



Psychopathy and sensitivity to the emotional polarity of metaphorical statements

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Abstract

Clinical and research evidence indicates that psychopathy is associated with anomalies in processing and using the emotional components of language. However, most research on the topic has involved simple verbal stimuli, thereby telling us little about how psychopaths process and use emotional material that is part of a more complex linguistic process. We administered an “Emotional Metaphor Q-Sort” task to 35 male inmates assessed for psychopathy with the Hare Psychopathy Checklist–Revised (PCL–R; Hare, 1991). The task consisted of metaphorical statements that had to be sorted along a continuum according to the direction and degree of their emotional valence, ranging from very negative to very positive. Although psychopaths and nonpsychopaths did not differ in their literal understanding of the metaphors, psychopaths made significantly more sorting errors than did nonpsychopaths, particularly with what should have been emotionally unambiguous metaphors. The results are consistent with the hypothesis that incarcerated psychopaths do not understand or make effective use of the emotional content of language.

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1. Introduction

Psychopathy is a clinical construct characterized by a cluster of interpersonal, affective, and lifestyle features, including egocentricity, grandiosity, deceptiveness, shallow emotions, lack of empathy, guilt, or remorse, impulsivity, irresponsibility, and the ready violation of social and

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legal norms and expectations (Cleckley, 1976; Hare, 1991, 1998a). Recent empirical research on the disorder has benefited from the use of paradigms and procedures of cognitive and affective neuroscience, particularly those associated with linguistic processes. The ways in which psychopaths process and use language provide us with clues about the nature of their cognitive and emotional world.

Clinicians have long noted that psychopaths apparently fail to appreciate fully the emotional and abstract nuances of language (e.g. Cleckley, 1976). Empirical research, though consistent with this position (see reviews by Hare, 1998a, *in press*), is limited by the general focus on relatively simple verbal stimuli, such as isolated words. Few studies have investigated the role of affect in more complex forms of psychopathic language, such as sentences and phrases used to communicate ideas and emotions. The objective of this study was to assess the ability of psychopaths to understand the literal and emotional meanings of metaphors, linguistic constructions that closely capture language as it is used in everyday life.

Metaphors consist of any linguistic device whereby “aspects of one object are carried over or transferred to another object so that the second object is spoken of as if it were the first” (see Bernstein, 1987). Forming the basis of many types of figures of speech (e.g. simile, idiom, slang, metonymy, synecdoche, irony, analogy, proverb), they are a fundamental and ubiquitous component of language (Beck, 1987). Metaphors assist us in making our communications more vivid, memorable, comprehensible, and aesthetically pleasing (Allbritton, 1995; Katz, 1996). Like language in general, metaphors have both denotative/literal and connotative/affective meanings. It is the latter that should present a problem to psychopaths, given the evidence that they do not show normal behavioral, electrocortical, or neuroimaging differentiation between neutral and emotional words (e.g. Intrator et al., 1997; Kiehl, Hare, McDonald, & Brink, 1999; Kiehl et al., 2001; Williamson, Harpur, & Hare, 1991; see reviews by Hare, 1998a, *in press*).

A study by Williamson, Harpur, and Hare (1990; see Hare, 1998a) included a metaphor component in the investigation of the psychopath’s emotional language. Their “word triad” task required psychopaths and nonpsychopaths to choose the two words in a triad of words that were most similar in meaning. The words (warm, cold, deep, shallow, loving, hateful, wise, and foolish) were presented in various combinations, three at a time, and were chosen to allow relationship-based groupings into six possible categories: antonym, domain, metaphor, polarity, domain and polarity, and no relation. Psychopaths used polarity relationships (pleasant–unpleasant) less often than did nonpsychopaths, but did not differ from them in their use of metaphor, domain, and antonym. The authors suggested that psychopaths “are able to form metaphorical relationships at the single word level and this may compensate for their insensitivity to affective valence” (p. 13). However, the metaphoric relationship consisted of only two words, which is clearly metaphor at its most elemental. Furthermore, the authors noted that the psychopaths could have based their metaphorical pairings more on a denotative than on a connotative understanding of the words. Consistent with this possibility was the additional finding by Williamson et al. (1990; see Hare, 1998a) that psychopaths performed poorly on a task that required them to match sentences on the basis of their inferred emotional polarity; they made many “opposite polarity errors.” For example, they recognized that “*A man running from a monster*” and “*A man surfing on a large wave*” each had emotional connotations (one fear, the other exhilaration or excitement), but they rated them as being similar (positive) in polarity. Presumably, most people would consider one to have negative (bad) and the other to have positive (good) connotations, respectively.

In contrast, it is possible that the psychopaths were more influenced by the arousal value of the event (high arousal is good, low arousal is bad) than by the emotional valence of the event. That is, they may have identified both events/experiences as arousing and therefore positive, thereby giving the impression of an apparent “confusion of, or insensitivity to, emotional polarity.” The results of several subsequent lexical decision (Intrator et al., 1997; Kiehl et al., 1999; Williamson, Harper, & Hare, 1991) and blink-startle (Patrick, Bradley, & Lang, 1993) investigations are consistent with this speculation.

The purpose of this study was to examine the psychopath’s ability to interpret metaphors and to make decisions based on the emotional valence of such complex linguistic material. We developed an Emotional Metaphor Q-Sort, consisting of 60 metaphorical statements that ranged from very negative to very positive in emotional valence. The participant’s task was first to explain the literal meaning of each statement, and then to sort the statements into six bins according to their emotional valence. The number of statements to be placed in each bin approximated a normal distribution. We expected that psychopaths would understand the literal meaning of the statements, but would make significantly more sorting errors (i.e. emotional polarity errors) than would nonpsychopaths.

2. Method

2.1. Participants

We used advertisements and word-of-mouth to recruit 35 volunteers for the study, all male inmates of a federal medium-high security prison in Abbotsford, BC. Each inmate provided informed consent for an interview and for the study proper, and signed a release that allowed researchers access to his institutional files. Participants were required to have normal or corrected-to-normal vision, have at least elementary reading ability (as assessed with the Wide Range Achievement Test-Revised; WRAT-R; Jastak & Wilkinson, 1984), be free from any apparent intellectual/cognitive deficit and/or psychosis (as noted in institutional files), and have English as a first language. Three inmates who did not have English as a first language were dropped from the study, leaving a sample of 32 inmates. Each was paid \$5.00 an hour for his participation.

2.2. Ratings of psychopathy

A senior graduate student trained in the assessment of psychopathy used a semi-structured interview and file information to rate each inmate on the Hare Psychopathy Checklist-Revised (PCL-R; Hare, 1991). The PCL-R is a highly reliable instrument ($ICC_1 = .85+$) that has been extensively validated and used to operationalize the construct in adult forensic populations (Hare, in press; also see reviews by Fulero, 1995; Stone, 1995). The PCL-R consists of 20 items that measure the interpersonal, affective and socially deviant features of psychopathy. Individual items, each scored on a 3-point scale (0, 1, 2) are summed to yield a total score, ranging from 0 to 40, which represents the degree to which an individual resembles the prototypical psychopath.

The mean PCL-R score for the 32 inmates in this sample was 25.8 (S.D. = 7.2), slightly higher than the norm for inmates in this prison. We divided the sample into High (H; $n = 12$), Medium

(M; $n = 10$), and Low PCL-R (L; $n = 10$) groups, using a cut score of 30 for the High group and 22 for the Low group. The mean PCL-R score for the High, Medium, and Low group was 33.5 (S.D. = 2.7), 24.8 (S.D. = 1.8), and 17.5 (S.D. = 3.2), respectively.

2.3. Demographic variables

Because the ability to understand and interpret metaphors could be associated with age, reading ability and/or formal education (including educational upgrading in correctional institutions), we compared each group on these variables. Mean WRAT-R scores and associated school grade levels were, respectively, 56.7 and 9 for the Low PCL-R group, 60.7 and 10 for the Medium group, and 56.8 and 9 for the Low group. Mean years of formal education was 10.7, 11.0, and 10.7 for the High, Medium, and Low PCL-R groups, respectively. None of the group differences was significant ($F < 2.0$ in each case).

2.4. Materials

2.4.1. The emotional metaphor Q-sort

In devising this test, we generated a list of 130 emotional metaphors. Approximately one quarter of these metaphors were adapted from Katz, Paivio, Marschark, and Clark's (1988) list of literary metaphors, while the remainder were developed for this study. To screen out metaphors that were emotionally ambiguous, six graduate students rated each metaphor in terms of its valence (positive or negative) and emotional intensity (1 = low; 2 = medium; 3 = high). All metaphors with inconsistent valence and intensity ratings (i.e. range > 1) were eliminated. The resulting list contained 92 metaphors. Each metaphor was then subjected to the Microsoft Word (v2.0a) grammatical analysis program. This program is able to assess the reading grade level of a piece of text, producing the text's "Flesch Grade Level." To control for differences in inmates' reading skills, we eliminated all metaphors with a Flesch Grade Level higher than grade six. This resulted in 72 metaphors. Because the Q-Sort required equal numbers of positive and negative metaphors, we randomly eliminated 12 more metaphors to balance the list. The final list contained 30 negative metaphors (e.g. *Man is a worm that lives on the corpse of the earth*) and 30 positive metaphors (e.g., *Love is an antidote for the world's ills*).

Each metaphor was printed in bold black letters (Font 14) on a yellow card (width = 21 cm, height = 9 cm) and then laminated. To facilitate the sorting process, a "sorting rack" (a wooden tray containing six compartments) was constructed. The three leftmost compartments were painted white (positive side) and the three rightmost compartments were painted black (negative side).

Instructions describing both the metaphors and the procedure were standardized. The task was as follows: (1) separate the metaphors into two equal piles, one positive and one negative; (2) select the two most positive metaphors from the positive pile and place them in the far left compartment of the white section of the rack; (3) select the nine most positive metaphors from the remaining metaphors in the positive pile and place them in the middle compartment of the white section of the rack; (4) place the remaining positive metaphors in the rightmost slot of the white section of the rack; and (5) replicate steps 2–4 with the negative metaphors, using the black half of the sorting rack.

2.4.2. *The metaphor interpretation task*

This task consisted of a subset of ten metaphors (five positive, five negative) from the Q-Sort task, which were read aloud to the inmate, one at a time, with instructions for him to give a verbal account of the meaning of each of these metaphors. This format is similar to that used in the Gorham Proverb Test (Gorham, 1956).

2.5. *Procedure*

The study was completed in a quiet interview room in two sessions. At the onset of the first session, the inmate received a written and verbal description of the study, and then read and signed the consent forms allowing researchers to access his institutional files and to conduct an interview. The PCL-R interview and the WRAT-R were administered in this session.

At the beginning of the second session the inmate read and signed the consent form for the experiment. The experimenter answered his questions, read the standard instructions for the Emotional Metaphor Q Sort, and asked him to, sort the cards. Once the first step was completed, the experimenter checked one pile to ensure that it contained 30 cards. If not, he asked the inmate to adjust the piles accordingly. After the inmate had identified the positive pile, both piles were placed in front of the appropriate side of the sorting rack. The experimenter then read out the next set of instructions, following the steps outlined above. Upon completion of this task, the sorting results were recorded by the experimenter. The entire sorting procedure was timed. Once the Metaphor Q-Sort was completed, the experimenter read the standard instructions for the Metaphor Interpretation task. The inmate's interpretations were recorded verbatim by the experimenter. Finally, the inmate was debriefed. The experimental procedure took approximately one hour to complete and involved no deception or coercion. The experimenter who conducted the testing was blind to PCL-R scores.

2.6. *Dependent variables*

2.6.1. *Metaphor interpretative aptness*

Aptness refers to the appropriateness of the inmate's interpretations of the metaphors. Two graduate student judges, each blind to the purpose and details of the experiment, independently rated the inmate's interpretations for aptness on a three point scale (0 = not at all apt; 1 = somewhat apt; 2 = apt) according to a pre-determined list of possible interpretations. Correlational analysis revealed a high degree of consistency between the two judges ($r = 0.91$). These scores were then averaged across the two judges to give each inmate an Aptness score, ranging from 0 to 20.

2.6.2. *Q-sort completion time*

This measure, scored in minutes, reflects several processes, including task difficulty, task involvement, ability, and degree of interest, motivation, or compliance.

2.6.3. *Q-sort sorting errors*

We assumed that sorting errors reflected effectiveness in using valence to sort emotional metaphors. Errors were defined as those responses that deviated from a master template derived from the results of the six graduate student judges involved in the task's construction. The number of errors was tabulated for each of the following categories.

- (a) *Total Valence Errors*. This is the number of times that pairs of metaphors were incorrectly assigned to the wrong valence category during the initial sorting (i.e. placing negative metaphors on the positive side, and vice versa).
- (b) *Large Valence Errors*. This is the number of times that metaphors were incorrectly sorted as belonging to the two most intense opposite valence categories (i.e. very or extremely positive/negative). If an inmate's sorting involved guessing, then we might assume that these guesses would be confined to the least intense subset of a category (i.e. slightly positive/negative). It was possible for a given participant to make more errors of this type in one direction than in another. For this reason, Large Valence Errors were broken down into Large Negative Errors (incorrectly sorting negative metaphors as being very or extremely positive) and Large Positive Errors (incorrectly sorting positive metaphors as being very or extremely negative).
- (c) *Small Valence Errors*. Although less theoretically interesting, Small Negative Errors and Small Positive Errors were included for the sake of completeness. These consisted of sorting errors where metaphors were incorrectly placed in the least intense of the opposite valence categories, possibly representing random guesses.

3. Results

3.1. Correlational analyses

The PCL-R Total was not significantly correlated with completion time ($r = -0.17$) or the Aptness of interpretation score ($r = -0.24$).

We used a Bonferroni procedure (Glass & Hopkins, 1996) to control for an inflated Type-I error rate when testing the correlations between the PCL-R Total score and sorting errors. For each of the seven correlations the level of significance was set at $0.05/7 = 0.007$ (d.f. = 30). The PCL-R Total score was significantly correlated with Total Valence Errors ($r = 0.44$), Large Valence Errors ($r = 0.51$), Large Negative Errors ($r = 0.50$), and Large Positive Errors ($r = 0.47$). Although in the predicted direction, the PCL-R was not significantly correlated with Small Valence Errors ($r = 0.34$), Small Negative Errors ($r = 0.34$), or Small Positive Errors ($r = 0.33$).

3.2. Group comparisons

Mean completion time (min) was 16.22 (S.D. = 4.7) for the Low PCL-R group, 14.80 (S.D. = 3.1) for the Medium group, and 12.92 (S.D. = 5.7) for the High group. Mean Aptness score was 13.9 (S.D. = 2.3) for the Low PCL-R group, 11.6 (S.D. = 1.4) for the Medium group, and 12.3 (S.D. = 3.1) for the High group. Planned contrasts revealed that the Low and High PCL-R groups did not differ in terms of either completion time or Aptness score ($F < 1.5$ in each case).

The sorting errors for each PCL-R group, as well as for a comparison group of students, are depicted in Fig. 1 (Total Valence Errors), Fig. 2 (Large Valence Errors), and Fig. 3 (Small Valence Errors). Planned contrasts (d.f. = 29) revealed that the High PCL-R group differed significantly from the Low PCL-R group in Total Valence Errors ($t = 2.34$, $P < 0.05$), Large Valence Errors ($t = 2.84$, $P < 0.01$), Large Positive Errors ($t = 2.86$, $P < 0.01$), and Large Negative Errors

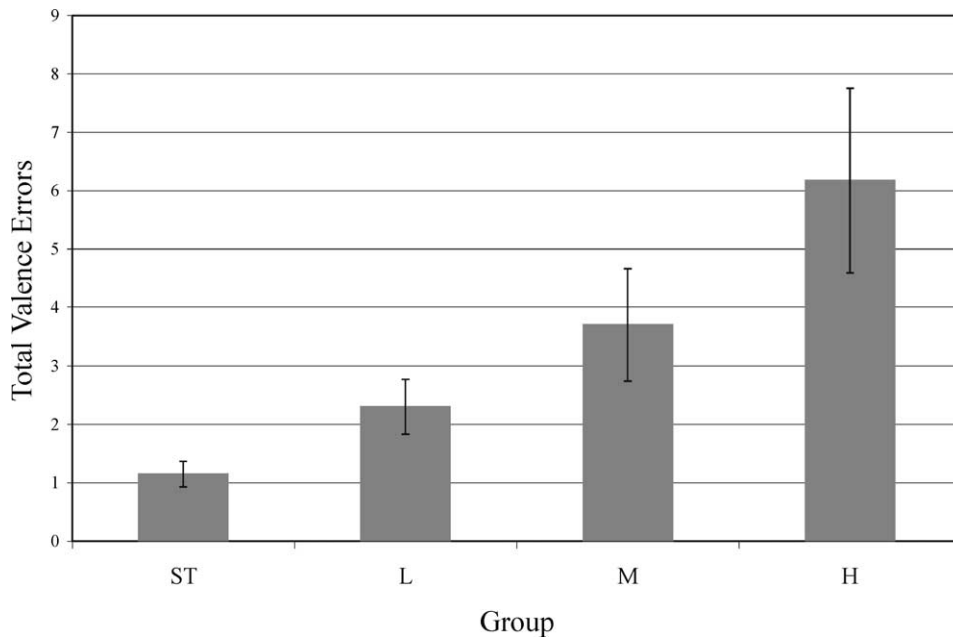


Fig. 1. Total number of valence errors made by students (ST) and by inmates with Low (L), Medium (M), and High (H) PCL-R scores.

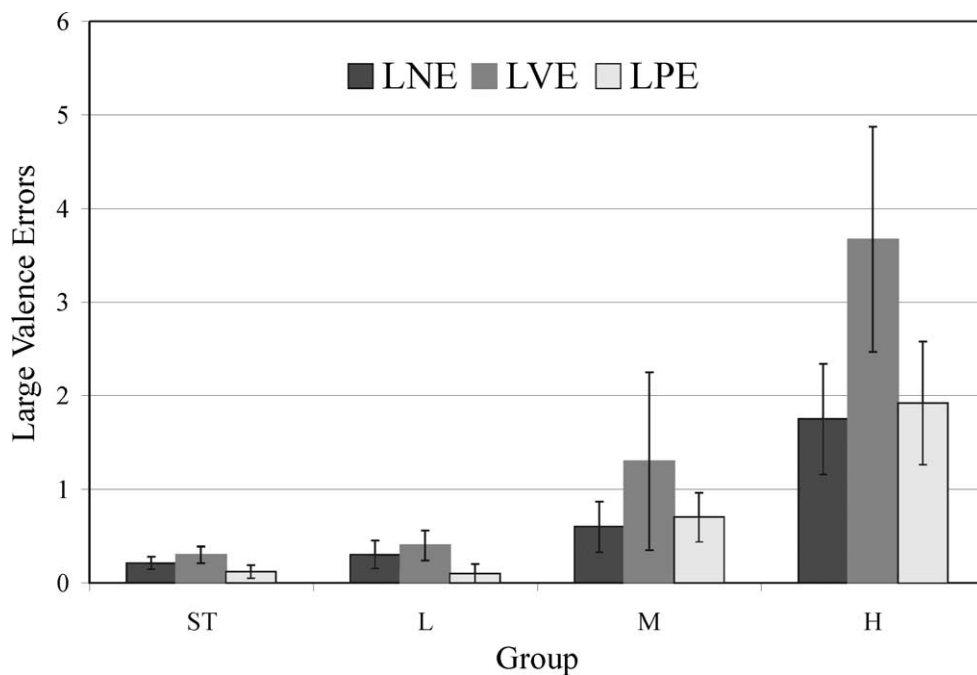


Fig. 2. Number of large valence errors made by students (ST) and by inmates with Low (L), Medium (M), and High (H) PCL-R scores. LVE = large valence errors; LNE = large negative errors; LPE = large positive errors.

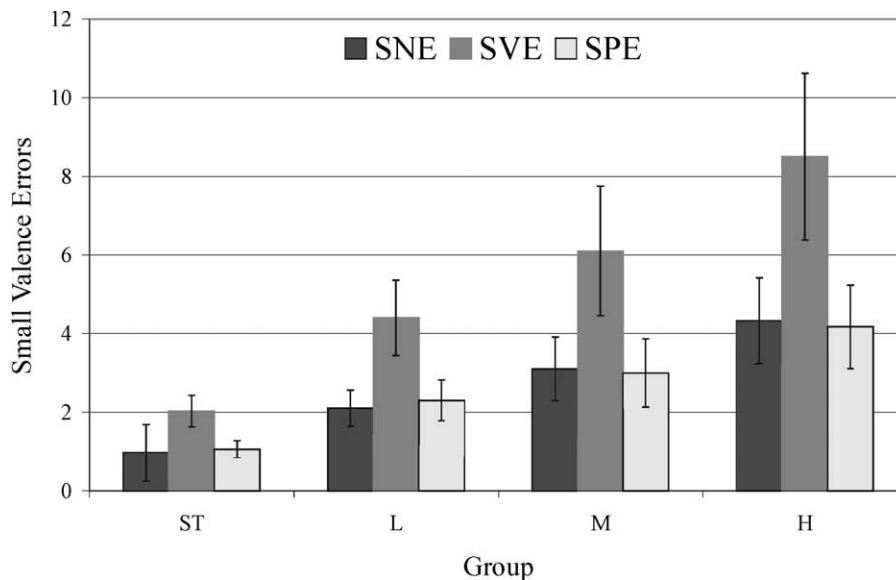


Fig. 3. Number of small valence errors made by students (ST) and by inmates with Low (L), Medium (M), and High (H) PCL-R scores. SVE = small valence errors; SNE = small negative errors; SPE = small positive errors.

($t = 2.46$, $P < 0.05$). Although in the expected direction, none of the planned contrasts involving small negative errors was significant ($P > 0.05$ in each case).

4. Discussion

Psychopathy was not associated with problems in interpreting the literal meaning of the metaphors used in this study. However, psychopathic inmates (high PCL-R scores) appeared to have considerable difficulty in sorting the metaphorical statements in terms of their emotional valence. They made more sorting errors in general, and more large valence errors in particular (see Figs. 1 and 2) than did nonpsychopathic inmates. That is, metaphors rated by others as very positive (+3) were sometimes placed at the very negative (−3) end of the continuum, and vice versa. These results are consistent with the finding by Williamson et al. (1990) that psychopaths performed poorly on a task that required them to match sentences on the basis of their inferred emotional polarity. Some examples from the present study illustrate this situation. One psychopathic individual interpreted the metaphor “*The sea is the mother of life*” as being very negative and the metaphor “*Memory is a dog that bites when you least expect it*” as being very positive. Another psychopath considered “*Man is a worm that lives on the corpse of the earth*” to be strongly positive in connotation, and “*Love is an antidote for the world’s ills*” to be strongly negative in connotation. In each case, this apparent “confusion” of emotional polarity presumably resulted from a tendency to evaluate and process complex linguistic stimuli more on the basis of their denotative than on their connotative or emotional content, a conclusion that would be consistent with clinical experience (e.g. Cleckley, 1976) and with empirical research on psychopathy

and affect (see Hare, 1998a, in press; Kiehl et al., 1999; Patrick et al., 1993; Williamson et al., 1991).

A related possibility is that psychopaths focus on some dimension other than valence (e.g., arousal) when evaluating emotional material. If the arousal value of an event or experience is more important than its emotional valence, it is easy to see why “*The sea is the mother of life*” might be viewed as negative and “*Memory is a dog that bites when you least expect it*” as positive; the former has little arousal value (and therefore is “negative”), whereas the latter has considerable arousal value (and therefore is “positive”). Alternatively, although the instructions were to sort the metaphors according to their emotional meanings, psychopaths might have been more influenced by idiosyncratic experiences than by culturally shared emotional meanings. For example, the psychopath who considered “*The sea is the mother of life*” to be very negative might have done so because of negative attitudes toward his mother. Nonetheless, it might be argued that if the psychopaths adopted either of these approaches to the task (arousal, idiosyncratic) it was largely the result of difficulty in attending to or processing the affective features of the task.

The large sorting errors made by the psychopaths in this study might seem curious in light of their apparent ability to understand the literal meaning of the metaphors. However, the ability to provide a reasonable interpretation of a metaphorical sentence does not necessarily require a deep understanding of its emotional connotations and its subtle linguistic meanings. The psychopaths may have known what the sentence meant on a surface (semantic) level, but they appeared to ignore or miss its “affective meaning. For example, one psychopath correctly interpreted the metaphor, “*Sleep is a doctor that heals daily wounds*” as meaning “*Sleep helps you heal your body*,” but then identified this metaphor as being negative in connotation.

An ironic aspect of these findings is that psychopaths often use metaphoric, figurative, and florid language to dazzle, obscure, impress, and manipulate others (Hare, 1998b). But this is more “a matter of words” than a deep semantic and affective appreciation of what they say. One psychopath in the study described an idyllic life with his wife: “*With her love I became a citizen of the celestial empire.*” His use of a flowery metaphor notwithstanding, he had not lived with his wife for two years before his arrest for burning down her house, appearing at her place of employment, and shooting two employees. This discrepancy between words and deeds is of course a key characteristic of psychopaths (Cleckley, 1976; Hare, 1991; Hare, Forth, & Hart, 1989). Presumably, their lack of emotional investment in what they say frees them to talk glibly about themes of love and trust, “pulling words from an overcoat pocket” (Hare, 1998b, p. 124).

There were several methodological weaknesses in this study. First, we did not explore with the inmates the reasons for their sorting strategies. Second, we did not include a measure of general intelligence in the study, and the results could be at least partly due to intellectual differences between psychopaths and nonpsychopaths. The research literature, summarized by Hare (in press), indicates that psychopathy generally is unrelated to measures of intelligence, but this does not necessarily mean that there were no task-relevant intellectual differences between the psychopaths and other inmates in the present study. If such differences did exist, they were not reflected in educational attainment or reading ability. Finally, it could be argued that the sorting results stemmed from motivational differences between psychopaths and nonpsychopaths. If this were the case then the psychopaths should have performed poorly on all aspects of the task, not just the sorting component. However, their aptness ratings and task completion times were not significantly different from those of the other inmates. Group differences were confined to

large sorting errors, suggesting that the results probably were not due to group differences in motivation.

In conclusion, the present findings provide further support for the proposition that psychopaths have difficulty in processing the affective components of language.

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