

## Psychopathy and Memory for Violence

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*Despite theoretical speculation suggesting psychopaths have superior memory for their autobiographical experiences in comparison to nonpsychopaths, little published research has directly assessed this issue. This lack of research formed the impetus for the present investigation. As part of a larger study investigating variables associated with episodic memory in adult male offenders, 150 violent crime perpetrators were interviewed at two federal penitentiaries in British Columbia, Canada. The participants' memories for three different acts of perpetrated violence were elicited (i.e., acts of instrumental and reactive violence and a poorly remembered act of violence) and exhausted for detail. The sample was dichotomized by psychopathy status via the Psychopathy Checklist-Revised (PCL-R; Hare, 1991, 2003). Consistent with certain assumptions of Hervé, Cooper, and Yuille's (2007) biopsychosocial model of eyewitness memory, the pattern which emerged indicated that psychopathic participants reportedly had better memory for their acts of violence in comparison to nonpsychopathic participants. The results are discussed in terms of how the present research supports the extant research and theories. Future directions for empirical investigations and implications for the criminal justice system are offered.*

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In comparison to nonpsychopathic criminals, psychopathic criminals are responsible for a disproportionate amount of crime (Hemphill, Templeman, Wong, & Hare, 1998), particularly crime that is violent (Serin, 1996) and interpersonal in nature (e.g., unlawful confinement; Hervé, Mitchell, Cooper, Hare, & Spidel, 2004). Thus, they are frequently in a position to report their memories for their violent offences (e.g., to the police, lawyers, triers of fact, institutional psychologists, and the National Parole Board). Despite being in such a position and the reality that memory evidence plays a pivotal role in many criminal trials, very little research has examined the memories of psychopathic criminals. Further, no research on this topic has been conducted in the field. In part, this lack of research formed the impetus for the present investigation.

Over 50 years ago, theorists speculated that psychopaths should have superior memory for their experiences in comparison to nonpsychopaths (Sherman, 1957). Indeed, Pennington (1954, as cited in Sherman, 1957) concluded psychopaths' "memories of past events can be considered excellent" (p.722) and Lindner (1944) went so far as to suggest that superior memory was a diagnostic symptom of psychopathy. However, since that time, only one study on psychopathy and memory has appeared in the published literature. Using a traditional eyewitness memory analogue design, Christianson et al. (1996) showed a group of 62 incarcerated offenders a series of slides depicting emotional (i.e., a bloody accident) and non-emotional material (e.g., a bus stop). Consistent with both research (e.g., Christianson & Loftus, 1991) and theory (Easterbrook,

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1959; see Christianson, 1992, for review), non-psychopaths recalled the central details of the emotional material better than the peripheral information. In contrast, the psychopaths failed to show this central-peripheral bias. That is, they similarly recalled the central and peripheral information. Moreover, psychopaths also recalled peripheral information on the emotional slide considerably better than nonpsychopaths (i.e., 50 versus 5.6 details), suggesting superior overall memory for emotional events. Nonetheless, although Christianson et al.'s results are in line with the findings from other areas of affective research on psychopathy, no field research has been published on the topic. As such, we know extremely little about whether psychopaths' memories for acts of perpetrated violence are superior to those of nonpsychopaths.

The limited state of the current research aside, many contemporary researchers agree with the traditional notion that psychopaths have superior memory. Further, many hypothesize that at least part of the reason lies in the affective deficit characteristic of psychopathy (Porter, Birt, Hervé, & Yuille, 2001). The nature of psychopaths' affective deficit has been explored in many studies with varying methodologies (e.g., Lorenz & Newman, 2000; Patrick, Bradley, & Lang, 1993; see reviews by Abbott, 2001 and Hare, 1998). Essentially, this affective deficit precludes them from experiencing a full range of emotions. The term "proto-emotions" describes the restricted emotional experience characteristic of psychopathy (Hare, 1993, p.53). That is, although psychopaths can experience primary emotions such as anger and happiness (if only short-lived), it is thought they cannot experience secondary emotions such as guilt and shame (Blair et al., 1995).

A potential driving force behind psychopaths' affective deficit is their hyposensitivity to arousal (Hervé & Hare, 1998). Converging lines of research demonstrates such hyposensitivity. For example, physiological evidence attests to psychopaths' lower level of baseline arousal, their insensitivity to punishment, and their deficient fear response, in comparison to nonpsychopaths (Hare, 1978). Further, many of the behavioral features of psychopathy (e.g., risk taking, sensation seeking, impulsivity; Ellis, 1987; Hare, 1991, 2003) indicate psychopaths are particularly drawn to arousal-inducing activities (Hervé, Cooper, Yuille, & Daylen, 2003). A recently

developed model of eyewitness memory (Hervé, Cooper, and Yuille (2007) suggests hyposensitivity to arousal is a major factor impacting eyewitness recall. According to an extension of this model, psychopaths are likely to compensate for their low level of baseline arousal by seeking out arousal-inducing situations such as committing violent crimes (Hervé et al., 2003). Thus, by instrumentally seeking arousing situations, they are likely to cognitively interpret the arousal as positive and thus focus on the most arousing aspects of the event (i.e., the central details, e.g., the act of violence). In short, this model suggests that hyposensitivity/psychopathy should have a facilitative influence on recall for highly arousing autobiographical experiences.

The present research was the first to capitalize on real-life acts of perpetrated violence to investigate the association among psychopathy and memory. For a variety of empirical and theoretical considerations, a sample of incarcerated violent offenders was asked to recall an act of instrumental violence and an act of reactive violence. Instrumental and reactive acts of violence were chosen as they represent the most divergent types of violence (Chase, O'Leary, & Heyman, 2001; Cornell et al., 1996). Instrumental violence is planned aggression and is essentially a means to an end (Woodworth & Porter, 2002). Conversely, reactive violence requires some level of provocation, be it real or imagined (Berkowitz, 1990). Other research with the present database demonstrated that instrumental acts of violence were reportedly recalled significantly better than reactive acts of violence (Cooper & Yuille, 2007). The present research was concerned with the impact of psychopathy on memory for both types of violence. The age of the memories and the number of rehearsals were examined as potential memory influencing factors. Based on traditional (Lindner, 1944; Sherman, 1957) and contemporary (Hervé et al., 2007; Porter et al., 2001) theorizing, it was hypothesized that psychopaths would report better memories for their acts of instrumental and reactive violence in comparison to nonpsychopaths.

In addition to memories of acts of perpetrated instrumental and reactive violence, an act of poorly recalled violence was elicited (i.e., a claim of amnesia for violence). Such an act could have been reactive or instrumental in nature. Although some published research has investigated offenders' claims of

amnesia in relation to violence (e.g., Gudjonsson, Hannesdottir, & Petursson, 1999; for a review, see Porter et al., 2001), no research has specifically examined psychopathy in relation to this issue. In line with the previous hypothesis, it was anticipated that psychopaths would be less likely to report a poorly recalled act of violence in comparison to nonpsychopaths. When psychopaths did report such memories, however, they were expected to be recalled better than nonpsychopaths' memories of such experiences.

## METHOD

### Participants

As part of a larger study on eyewitness memory in offenders (Cooper, 2005), 150 male violent offenders were interviewed at either Mountain Institution (58%) or Kent Institution (42%). Both institutions are federal penitentiaries in British Columbia, Canada governed by the Correctional Service of Canada (CSC). Mountain Institution is a medium-security institution and Kent institution is a maximum-security institution. To be eligible for participation, participants must have been convicted of at least one violent or sexual offence. They were also required to read and comprehend English. Interested participants contacted the psychology department at their respective institutions through a written request to schedule an interview session; some participants approached the researchers in person. Participants received a \$10 honorarium for their participation in the study. The interviews took place either in a private office in the psychology department or in a private office in the participants' living units. Each interview took approximately 5 hours to complete.

The participants were on average 34.93 years old ( $SD = 10.58$ ; range: 19-77). Sixty-five percent of the sample was Caucasian, 17% were Aboriginal, and approximately 18% reported a mixture of backgrounds. The participants indicated an average of 11.25 years of education ( $SD = 2.13$ ; range: 4.5-18) and reported being incarcerated for a mean of 6.23 ( $SD = 5.88$ ; range: .08-27) years for their most recent offence(s).

### Measures

#### *Assessment of Memory Characteristics:*

The Memory Characteristics Questionnaire (MCQ; Johnson, Foley, Suengas, & Raye, 1988) was used to assess the participants' memories for each of their provided acts of violence. It is a 39-item self-report questionnaire that assesses the phenomenological qualities of memory (e.g., vividness, detail, coherence, etc.) for an event (for review, see Johnson, 1988). Research shows the MCQ can differentiate between true and false memories of word lists (e.g., Mather, Henkel, & Johnson, 1997), videotaped events (Henkel, Franklin, & Johnson, 2000), and childhood experiences (Johnson et al., 1988). Participants responded to each MCQ question on a 7-point Likert scale (e.g., 1 = *a vague memory for an event*; 7 = *a clear distinct memory for an event*) regarding each provided memory. Participants were assessed on the MCQ once per memory. Although widely used by researchers as an assessment of the phenomenal characteristics of memories (e.g., D'Argembeau, Comblain, & Van der Linden, 2003; Destun & Kuiper, 1999), the psychometric properties of the MCQ have yet to be reported in the published literature.

Three items on the MCQ were used as memory criterion variables (i.e., question #8 [vividness] = "overall vividness is" [from 1 = vague to 7 = very vivid]; question #9 [detail] = "my memory for this event is" [from 1 = sketchy to 7 = very detailed]; question #33 [overall memory] = "overall, I remember this event" [from 1 = hardly to 7 = very well]). One item on the MCQ (i.e., #38) assessed for rehearsal to others (from 1 = not at all to 7 = many times).

#### *Assessment of Psychopathy*

The PCL-R (Hare, 1991, 2003) is the gold standard in the assessment of psychopathy (Fulero, 1995; Stone, 1995). It consists of 20 items that measure the interpersonal (e.g., manipulative, superficially glib), affective (e.g., callousness, lack of remorse), and behavioral features (e.g., impulsive, criminally versatile) of psychopathy. Factor analysis indicates the PCL-R (1991) forms two distinct yet related factors (Hare et al., 1990; Harpur, Hakstian,

& Hare, 1988).<sup>1</sup> Factor one assesses interpersonal and affective traits and factor two measures socially deviant lifestyle features. The PCL-R was designed for the assessment of psychopathy in criminal populations and is usually scored via a review of the offender's correctional files and an interview with the offender. However, if the offender refuses an interview, a file-based assessment has been deemed sufficient to score the PCL-R although such a technique may slightly underestimate an individual's score, especially with regards to interpersonal and affective characteristics (Harris, Rice, & Quinsey, 1993; Wong, 1988). Individual items are scored on a 3-point scale (i.e., 0, 1, 2) and are summed to yield a total score, ranging from 0 to 40 (Hart, Hare, & Harpur, 1992; Seto & Barbaree, 1999). The total score represents the degree to which an individual resembles the prototypical psychopath (Hart & Hare, 1997). Although the PCL-R can be used as a dimensional measure, a score of 30 or greater has been demonstrated to categorize/diagnose a psychopath (Hart & Dempster, 1997). That is, although the dimensions of psychopathy vary across individuals, at a certain level of severity, psychopathy can be construed as a discrete taxon or trait (Cooke, 1998). The sound psychometric properties of the PCL-R are well established (Fulero, 1995, Stone, 1995), as is its construct validity (Hare, 2003).

## Design and Procedure

### *Interview and Protocol Training*

Trained forensic psychology graduate students, undergraduate students, and the first author conducted the interviews. Three of the interviewers were male and seven were female. Due to the breadth of the protocol, two weeks of training was necessary. The first step was to train the interviewers in the adult "Step-Wise" interview protocol (Yuille, 1990; Yuille, Marxsen, & Cooper, 1999). This semi-structured interview is routinely used as an investigative tool for victims with allegations of sexual assault and domestic violence. Although there were no a priori reasons to expect the "Step-wise"

protocol could not be adapted for use with perpetrators of crime, this was one of the first studies to use the interview protocol on male incarcerated violent offenders. The main tenet of the "Step-wise" interview is to use a funnel approach to questioning (i.e., a focus on an uninterrupted free narrative, and a higher proportion of open-ended questions than specific/closed-ended questions). The "Step-wise" protocol was used to elicit memories for each of the three acts of violence from the participants.<sup>2,3</sup>

One day of training was spent in a workshop conducted by the first and third authors in which the "Step-Wise" protocol was outlined in detail and mock interviews illustrating alternative scenarios were presented. The second day was spent practising the Step-Wise protocol in small groups in which the interviewers were videotaped. On the third day, the interviewers watched the tapes of their interviews and received feedback from the first author regarding their performance. The fourth and fifth days entailed presenting the entire project methodology to the interviewers. During the second week, each interviewer went through the entire protocol during a mock interview and feedback was provided. The last day of the second week was a review session in which a discussion of potential problems took place. This day also included a discussion of proper dress, confidentiality, professional conduct, and safety. As well, prior to data collection, each interviewer had a meeting with either a Security Intelligence Officer or a CSC institutional psychologist about safety and professional conduct in the institutions.

### *Interview*

With the informed consent of the participants, the interviews were audiotaped to provide a verbatim account of the participants' memories. The verbatim accounts<sup>4</sup> will be coded for future research, not for the purposes of the present research. At the outset of the interviews, the interviewers developed rapport with the participants, explained the scope of the study and the limits to confidentiality, and received the

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<sup>1</sup> More recent analyses suggest that the PCL-R forms a superordinate factor (psychopathy), with subordinate factors (Factor 1 and Factor 2) each containing two sub factors or facets (see Hare, 2003).

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<sup>2</sup> Not all participants recalled each type of memory.

<sup>3</sup> The larger study involved the elicitation of two additional memory types (i.e., memories for positive and traumatic experiences).

<sup>4</sup> The verbatim accounts are in the process of being transcribed and coded for quality and quality of detail and credibility.

participants' informed consent to participate. After collecting demographic information, the interviewers used the "Step-wise" interview protocol to elicit the three different memories. The order of the memories was counter balanced to prevent an ordering effect of recall.<sup>5</sup> That is, the memories were ordered to allow each memory to occupy the first and last position in the protocol for approximately 30 participants.

The participants were asked a number of questions about their memories including the ages of the experiences and the number of times they had recalled them to others. After each memory was elicited and exhausted for detail in a "Step-wise" fashion, the interviewers had the participants assess their memories with the MCQ (Johnson et al., 1988) and other measures (e.g., state variables such as state dissociation and affect during the experience);<sup>6</sup> the participants were also assessed on a few trait measures (e.g., personality, trait dissociation) once all memories had been elicited.<sup>7</sup> After the interviews (and measures) were completed, trained research assistants reviewed the participants' correctional files and located the participant's PCL-R (Hare, 1991, 2003) scores, thereby ensuring that the interviewers remained blind to the participants' standing on the PCL-R. If more than one PCL-R rating sheet was available, each was examined to assess interrater reliability.

## RESULTS

### Types of Memories Provided

After each memory was provided, the interviewers applied a theme label (e.g., instrumental assault). After each interview, the first author reviewed the theme label with each interviewer. There were no discrepancies between the interviewers and the first author in this process. The memories for acts of instrumental violence the participants provided were grouped into the following themes (or categories): assaults/fights

(54.1%); robberies (19.7%); stabbings/shootings/murders (9%); sexual assaults (9%); and break and enters and home invasions involving instrumental violence (7.4%). Approximately 1% of the memories for acts of instrumental violence could not be grouped into these categories. The memories for acts of reactive violence were classified into the following categories: assaults/fights (79%); stabbings/shootings/murders (15.9%); and break and enters and robberies involving reactive violence (1.4%). Approximately 4% of the memories for acts of reactive violence could not be grouped into these categories. The poorly recalled acts of violence were grouped into the following categories: assaults/fights (67.1%); stabbings/shootings/murders (15.9%); sexual assaults (8.5%); and robberies involving violence (2.4%). Approximately 6% of such experiences could not be classified into these categories. In short, most of the acts of violence provided were assaults/fights. Events that led to the death or serious harm to the victim(s) were less common.

### Psychopathy Reliability and Demographics

PCL-R information was available for 135 (90%) of the 150 participants. The suggested North American cut-off of 30 (i.e.,  $\geq$  29.5) for psychopathy was utilized. For 18 participants, 2 PCL-R ratings were available in their correctional files. A bivariate Pearson one-tailed correlation indicated the two rating of the total percentile scores were significantly but moderately associated ( $r(16) = .59, p < .01$ ).

The mean PCL-R score for the 135 participants with PCL-R information was 26.45 ( $SD = 6.64$ ; *range*: 8.4 – 36) and 39.3% met the diagnostic criteria for psychopathy. The mean Factor one score was 9.47 ( $SD = 3.68$ ; *range*: 0 – 16) and the mean Factor two score was 13.03 ( $SD = 3.09$ ; *range*: 1 – 18). Table 1 illustrates the psychopathy demographics as a function of psychopathy status.

### Psychopathy and Age of Violent Experiences

The memories of psychopathic and non-psychopathic participants did not differ significantly in age (i.e., time between experience and recall): memories of instrumental violence ( $X_p = 11.31$  years

<sup>5</sup> Counter balancing occurred across the five memories elicited as part of the larger study.

<sup>6</sup> Findings related to such variables are reported in Cooper (2005).

<sup>7</sup> Findings related to such variables are reported in Cooper (2005).

[ $SD = 7.79$ ] vs.  $X_{np} = 11.06$  years [ $SD = 9.33$ ];  $t(106) = .15, p > .50$ ); reactive violence ( $X_p = 11.56$  years [ $SD = 8.37$ ] vs.  $X_{np} = 12.32$  years [ $SD = 10.47$ ];  $t(121) = .42, p > .50$ ); and poorly recalled violence ( $X_p = 11.31$  years [ $SD = 8.58$ ] vs.  $X_{np} = 10.79$  years [ $SD = 8.00$ ];  $t(69) = .25, p > .50$ ).

### Psychopathy and Memory Rehearsal

The number of reported prior rehearsals was assessed in two ways: from open ended interview questions and via item 38 on the MCQ (i.e., rehearsal to others). In terms of the former, psychopathic participants did not report rehearsing their memories of instrumental violence ( $X_p = 39.96$  [ $SD = 159.57$ ] vs.  $X_{np} = 9.07$  [ $SD = 14.13$ ];  $t'(39.36) = 1.22, p > .20$ ) or reactive violence ( $X_p = 24.89$  [ $SD = 85.45$ ] vs.  $X_{np} = 13.68$  [ $SD = 28.17$ ];  $t'(56.26) = .90, p > .30$ ) significantly more often to others in comparison to nonpsychopathic participants. Nonpsychopathic participants reported to have rehearsed their poorly recalled acts of violence ( $X_{np} = 24.33$  [ $SD = 44.74$ ] vs.  $X_p = 9.32$  [ $SD = 16.23$ ];  $t'(62.55) = 2.04, p < .05$ ) significantly more often than psychopathic participants.

In regards to the participants' responses to item 38 on the MCQ, psychopathic and nonpsychopathic participants did not significantly differ in their reported rehearsals for memories of instrumental violence ( $X_p = 3.66$  [ $SD = 2.06$ ] vs.  $X_{np} = 3.54$  [ $SD =$

$1.99$ ];  $t(110) = .31, p > .50$ ), reactive violence ( $X_p = 3.88$  [ $SD = 3.26$ ] vs.  $X_{np} = 3.37$  [ $SD = 2.02$ ];  $t(123) = 1.09, p > .20$ ), or poorly recalled violence ( $X_p = 3.41$  [ $SD = 2.01$ ] vs.  $X_{np} = 4.13$  [ $SD = 1.96$ ];  $t(73) = 1.51, p > .10$ ).

### Psychopathy and Amnesia for Violence

Fifty-five percent of the sample provided poorly recalled acts of violence. The psychopathy status of the participants who did and did not provide poorly recalled acts of violence were examined. Fifty percent of the psychopathic participants and 58.5% of the nonpsychopathic participants reported such experiences. A Chi square analysis indicated nonpsychopathic participants did not significantly differ from psychopathic participants in terms of whether or not they provided poorly recalled acts of perpetrated violence ( $\chi^2(1) = .96, p > .30$ ).

### Psychopathy and Memory for Violence

To examine whether psychopathic participants reported better memory for acts of perpetrated violence in comparison to nonpsychopathic participants, total memory scores for each event were calculated (i.e., the 3 MCQ memory criterion variables for each event were summed). Independent samples t-tests were calculated on the 3 MCQ memory criterion variables and the total memory

Table 1  
*PCL-R Scores as a Function of Psychopathy Status*

	Nonpsychopaths (60.7%)			Psychopaths (39.3%)		
	<i>M</i>	<i>SD</i>	Range	<i>M</i>	<i>SD</i>	Range
PCL-R Total						
Score	22.37	5.46	8.4 – 29.0	32.41	2.20	29.5-36.0
Percentile	44.71	20.70	4.9 – 72.0	86.82	8.29	77.0-98.0
PCL-R Factor 1						
Score	7.39	2.98	0.0 - 13.7	12.60	2.07	6.5-16.0
Percentile	41.07	21.95	1.2 - 92.5	80.78	15.32	34.0-100.0
PCL-R Factor 2						
Score	11.72	3.14	1.0 – 17.0	15.02	1.61	8-18.0
Percentile	51.79	25.49	1.0 – 98.0	81.79	14.57	20.0-100.0

scores for each event as a function of psychopathy. Psychopathic participants did not report significantly better memory for acts of instrumental violence in comparison to nonpsychopathic participants (vividness:  $t(110) = 1.09, p > .20$ ; detail:  $t(110) = .73, p > .40$ ; overall memory:  $t(110) = .72, p > .40$ ; total memory:  $t(110) = .93, p > .30$ ; see Table 2).

Psychopathic participants reported significantly higher levels of detail than nonpsychopathic participants concerning their memories for acts of reactive violence ( $t(124) = 1.99, p < .05$ ; see Table 3). Otherwise, psychopathic and nonpsychopathic participants did not differ in their reported memory for acts of reactive violence: vividness ( $t(124) = .61, p > .50$ ), overall memory ( $t(123) = 1.08, p > .10$ ), and total memory ( $t(123) = 1.33, p > .10$ ; see Table 3).

Psychopathic and nonpsychopathic participants did not differ in their reported memory for their poorly recalled acts of violence (vividness:  $t(73) = 1.05, p > .20$ ; detail:  $t(72) = .92, p > .30$ ; overall memory:  $t(73) = 1.82, p > .05$ ; total memory:  $t(72) = 1.44, p > .10$ ; see Table 4).

## DISCUSSION

The goal of the present investigation was to shed some light on the impact of psychopathy on autobiographical memories of violent acts (i.e., real-life events). According to Hervé et al. (2007), personality is believed to 'predispose' individuals to experience and, therefore, encode and retrieve events in a personality-congruent manner. One particularly salient personality trait thought to influence memory formation is arousal sensitivity, as arousal (or stress) is a known factor affecting memory. Theoretically, hyposensitives, being less prone to experience stress-related memory distortions, should show better memory for arousing events (e.g., acts of violence) relative to hypersensitives. As discussed earlier, based on a behavioural analysis, we view psychopaths as relatively more hyposensitive than their nonpsychopathic counterparts (Ellis, 1987; Hare, 1965, 1978; Jacobson & Gottman, 1998; Zuckerman, 1979). Therefore, we expected psychopaths to have better memory for events of impact (i.e., violent acts) than nonpsychopaths.

Although only one memory analysis was statistically significant in the hypothesized direction

(reported memory for details of reactive acts of violence), a pattern emerged showing that psychopathic participants had relatively better memory for the three different perpetrated acts of violence in comparison to nonpsychopathic participants.<sup>8</sup> That is, there were 11 analyses that, although not statistically significant, showed psychopathic participants to have relatively better memory for perpetrated acts of violence than nonpsychopathic participants. Similarly, although not statistically significant, the psychopathic participants reported poorly recalled acts of violence at a relatively less frequent rate than nonpsychopathic participants (i.e., they tended to have relatively good memory for all their acts of violence). As psychopathic participants' memories were shown to be similar in ages to the nonpsychopathic participants' memories, the results could not be explained by differences in delay (i.e., from experience to interview), a known memory-influencing factor (Yuille & Daylen, 1998). Similarly, the memory trend could not be attributed to differences in rehearsal, another established memory influencing factor (Scrivner & Safer, 1988). Clearly, the present results are not robust but the identified pattern does suggest a call for more research on this topic.

In line with the Hervé et al.'s (2007) model, the hyposensitivity characteristic of psychopathy, in addition to inherently making them less sensitive to stress-related memory distortions in general, presumably influenced psychopathic participants to seek out arousing experiences throughout their lives, such as committing acts of violence, thereby resulting in further (conditioned) habituation to stressful events. Further, due to their hyposensitivity, psychopathic participants likely focused on the most arousing aspects (i.e., central, related details (i.e., the violence)) of the events at the relative exclusion of non-arousing information (e.g., peripheral, non-event related subjective details), hence their better reported memory for such experiences. In contrast, hypersensitive participants, given their preoccupation with avoiding arousal, were not likely to have focused on the most arousing (central) aspects of the scene but on peripheral details, such as their

<sup>8</sup> The same trend was apparent when the participants' memories for their positive and traumatic experiences were examined (see Cooper, 2005).

Table 2  
*Instrumental Violence Memory Comparisons as a Function of Psychopathy*

	Nonpsychopaths (60.7%)		Psychopaths (39.3%)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Vividness	5.39	1.49	5.71	1.42	> .20
Detail	5.51	1.41	5.71	1.25	> .40
Overall Memory	5.79	1.36	5.98	1.27	> .40
Total Memory	16.70	3.91	17.39	3.64	> .30

Note: Vividness indexed by Memory Characteristics Questionnaire (MCQ) item # 8, Detail by MCQ item # 9, Overall Memory by MCQ item # 33, and Total Memory by the sum of MCQ item # 8, 9 & 33

Table 3  
*Reactive Violence Memory Comparisons as a Function of Psychopathy*

	Nonpsychopaths (60.7%)		Psychopaths (39.3%)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Vividness	5.03	1.52	5.20	1.55	> .50
Detail	5.11	1.40	5.61	1.37	< .05
Overall Memory	5.36	1.48	5.64	1.32	> .10
Total Memory	15.49	3.96	16.44	3.82	> .10

Note: Vividness indexed by Memory Characteristics Questionnaire (MCQ) item # 8, Detail by MCQ item # 9, Overall Memory by MCQ item # 33, and Total Memory by the sum of MCQ item # 8, 9 & 33

Table 4  
*Poorly Recalled Violence Memory Comparisons as a Function of Psychopathy*

	Nonpsychopaths (60.7%)		Psychopaths (39.3%)		
	<i>M</i>	<i>SD</i>	<i>M</i>	<i>SD</i>	<i>p</i>
Vividness	2.94	1.77	3.37	1.60	> .20
Detail	2.86	1.68	3.23	1.53	> .30
Overall Memory	3.02	1.87	3.81	1.69	> .05
Total Memory	8.82	5.08	10.05	4.20	> .10

Note: Vividness indexed by Memory Characteristics Questionnaire (MCQ) item # 8, Detail by MCQ item # 9, Overall Memory by MCQ item # 33, and Total Memory by the sum of MCQ item # 8, 9 & 33

subjective feelings. Unfortunately, as no measure of arousal sensitivity was utilized in the present investigation, it was only assumed that, in comparison to the psychopathic participants, the nonpsychopathic participants were relatively hypersensitive to arousal.

In addition to supporting elements of the Hervé et al.'s (2007) model, the results are consistent with recent but non-researched speculations on the topic. For example, Porter et al. (2001) proposed psychopaths should have superior memory for their extreme violent acts in comparison to nonpsychopaths considering their affective deficit should preclude them from experiencing severe state dissociation and dissociative amnesia. Similarly, Swihart, Yuille, & Porter (1999) noted, due to the orientating response characteristic of psychopaths, they would be likely to remember their crimes and to not develop dissociative amnesia. As stated above, suggestions that psychopaths should have good memory are also found in the more remote literature (e.g., Lindner, 1944).

Some research (Pollock, 1999) has demonstrated psychopaths to not have a stress response in relation to committing violence. Indeed, some appear to actually enjoy it (Hare, 1993). It is proposed that psychopaths' lack of stress response to committing violence is positively associated with their memory, particularly their memory for instrumental violence. Indeed, other analyses with the present dataset (Cooper, Hervé, & Yuille, 2005) indicated that positive affect during instrumental violence was positively associated with memory for such experiences, as well as with participants' scores on the interpersonal and affective factor on the PCL-R (Hare, 1991, 2003). Thus, psychopaths may have superior memory for their acts of violence in part because they enjoy committing acts of violence and, therefore, do not succumb to memory distortions stemming from negative affective states. As one psychopathic participant gleefully reported, "I think about everything I do before I do it...and I remember everything that I do."

### **Limitations and Suggestions for Future Research**

The relatively high prevalence of psychopathy was a limitation of the present investigation. Indeed

almost 40% of the present sample met the criteria for psychopathy, a rate considerably higher than what is typically found in North American prisons (i.e., 15-25%; Hare, 1991, 2003). Moreover, the mean PCL-R (Hare, 1991, 2003) score of the entire sample was close to one standard error of measurement above the diagnostic cut-off for psychopathy and, therefore, many of the nonpsychopathic participants displayed a considerable number of psychopathic characteristics. For example, one nonpsychopathic participant, who was formally employed as a hit man, made the following callous statement about one of his murderous acts: "I wasn't wearing a mask...when I started working on her, I took off the mask. Then she knew exactly what was going on...she was going to die. It was just a matter of when...I was paid \$150,000 to give a message, a message that was very violent, very noticeable...my contract was to inflict as much pain as I possibly could...it's not at all pleasant, it's not even nice to talk about. But it is what I was paid to do." When this participant was asked how he was feeling when he was torturing the victim before her death, he made the following comment, "...thinking yes, but feeling, no. I can detach myself from it. It's just a job. That sounds pretty callous but that's how I was able to do it." Similarly, another nonpsychopathic participant, previously employed as a drug debt collector, made the following statement to the first author in a state of amusement: "I had them [garden shears] in my hand...I put them around his fingers...the blade part was on his fingers like this. I was in the process of trying to save him a hospital bill (laughs)...I'm paid to do this, you know. I'm a capitalist just like a lot of people. And, you know, I capitalize and make some money. This is what I do, you know, what I mean. You're a psychologist. There's people that are doctors. Well, I collect money and sell drugs. Mine's not legal, but it pays."

The relatively high prevalence of psychopathy (and psychopathic characteristics) in this sample likely reflects, in part, the fact that inmates scoring high on the PCL-R are more likely to be incarcerated in maximum-security institutions relative to other inmates (Strachan, 1993). Furthermore, their proneness for institutional misconduct (e.g., Hare, 2003; Hildebrand, De Ruiter, & Nijman, 2004) suggests that moderately-to-highly psychopathic inmates in lower security institutions may be more

likely to find themselves quickly upwardly transferred to maximum-security institutions. In addition, the nature of the research and how some of the participants were informed of it (e.g., 'word of mouth') may have differently attracted psychopaths and nonpsychopaths to volunteer for this study. The main component of the study was an engaging semi-structured interview process, which involved the participants talking at length about themselves and their histories. Considering the glibness, superficial charm and egocentricity of psychopaths (Hare, 1991, 2003), such a context might have been particularly appealing for the psychopathic participants in the present investigation. Indeed, the eagerness of some psychopathic participants' to display their core characteristics was quite telling throughout the interview process. For example, at the outset of an interview, one participant made the following statement, "Ya know, I'm 96th percentile on the PCL-R, eh." Perplexed by this 'bragging,' upon retrieving the participant's PCL-R information from his correctional file, the interviewer noticed the participant was 'only' at the 91st percentile on the PCL-R. This display of 'grandiosity' is interesting considering most offenders are displeased to have high PCL-R scores in the contexts of risk assessments and National Parole Board hearings. Interestingly, this may explain the difference between their interview and questionnaire self-report noted above. It may be that interpersonal interactions pull for a different response style than do questionnaires in psychopaths (or high Factor 1 offenders) but not in nonpsychopaths, a point deserving empirical attention. That the interviewers were largely female may also have affected the prevalence of psychopathy in this study. Indeed, it did not take long for participants to notice this reality, as highlighted by the fact that there often was a crowd of willing research participants hovering around the interviewers in the offenders' living units both prior to and upon completion of the individual interviews.

No matter the reason, the relatively high base rate of psychopathic features in the present sample may explain why the overall observed memory pattern was, by and large, non-significant. Instead of comparing 'pure' psychopathic participants to 'pure' nonpsychopathic participants, the psychopathy analyses for the present investigation largely involved comparisons between highly and moder-

ately psychopathic participants. Future research on this topic should attempt to assess participants with more discrepant PCL-R scores to lessen this problem.

Another limitation concerns the fact that memory was assessed via a self-report questionnaire, as exemplified by the above noted (albeit single) difference between interview and questionnaire data. We are currently in the process of transcribing and coding the memory narratives for quantity and quality of detail. Following, we will compare questionnaire data to the narrative data. Although other research comparing such procedures has shown them to be significantly associated (Griesel et al., 2005), research also suggests that the self-report of psychopaths may be less reliable than that of nonpsychopaths (Porter & Woodworth, 2002). In other words, the information gained from self-report, as well as its veracity, may differ for psychopaths as compared to nonpsychopaths.

Finally, the issue of narrative veracity is, irrespective of psychopathy, a limitation. As with any field research on memory, it is impossible to have objective ground truth. This issue is compounded when offenders are studied, considering the likelihood of anti-social personality disorder and psychopathy, as deception is a feature of both (Cooper & Yuille, 2006). Of course, the rate of deception is an empirical question and the narratives are in the process of being coded with Criteria Based Content Analysis, a procedure designed to assess the credibility of narrative accounts of crimes (Colwell, Hiscock, & Memon, 2002).

## Implications

The above limitations notwithstanding, the present results have a few tentative implications for theory, research and practice (e.g., for the criminal justice system). With regard to theory and research, the present findings highlight the need to assess for individual differences when investigating memory, be it in the laboratory or in the field. As noted by Hervé et al. (2007), the formation of autobiographical memories, particularly those reflecting events of impact, is quite complex, reflecting the end product of a number of predisposing (e.g., personality, arousal sensitivity), precipitating (e.g., affect, dissociation), and perpetuating (e.g., recall history) biopsychosocial variables.

With regard to practice, institutional psychologists and other mental health professionals within the forensic context are frequently asked to assess individuals for a variety of issues (e.g., risk to recidivate, diagnostic) that, at least in part, depends on the interviewees' recall of past events (e.g., crimes, traumatic experiences, day-to-day institutional events, etc). Based on the present results, clinical-forensic assessors conducting assessments (e.g., risk, criminal responsibility, malingering, institutional infractions, etc.) should expect relatively better memory for violent crimes from psychopathic than from nonpsychopathic individuals. Similarly, they should expect psychopaths to experience amnesia for violence at a less frequent rate than nonpsychopaths. Any claim to the contrary should be viewed with caution and compared to other sources of information, and explanations for the discrepancy should be sought (see Hervé et al., 2007).

It is important to understand that psychopathy is only one of a host of potential memory influencing factors. As we argue elsewhere (Hervé et al., 2007), clinical-forensic assessors should take into account a number of predisposing, precipitating, perpetuating biopsychosocial variables when evaluating the recall of individuals' accounts of their crimes.

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