck” in memory and keep coming back. These memories consist of part of what actually happened at the time, rather than your thoughts about what has happened since, such as being in prison because of the assault. Do you sometimes get such unwanted recollections of the assault?”

If endorsed, participants were asked to describe all such intrusive memories in detail. If more than one intrusive memory was identified, the participant was asked to identify the one that was most upsetting or distressing. The interviewer used a checklist to confirm that the criteria for an intrusive memory of the offence were met. After eliciting the intrusive memory, the following information was also elicited: frequency and duration, perceived meaning (“What does this memory mean to you when you think about it now?”), and modalities (thoughts, feelings, sensations, or their combination; “Could you tell me a bit more about how you experience this particular memory?”) and nature of sensory qualities (seeing a film scene, seeing a snapshot, seeing a series of pictures, hearing sounds other than spoken words, hearing spoken words, smells or tastes, or bodily sensations). Participants rated a range of phe-

nomenological qualities of the intrusive memory that had been previously identified as typical of intrusive memories in PTSD (including vividness, clarity, level of distress, here and now quality, level of control, and degree of change; Michael et al., 2004), each measured on a scale from 0 (*not at all*) to 100 (*extremely*). For example, participants were asked, “When you have this particular memory. . . how vivid and bright is it? (vividness); how clear and detailed is it? (clarity); how upsetting or distressing was it? (distress); to what extent did it seem to be happening now instead of something from the past (here and now quality). Participants were further asked to identify the worst part of the whole event, by indicating which moment in the course of events had the greatest negative emotional impact.

**Rumination.** Rumination was assessed with an adapted version of the Rumination Interview (Michael et al., in press; Speckens, Ehlers, Hackmann, Ruths, & Clark, in press). This interview followed a similar format as for intrusive memories, with the addition of more specific questions on the nature and content of the ruminations, each rated on a 5-point scale from *never*, through *rarely*, *sometimes*, *often*, to *always*, including (a) content of rumination: the presence of “why” and “what if” questions (e.g., “about why it happened to me, what life would be like if the event had not happened, about the kind of person I am”; 12 items,  $\alpha = .72$ ), and (b) occurrence of unproductive thoughts during rumination (e.g., “The thoughts go the same way, repeat themselves; I seem to think in circles, coming back to the same things again and again; I seem to drift from one topic to the next; I find it hard to put a stop to them”; 6 items,  $\alpha = .65$ ).

Participants were also asked to estimate the time spent dwelling on the assault and its consequences. Participants were then asked to rate on scales from 0 (*not at all*) to 100 (*extremely*), the following qualities to their ruminative experiences: vividness; clarity/detail; level of distress; the level of control they had over the memory coming into their mind; the degree of change in the memory from one time to another; level of avoidance of ruminations; the proportion of time spent ruminating on the violent offences that was intentionally initiated; the degree to

which the participant felt driven to continue dwelling on the assault and its consequences; and the extent to which dwelling on the event was perceived as helpful or unhelpful. Finally, participants who experienced both intrusions and ruminations were asked to what extent intrusive memories triggered ruminations, or vice versa.

**Symptoms of posttraumatic stress disorder.** The PTSD Symptom Scale–Interview Version (PSS-I) is a semistructured interview designed to assess symptoms of PTSD as defined by the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV;* American Psychiatric Association, 1994) criteria. The PSS-I is comprised of 17 items corresponding to the 17 symptoms of PTSD, and yields a total PTSD symptom severity score, as well as re-experiencing, avoidance, and arousal subscores. Each item consists of one brief question. The participant's answer is rated by the interviewer from 0 (*not at all*) to 3 (*5 or more times per week/very much*). Total severity scores on the PSS-I are based on the sums of raw items. Symptoms measured on the PSS-I are considered present if they are rated as 1 (*once per week or less/a little*) or greater. The scale has high internal consistency ( $\alpha = .85$ ), moderate to high correlations with other measures of psychopathology, high test-retest reliability ( $r = .80$ ), high interrater reliability ( $\kappa = .91$ ), and good diagnostic agreement with the Clinician-Administered PTSD Scale (Foa & Tolin, 2000). The total PSS-I score was used as a continuous measure of PTSD symptom severity. To qualify for a diagnosis of PTSD, the participant had to report the minimum number of symptoms specified in the *DSM-IV*.

## Procedure

After the participant had given consent, the semistructured interviews assessing demographic and offence characteristics were administered. Participants then gave a narrative account of the event and filled in some questionnaires, the results of which will be presented elsewhere. The Intrusion and Rumination Interviews followed. Finally, the PSS-I and the Quick Test were administered. The interviews and questionnaires were administered in a fixed order, taking

between 1.5 and 2 hours. All interviews were conducted in their entirety and individually by the first author. Where relevant, participants were provided with enlarged rating scales for each questionnaire or interview, to consider while the researcher read questions or statements aloud, to minimize any potential confounding effect of reading ability. The narrative account, Intrusion and Rumination Interviews, and qualitative enquiries were tape-recorded.

## Data Analysis

Interviews were transcribed verbatim. Two raters independently rated the transcripts of the Intrusion Interviews to determine whether intrusive memories reported by the participant met criteria for an intrusive memory. The interrater reliability was high ( $\kappa = .90$ ,  $n = 105$ ,  $p < .001$ ). Discussion between the two raters led to resolution of all five cases involving disagreement.

All quantitative data was input into an SPSS for Windows (version 11.5) platform for analysis. Chi-square tests (categorical data; or Fisher's exact test if invalid) or  $t$  tests (continuous data; or, when indicated by Levene's equality of variance test,  $t$  tests based on unequal variances) were used to compare participants with and without intrusions on demographic background and assault characteristics. Associations of intrusion and rumination characteristics with a diagnosis of PTSD were calculated with phi coefficients (for nominal variables) and point biserial correlations (for continuous variables). As a measure of effect size that is comparable with correlation coefficients, we report  $\eta$  values. All qualitative data was input into a MaxQDA, (a software tool to support qualitative data analysis; Science Plus Group b.v.) platform for analysis (VERBI Software English Version, 2001). Content of the intrusions and their meanings was qualitatively analyzed in three ways. First, the content of the intrusive memories was categorized in relation to the warning signal hypothesis of intrusive memories (Ehlers et al., 2002; Hackmann et al., 2004). The categories were (a) stimulus that was present shortly before the assault began and signaled its onset; (b) a stimulus that occurred in the course of the event, and signaled a moment when the meaning of the event

changed for the worse; (c) a moment when the meaning changed for the better; (d) a moment when everything still seemed okay (e.g., images of a pleasant day prior to the event); (e) a moment when they wished they had acted differently; (f) a moment from an earlier trauma; (g) fantasies about things that did not happen. This classification has been shown to be reliable ( $\kappa = .90$ ; Hackmann et al., 2004). Categories 1 and 2 both represent warning signals (a stimulus signaling the onset of threat), and can be considered two examples of the same concept. In contrast to studies of trauma survivors, the onset of the assault was initiated by the participant and was usually not experienced as distressing. The warning signal hypothesis refers to the onset of trauma, which occurred during the course of the assault or afterwards. Category 1 was nevertheless labeled onset of assault, as this can be determined relatively unambiguously.

Second, a detailed thematic analysis of the content and meaning of intrusive memories was carried out using the interpretative phenomenological analysis (IPA) method (Smith, 1995, 1996) and the transcripts were analyzed for recurrent themes (Smith, Jarman, & Osborn, 1999; Smith & Osborn, 2003). Interview transcripts were read and reread a number of times to obtain a general sense of the participant's account. Notes were made of potential themes. The text was then reread, examining both semantic content and language use, including the use of key words, phrases, or explanations. These were then coded with a key word or phrase, which captured the essence of the content, representing emergent themes. This process was repeated with each transcript. Finally, repetitions of these emergent themes (between each individual transcript) were taken as indicative of their status as recurrent themes, which reflected shared understandings. For each theme, a file of transcript extracts was created. The extracts reported give examples of some of these recurrent themes. Not every participant expressed each theme, and some expressed more than one theme. Interrater reliability checks of both content and meaning were carried out with an independent rater who attempted to identify the presence or absence of one or more categories in each description. Interrater reliability was high for both intrusive memory

content ( $\kappa = .97$ ,  $n = 48$ ,  $p < .001$ ) and intrusive memory meaning ( $\kappa = .94$ ,  $n = 48$ ,  $p < .001$ ).

## Ethical Approval

Ethical approval was obtained from the Prison Health Research Ethics Committee (PHREC) prior to the commencement of the study. Prior written approval of the governors and the lead clinicians of the relevant YOI's in which the study took place was obtained. Prior approval of the head of security and operations at the YOI's was received for the use of recording equipment within the YO institutions. Written consent was obtained from each participant prior to commencement of the study procedure. Given the sensitive nature of the data collected in this study, details of assaults and participant characteristics reported in the qualitative part of this article have been modified to protect anonymity. Participant responses were kept confidential, including from the institutional authorities. Participants were not reimbursed.

## RESULTS

Forty-eight participants (45.7%) reported intrusive memories of their violent offence. Six participants (5.7%) met diagnostic criteria for PTSD. The percentages of participants who met criteria for the reexperiencing (B), avoidance (C), and hyperarousal symptom clusters (D) were 56% (100% of the participants with intrusions vs. 19% of those without intrusions), 20% (31% vs. 11%), and 11.4% (40% vs. 12%), respectively. The percentages who met *DSM-IV* criteria B1 to B5 were 48%, 22%, 18%, 45%, and 24%, respectively; C1 to C7, 47%, 5%, 35%, 3%, 15%, 3%, and 47%; and D1 to D5 12%, 8%, 13%, 6%, and 4%. Note that some of the criteria may have been influenced by being in prison (e.g., C2 and C7). The mean PSS-I total score for the intrusion group ( $M = 10.4$ ,  $SD = 5.8$ ) was significantly higher than that of the no intrusion group ( $M = 2.3$ ,  $SD = 2.3$ ) in line with selection criteria for the two groups,  $t(59.9) = 9.11$ ,  $p < .001$ .

### Demographic, Legal, and Clinical Variables

Table 1 shows that participants with and without intrusions were comparable in demographic characteristics. The

only exception was that the intrusion group was significantly more likely than the no intrusion group to report a previous conviction for a violent offence (58.3% vs. 33.3%),  $\chi^2(1, N=105) = 6.59, p < .01, \eta = .25$ .

**Table 1.** Demographics, Criminal Record, and Clinical History of the Intrusion and No Intrusion Groups, and Correlations with Posttraumatic Stress Disorder Symptom Severity

Variable	No Intrusion group		Intrusion group		Correlation with PSS-I
	<i>n</i>	%	<i>n</i>	%	
Ethnicity					.20*
Caucasian	39	68.4	39	81.3	
Non-Caucasian	18	31.6	9	18.7	
Education—highest degree earned					−.03
No qualifications	36	63.2	29	60.4	
GCSE/equivalent	20	35.1	17	35.4	
A level/equivalent	1	1.8	2	4.2	
Employment status at time of offence					−.07
Employed/student	29	50.9	24	50.0	
Unemployed/not at school	28	49.1	24	50.0	
Relationship status					−.03
Current partner	37	64.9	25	53.2	
Criminal record					.06
Previous convictions	38	66.7	36	75.0	
Prior imprisonment					.11
Yes	17	29.8	19	39.6	
Prior violent offence					.18
Yes	19	33.3	28	58.3	
History of trauma					.20*
Yes	41	71.9	39	81.3	
Victim of violence					.25**
Yes	26	45.6	27	56.3	
Psychiatric history					.13
Yes	13	22.8	23	47.9	
History of head injury					−.01
Yes	21	36.8	15	31.3	
Memory problems					.28**
Yes	0	0.0	2	4.2	
Psychiatric referral since offence					.22*
Help sought	4	7.0	8	16.7	
Medication					.14
Current psychiatric medication	3	5.3	4	8.3	
Alcohol dependence					.15
Yes	10	17.5	13	27.1	
Illegal drug use					−.03
Regular use	47	82.5	40	83.3	
Drug dependence					.03
Yes	9	15.8	11	22.9	

(Continued)

**Table 1.** (Continued) Demographics, Criminal Record, and Clinical History of the Intrusion and No Intrusion Groups, and Correlations with Posttraumatic Stress Disorder Symptom Severity

Variable	No Intrusion group		Intrusion group		Correlation with PSS-I
	<i>n</i>	%	<i>n</i>	%	
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	
Age (years)	19.7	0.91	19.9	0.91	.02
Quick Test (IQ)	84.2	7.1	84.7	9.1	-.05
Age left full-time education (years)	15.1	1.8	14.8	1.4	-.10
Number of previous traumas	1.65	1.71	2.13	1.57	.25**
Alcohol intake per week at time of assault, units	94.60	160.39	113.38	140.69	.10

<sup>a</sup>Education was analyzed both by categorization of highest qualification (Fisher's exact test) and by age of completing education, as a continuous variable. PSS-I = Post-Traumatic Symptom Scale-Interview Version; GCSE = General Certificate of Secondary Education.

\*\* $p < .01$ .

Non-White ethnicity and (as a trend) previous conviction for violence also correlated with PTSD symptom severity as measured by the PSS-I.

Table 1 also shows aspects of the participant's clinical history. The only significant difference between the intrusion and no intrusion groups was that participants with intrusions were more likely to report a history of previous treatment for a psychiatric disorder,  $\chi^2(1, N = 105) = 7.29, p = .007, \eta = .26$ . Posttraumatic stress disorder severity as measured with the PSS-I correlated with a history of trauma and violence, the number of previous traumas, a history of memory problems, and receiving a psychiatric referral since the offence. There were no associations between intrusions and assault characteristics.

### Presence of Intrusions

All but two (95.8%) of the participants with intrusions reported current intrusive memories. The remaining two individuals reported intrusive memories that had been present for 2 years and 18 months, respectively. The intrusion group reported experiencing a median of two intrusive memories of different content from different moments in the course of the event (minimum = 1, maximum = 4). The mean frequency was 3.8 ( $SD = 5.7$ , minimum = 0, maximum = 35;  $Mdn = 3$ ) intrusive memories per week in the month preceding interview. Over half of the intrusion group ( $n = 26$ ; 54%), reported the duration of

intrusive memories to be less than 10 seconds on average, with 14 (29%) reporting intrusions that lasted longer than 1 minute.

### Qualities of Intrusions

All but one ( $n = 47$ ; 98%) of the intrusion group reported a sensory component to their intrusive memory, 15 (31%) reported a feeling component, 5 (10%) a thought component, and 18 (38%) reported a combination of sensory and thought/feeling components.

The majority of participants reported visual images, with the most frequent subcategory a series of still visual images of the assault, although participants reported intrusive memory components including sounds, smells, tastes, and physical sensations. Of those participants who endorsed a mixture of sensory components to their selected intrusion, the majority ( $n = 37$ ; 77.1%) nominated the visual modality as the most striking.

Table 2 lists the qualities of the intrusive memories described. The intrusive memories were described as vivid, clear, detailed, intrusive, unchanging, and very distressing. The intrusive memories varied in the extent to which they were described as having a here and now quality, with some intrusive memories clearly producing a flashback-type experience as illustrated in the following example: "When I sit down I could be watching 'telly or something . . . and it'll just come up and I'll think to myself, 'Why has

**Table 2.** Qualities of Intrusive Memories and Ruminations and Correlations with Posttraumatic Stress Disorder Symptom Severity

Variable	Intrusions ( <i>n</i> = 48)			Ruminations ( <i>n</i> = 38)		
	<i>M</i>	<i>SD</i>	Correlation with PSS-I	<i>M</i>	<i>SD</i>	Correlation with PSS-I
Vividness <sup>a,b</sup>	67.9	21.7	.24	81.9	23.6	.22
Clarity/detail <sup>b</sup>	73.1	19.9	.21	78.6	16.8	.47*
Distress	81.7	18.8	.42**	71.3	26.7	.41*
Nowness/Here and now quality	37.1	28.7	.36*	N/A	N/A	N/A
Level of control	9.4	16.3	-.30*	37.4	34.5	-.34*
Degree of change	4.8	11.1	.04	41.8	30.8	.07
Proportion of time initiated voluntarily	N/A	N/A	N/A	32.1	26.2	-.32*
Driven quality	N/A	N/A	N/A	56.8	28.7	.20
Unhelpfulness	N/A	N/A	N/A	66.0	31.2	-.23
Unproductive thoughts	N/A	N/A	N/A	15.5	4.2	.35*
Different contents of rumination	N/A	N/A	N/A	31.1	6.9	.28

Note. All variables with the exception of rumination content and unproductive thinking rated on scale from 0 = *not at all* to 100 *extremely*.

<sup>a</sup>*N* = 47 for intrusions (all others *n* = 48). <sup>b</sup>Vividness and degree of clarity and detail only apply to ruminations with a sensory component (*n* = 24).

\**p* < .05. \*\**p* < .01.

it popped up now?!' . . . It's like a flashback kind of thing. It's there, then it goes, and then it comes back again when it wants to. It's like it's got a mind of its own. It's not my brain, it's just like it comes back whenever it wants."

The intrusion characteristics that were significantly associated with total PSS-I score within the subgroup of perpetrators with intrusions were distress ( $r = .42$ ,  $p < .01$ ), here and now quality ( $r = .36$ ,  $p < .05$ ), and level of control (negatively;  $r = -.30$ ,  $p < .05$ ).

### Qualitative Analysis of Intrusions

The majority of the participants' most distressing intrusive memories were classified as representing a stimulus that signaled a moment when the meaning of the event changed for the worse (67%), for example the sight/smell of blood or the sight of the victim not moving—which then made the participant realize that he had hurt the victim more than intended. A further 6% of the intrusive memories were about stimuli that preceded the assault (warning stimuli). Ten percent were about a moment when the meaning changed for the better, and 17% of the intrusive memories

were about a moment when the participant later thought he should have done something differently.

Table 3 shows that analysis of the content of intrusive memories of the offence using the interpretative phenomenological analysis method yielded six categories of visual images: the wounded victim (40%), the actual assault (41%), the weapon (7%), a perceived precipitant (2%), an aspect of the immediate aftermath (2%), and the perpetrator being assaulted (8%). Images of the wounded victim were not significantly associated with higher PSS-I scores than other intrusions ( $M = 11.4$ ,  $SD = 6.0$  vs.  $M = 9.3$ ,  $SD = 5.4$ ),  $F(1, 47) = 1.56$ , *ns*,  $\eta = .18$ .

Table 4 summarizes how participants interpreted their intrusive memories. Interpretative phenomenological analysis yielded seven categories: (a) moral breaches (32%); (b) victim did not deserve level of injury (10%); (c) sudden realization of victim's level of injury during the assault (14%); (d) shock, disbelief, or surprise that they had acted so violently (23%); (e) consequences for family of victim or perpetrator (6%); (f) consequences for self (8%); and (g) reflective turning points (5%). A meaning focusing on the negative consequences for the victim or others (categories 2, 3, and 5) was not significantly associated with higher

**Table 3.** Qualitative Analysis of the Content of Intrusive Memories

Themes	Examples
1. Images of the wounded victim	“I get the picture of his face in my head . . . its like his eyes are open but they’re looking into space . . . It’s like he’s not there . . . his mouth is open a bit and I can see his teeth . . . and I can see blood coming out the back of his head, like a pool of blood, thick blood . . . I thought he was dead.”
2. Assault on the victim	“Well, all I see is that last part when the knife goes in and I see . . . blood squirt out . . . you know, you get that smell of blood . . . and the squirt . . . its just like the smell of blood. A lot of blood . . . a kind of ‘iron-ey’ kind of smell . . . I hear the squirt of the blood.”
3. Weapon	“I don’t see me. It’s not me I see . . . I just see the knife coming from, say, this height (demonstrates) . . . And it’s just the knife that stands out so much . . . It’s like it shines . . . it’s like Excalibur or something . . . it comes flying through the air . . . you can see it cutting the air . . . it leaves traces . . . and there’s just blood everywhere . . . I don’t remember it outside of that, after that much blood . . . there was nothing . . . it was just the knife . . . everything else around it was black . . . when the knife reached a certain point . . . the blood splatters . . . goes red . . . everything.”
4. Perceived precipitant	“The victim with the smile on his face.”
5. Aftermath	“Running away . . . panicking . . . a sudden realization . . . I just realized . . . what have I done!?!...Why have I done this!?!...things I was thinking as I was running away . . . panicking.”
6. Perpetrator being assaulted	“It always comes back to the guy on top of me . . . him holding me, this big guy . . . I’m trying to get away but he’s not letting go . . . it freaks me out . . . it scares me ‘cos I don’t know what could have happened there . . . I could have been in a lot of danger there . . . I dunno who that person was . . . I don’t know what he could have done . . . I committed the robbery, but scary! Scary!”

PSS-I scores than other meanings ( $M = 11.4, SD = 6.7$  vs.  $M = 9.6, SD = 4.8$ ),  $F(1, 46) = 1.08, ns, \eta = .15$ .

### Presence of Ruminations

Thirty-eight (36%) of the participants described ruminations about their violent offence. Most of them ( $n = 18; 47\%$ ) reported ruminating for several hours per week, up to 1 hour per day on their violent crime. Fourteen participants (37%) reported ruminating for several hours each day, and six (16%) for 1 hour per week or less.

### Qualities of Ruminations

All but one participant ( $n = 37; 97\%$ ) described their ruminations as experiencing a train of thoughts. Fifteen (40%) reported a feeling component; twenty-four (63%) reported a sensory component to their ruminations. Twenty-six participants (68%) reported mixed modalities, combining a train of thoughts with a feeling or sensory component.

Table 2 summarizes the qualities of ruminations rated by participants. In general, the ruminations were described as vivid, clear, changing, detailed (if a sensory component was involved), distressing, involuntary, and were perceived as unhelpful.

Presence of rumination correlated with PTSD symptom severity as measured by the PSS-I ( $r = .52, p < .001$ ). Within the subgroup of participants with rumination, the rumination characteristics that were significantly associated with PSS-I scores were distress, detail/clarity, unproductive thoughts, and (negatively) level of control and intentionality (Table 2).

### Content of Ruminations

The main contents of the ruminations endorsed by participants were the following: how things would have been if only they had done something differently ( $M = 3.6$ ), what life would be like if the event had not occurred ( $M = 3.6$ ), dwelling on the long-term consequences of

**Table 4.** Qualitative Analysis of the Meaning of Intrusive Memories

Themes	Characteristics	Examples
1. Moral breach	Transgressed important code of behavior; should not have done it; guilt, shame or embarrassment	"It hurts, you know, 'cos it's a serious thing I've done . . . I've hurt a person, I've scarred a person for life, really and truly . . . it's embarrassing . . . it hurts . . . I'm ashamed of myself for what I've done . . . the crime that I've committed . . . not stopping and thinking about what I'm doing."
2. Victim not deserving	A subcategory of moral breaches, but specific with respect to including a statement that the victim did not deserve the level of injury sustained or to be assaulted at all.	"Like, if it had been someone who had deserved it, someone who done something really bad, . . . then maybe there would be a little bit more justification in it . . . But there weren't really nothing to say that them geezers deserved what they got . . . I think it's guilt that brings it up . . . because they didn't deserve it to happen to 'em, do you know what I mean? . . . If it had been someone who robbed my Dad . . . or raped someone or something, I'd sit back and I'd probably say, "So what?" . . . Cut his face up, he deserved it . . . He's a rapist or he beats up old ladies or some shit like that . . . but because it's two geezers who didn't do nothing wrong, to get what happened to them makes me feel guilty."
3. Sudden realization of level of injury	Moment when it became clear that the victim was very seriously injured; sense of fear, threat, or serious legal implications.	"Realism . . . realism . . . when I saw him there, dead on that night, <i>that</i> is when it come . . . it hit me that I've actually killed a person . . . before that I didn't really . . . all my emotions were all over the place and I didn't know what was going on."
4. Shock, disbelief or surprize at self	Surprize at level of violence committed: expression of surprize or disbelief; implied loss of control	"I didn't think I was . . . I've punched people before and I've beaten them up, but I didn't think I was capable of being part of that sort of damage . . . I didn't think I could do that . . . hurting another human being with a punch."
5. Consequences for family	Suffering for victim's or perpetrator's family	"I get sad when I think about what I done to the man . . . I feel sorry for his family and his kids."
6. Consequences for self	Sense of loss of life opportunity for self	"I'm hurt that I've put myself in this position . . . I've basically chucked away . . . the best years of my life."
7. Reflective turning points	Major lifestyle or life philosophy turning point (as opposed to turning point within the course of events)	"I just try to think of it as a turning point in my life, like I try to draw some positive things from it . . . if I think of it all as a negative thing that happened and such an awful thing that happened I'm never going to go forward in life."

<sup>a</sup>One participant felt unable to say what his intrusive memory meant to him. All other interpretations were able to be placed within the categories listed.

their violent offending ( $M = 3.3$ ), what else may have happened ( $M = 2.9$ ), what they would like to say to the victim ( $M = 2.8$ ), why did it happen to me ( $M = 2.6$ ), and what kind of person am I ( $M = 2.5$ ). In the main, ruminative content focused on two themes. The first theme was spe-

cific points in time during the course of events leading up to the violence when the individual now wishes he had acted differently: "I could have changed my mind at that point, you know what I mean?! I could have backed off. All of this that's happened, I could have changed all that at

*that point!* . . . I analyze it. What if I'd done it this way or that way? But . . . I made the wrong choice."

The second theme was repetitive thoughts about the consequences of the participant's actions, both for the victim, and for themselves: "I think about, what if I never done it? What would I be doing right now? Would I still be sitting here talking to you? Just, how would life be like now? How much different would it be? . . . Stuff like that, really."

### Relationship Between Intrusions and Ruminations

Presence of intrusive memories and rumination were moderately related,  $\phi = .50$ ,  $p < .001$ . Thirty participants (29%) experienced both intrusive memories and ruminations related to their violent offence. Thirty out of 38 (79%) participants with ruminations also reported intrusive memories. Eight of these participants (27%) reported that the ruminations triggered intrusions. Thirty out of 48 (63%) participants with intrusions also had ruminations, and 27 (90%) of them reported that their intrusions triggered ruminations.

### Prediction of PTSD Symptom Severity

A multiple regression analysis explored how much of the variance of PTSD symptom severity in offenders can be predicted with history variables and intrusion and rumination characteristics. Variables that showed significant correlations with PSS-I scores were entered into the equation in three blocks: (a) demographic and history variables (ethnic group, number of previous traumas, a previous conviction for a violent offence, and a history of major memory problems), (b) intrusion characteristics (intrusion-related distress, "nowness," and lack of control), and (c) rumination characteristics. The rumination characteristics were highly correlated, leading to multicollinearity, probably because the majority of participants did not endorse rumination. The variables of rumination-related distress, the level of control (reversed), and the proportion of time rumination was initiated voluntarily (reversed) were therefore combined ( $\alpha = .97$ ) to yield a score for the degree to which

the participant reported involuntary and distressing rumination. The results were the same when the unproductive thoughts subscale was used instead.

In the first step, demographic and history variables explained 19% of the variance,  $F(4, 100) = 5.72$ ,  $p < .001$ ,  $R^2 = .19$ . In the second step, intrusion characteristics explained an additional 44% of the variance,  $F$  change (3, 97) = 38.69,  $p < .001$ ,  $R^2$  change = .44. In the third step, distressing involuntary rumination explained a further 4% of the variance,  $F$  change (1, 96) = 12.93,  $p < .001$ ,  $R^2$  change = .04. All variables together explained 67% of the variance,  $F(8, 196) = 24.75$ ,  $p < .001$ ,  $R^2 = .67$ . The variables that explained unique variance in the final equation were intrusion-related distress,  $\beta = .42$ ,  $p < .001$ , nowness of intrusions,  $\beta = .21$ ,  $p < .001$  and distressing and involuntary rumination,  $\beta = .26$ ,  $p < .001$ . Ethnic origin was marginally significant,  $\beta = .17$ ,  $p < .10$ .

## DISCUSSION

This is the first systematic study, with a reasonably large sample size and with interrater reliability measures, to demonstrate that a high proportion of young offenders have distressing intrusive memories related to their offence.

The intrusive memories described by the perpetrators are phenomenologically similar to those reported by assault and other trauma victims (Ehlers et al., 2002; Hackmann et al., 2004; Michael et al., 2004) in that they were involuntarily triggered, characterized by a low level of control, high distress, and were comprised mainly of brief sensory fragments, with a predominance of visual recollections (Ehlers & Steil, 1995; Mellman & Davis, 1985; van der Kolk & Fisler, 1995). They were also repetitive and stereotyped, consistent with the suggestion that they are resistant to change (van der Kolk & van der Hart, 1991). Some of the characteristics that have been shown to be highly predictive of PTSD (Michael et al., 2004), namely the distress and here and now quality, showed considerable variation in this sample, in line with the relatively low proportion of participants with PTSD. Among participants with intrusions, the distress and the here and now quality of the

intrusive memories showed the greatest association with PTSD symptom severity.

Analysis of the content of intrusive memories showed that they do not appear to be random fragments of the event. Intrusive memories predominantly represented the first sensations (often visual impressions) of the moment when the meaning changed dramatically for the worse, when the event became threatening to the perpetrator. This is consistent with the so-called warning signal hypothesis (Ehlers et al., 2002). In contrast to victims of assault, however, only 6% of the intrusions were about events immediately preceding the assault. This may be because the assault was in nearly all cases initiated by the perpetrator and was initially not perceived as distressing or, in most cases, not outside of their control. Thus, the onset of trauma usually did not coincide with the onset of the assault, but occurred when the meaning changed for the worse, usually because of an unintended outcome of the assault.

Analysis of the subjective meaning of the intrusive memories further illustrates that intrusions corresponded to parts of the course of events that had particular significance for the participant. Just under 80% of the interpretations were classified in one of the four main categories: moral breach, victim undeserving, shock or disbelief at what they had done, and sudden realization of the seriousness of the injury to the victim. These categories are associated with negative emotional states and are suggestive of regret and remorse, concepts used inconsistently in forensic psychiatry. Although acceptance of responsibility for offending behavior and responses of recognition and remorse have been deemed central to practical treatment goals in forensic psychiatry (Grounds, 1996), the words *regret* and *remorse* do not appear in the index of either of the two major British textbooks of forensic psychiatry (Bluglass & Bowden, 1990; Gunn & Taylor, 1993). This may be, in part, because of the difficulty in assessing the genuineness of such claims due to the obvious potential secondary gains. Obtaining such accounts indirectly via enquiry about intrusive memories may elicit phenomenological characteristics that are more persuasive.

More than a third of the participants reported ruminating about the offence. Rumination was associated with

PTSD, as suggested by previous research (Ehlers et al., 1998; Murray et al., 2002). Like intrusive memories, ruminations were described as distressing and largely involuntary. However, ruminations were mainly described as thoughts of changing content and thus appear to be distinguishable from the predominantly sensory intrusive memories that were described as not changing over time (De Silva & Marks, 1999; Ehlers & Clark, 2000; Ehlers et al., 2004; Joseph et al., 1997). As with trauma victims, perpetrators tended to ruminate in a repetitive, circular fashion on what if questions related to the assault and its consequences, such as how things might have turned out differently if they had acted in a different way at the time (Michael, 2000).

Over 60% of the participants with intrusions also experienced ruminations related to the offence, and the ruminations were frequently triggered by intrusive memories. In contrast, ruminations infrequently triggered intrusive memories in this sample.

In line with previous research on assault survivors (Michael et al., 2004; Michael et al., in press), intrusion and rumination characteristics measured with simple rating scales explained more variance in PTSD symptom severity than demographic or history variables. Demographic and history variables explained 19% of the variance. When intrusion and rumination characteristics were included, this increased to 67% explained variance. These findings have possible implications for the psychiatric assessment of offenders. Traditionally, such assessments focus on psychiatric history, which did not predict PTSD symptoms well in the present study. Asking offenders directly about potential intrusions and ruminations about the offence may be a promising alternative.

The current study had several limitations. First, it relied on interview data; thus, it is dependent on the participants' self-awareness and understanding of the questions. Some of the concepts under investigation may have been difficult to understand for this population, although every attempt was made to clarify questions. Furthermore, we cannot rule out that memories were affected by prior medicolegal proceedings. We intentionally interviewed participants postconviction to minimize their motivation to distort the

information provided. Finally, the study focused on young offenders, which means that the generalizability of the results to older violent offenders needs to be tested in further studies. However, the advantage of studying a young prison population was a decreased likelihood that memories of the index offense were confounded with memories of other offenses or previous imprisonment. In addition, efforts were taken to minimize selection bias within the YOI population and over 90% of the offenders incarcerated at the time of the study were interviewed. Thus, the results appear to be representative for young offender populations.

In conclusion, the study showed that a substantial minority of young violent offenders report intrusive memories of their offence, which phenomenologically resembled intrusive memories in victims of violence. The individual with regard to the acceptability of violence often related the interpretation of intrusive memories in the present study to transgression of a deeply held belief. When asked directly about their intrusive memories, participants provided relatively precise information about their attitudes towards the acceptability of violence. This information is generally difficult to elicit, and thus an interview about the content of intrusive memories and their meanings may be a useful tool in risk assessment. Anecdotally, many participants acknowledged that they had never been asked about the phenomenological characteristics of their memories of their violent behavior, and this more focused enquiry was more engaging for them than the usual line of questioning about why they had done it. Clinical attention can be productively placed not just on clinical factors that precede offending behavior, but on the impact of offending on the individual.

## REFERENCES

- American Psychiatric Association. (1994). *Diagnostic and statistical manual of mental disorders* (4th ed.). Washington, DC: Author.
- Ammons, R. B., & Ammons, C. H. (1962). *Quick Test*. Missoula, MT: Psychological Test Specialists.
- Bluglass, R., & Bowden, P. (Eds.). (1990). *Principles and practice of forensic psychiatry*. London: Churchill Livingstone.
- De Silva, P., & Marks, M. (1999). Intrusive thinking in posttraumatic stress disorder. In W. Yule (Ed.), *Post-traumatic stress disorder: Concepts and therapy* (pp. 161–175). New York: Wiley.
- Dunmore, E., Clark, D. M., & Ehlers, A. (1999). Cognitive factors involved in the onset and maintenance of posttraumatic stress disorder (PTSD) after physical and sexual assault. *Behaviour Research and Therapy*, 37, 809–829.
- Dunmore, E., Clark, D. M., & Ehlers, A. (2001). A prospective investigation of the role of cognitive factors in persistent posttraumatic stress disorder (PTSD) after physical or sexual assault. *Behaviour Research and Therapy*, 39, 1063–1084.
- Ehlers, A., & Clark, D. M. (2000). A cognitive model of post-traumatic stress disorder. *Behaviour Research and Therapy*, 38, 319–345.
- Ehlers, A., Hackmann, A., & Michael, T. (2004). Intrusive re-experiencing in post-traumatic stress disorder: Phenomenology, theory, and therapy. *Memory*, 12, 403–415.
- Ehlers, A., Hackmann, A., Steil, R., Clohessy, S., Wenninger, K., & Winter, H. (2002). The nature of intrusive memories after trauma: The warning signal hypothesis. *Behaviour Research and Therapy*, 40, 1021–1028.
- Ehlers, A., Mayou, R. A., & Bryant, B. (1998). Psychological predictors of chronic posttraumatic stress disorder after motor vehicle accidents. *Journal of Abnormal Psychology*, 107, 508–519.
- Ehlers, A., & Steil, R. (1995). Maintenance of intrusive memories in posttraumatic stress disorder: A cognitive approach. *Behavioural and Cognitive Psychotherapy*, 23, 217–249.
- Foa, E. B. (1995). *The Posttraumatic Diagnostic Scale (PDS) manual*. Minneapolis, MN: National Computer Systems.
- Foa, E. B., Cashman, L., Jaycox, L., & Perry, K. (1997). The validation of a self-report measure of posttraumatic stress disorder: The Posttraumatic Diagnostic Scale. *Psychological Assessment*, 9, 445–451.
- Foa, E. B., & Tolin, D. F. (2000). Comparison of the PTSD Symptom Scale-Interview version and the Clinician-Administered PTSD Scale. *Journal of Traumatic Stress*, 13, 181–191.
- Frith, C. D., Leary, J., Cahill, C., & Johnstone, E. C. (1991). Performance on psychological tests. Demographic and clinical correlates of the results of these tests. *British Journal of Psychiatry*, 159(Suppl 13), 26–29.
- Grounds, A. (1996). Expectations and ethics. In C. Cordess & M. Cox (Eds.), *Forensic psychotherapy: Crime, psychodynamics and the offender patient* (p. 7–14). London: Jessica Kingsley.

- Gunn, J., & Taylor, P. (Eds.). (1993). *Forensic psychiatry: Clinical, legal and ethical issues*. Oxford: Butterworth-Heinemann Limited.
- Hackmann, A., Ehlers, A., Speckens, A., & Clark, D. M. (2004). Characteristics and content of intrusive memories in PTSD and their changes with treatment. *Journal of Traumatic Stress*, 17, 231–240.
- Joseph, S., Williams, R., & Yule, W. (1997). Understanding post-traumatic stress. A psychosocial perspective on PTSD and treatment. Chichester, UK: Wiley.
- Kruppa, I., Hickey, N., & Hubbard, C. (1995). The prevalence of post-traumatic stress disorder in a special hospital population of legal psychopaths. *Psychology, Crime and Law*, 2, 131–141.
- Mellman, T. A., & Davis, G. C. (1985). Combat-related flashbacks in posttraumatic stress disorder: Phenomenology and similarity to panic attacks. *Journal of Clinical Psychiatry*, 46, 379–382.
- Michael, T. (2000). *The nature of trauma memory and intrusive cognitions on posttraumatic stress disorder*. Oxford, UK: Oxford University.
- Michael, T., Ehlers, A., Halligan, S. L., & Clark, D. M. (2005). Unwanted memories of assault: What intrusion characteristics are associated with PTSD? *Behaviour Research and Therapy*, 43, 613–628.
- Michael, T., Halligan, S. L., Clark, D. M., & Ehlers, A. (in press). Rumination in posttraumatic stress disorder. *Anxiety and Depression*.
- Murray, J., Ehlers, A., & Mayou, R. A. (2002). Dissociation and posttraumatic stress disorder: Two prospective studies of motor vehicle accident survivors. *British Journal of Psychiatry*, 180, 363–368.
- Reynolds, M., & Brewin, C. R. (1998). Intrusive cognitions, coping strategies and emotional responses in depression, post-traumatic stress disorder and a non-clinical population. *Behaviour Research and Therapy*, 36, 135–147.
- Reynolds, M., & Brewin, C. R. (1999). Intrusive memories in depression and posttraumatic stress disorder. *Behaviour Research and Therapy*, 37, 201–215.
- Science Plus Group b.v. (VERBI Software English Version 2001). MaxQDA (Version 2001) [Computer software]. Groningen, The Netherlands: Author.
- Smith, J. A. (1995). Semi-structured interviewing and qualitative analysis. In J. A. Smith, R. Harre, & L. V. Langenhove (Eds.), *Rethinking methods in psychology* (pp. ). London: Sage.
- Smith, J. A. (1996). Beyond the divide between cognition and discourse: Using interpretative phenomenological analysis in health psychology. *Psychology and Health*, 11, 261–271.
- Smith, J. A., Jarman, M., & Osborn, M. (1999). Doing interpretative qualitative analysis. In M. Murray & K. Chamberlain (Eds.), *Qualitative health psychology: Theories and methods* (pp. ). London: Sage.
- Smith, J. A., & Osborn, M. (2003). Interpretative phenomenological analysis. In J. A. Smith (Ed.), *Qualitative psychology. A practical guide to research methods* (pp. 51–80). London: Sage.
- Speckens, A. E. M., Ehlers, A., Hackmann, A., Ruths, F., & Clark, D. M. (in press). Intrusive memories and rumination in patients with post traumatic stress disorder: A phenomenological comparison. *Memory*.
- Spitzer, C., Dudek, M., Liss, H., Orlob, S., Gillner, M., & Freyberger, H. J. (2001). Post-traumatic stress disorder in forensic inpatients. *Journal of Forensic Psychiatry*, 12, 63–77.
- van der Kolk, B. A., & Fislir, R. (1995). Dissociation and the fragmentary nature of traumatic memories: Overview and exploratory study. *Journal of Traumatic Stress*, 8, 505–525.
- van der Kolk, B. A., & van der Hart, O. (1991). The intrusive past: The flexibility of memory and the engraving of trauma. *American Imago*, 48, 425–454.
- Wechsler, D. (1981). *The Wechsler Adult Intelligence Scale* (Rev. ed.). San Antonio, TX: Harcourt, Brace & Company/Psychological Corporation.